

# PUBLIC TESTIMONY SIGN-UP SHEET

Agenda Item: EI STAFF Tasking

*Check the boxes below if you will  
have a PowerPoint or Handout*

#	NAME (Please Print)	TESTIFYING ON BEHALF OF:	Handout	PPT
1	Bernie Burkholder	<del>WV</del> F/V Northern Endeavor		
2	CHRIS Woodley	GROUNDWATER FORUM		
3	JAMIE/LANCE/LOU	ALASKA BEING SEA CRABBERS		X
4	OYSTEIN LONE	F/V PACIFIC SOUNDER		
5	Linda Benhken	ALFA		X
6	JOHN GAUVIN	ARSC		
7	NIKOLAI A SIVERTSTOL	F/V CONFIDENCE SCANDIES ROSE		
8	Heather McCarty	CBFA		
9	Ian Pitzman	self		
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

NOTE to persons providing oral or written testimony to the Council: Section 307(1)(l) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person "to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.

# *Request to Address All Crab PSCs*



*Jamie Goen, Lance Farr, Lou Forristall*

*See Alaska Bering Sea Crabbers comment letter under Agenda Item E1 (staff tasking) for more details.*

# *The Ask*

*Help Alaska's crab fishery, an important, iconic fishery for Alaska and the US, remain a viable and productive fishery.*

---

- Request Council action to **address the mismatch in crab prohibited species catch (PSC) limits and minimize bycatch in a meaningful way** using incentives.
- Revise the formula and approach for PSC management of all crab building from available Council documents on this topic since 2010.
- Provide more clarity and transparency on the source numbers used in the formula to calculate the PSC limits.

# What's the Problem?

- Current crab PSC management using abundance-based limits and closed areas may not be minimizing bycatch in other fisheries to the extent practicable, particularly in cases where the directed crab fisheries are closed.



Why PSC at highest levels?



(ii) *Tanner crab (C. bairdi)*. The PSC limit of *C. bairdi* crabs caught by trawl vessels while engaged in directed fishing for groundfish in Zones 1 and 2 during any fishing year will be specified for up to two fishing years by NMFS under paragraph (e)(6) of this section, based on total abundance of *C. bairdi* crabs as indicated by the NMFS annual bottom trawl survey, using the criteria set out under paragraphs (e)(1)(ii)(A) and (B) of this section.

(A) The following table refers to the PSC limits for *C. bairdi* that you must follow in Zone 1:

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

(B) This table refers to the PSC limits for *C.*

When the total abundance of <i>C. bairdi</i> crabs
(1) 175 million animals or less
(2) Over 175 million to 290 million animals
(3) Over 290 million to 400 million animals
(4) Over 400 million animals



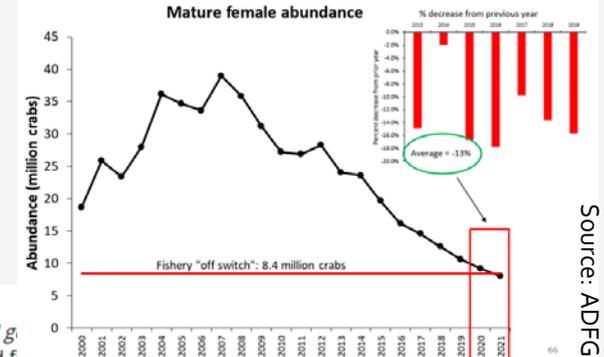
Why PSC at middle level?



(e) *BSAI PSC limits for crab and herring*—(1) Trawl g. crab caught by trawl vessels while engaged in directed f will be specified for up to two fishing years by NMFS, after consultation with the Council, based on abundance and spawning biomass of red king crab using the criteria set out under paragraphs (e)(1)(i)(A) through (C) of this section. The following table refers to the PSC limits for red king crab that you must follow in Zone 1:

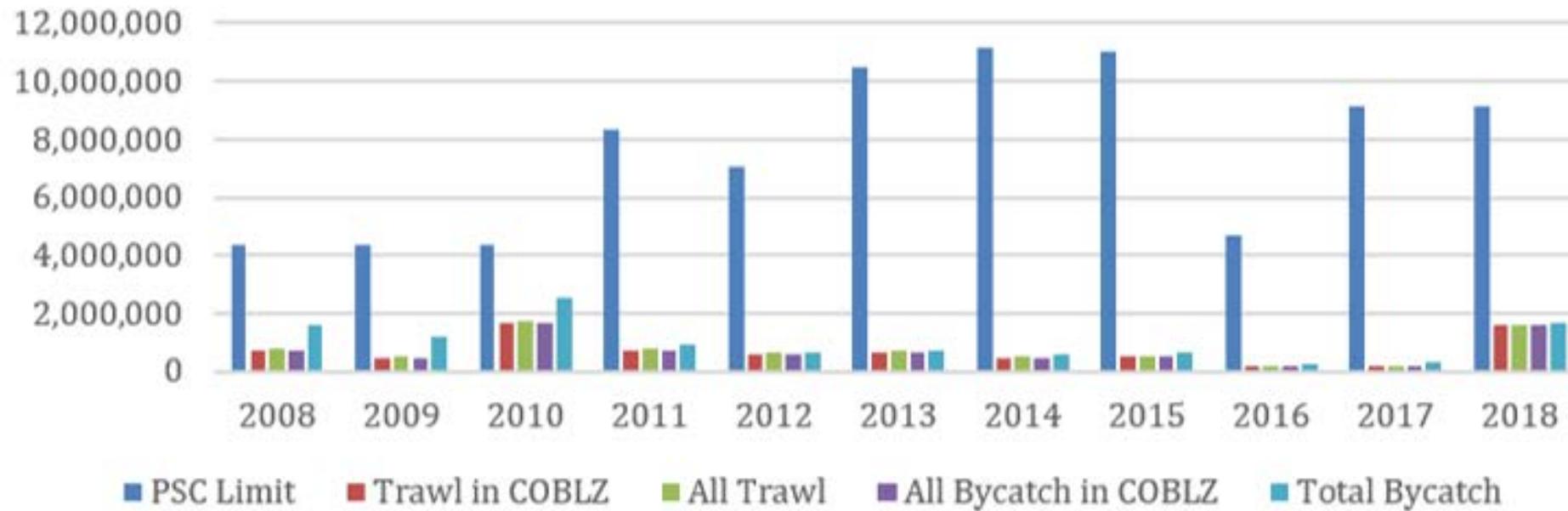
When the number of mature female red king crab is ...	The zone 1 PSC limit will be ...
(A) At or below the threshold of 8.4 million mature crab or the effective spawning biomass is less than or equal to 14.5 million lb (6,577 mt)	32,000 red king crab.
(B) Above the threshold of 8.4 million mature crab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

Trending towards thresholds



Source: ADFG

## Snow Crab PSC Limits, PSC, and Bycatch (in number of crab)



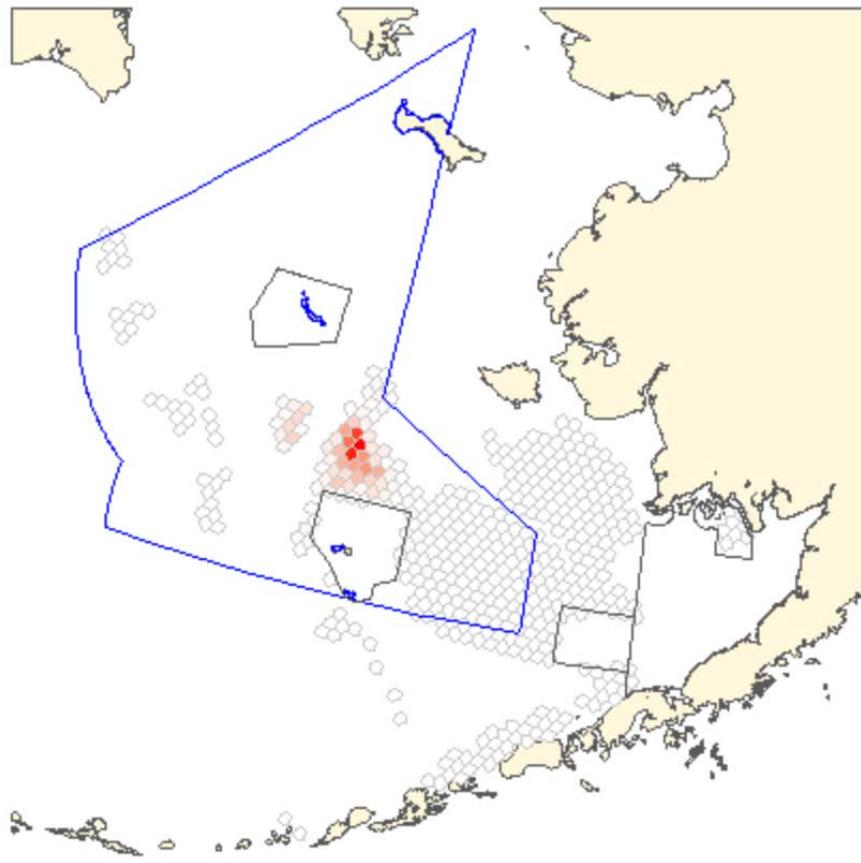
# *Additional Snow Crab PSC work by ABSC*

---

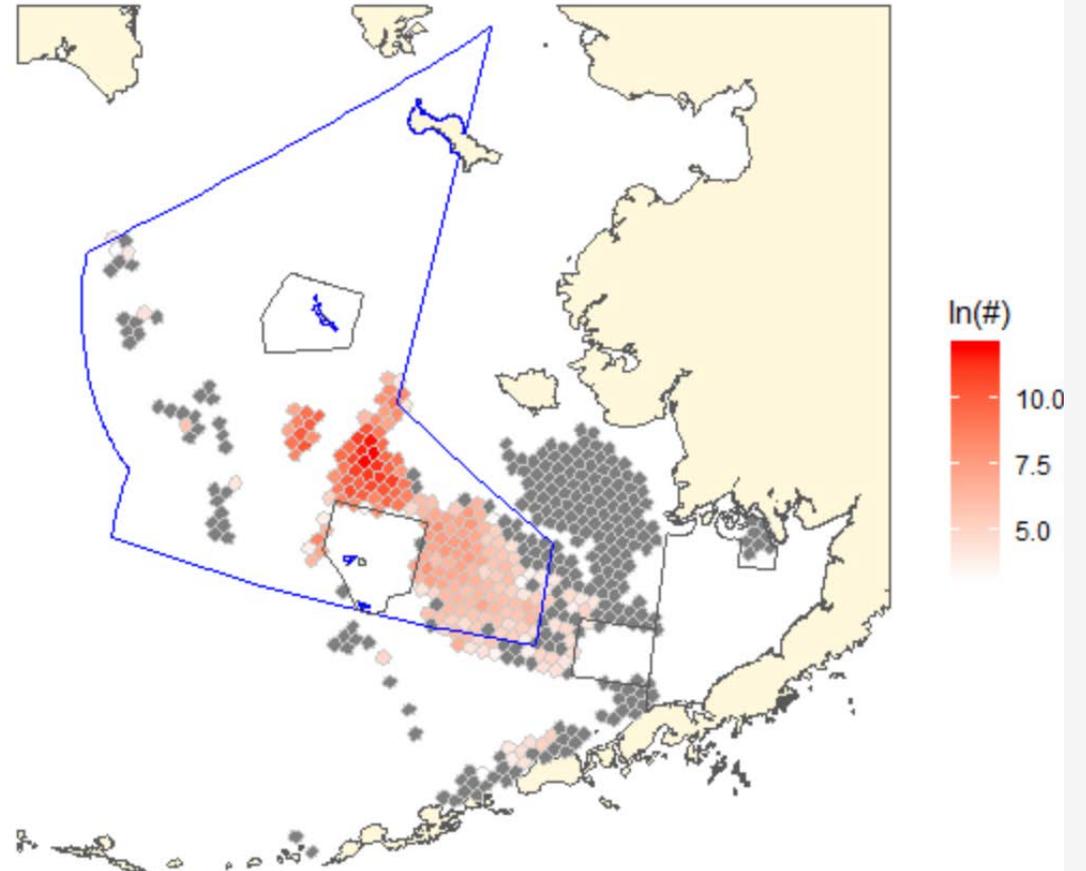
- December 2018 (NPFMC Initial Review - Draft EA) – ABSC Data Request to NPFMC
  - Better understand bycatch through spatial data on:
    - effort (tow duration)
    - trawl sector (pelagic and bottom)
    - And snow crab abundance (sex and size)
- Council provided additional data through reports in spring and summer 2019
- ABSC work over summer 2019 to map by year (instead of aggregate years) and in a different format to better understand data and patterns.
  - Looked at low (2016), mid (2014), and high (2018) bottom trawl bycatch years.
  - See ABSC report and maps attached to E1 comment letter.

# 2018 PSC (High-PSC Year)

Opilio PSC 2018

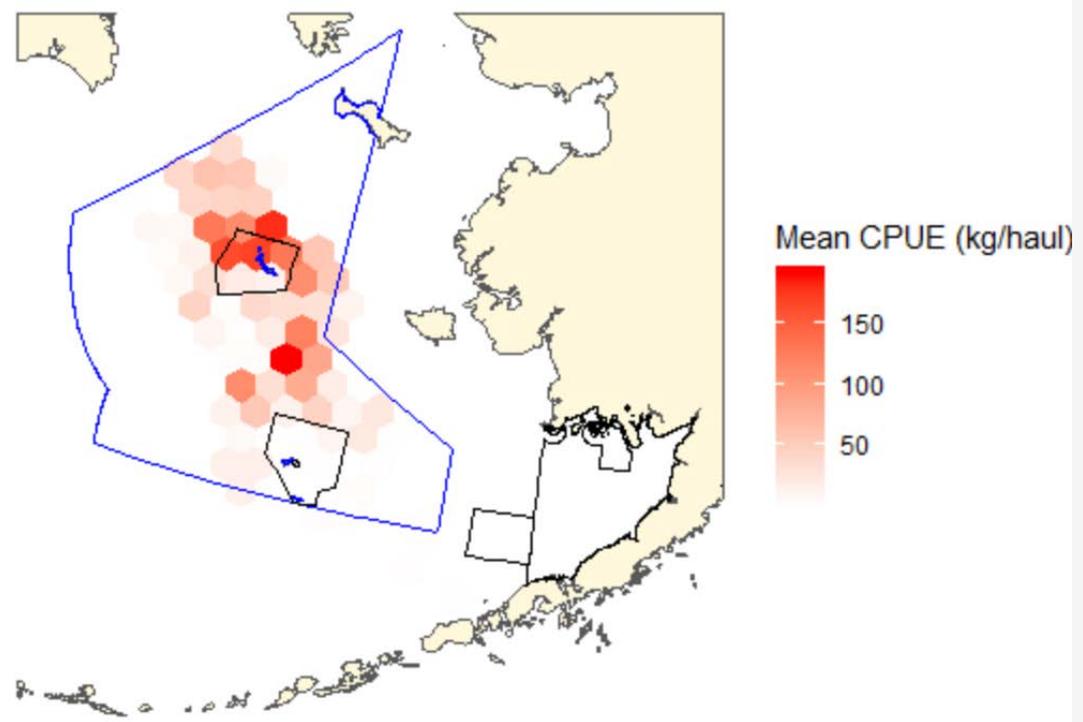


Opilio PSC 2018 (Natural Logarithm)

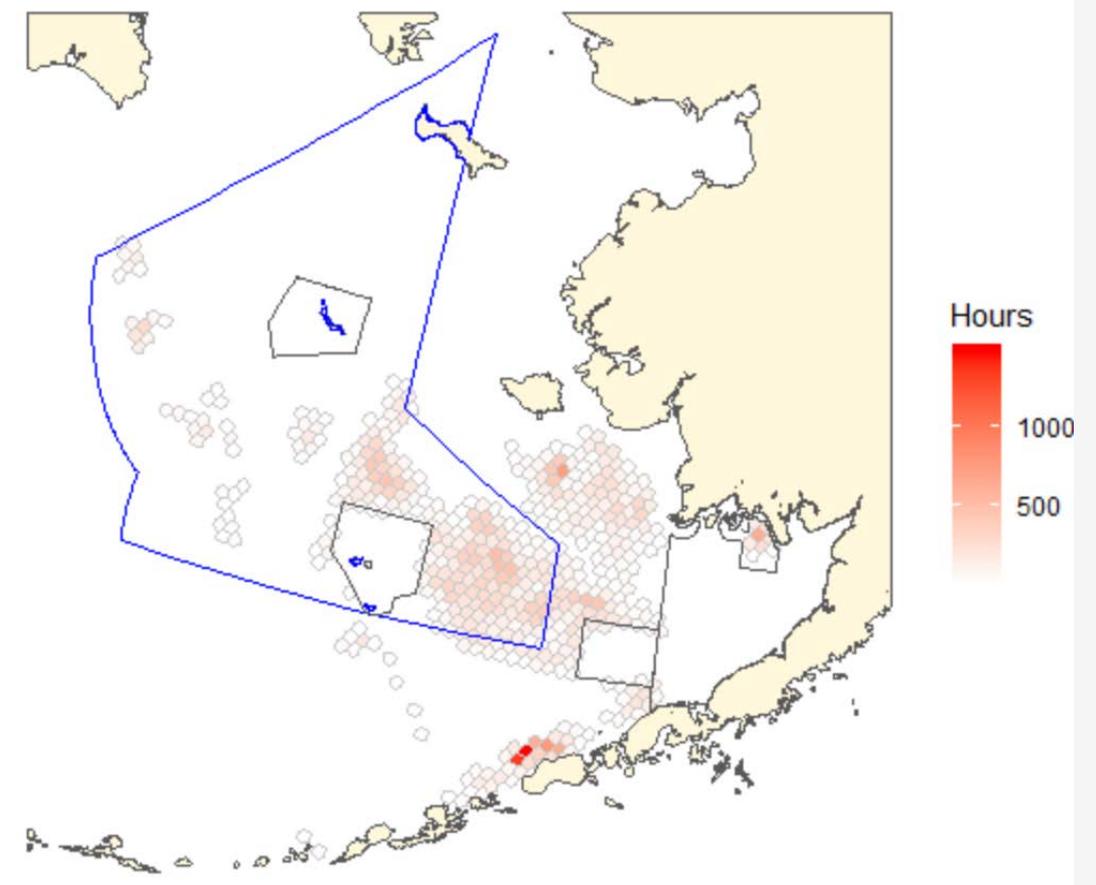


# 2018 Survey CPUE and Trawl Fishery Effort

Opi Abundance 2018 (Trawl Survey Data)

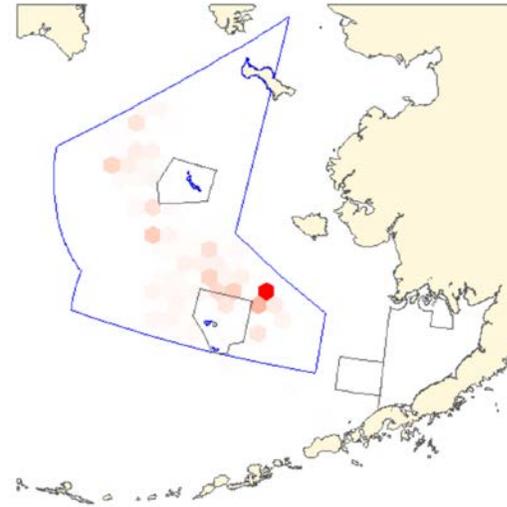


2018 Average Tow Time

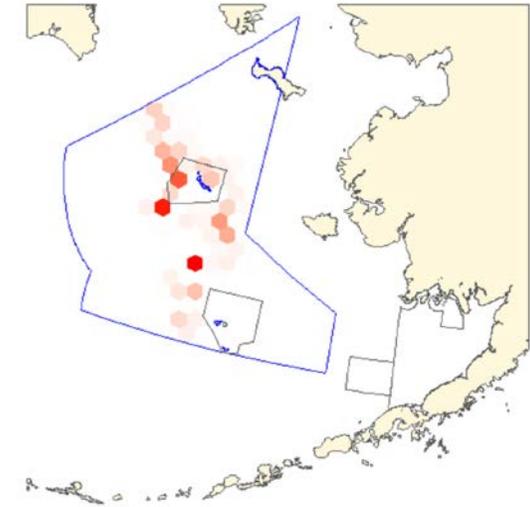


*2018 Opilio  
Abundance  
by size and sex  
based on  
CPUE from  
NMFS trawl survey*

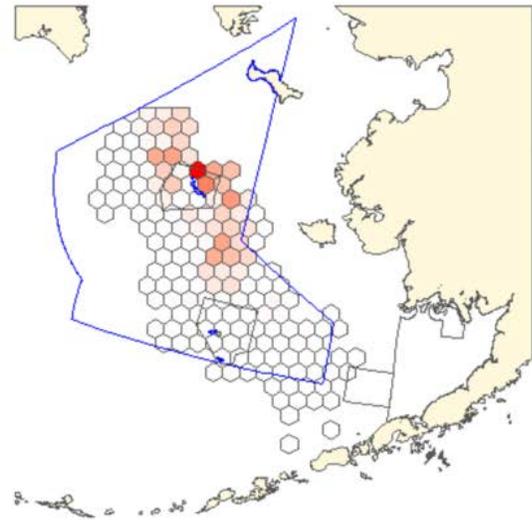
Mature Male Abundance 2018



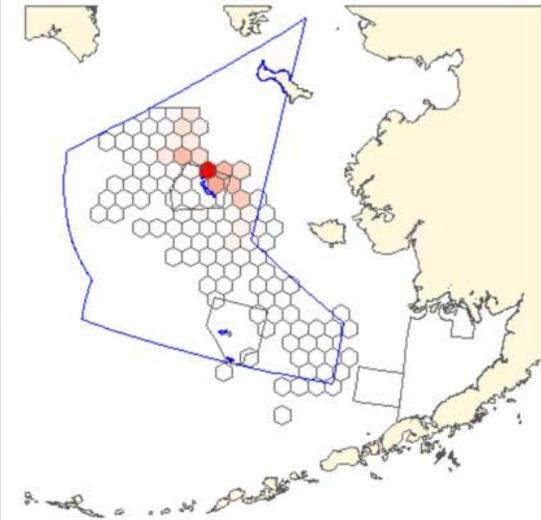
Mature Female Abundance 2018



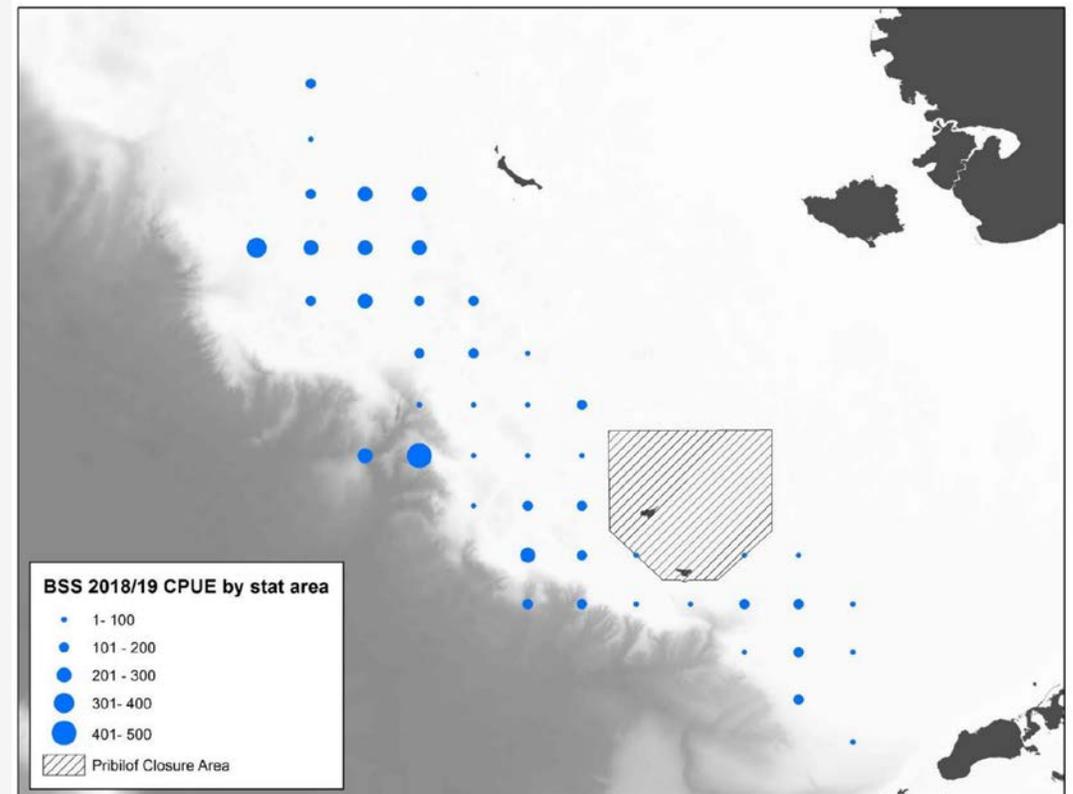
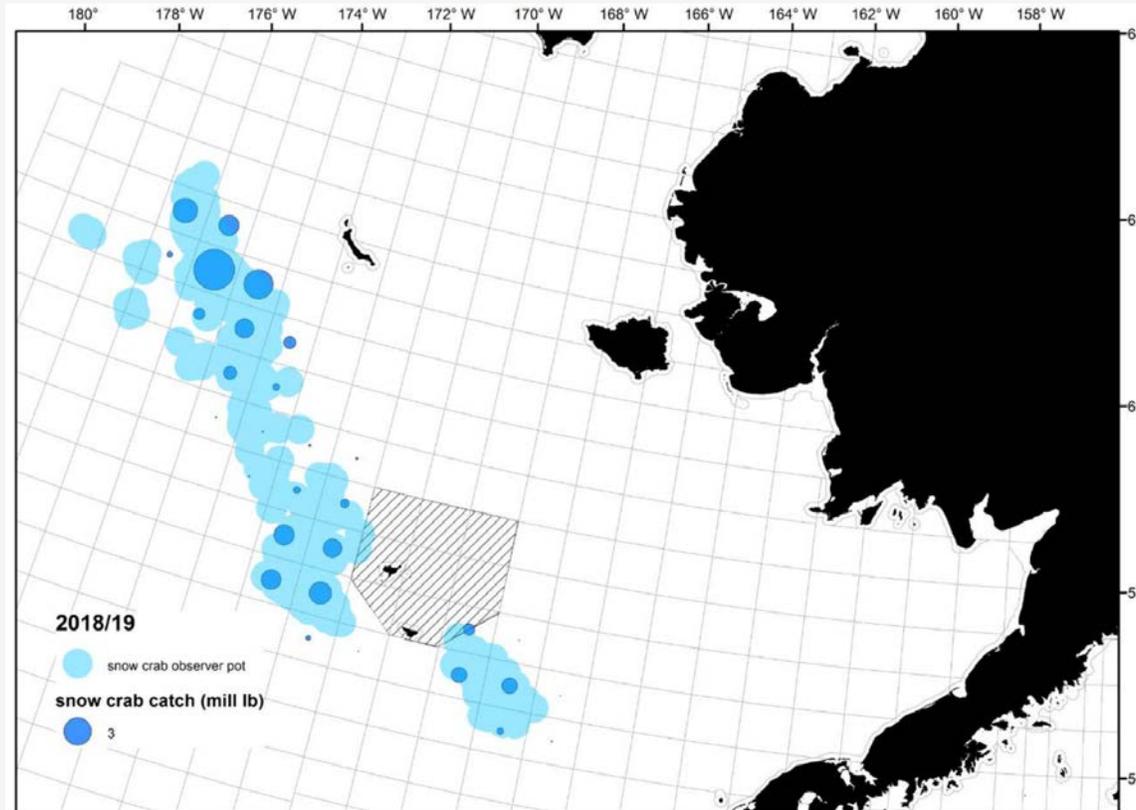
Immature Male Abundance 2018



Immature Female Abundance 2018



# 2018 Directed Fishery Maps from ADFG



# *Takeaways from ABSC snow crab work*

---

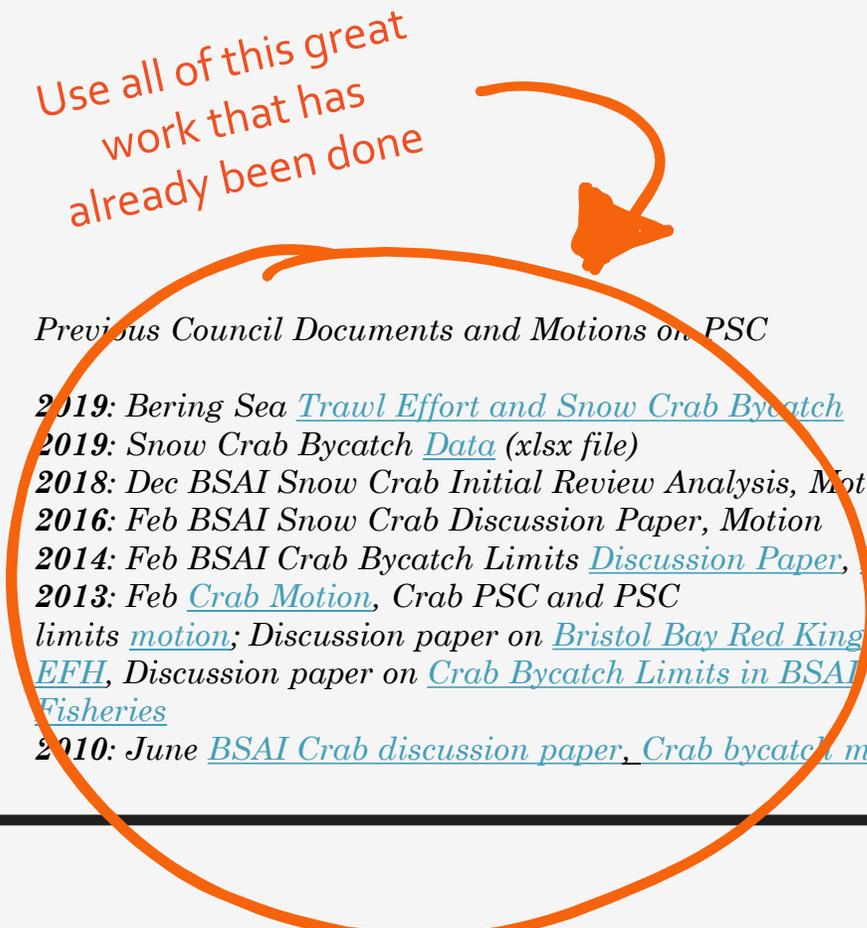
- Spatial maps by year were informative.
  - The COBLZ captures most of the snow crab population and trawl bycatch in years reviewed (2014, 2016, and 2018).
  - The overlap of bottom trawl tow time and snow crab CPUE from the NMFS trawl survey appears to be a solid predictor of snow crab bycatch.
  - Mature males and females tend to have higher CPUE estimates near areas of high bottom trawl bycatch.
  - Additionally, both mature males and females are typically present in areas of high bottom trawl effort, but some years trawlers appear to encounter comparatively more males (2016) and more females (2018).
  - The spatial management in this fishery still seems to be appropriate.
- 

# *What now?*

- Following the Council's PSC work on all crab from 2010-2014, the Council then focused on just snow crab through 2019 with the intent to use it as a template for other crab PSCs.
    - *Status: Per Council direction in April 2019, industry working informally outside the Council process to review data and develop recommendations to bring to Council. Industry meetings started in Nov 2019.*
  - Since then, the directed bairdi fishery closed this year and red king crab is trending towards closing.
  - To help those stocks grow to levels to support a directed fishery, under an abundance-based PSC management system, the PSC should be at the lowest levels and they are not.
  - This indicates a mismatch in the approach, formula, and incentives in the current crab PSC management. It is not minimizing bycatch in a meaningful way.
-

# A path forward

Use all of this great work that has already been done



## Previous Council Documents and Motions on PSC

2019: Bering Sea [Trawl Effort and Snow Crab Bycatch](#)

2019: Snow Crab Bycatch [Data](#) (xlsx file)

2018: Dec BSAI Snow Crab Initial Review Analysis, Motion

2016: Feb BSAI Snow Crab Discussion Paper, Motion

2014: Feb BSAI Crab Bycatch Limits [Discussion Paper](#), [Motion](#)

2013: Feb [Crab Motion](#), Crab PSC and PSC

limits [motion](#); Discussion paper on [Bristol Bay Red King Crab EFH](#), Discussion paper on [Crab Bycatch Limits in BSAI Fisheries](#)

2010: June [BSAI Crab discussion paper](#), [Crab bycatch motion](#)

GOAL: Create stronger incentives to minimize bycatch. In particular, when a directed fishery is closed or close to closing. This would reduce impacts on crab stocks to provide more opportunity for the stock to grow to levels to again support a directed fishery.

**First step as a conservation measure & more immediate action, lower PSC limits to their lowest level available in regulation when a directed crab fishery is closed.**

Separately, work on a longer-term solution to review and revise the formula and approach for PSC management for all crab building from available Council documents on this topic since 2010.

Ideas and components to consider for PSC management:

- Using raw survey or stock assessment model estimates,
- Using numbers versus weight of crab,
- Using a percent of abundance to establish PSC (like opilio) or a stairstep approach (like bairdi and red king crab) or a different approach altogether (like encounter rates),
- Considering the use and utility of closed areas (for example, does the Red King Crab Savings Area adequately protect BBRKC when the crab move in response to temperature changes?),
- Considering the effect on crab at sensitive life stages or shell conditions (like soft shell crab which have higher mortality if encountered with fishing gear),
- Counting bycatch throughout a stock's range toward the PSC,
- Considering where industry can best self-manage through communication inseason to avoid hotspots,
- Reviewing bycatch monitoring and accounting methods to ensure they are effective for estimating bycatch.

# Adjusted Interim Management Procedure

	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	<u>Total</u>
<b>O32 Stock Distribution</b>	<b>2.0%</b>	<b>12.5%</b>	<b>15.3%</b>	<b>30.3%</b>	<b>12.1%</b>	<b>9.3%</b>	<b>5.2%</b>	<b>13.2%</b>	<b>100%</b>
<b>HR</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>0.75</b>	<b>0.75</b>	<b>0.75</b>	<b>0.75</b>	<b>NA</b>
<b>TCEY Distribution</b>	<b>2.2%</b>	<b>13.9%</b>	<b>17.0%</b>	<b>33.6%</b>	<b>10.1%</b>	<b>7.7%</b>	<b>4.3%</b>	<b>11.0%</b>	<b>100%</b>
<b>Adjusted</b>	<b>1.65</b>	<b>18.2%</b>	<b>Depends on total TCEY</b>						
<b>% for 31.9 MIb</b>	<b>5.2%</b>	<b>18.2%</b>	<b>15.6%</b>	<b>30.7%</b>	<b>9.2%</b>	<b>7.1%</b>	<b>4.0%</b>	<b>10.1%</b>	<b>100%</b>
<b>TCEYs</b>	<b>1.65</b>	<b>5.80</b>	<b>4.97</b>	<b>9.80</b>	<b>2.94</b>	<b>2.26</b>	<b>1.27</b>	<b>3.22</b>	<b>31.90</b>



# Mitigating for U26 non-directed discards in AK

	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	<u>Total</u>
<b>Base</b>	<b>1.65</b>	<b>5.80</b>	<b>4.97</b>	<b>9.80</b>	<b>2.94</b>	<b>2.26</b>	<b>1.27</b>	<b>3.22</b>	<b>31.90</b>
<b>%</b>	<b>5.2%</b>	<b>18.2%</b>	<b>15.6%</b>	<b>30.7%</b>	<b>9.2%</b>	<b>7.1%</b>	<b>4.0%</b>	<b>10.1%</b>	<b>100.0%</b>
<b>Without U26</b>	<b>1.65</b>	<b>6.22</b>	<b>5.35</b>	<b>10.56</b>	<b>3.17</b>	<b>2.43</b>	<b>1.37</b>	<b>3.47</b>	<b>34.21</b>
<b>Gain</b>	<b>0.00</b>	<b>0.42</b>	<b>0.38</b>	<b>0.76</b>	<b>0.23</b>	<b>0.17</b>	<b>0.10</b>	<b>0.25</b>	<b>2.31</b>
<b>Adjusted</b>	<b>1.65</b>	<b>6.22</b>	<b>4.88</b>	<b>9.63</b>	<b>2.89</b>	<b>2.22</b>	<b>1.25</b>	<b>3.16</b>	<b>31.90</b>
<b>Adjusted %</b>	<b>5.2%</b>	<b>19.5%</b>	<b>15.3%</b>	<b>30.2%</b>	<b>9.1%</b>	<b>7.0%</b>	<b>3.9%</b>	<b>9.9%</b>	<b>100%</b>



# *Request to Address All Crab PSCs*



*Jamie Goen, Lance Farr, Lou Forristall*

*See Alaska Bering Sea Crabbers comment letter under Agenda Item E1 (staff tasking) for more details.*

# *The Ask*

*Help Alaska's crab fishery, an important, iconic fishery for Alaska and the US, remain a viable and productive fishery.*

---

- Request Council action to **address the mismatch in crab prohibited species catch (PSC) limits and minimize bycatch in a meaningful way** using incentives.
- Revise the formula and approach for PSC management of all crab building from available Council documents on this topic since 2010.
- Provide more clarity and transparency on the source numbers used in the formula to calculate the PSC limits.

# What's the Problem?

- Current crab PSC management using abundance-based limits and closed areas may not be minimizing bycatch in other fisheries to the extent practicable, particularly in cases where the directed crab fisheries are closed.



Why PSC at highest levels?



(ii) *Tanner crab (C. bairdi)*. The PSC limit of *C. bairdi* crabs caught by trawl vessels while engaged in directed fishing for groundfish in Zones 1 and 2 during any fishing year will be specified for up to two fishing years by NMFS under paragraph (e)(6) of this section, based on total abundance of *C. bairdi* crabs as indicated by the NMFS annual bottom trawl survey, using the criteria set out under paragraphs (e)(1)(ii)(A) and (B) of this section.

(A) The following table refers to the PSC limits for *C. bairdi* that you must follow in Zone 1:

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

(B) This table refers to the PSC limits for *C.*

When the total abundance of <i>C. bairdi</i> crabs
(1) 175 million animals or less
(2) Over 175 million to 290 million animals
(3) Over 290 million to 400 million animals
(4) Over 400 million animals

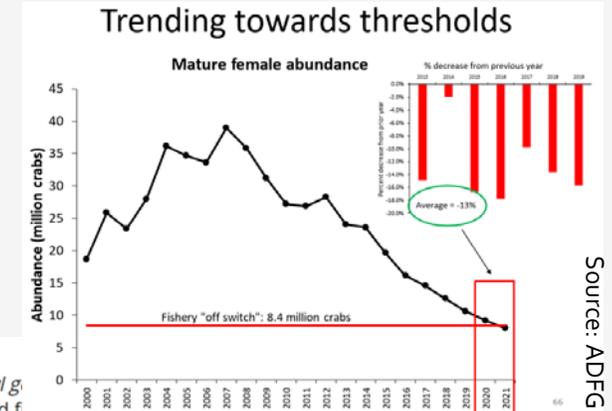


Why PSC at middle level?



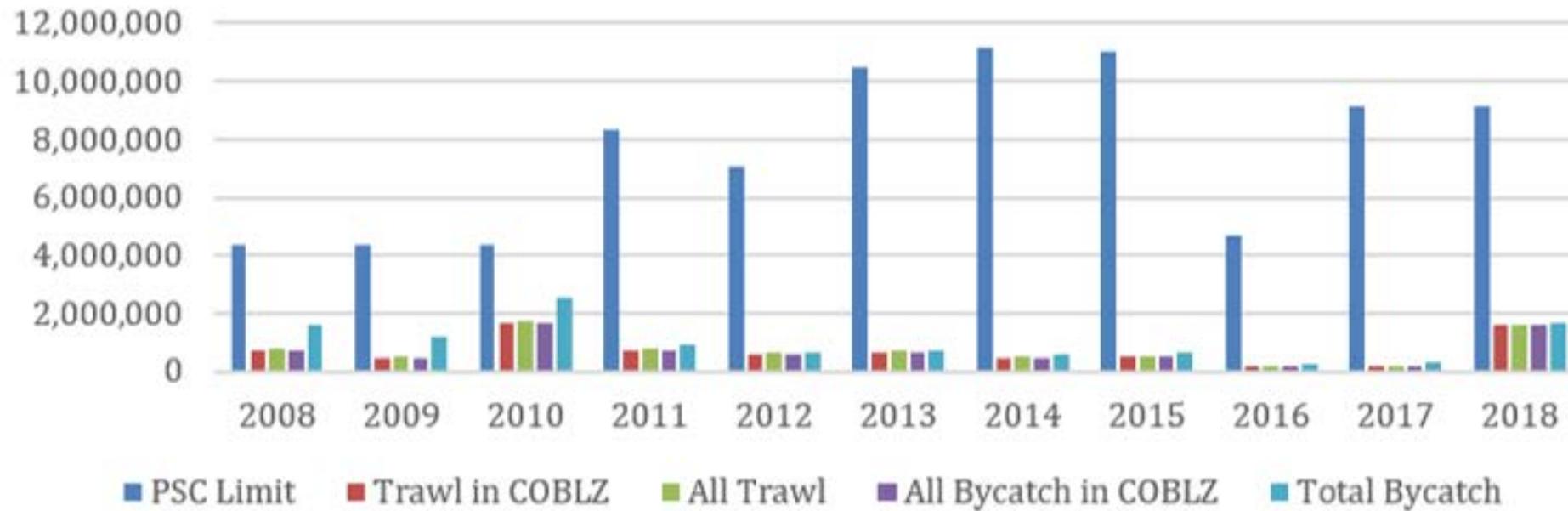
(e) *BSAI PSC limits for crab and herring*—(1) Trawl g. crab caught by trawl vessels while engaged in directed f will be specified for up to two fishing years by NMFS, after consultation with the Council, based on abundance and spawning biomass of red king crab using the criteria set out under paragraphs (e)(1)(i)(A) through (C) of this section. The following table refers to the PSC limits for red king crab that you must follow in Zone 1:

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: ADFG

## Snow Crab PSC Limits, PSC, and Bycatch (in number of crab)



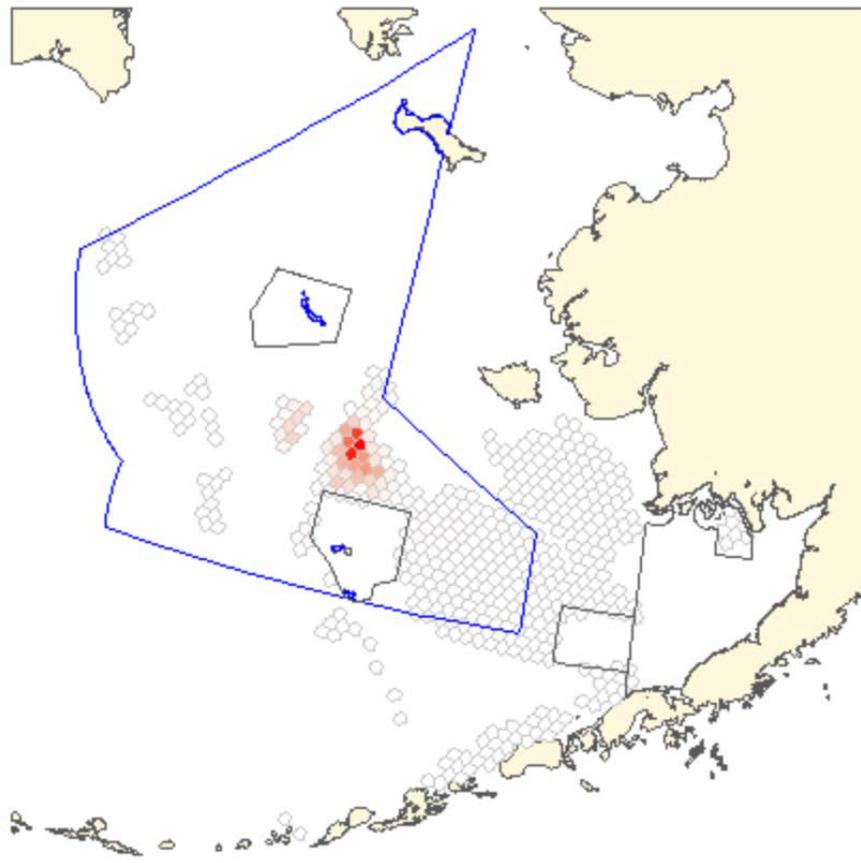
# *Additional Snow Crab PSC work by ABSC*

---

- December 2018 (NPFMC Initial Review - Draft EA) – ABSC Data Request to NPFMC
  - Better understand bycatch through spatial data on:
    - effort (tow duration)
    - trawl sector (pelagic and bottom)
    - And snow crab abundance (sex and size)
- Council provided additional data through reports in spring and summer 2019
- ABSC work over summer 2019 to map by year (instead of aggregate years) and in a different format to better understand data and patterns.
  - Looked at low (2016), mid (2014), and high (2018) bottom trawl bycatch years.
  - See ABSC report and maps attached to E1 comment letter.

# 2018 PSC (High-PSC Year)

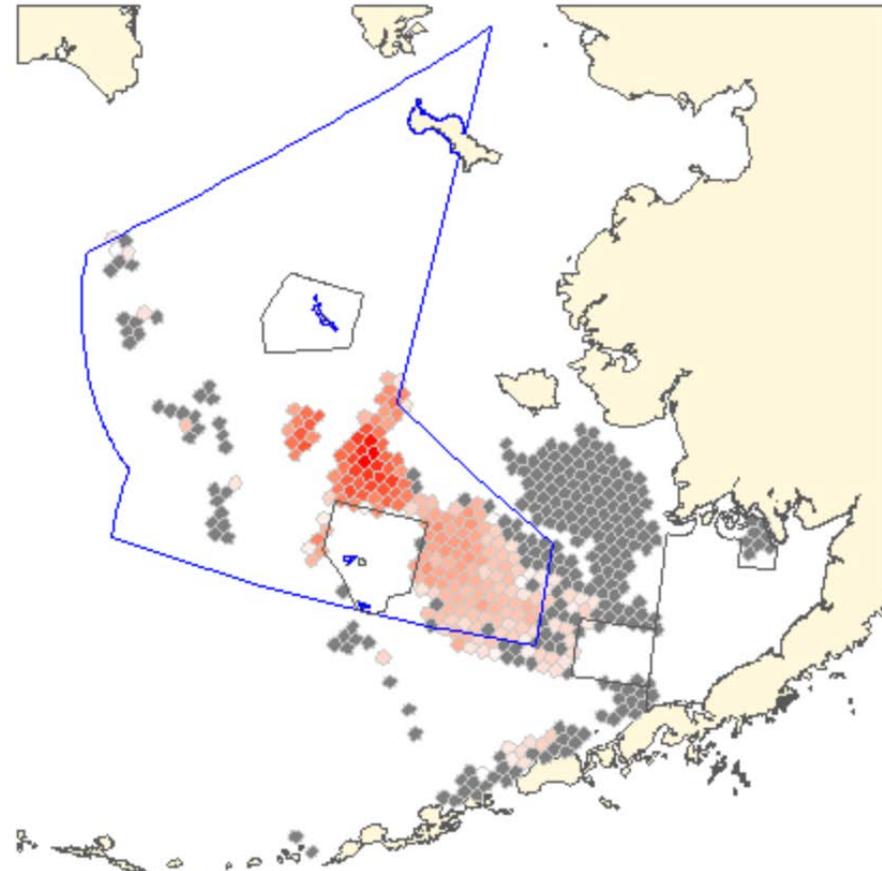
Opilio PSC 2018



Raw #



Opilio PSC 2018 (Natural Logarithm)

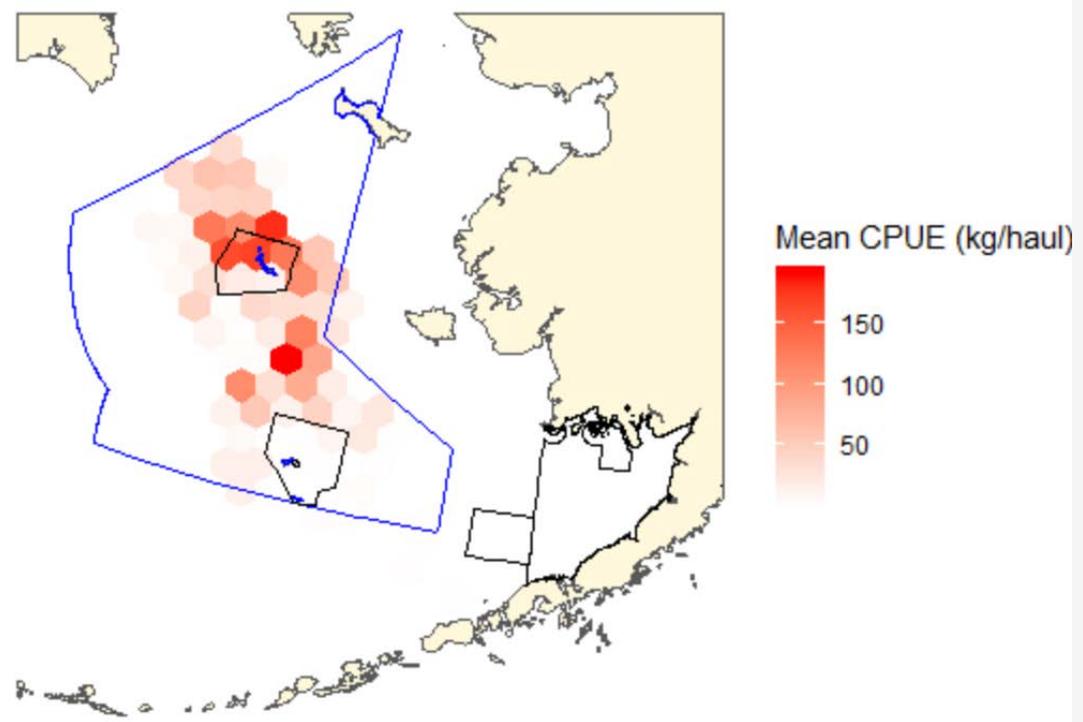


ln(#)

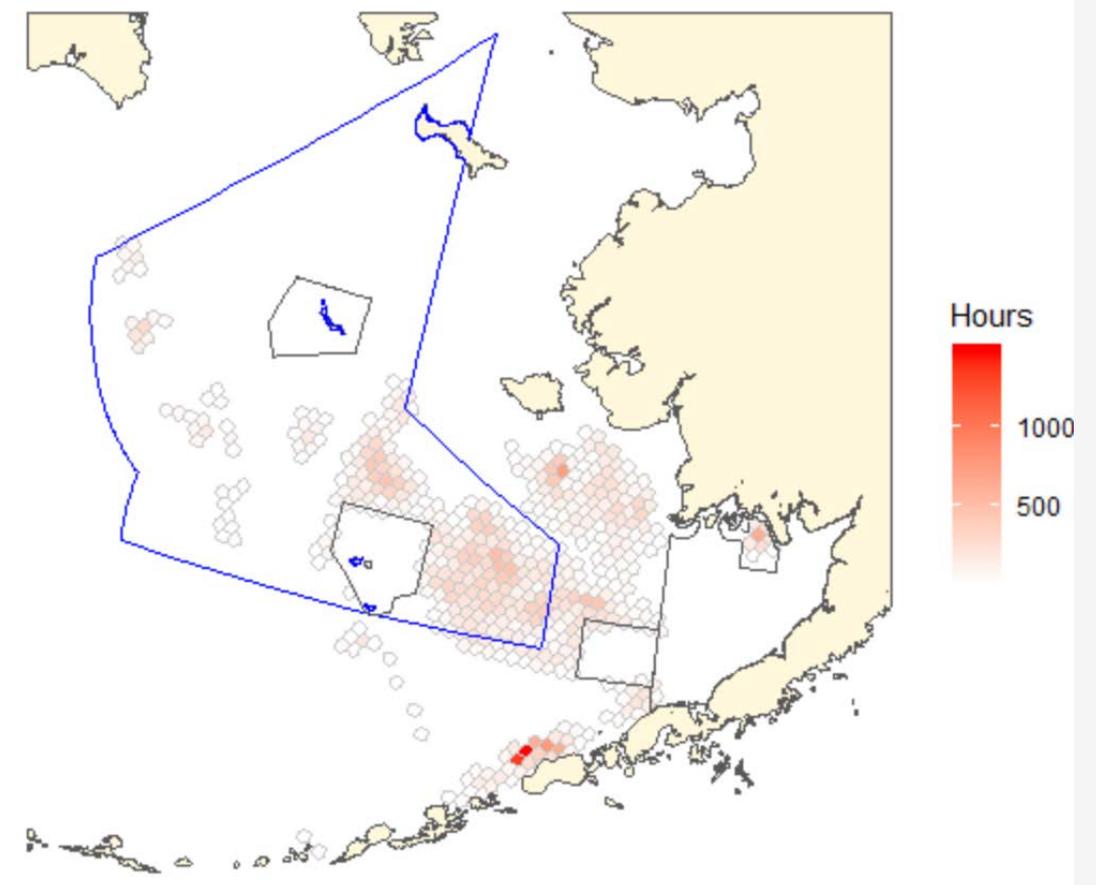


# 2018 Survey CPUE and Trawl Fishery Effort

Opi Abundance 2018 (Trawl Survey Data)

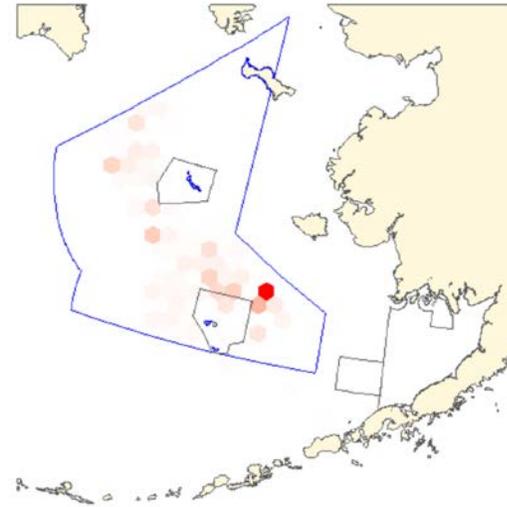


2018 Average Tow Time

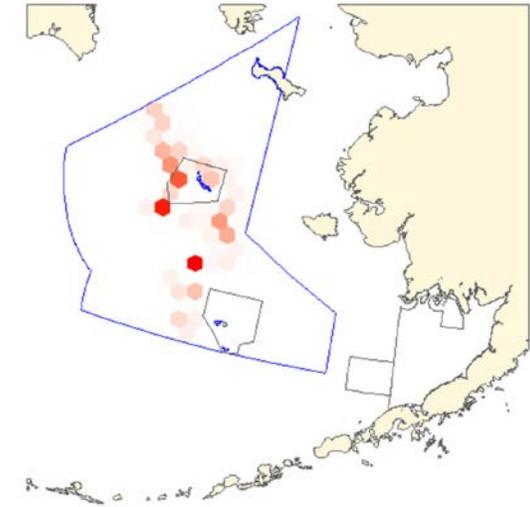


*2018 Opilio  
Abundance  
by size and sex  
based on  
CPUE from  
NMFS trawl survey*

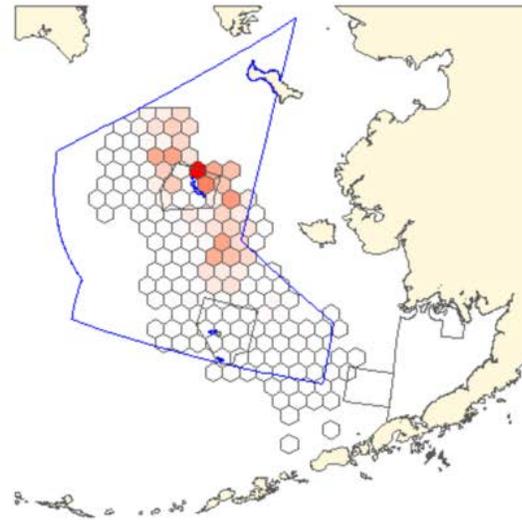
Mature Male Abundance 2018



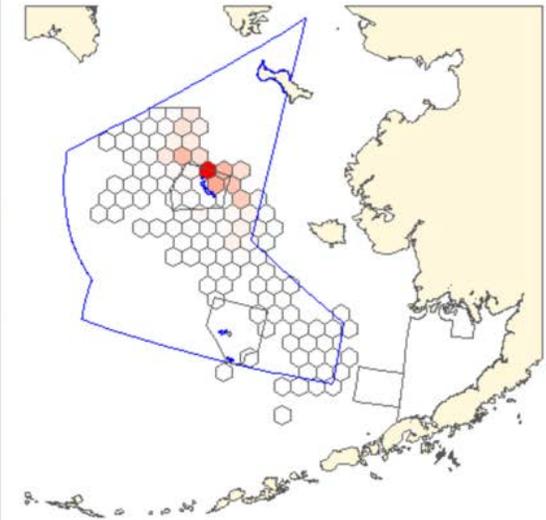
Mature Female Abundance 2018



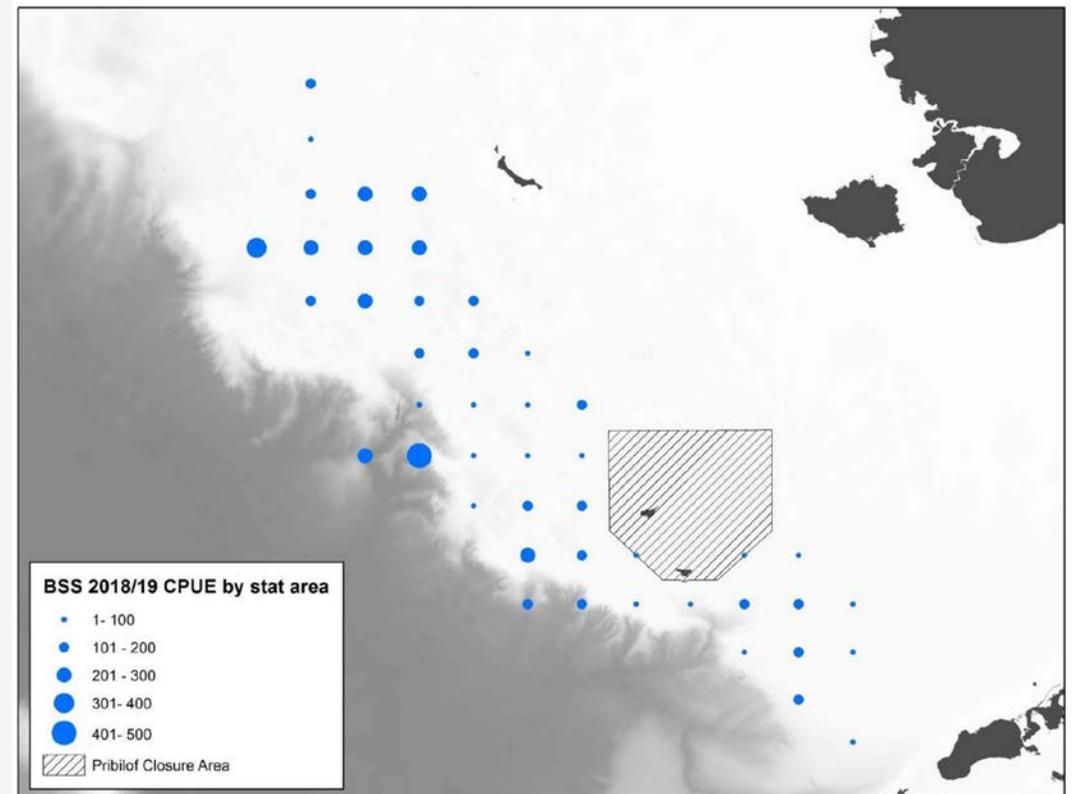
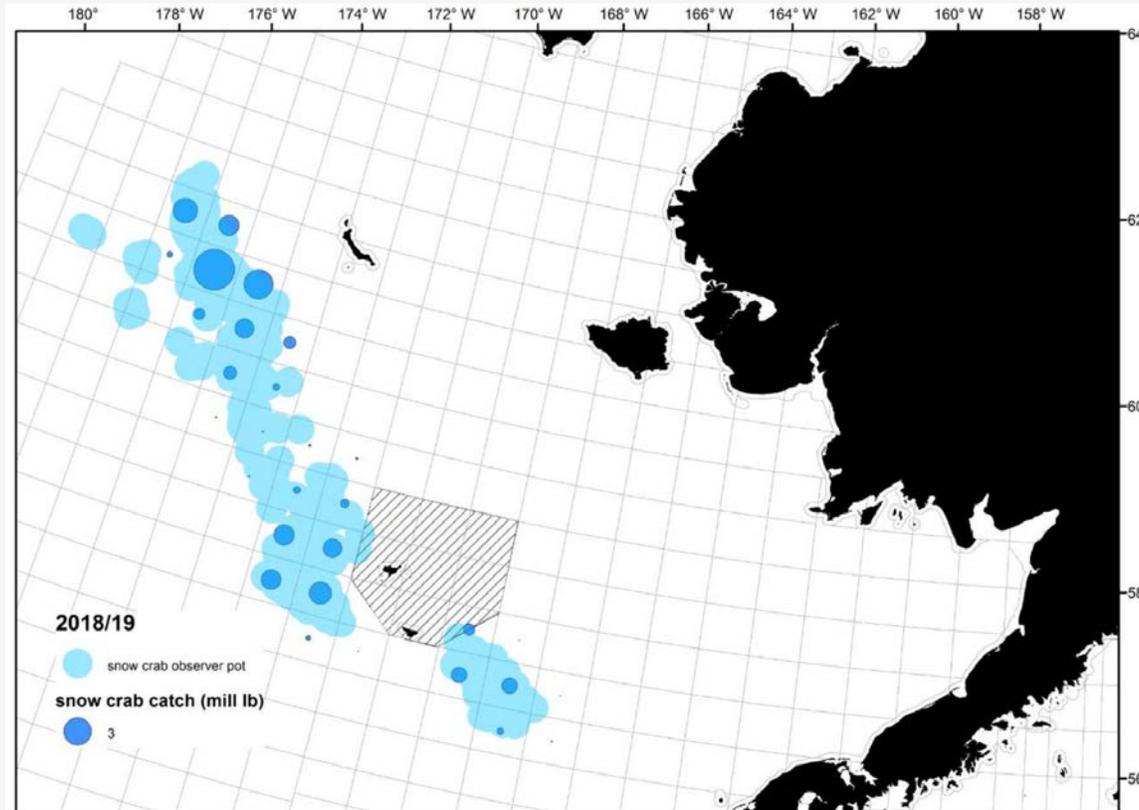
Immature Male Abundance 2018



Immature Female Abundance 2018



# 2018 Directed Fishery Maps from ADFG



# *Takeaways from ABSC snow crab work*

---

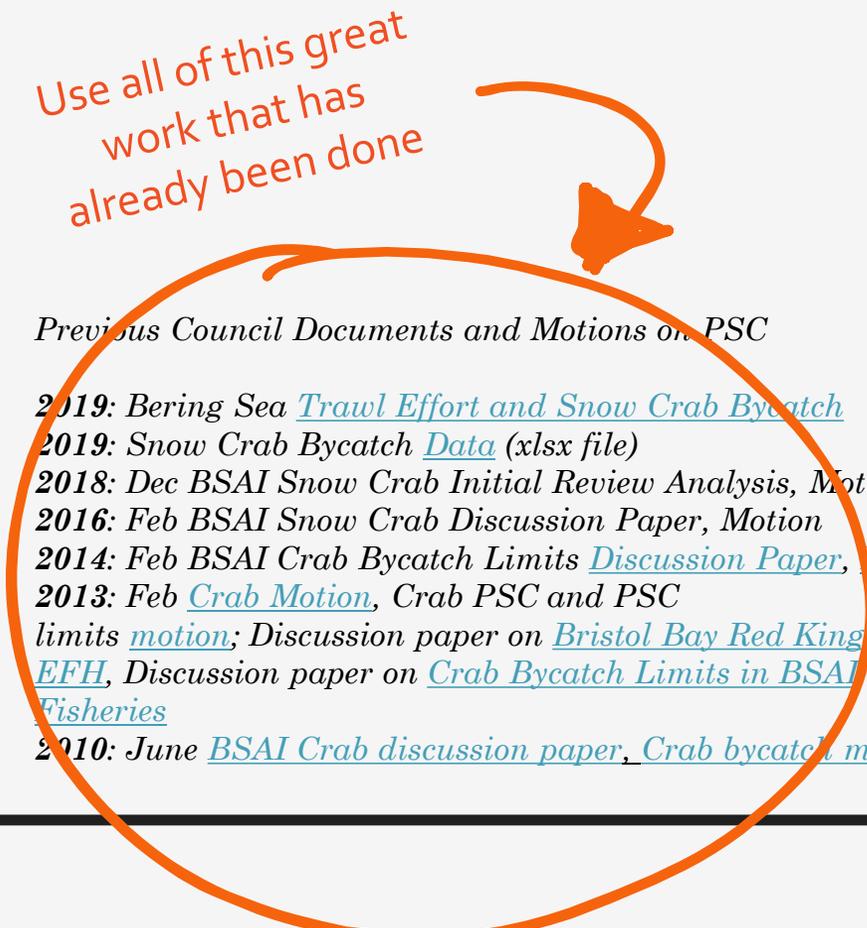
- Spatial maps by year were informative.
  - The COBLZ captures most of the snow crab population and trawl bycatch in years reviewed (2014, 2016, and 2018).
  - The overlap of bottom trawl tow time and snow crab CPUE from the NMFS trawl survey appears to be a solid predictor of snow crab bycatch.
  - Mature males and females tend to have higher CPUE estimates near areas of high bottom trawl bycatch.
  - Additionally, both mature males and females are typically present in areas of high bottom trawl effort, but some years trawlers appear to encounter comparatively more males (2016) and more females (2018).
  - The spatial management in this fishery still seems to be appropriate.
- 

# *What now?*

- Following the Council's PSC work on all crab from 2010-2014, the Council then focused on just snow crab through 2019 with the intent to use it as a template for other crab PSCs.
    - *Status: Per Council direction in April 2019, industry working informally outside the Council process to review data and develop recommendations to bring to Council. Industry meetings started in Nov 2019.*
  - Since then, the directed bairdi fishery closed this year and red king crab is trending towards closing.
  - To help those stocks grow to levels to support a directed fishery, under an abundance-based PSC management system, the PSC should be at the lowest levels and they are not.
  - This indicates a mismatch in the approach, formula, and incentives in the current crab PSC management. It is not minimizing bycatch in a meaningful way.
-

# A path forward

Use all of this great work that has already been done



## Previous Council Documents and Motions on PSC

2019: Bering Sea [Trawl Effort and Snow Crab Bycatch](#)

2019: Snow Crab Bycatch [Data](#) (xlsx file)

2018: Dec BSAI Snow Crab Initial Review Analysis, Motion

2016: Feb BSAI Snow Crab Discussion Paper, Motion

2014: Feb BSAI Crab Bycatch Limits [Discussion Paper](#), [Motion](#)

2013: Feb [Crab Motion](#), Crab PSC and PSC

limits [motion](#); Discussion paper on [Bristol Bay Red King Crab EFH](#), Discussion paper on [Crab Bycatch Limits in BSAI Fisheries](#)

2010: June [BSAI Crab discussion paper](#), [Crab bycatch motion](#)

GOAL: Create stronger incentives to minimize bycatch. In particular, when a directed fishery is closed or close to closing. This would reduce impacts on crab stocks to provide more opportunity for the stock to grow to levels to again support a directed fishery.

**First step as a conservation measure & more immediate action, lower PSC limits to their lowest level available in regulation when a directed crab fishery is closed.**

Separately, work on a longer-term solution to review and revise the formula and approach for PSC management for all crab building from available Council documents on this topic since 2010.

Ideas and components to consider for PSC management:

- Using raw survey or stock assessment model estimates,
- Using numbers versus weight of crab,
- Using a percent of abundance to establish PSC (like opilio) or a stairstep approach (like bairdi and red king crab) or a different approach altogether (like encounter rates),
- Considering the use and utility of closed areas (for example, does the Red King Crab Savings Area adequately protect BBRKC when the crab move in response to temperature changes?),
- Considering the effect on crab at sensitive life stages or shell conditions (like soft shell crab which have higher mortality if encountered with fishing gear),
- Counting bycatch throughout a stock's range toward the PSC,
- Considering where industry can best self-manage through communication inseason to avoid hotspots,
- Reviewing bycatch monitoring and accounting methods to ensure they are effective for estimating bycatch.

# Adjusted Interim Management Procedure

	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	<u>Total</u>
<b>O32 Stock Distribution</b>	<b>2.0%</b>	<b>12.5%</b>	<b>15.3%</b>	<b>30.3%</b>	<b>12.1%</b>	<b>9.3%</b>	<b>5.2%</b>	<b>13.2%</b>	<b>100%</b>
<b>HR</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>0.75</b>	<b>0.75</b>	<b>0.75</b>	<b>0.75</b>	<b>NA</b>
<b>TCEY Distribution</b>	<b>2.2%</b>	<b>13.9%</b>	<b>17.0%</b>	<b>33.6%</b>	<b>10.1%</b>	<b>7.7%</b>	<b>4.3%</b>	<b>11.0%</b>	<b>100%</b>
<b>Adjusted</b>	<b>1.65</b>	<b>18.2%</b>	<b>Depends on total TCEY</b>						
<b>% for 31.9 MIb</b>	<b>5.2%</b>	<b>18.2%</b>	<b>15.6%</b>	<b>30.7%</b>	<b>9.2%</b>	<b>7.1%</b>	<b>4.0%</b>	<b>10.1%</b>	<b>100%</b>
<b>TCEYs</b>	<b>1.65</b>	<b>5.80</b>	<b>4.97</b>	<b>9.80</b>	<b>2.94</b>	<b>2.26</b>	<b>1.27</b>	<b>3.22</b>	<b>31.90</b>



# Mitigating for U26 non-directed discards in AK

	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	<u>Total</u>
<b>Base</b>	<b>1.65</b>	<b>5.80</b>	<b>4.97</b>	<b>9.80</b>	<b>2.94</b>	<b>2.26</b>	<b>1.27</b>	<b>3.22</b>	<b>31.90</b>
<b>%</b>	<b>5.2%</b>	<b>18.2%</b>	<b>15.6%</b>	<b>30.7%</b>	<b>9.2%</b>	<b>7.1%</b>	<b>4.0%</b>	<b>10.1%</b>	<b>100.0%</b>
<b>Without U26</b>	<b>1.65</b>	<b>6.22</b>	<b>5.35</b>	<b>10.56</b>	<b>3.17</b>	<b>2.43</b>	<b>1.37</b>	<b>3.47</b>	<b>34.21</b>
<b>Gain</b>	<b>0.00</b>	<b>0.42</b>	<b>0.38</b>	<b>0.76</b>	<b>0.23</b>	<b>0.17</b>	<b>0.10</b>	<b>0.25</b>	<b>2.31</b>
<b>Adjusted</b>	<b>1.65</b>	<b>6.22</b>	<b>4.88</b>	<b>9.63</b>	<b>2.89</b>	<b>2.22</b>	<b>1.25</b>	<b>3.16</b>	<b>31.90</b>
<b>Adjusted %</b>	<b>5.2%</b>	<b>19.5%</b>	<b>15.3%</b>	<b>30.2%</b>	<b>9.1%</b>	<b>7.0%</b>	<b>3.9%</b>	<b>9.9%</b>	<b>100%</b>

