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# Council Action on Crab Prohibited Species Catch Limits in the BSAI Groundfish Fisheries



Presentation to the Crab Plan Team

May 2020

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## ALTERNATIVES

- Alternative 1: No action
- Alternative 2: Reduced PSC limits for BSAI trawl CDQ and non-CDQ groundfish fishing when the corresponding directed crab fishery is closed.
  - When no Crab Rationalization Program individual fishing quota (IFQ) is issued in a season for BBRKC, bairdi, or opilio, set the crab PSC limit for that stock at the lowest abundance-based level. As described in regulation at 50 CFR 679.21(e)(1), the PSC limits for the groundfish fisheries would be as follows under this alternative when the directed crab fishery is closed:
    - • Bairdi Zone 1 - 0.5% of total abundance minus 20,000 animals
    - • Bairdi Zone 2 – 1.2% of the total abundance minus 30,000 animals
    - • BBRKC Zone 1 - 32,000 red king crab
    - • Opilio - 4.350 million animals



## PURPOSE AND NEED

- *“...This action is intended to ensure there is consistency in management measures between directed fisheries and bycatch in groundfish fisheries, making more explicit the balance of impacts to all the fisheries and communities that are affected by the status of depressed stocks.”*
- Motivated by conservation concerns as well as equity



## SEEKING CPT INPUT...

...characterizing the biological effects of trawl PSC limits that are more restrictive when the directed crab fisheries are closed.

- 1) what is known/ what is unknown at this time,
- 2) what could be investigated between now and September, and
- 3) what we would need more time to analyze.



## ALTERNATIVES

- The Council also requested that the analysis include source numbers for the crab abundance estimates used to calculate the PSCs and clearly state whether they are from raw numbers from the NMFS bottom trawl survey or from stock assessment model estimates.

	Total abundance	Effective spawning biomass
BBRKC	Modeled abundance of mature female BBRKC	From stock assessment (females)
EBS Snow	Raw #s from NMFS standard (bottom) trawl survey	N/A
EBS Tanner	Modeled estimated total abundance	N/A



## SEEKING CPT INPUT

Analysts are seeking the CPT's help in understanding:

- 1) What is the importance of bycatch in crab populations dynamics and its effect on fishery sustainability?
- 2) Is there a clear relationship between crab abundance and bycatch levels?
- 3) Is the level of unobserved mortality of crab in trawl fisheries important relative to observed bycatch?
- 4) What is else is known/ unknown about crab abundance and bycatch levels that would be important to make clear in this analysis?



## DISCUSSION QUESTIONS

1) What is the importance of bycatch in crab populations dynamics and its effect on fishery sustainability?

If a directed crab fishery is closed, does continued mortality (due to both observed and unobserved bycatch of crab) effect the population dynamics of that stock?

At a certain threshold after a directed crab fishery is closed, is it likely that current PSC limits would enable the fishery to rebuild in the future if it is already closed in one year? For example, if BBRKC were under a rebuilding plan (like SMBKC), how much bycatch would affect rebuilding of the stock?



## DISCUSSION QUESTIONS

### 2) Is there a clear relationship between crab abundance and bycatch levels?

- As crab abundance increases, does crab (trawl) bycatch increase? Or is amount of crab bycatch more linked to fishing effort?
- Is the CPT concerned about the level of bycatch that does not accrue towards PSC limits? This would include outside time/area closures as well as fixed gear which has a lower mortality rate





## DISCUSSION QUESTIONS

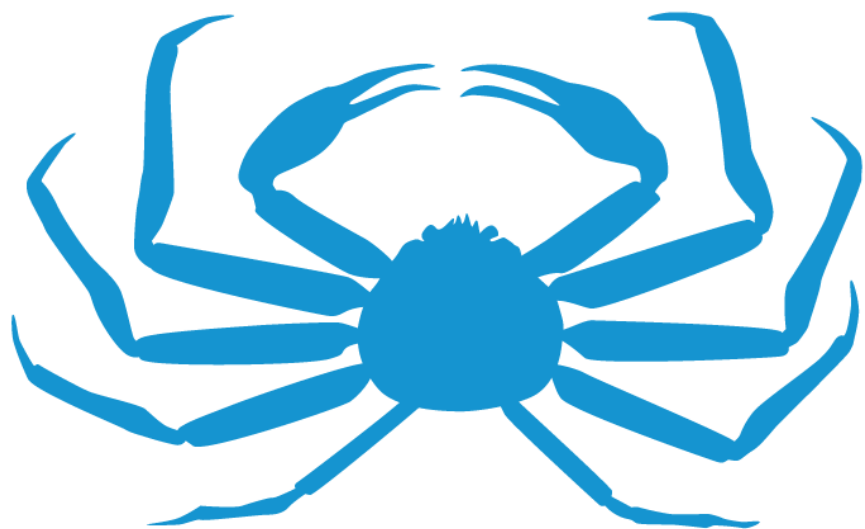
3) Is the level of unobserved mortality of crab in trawl fisheries important relative to observed bycatch ?



## DISCUSSION QUESTIONS

4) What is else is known/ unknown about crab abundance and bycatch levels that would be important to make clear in this analysis?





# QUESTIONS?

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# TABLES AND FIGURES



## ZONE I BBRKC PSC LIMITS

When the number of mature female red king crab is ...	The zone 1 PSC limit will be ...
(A) At or below the threshold of 8.4 million mature crab or the effective spawning biomass is less than or equal to 14.5 million lb (6,577 mt)	32,000 red king crab.
(B) Above the threshold of 8.4 million mature crab and the effective spawning biomass is greater than 14.5 but less than 55 million lb (24,948 mt)	97,000 red king crab.
(C) Above the threshold of 8.4 million mature crab and the effective spawning biomass is equal to or greater than 55 million lb	197,000 red king crab.

Source: 50 CFR 679.21(e)(1)(j)



## EBS SNOW CRAB IN COBLZ

EBS snow crab PSC limits are based on total abundance of snow crab as indicated by the NMFS standard trawl survey. The limit in COBLZ is set annually at 0.1133% of the snow crab abundance estimate from the NMFS standard trawl survey minus 150,000 crab, unless a minimum or maximum abundance threshold is reached.

- If 0.1133% multiplied by the total abundance is less than 4.5 million, then the minimum PSC limit will be 4.350 million animals.
- If 0.1133% multiplied by the total abundance is greater than 13 million, then the maximum PSC limit will be 12.850 million animals.



# ZONE 1 AND ZONE 2 EBS TANNER

When the total abundance of <i>C. bairdi</i> crabs is ...	The PSC limit will be ...
(1) 150 million animals or less	0.5 percent of the total abundance minus 20,000 animals
(2) Over 150 million to 270 million animals	730,000 animals
(3) Over 270 million to 400 million animals	830,000 animals
(4) Over 400 million animals	980,000 animals

Zone 1

Source: 50 CFR 679.21(e)(1)(ii)(A)

Zone 2

When the total abundance of <i>C. bairdi</i> crabs is ...	The PSC limit will be ...
(1) 175 million animals or less	1.2 percent of the total abundance minus 30,000 animals
(2) Over 175 million to 290 million animals	2,070,000 animals
(3) Over 290 million to 400 million animals	2,520,000 animals
(4) Over 400 million animals	2,970,000 animals

Source: 50 CFR 679.21(e)(1)(ii)(B)



# BBRKC

**Table 3 BBRKC Zone 1 PSC limits and use by fishery (# of crab), 2008-2020**

Bristol Bay RKC Zone 1	CDQ PSQ limit	CDQ PSQ usage	A80 limit	A80 PSC Usage	BSAI TLA PSC Limit	BSAI TLA PSC Usage
2008	21,079	2,623	109,915	78,426	53,797	4,492
2009	21,079	2,187	104,427	59,428	53,797	4,664
2010	21,079	779	98,920	54,314	53,797	0
2011	21,079	3,630	93,432	31,003	53,797	3,336
2012	10,379	2,605	43,293	24,164	26,489	225
2013	10,379	2,425	43,293	22,524	26,489	224
2014	10,379	1,455	43,293	26,333	26,489	177
2015	10,379	62	43,293	12,615	26,489	77
2016	10,379	430	43,293	21,442	26,489	1,448
2017	10,379	3,722	43,293	27,143	26,489	4,167
2018	10,379	1,936	43,293	9,799	26,489	989
2019	10,379	2,044	43,293	20,775	26,489	2,141
2020	10,379	2,086	43,293	13,896	26,489	3,117

**Green indicates sectors/years in which PSC usage would have exceeded PSC limit if they had been set at lowest level**





# EBS SNOW

**Table 4 EBS Snow crab COBLZ PSC limits and use by fishery (# of crab), 2008-2020**

EBS Snow Crab in COBLZ	CDQ PSQ limit	CDQ PSQ usage	A80 limit	A80 PSC Usage	BSAI TLA PSC Limit	BSAI TLA PSC Usage
2008	465,450	10,998	2,386,668	601,773	1,248,494	64,590
2009	465,450	56,254	2,267,412	356,667	1,248,494	23,129
2010	465,450	11,530	2,148,156	266,102	1,248,494	1,379,131
2011	889,221	29,749	3,875,381	480,262	2,385,193	212,241
2012	752,159	26,600	3,085,323	326,335	2,017,544	239,451
2013	1,123,643	19,445	4,609,135	400,283	3,013,990	224,401
2014	1,196,890	34,958	4,909,594	329,062	3,210,465	81,796
2015	1,178,281	40,269	4,833,261	394,127	3,160,549	48,005
2016	503,790	12,189	2,066,524	145,705	1,351,334	2,711
2017	974,286	19,709	3,996,480	125,564	2,613,365	4,946
2018	975,898	291,314	4,003,091	1,216,259	2,617,688	68,722
2019	1,275,060	74,151	5,230,243	834,553	3,420,143	17,017
2020	918,156	6,382	3,766,238	278,652	2,462,805	53,253

**Blue indicates sectors/years in which PSC usage exceed the limit**



# EBS TANNER ZONE I

**Table 5 EBS Tanner Zone 1 PSC limits and use by fishery (# of crab), 2008-2020**

EBS Tanner Crab Zone 1	CDQ PSQ limit	CDQ PSQ usage	A80 limit	A80 PSC Usage	BSAI TLA PSC Limit	BSAI TLA PSC Usage
2008	104,860	3,815	460,674	141,453	411,228	41,545
2009	104,860	7,203	437,658	167,340	411,228	17,518
2010	88,810	13,200	351,176	148,284	348,285	16,373
2011	88,810	9,635	331,608	221,988	348,285	21,358
2012	104,860	14,594	368,521	171,355	411,228	8,827
2013	104,860	20,603	368,521	239,861	411,228	16,929
2014	104,860	6,603	368,521	155,223	411,228	10,657
2015	104,860	3,088	368,521	71,616	411,228	17,657
2016	88,810	2,761	312,115	50,605	348,285	9,941
2017	88,810	4,812	312,115	95,674	348,285	53,859
2018	88,810	1,638	312,115	21,763	348,285	3,920
2019	104,860	1,719	368,521	23,181	411,228	4,041
2020	104,860	340	368,521	13,752	411,228	3,605



## EBS TANNER ZONE 2

Table 6 EBS Tanner Zone 2 PSC limits and use by fishery (# of crab), 2008-2020

EBS Tanner Crab Zone 2	CDQ PSQ limit	CDQ PSQ usage	A80 limit	A80 PSC Usage	BSAI TLA PSC Limit	BSAI TLA PSC Usage
2008	317,790	9,508	599,134	386,049	1,241,500	69,749
2009	317,790	5,652	745,536	226,578	1,241,500	52,978
2010	269,640	15,975	599,271	225,088	1,053,394	70,663
2011	269,640	14,706	565,966	566,190	1,053,394	61,437
2012	317,790	16,964	627,778	166,732	1,241,500	43,728
2013	317,790	16,753	627,778	344,658	1,241,500	70,504
2014	317,790	38,298	627,778	303,607	1,241,500	103,381
2015	317,790	9,055	627,778	196,608	1,241,500	25,527
2016	269,640	4,885	532,660	102,466	1,053,394	5,609
2017	221,490	5,630	437,542	157,924	865,288	27,350
2018	269,640	17,988	532,660	108,259	1,053,394	10,166
2019	317,790	15,580	627,778	249,557	1,241,500	7,007
2020	317,790	3,301	627,778	177,700	1,241,500	25,272

Blue indicates sectors/years in which PSC usage exceed the limit



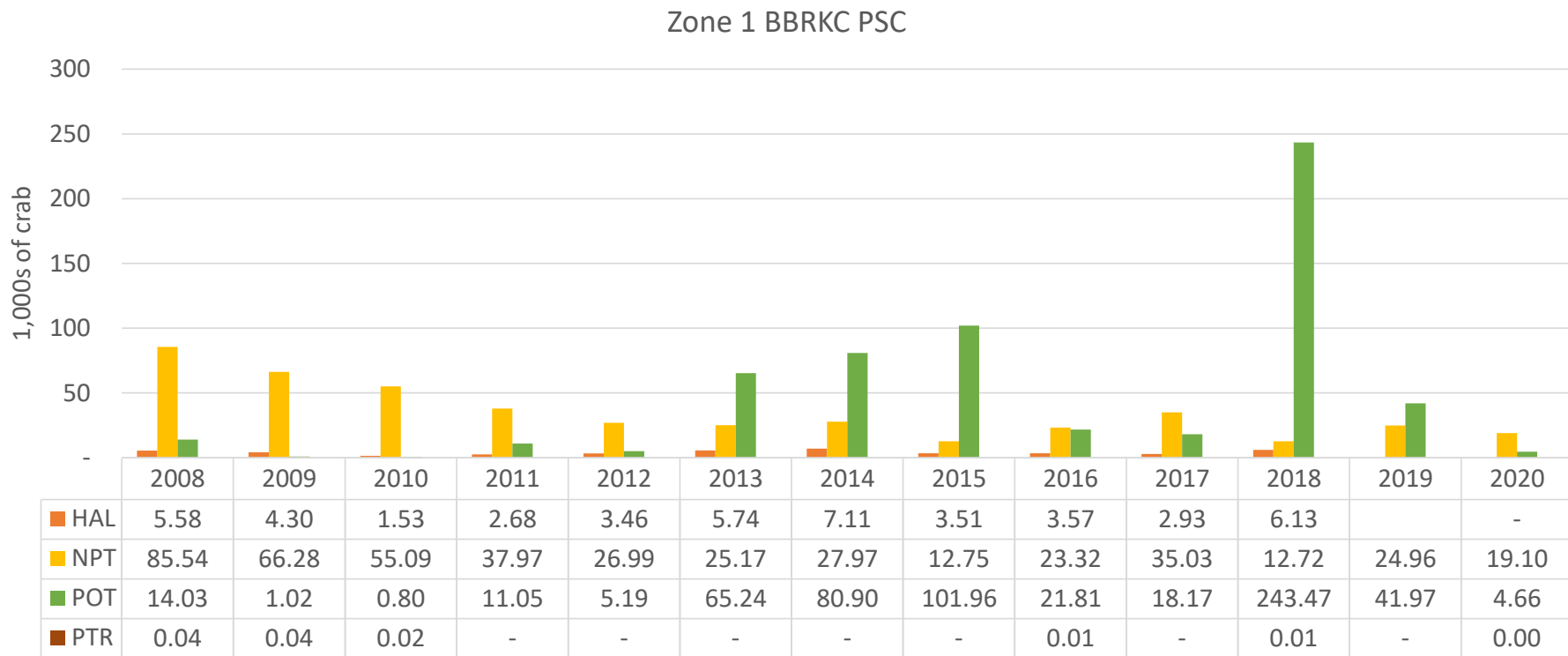
**Table 7 Apportionment of crab PSC based on the lowest PSC limit (# of crab)**

	<b>lower PSC limit</b>	<b>CDQ PSQ limit</b>	<b>A80 limit</b>	<b>BSAI TLA PSC Limit</b>
<b>BBRKC Zone 1</b>	32,000	3,424	14,282	8,739
<b>EBS snow COBLZ</b>	4,350,000	481,500	1,975,093	1,291,546
<b>Tanner Zone 1*</b>	730,000	78,110	274,511	306,323
<b>Tanner Zone 2*</b>	2,070,000	221,490	437,542	865,288

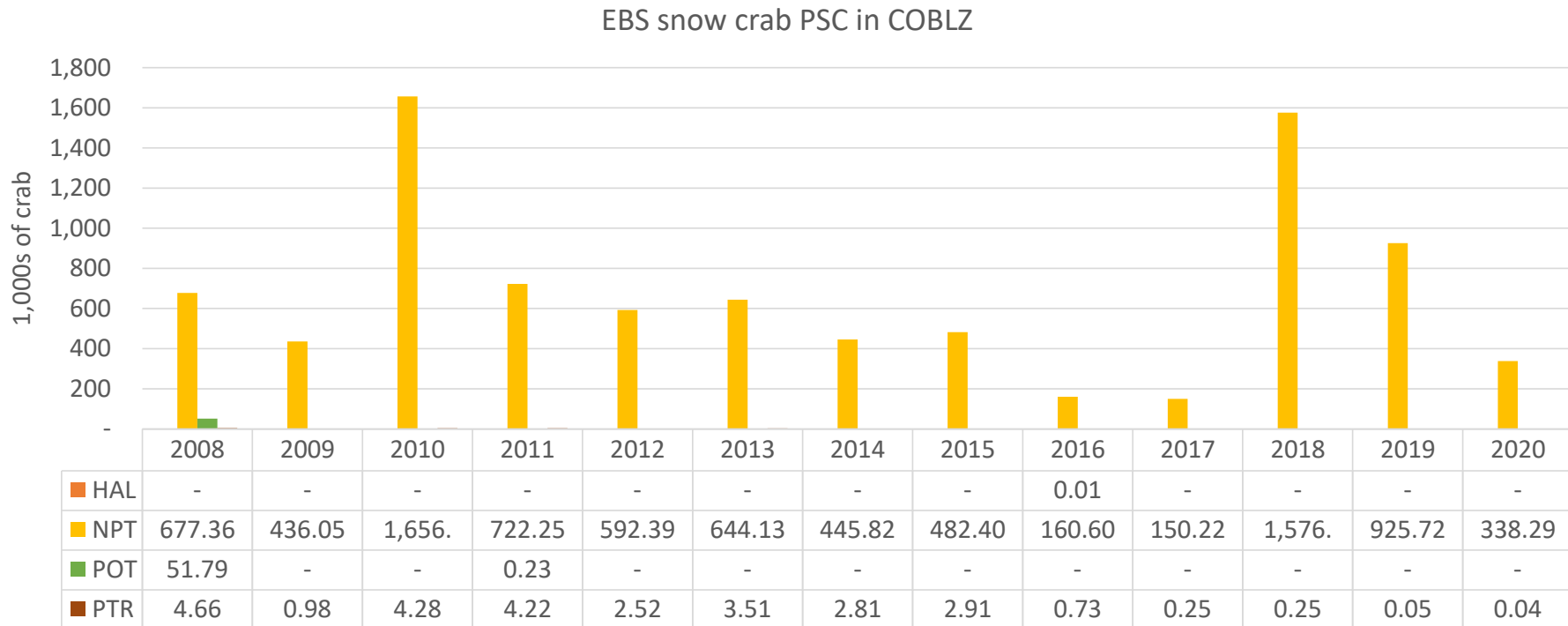
\*Technically Tanner PSC limits may be lower as they would be based on a proportion of abundance. Values listed are the lowest fixed amounts.



# FIGURE 5. ZONE I BBRKC PSC USAGE BY GEAR TYPE AND TARGET SPECIES, 2008-2020

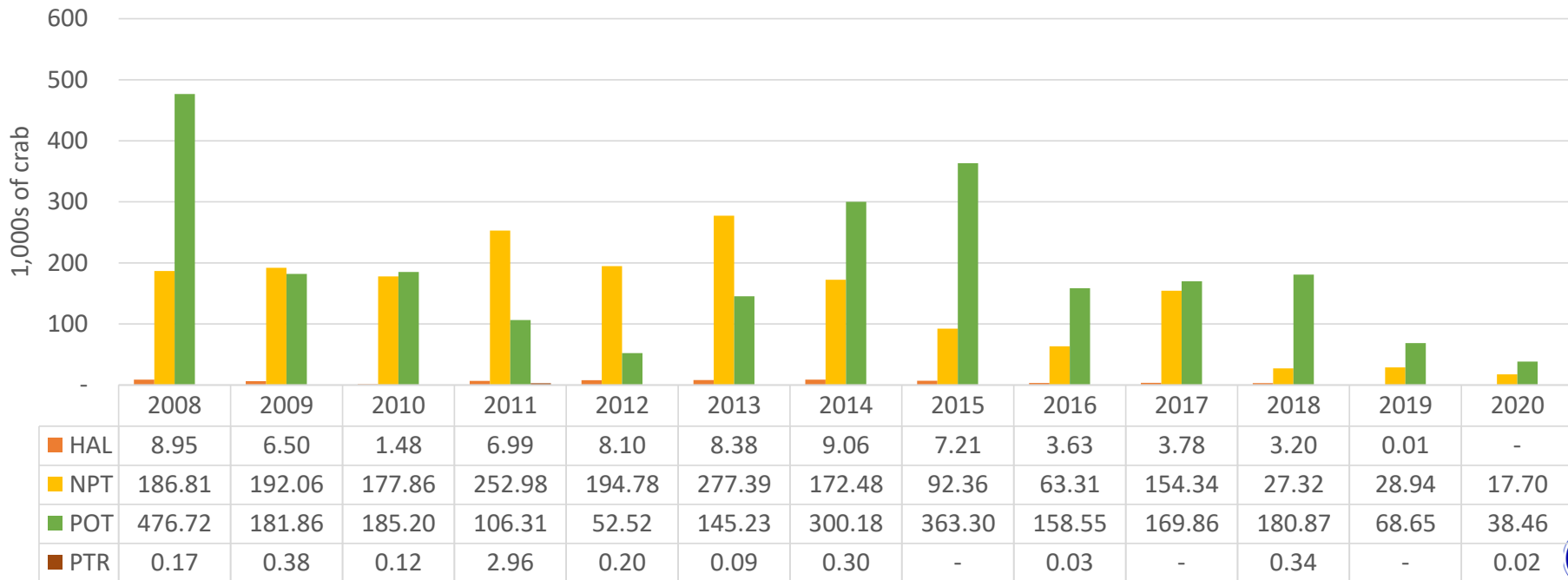


# FIGURE 6. EBS SNOW CRAB PSC USAGE IN COLBZ BY GEAR TYPE AND TARGET SPECIES, 2008-2020



# FIGURE 7. ZONE I EBS TANNER PSC USAGE BY GEAR TYPE AND TARGET SPECIES, 2008-2020

Zone 1 EBS Tanner PSC



# FIGURE 8. ZONE 2 EBS TANNER PSC USAGE BY GEAR TYPE AND TARGET SPECIES, 2008-2020

Zone 2 EBS Tanner PSC

