

# Update: Harvest Strategy Golden King Crab (*Lithodes aequispinus*)



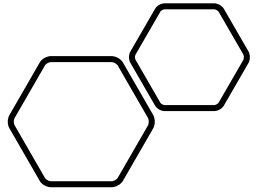
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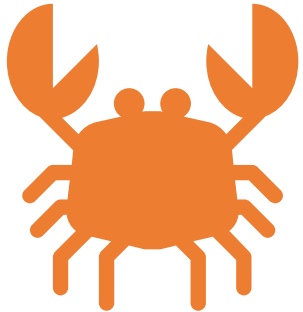
King and Tanner Task Force Meeting

December 11<sup>th</sup>, 2020





# Outline



**GKC Harvest  
Strategy**  
Overview



**Performance  
Indicators**  
Fishticket & Biological



**Reference Points**  
Target, Trigger, and Limit



**Industry Feedback &  
Requests**  
Discussion

# Southeast GKC Harvest Strategy Overview



## • Objectives

- Improve and stabilize fishery performance
- Transparent and repeatable metrics
- Consistent with BOF Policy on King and Tanner Crab Resource Management [5 AAC 34.080] and SEAK GKC management plan [5 AAC 34.114].

## • Performance Indicators

- Primary (logbook CPUE, proportion of GKC catch during Tanner fishery)
- Secondary (lbs/pot day, length & recruit compositions, local ecological knowledge (LEK) aka fishermen experience)

## • Reference Points (avg. logbook CPUE)

- **Target**-where we want the stock to be
- **Trigger**- prompts management action and intervention
- **Limit**- stock danger zone due to poor fishery performance

## • Decision Rules

- Inseason- tracking performance inseason and determines if any management action is needed
- Postseason- GHF determinations and area closures if warranted

# Secondary Performance Indicators



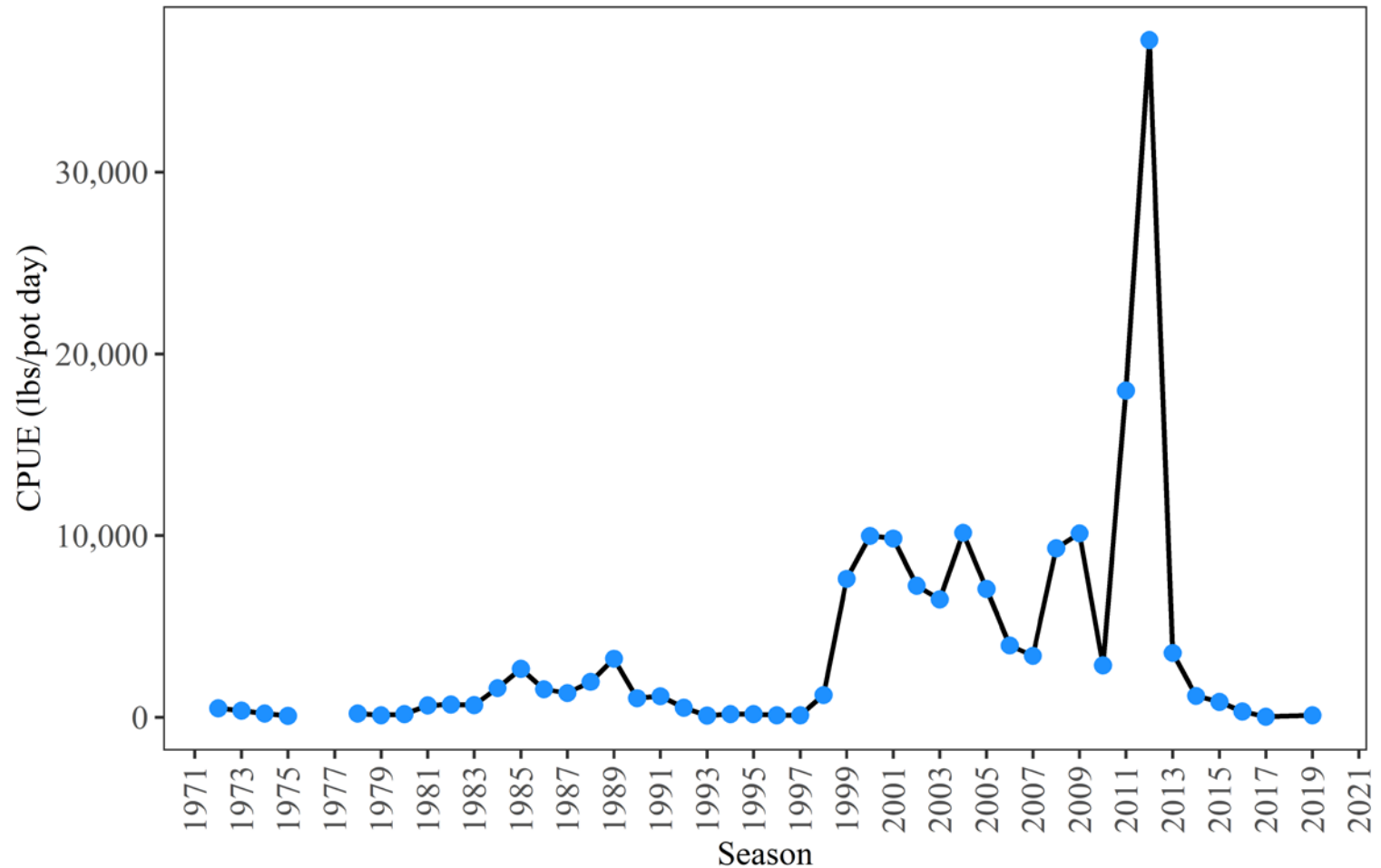
- **Lbs/pot day**

- 1970–present
- Utilizes fishticket data
- Assumes permit holders are actively fishing in area throughout entire season
- Trends comparable to logbook CPUE but at lower resolution and less informative

$$\text{active fishing season}(\text{days}) = (\text{date}_{\text{first catch}} - \text{date}_{\text{last catch}}) \quad (4)$$

$$CPUE_f = \frac{\text{harvest}(\text{lbs})}{\text{active fishing season}(\text{days})} \quad (5)$$

East Central -active fishing season



# Secondary Performance Indicators



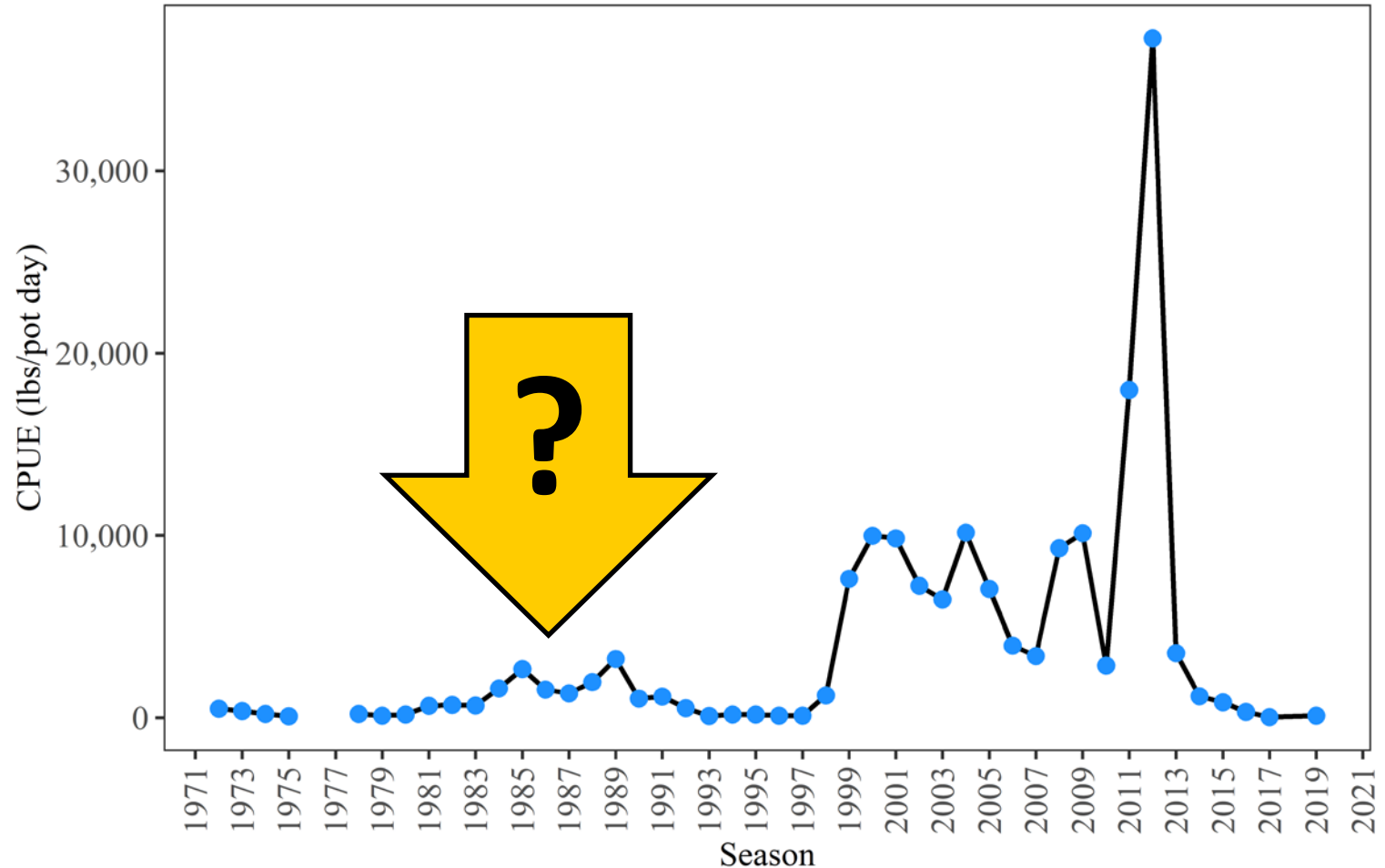
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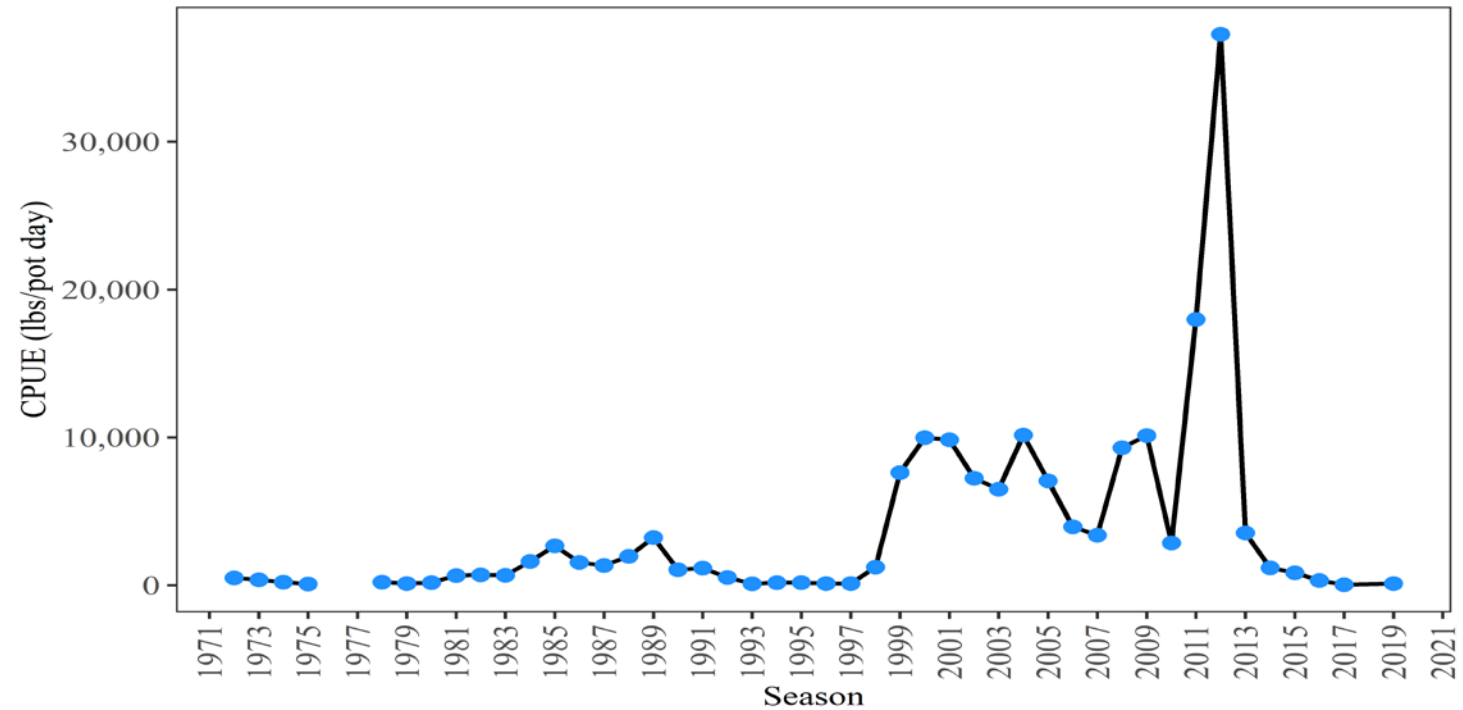
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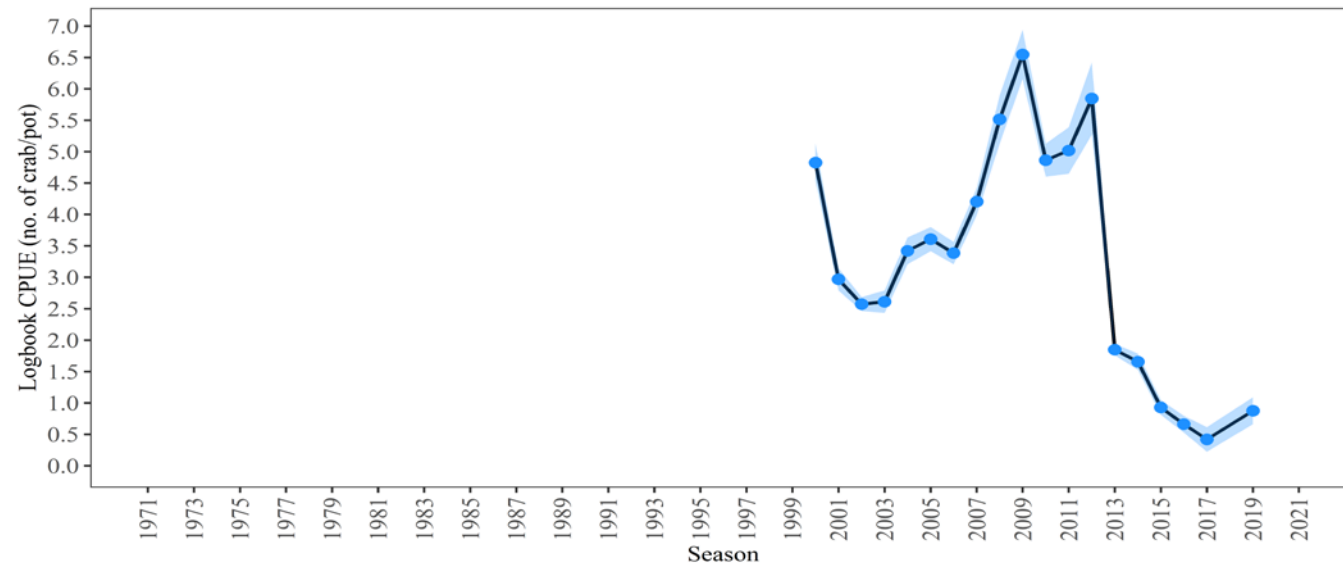
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East Central -active fishing season



East Central logbook data



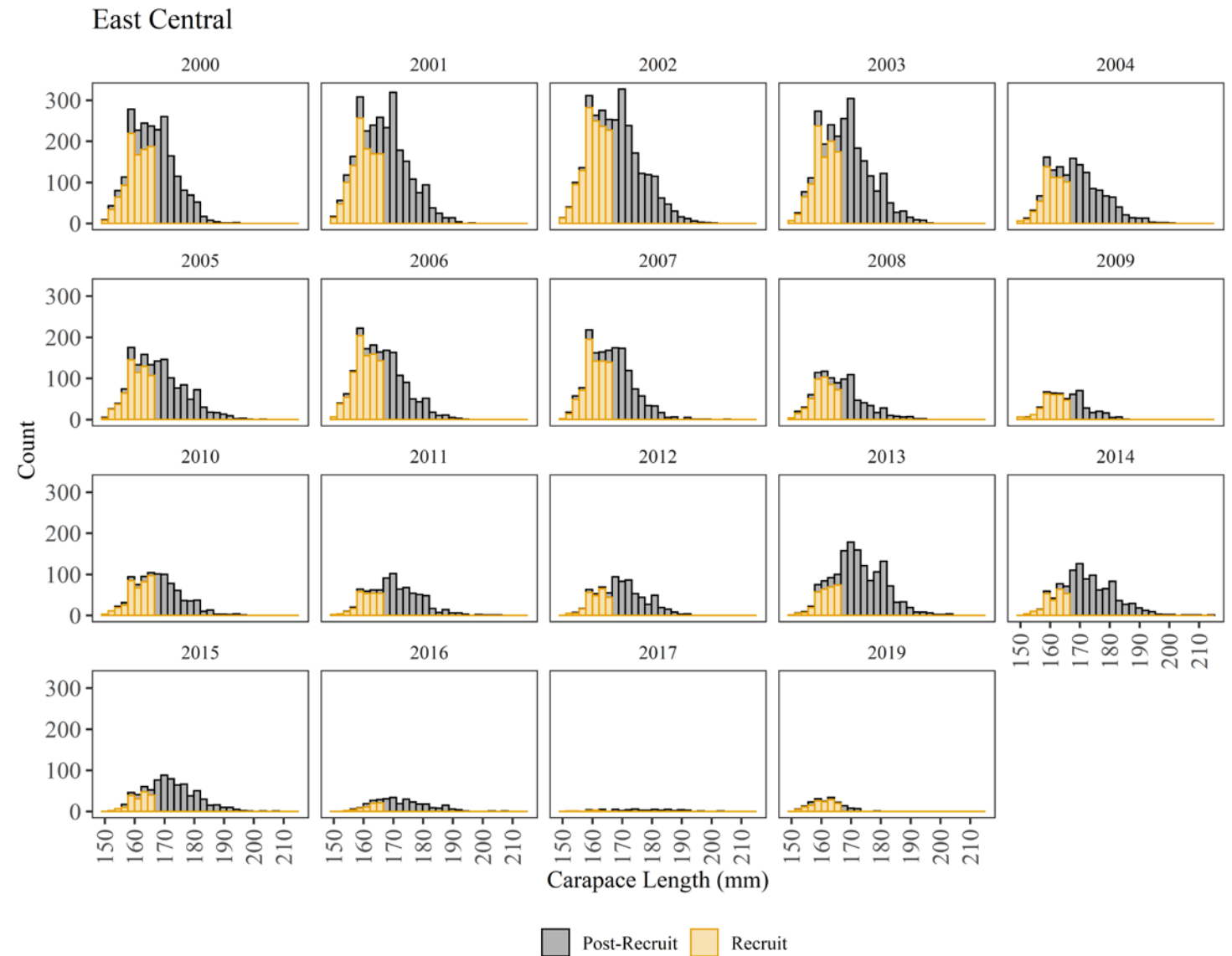
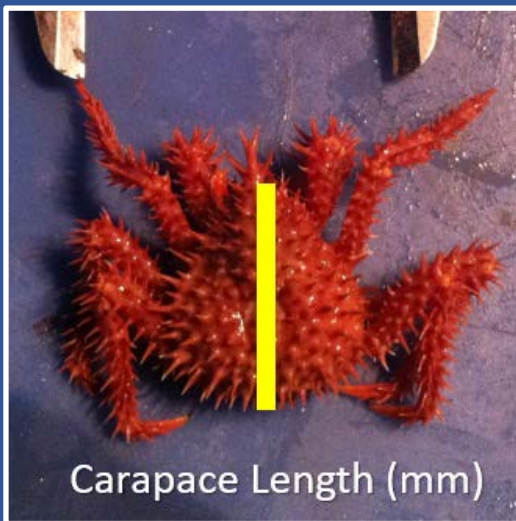


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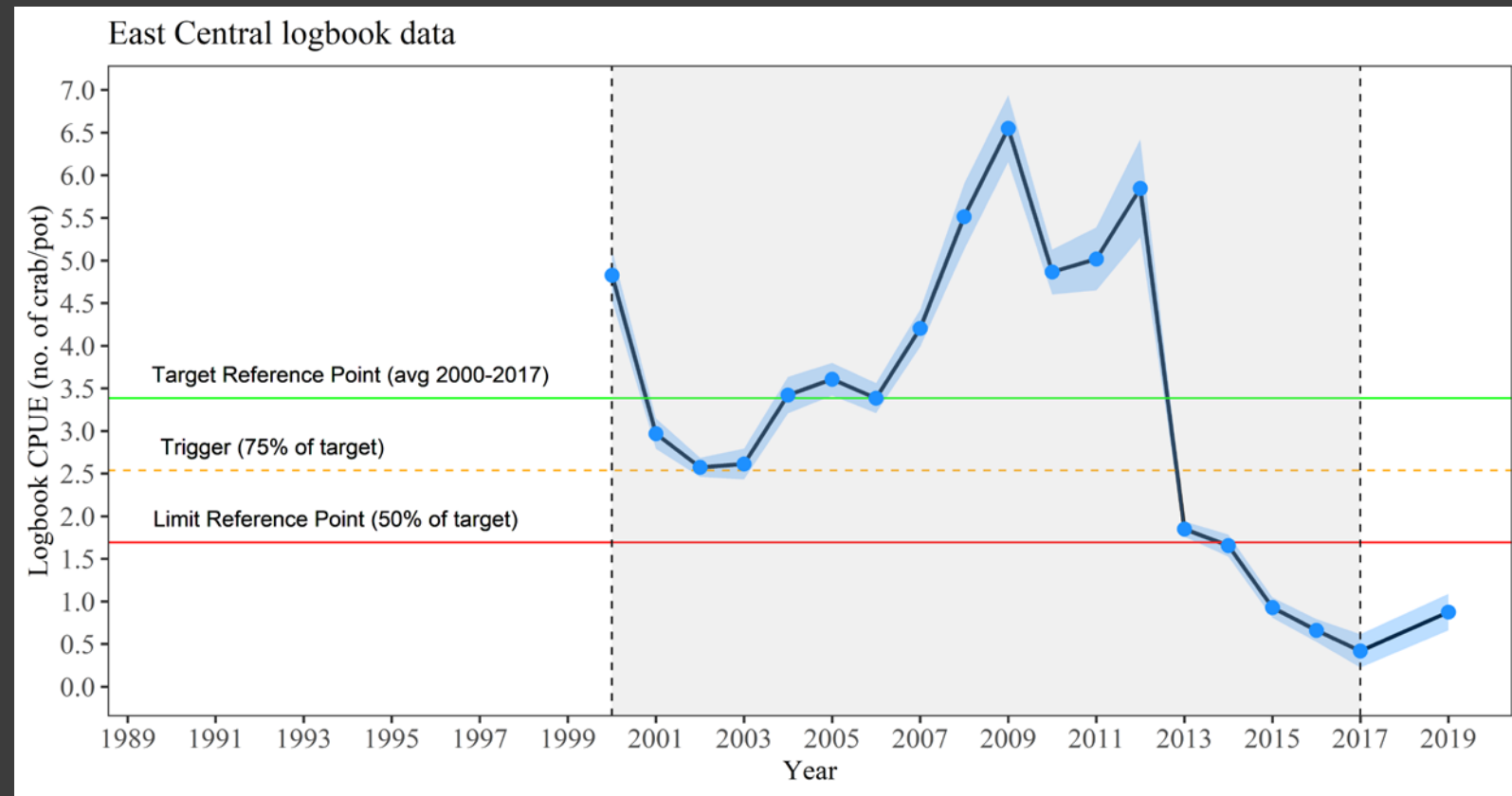
- **Biological**

- Male CL (mm) frequencies and shell age in determining recruit class for area and season;
- Tracks changes in recruitment over time;



# Reference Points

## Ex. East Central



- Precautionary approach (slow-up fast down);
- Target is set @ avg. cpue (2000–2017);
- Trigger @ 75% & Limit 50% of Target;
- Provides a starting point in harvest strategy discussions



# Industry Feedback & Requests



- Increase GHRs to match historical harvest;
- Review logbook CPUE reference points under different scenarios;
- Review mechanism scenarios to increase GHL inseason;
- Match postseason decision rules when increasing/decreasing to make changes based on previous season's GHL;
- Further information on bycatch metric in Tanner fishery

# Guideline Harvest Ranges (GHRs)



- GHRs adjusted and reduced in Northern, Icy Strait, and East Central @ 2018 BOF;
- Continued declines in GKC fishery performance prompted GHR reviews in 2015;
- GHRs revised to be biologically based and reflect the maximum sustained yield (MSY) a stock can sustain;
- Analysis used information based on historical and present catch and effort data

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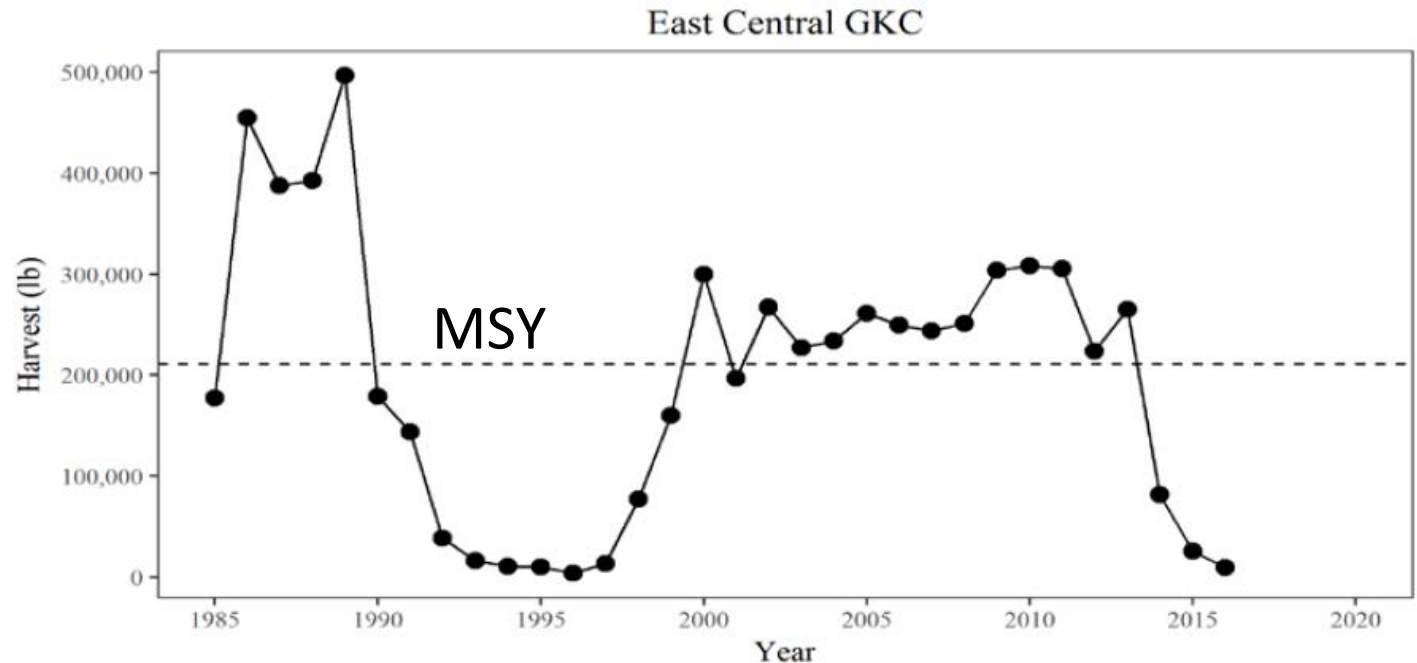
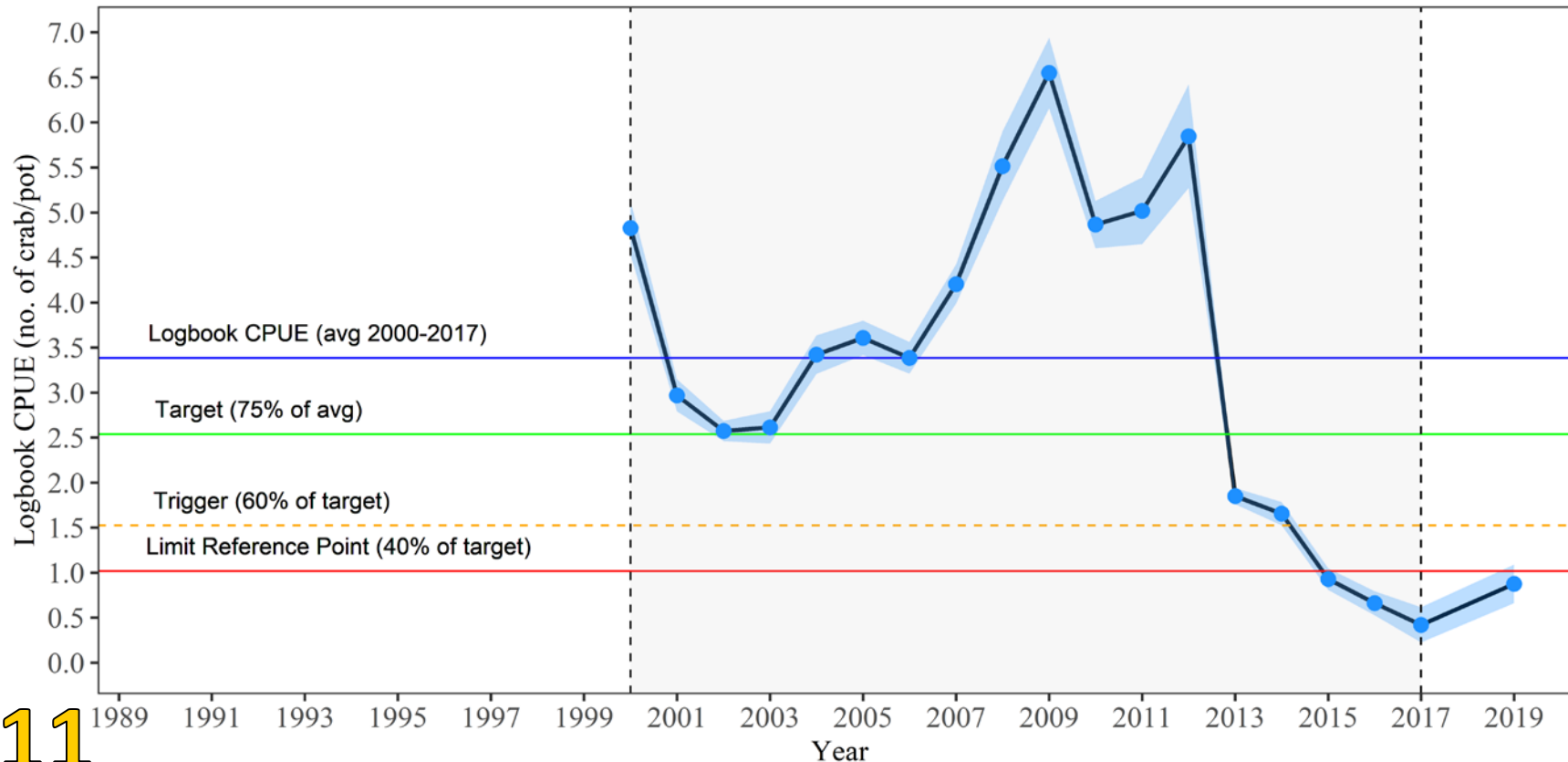


Figure 69-2. Maximum sustained yield estimates (dotted line) for East Central and total harvest (solid line) from 1985 to 2016. Source: 2018 BOF Staff Comments Proposal 69 <http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.meetinginfo&date=01-11-2018&meeting=sitka>

# Reference Point Adjustments



East Central logbook data



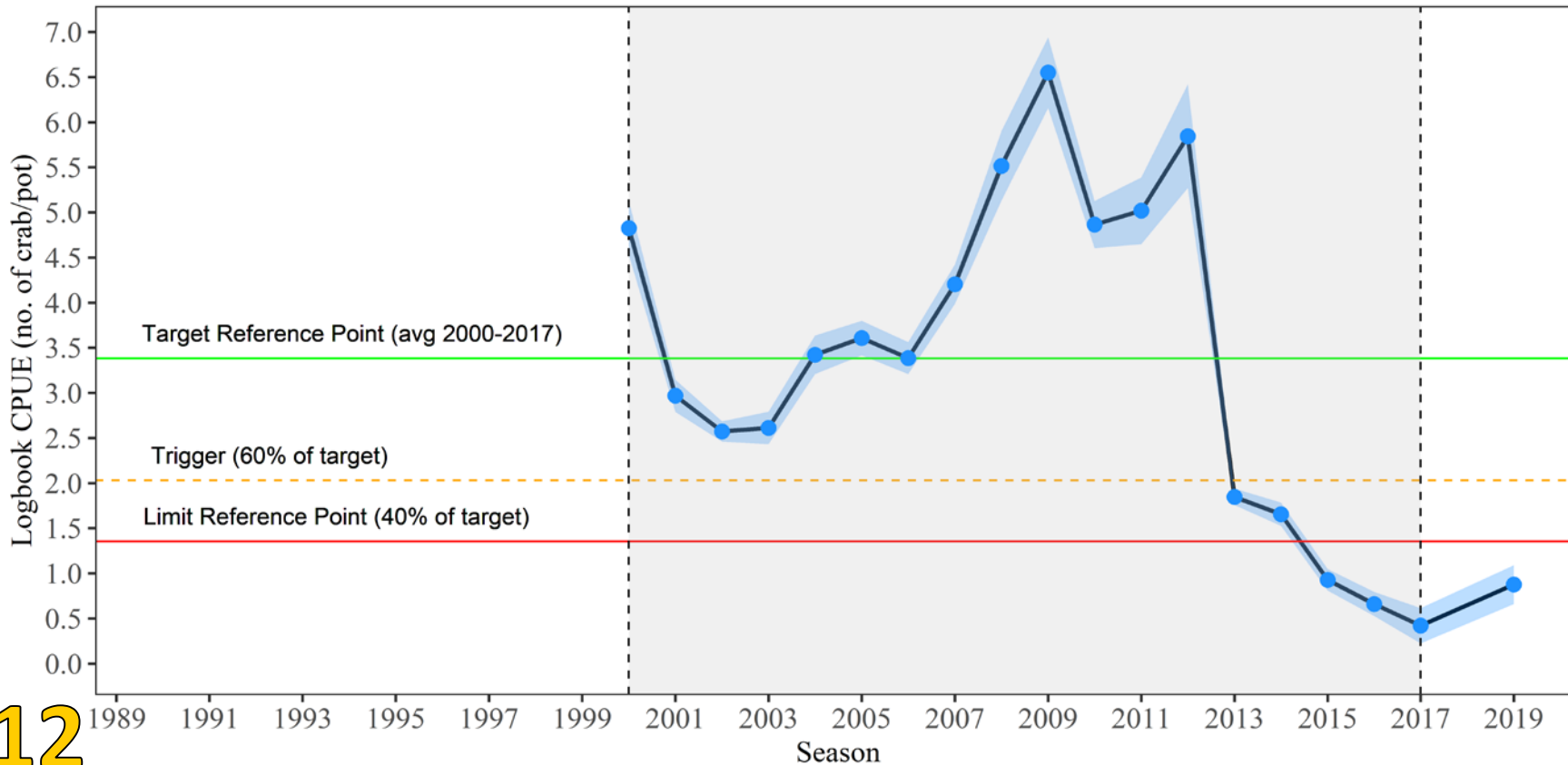
## Scenario B

- Industry request
- Reduce Target reference point to be @ 75% of avg
- Trigger reduced to 60%
- Limit reduced to 40%

# Reference Point Adjustments



East Central logbook data



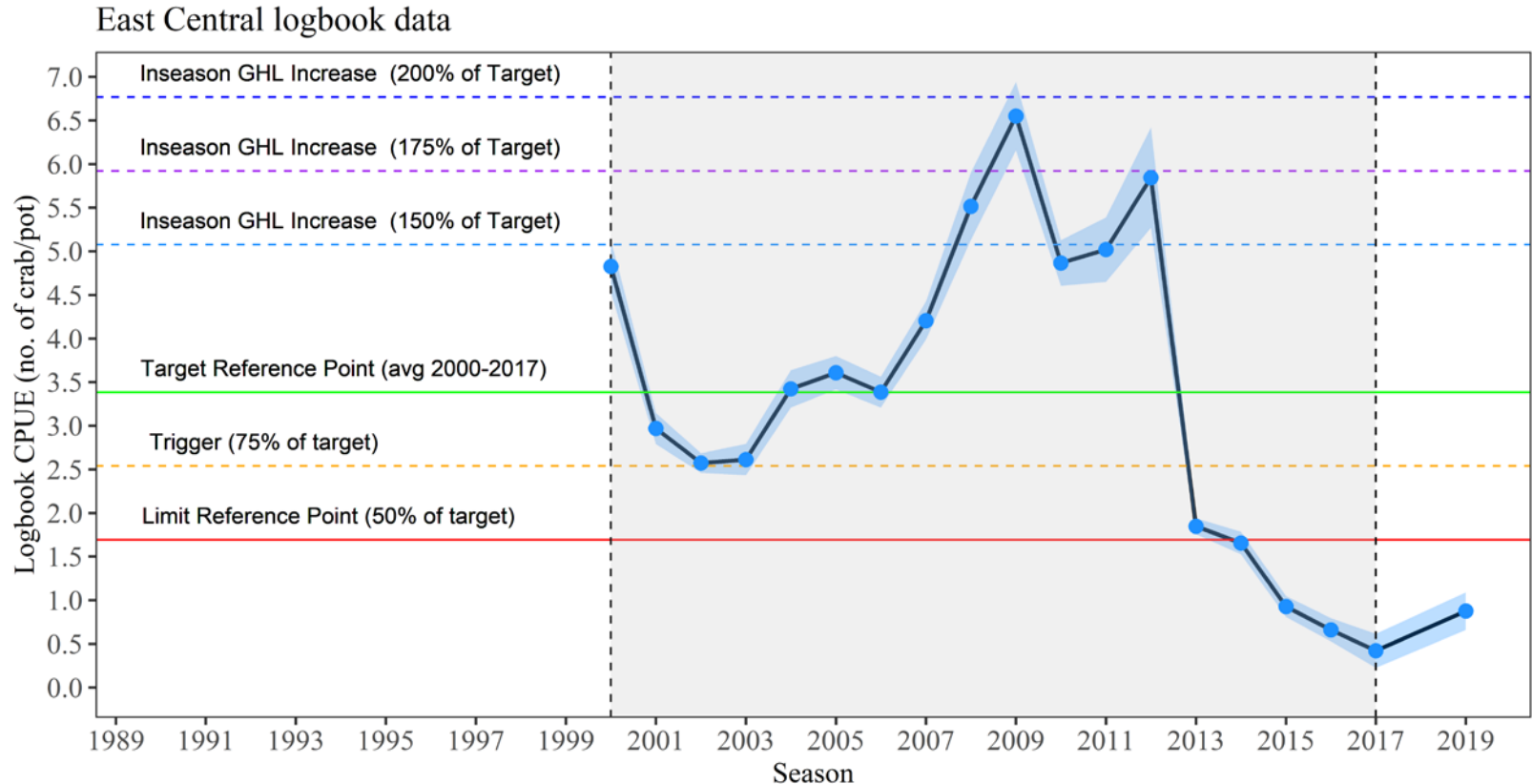
## Scenario C

- Option between original and industry request
- Trigger reduced to 60%
- Limit reduced to 40%

# GHL Inseason Increases



- Request increasing GHL 10% inseason when fishing performance is positive/high
- **Scenario A, B, C**
  - A. 10% increase is prompted when CPUE is 200% > Target reference point;
  - B. 10% increase is prompted when CPUE is 175% > Target reference point
  - C. 10% increase is prompted when CPUE is 150% > Target reference point



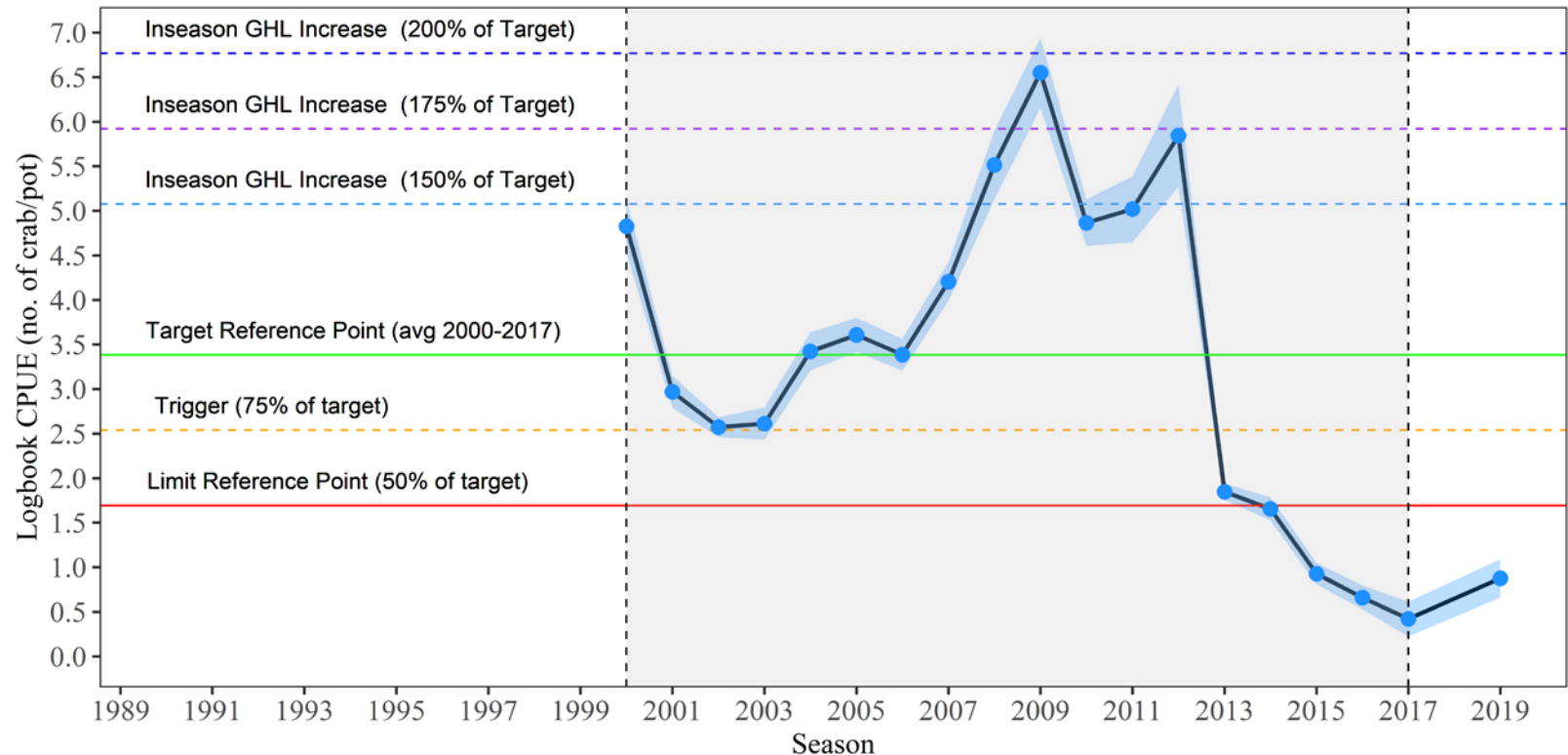
# GHL Inseason Increases



## • Questions & Concerns

- What if GHL is caught in < 14 days, would 500 pot min. be only trigger?;
- Would there be a waiting period until fishtickets/logbooks are turned into verify data?
- Increases recruitment overfishing risk;
- Increasing hyperstability risk

East Central logbook data





# GHL Inseason Increases



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**Recruitment Overfishing**– rate of fishing is such that annual recruitment to the exploitable stock has become significantly reduced and is characterized by reduced spawning stock biomass and low annual recruitment which can lead to stock collapse.

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## K&T Management Resource Policy (1 & 5):

1. Maintain crab stocks comprised of various size and age classes of mature animals in order to maintain the longterm reproductive viability of the stock and reduce industrial dependency on annual recruitment, which is extremely variable. Benefits of this policy are most apparent when weak recruitment occurs. As population abundance and structure change with declining recruitment, harvests should be reduced.

5. Maintain an adequate brood stock to rebuild king or Tanner crab populations when they are depressed. Maintenance of an adequate brood stock takes precedence over short term economic considerations. When populations are at or below threshold, the minimum stock size that allows sufficient recruitment so that the stock can rebuild itself, fisheries must be closed and must remain closed until there is adequate brood stock.

# GHL Inseason Increases



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**Hyperstability:** occurs when catch rates remain high even as fish populations decline. The effects of hyperstability can increase for species that aggregate causing a subsequent collapse in stocks.

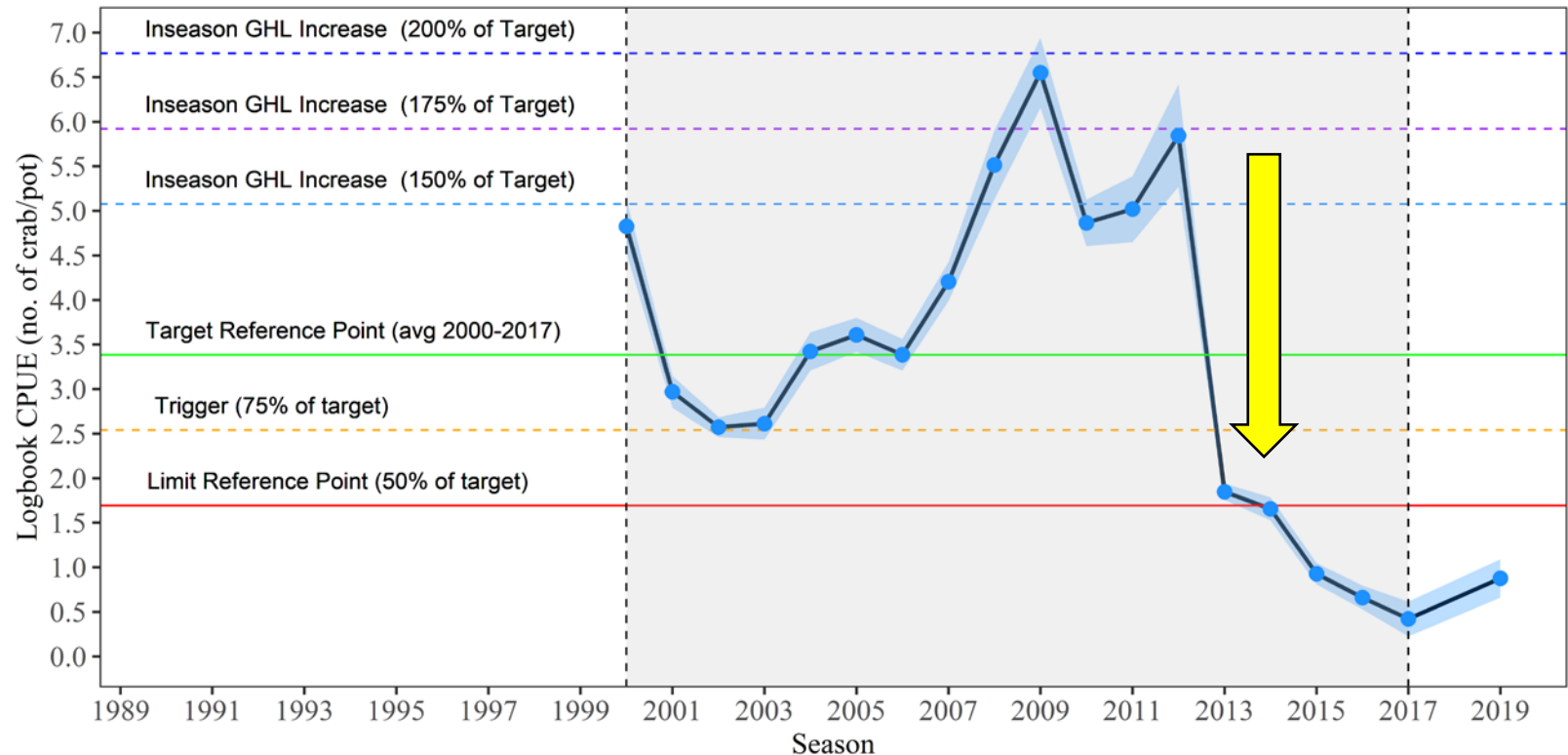
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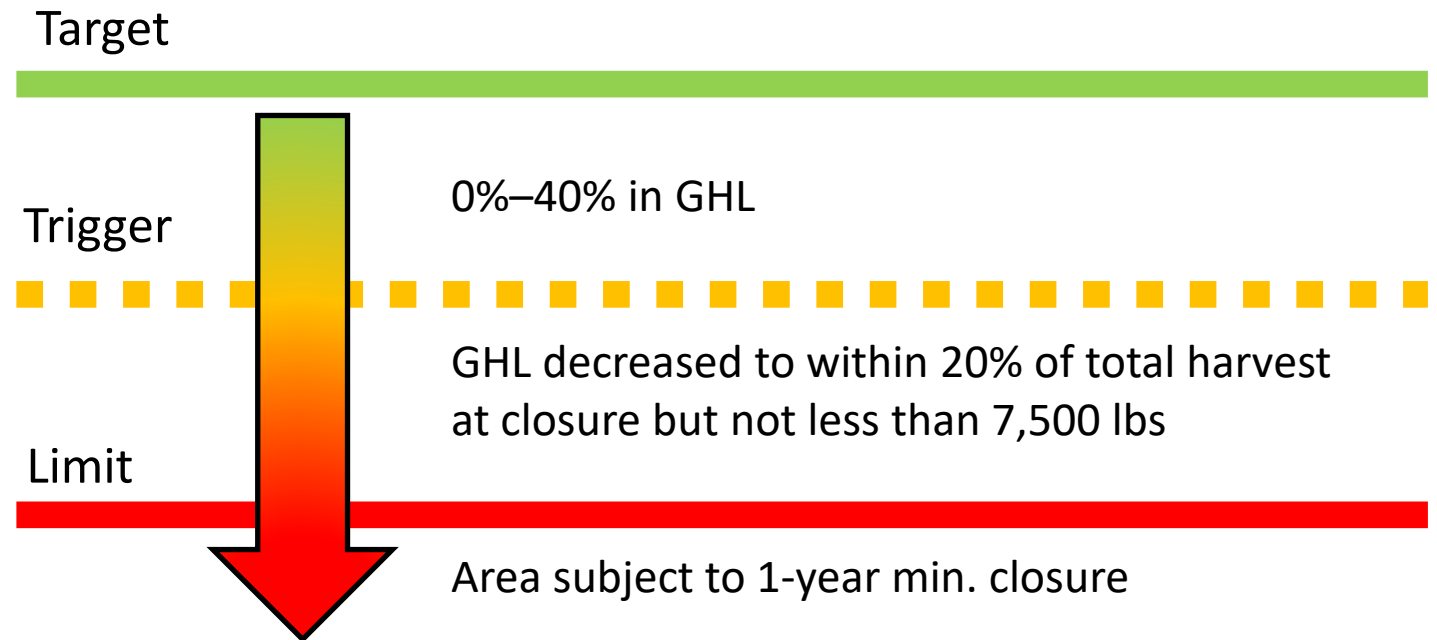


# Post Decision Rules



- **Decreasing GHL**

- Decrease GHL if CPUE is less than previous season;
- Adjust decreasing decision if CPUE is between  $>$  Limit and  $<$  Trigger

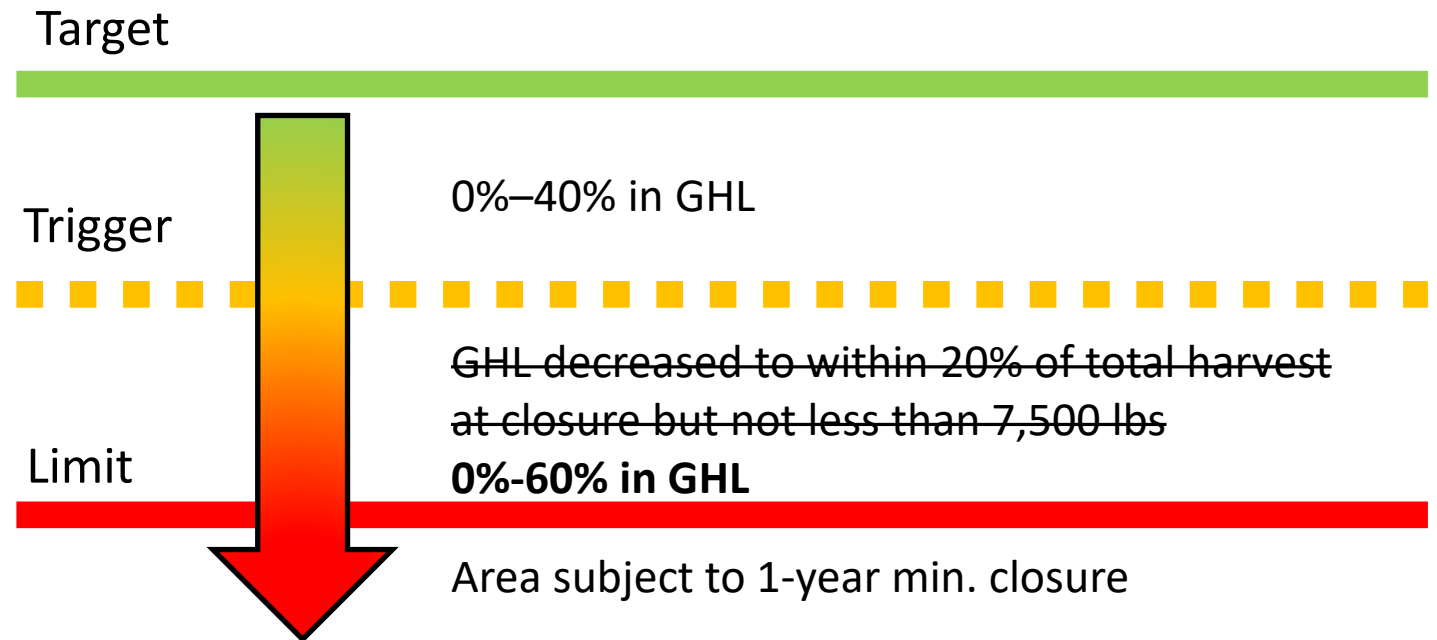


# Post Decision Rules



## • Decreasing GHL

- Decrease GHGs based on prior years if performance is low;
- Adjust decreasing decision if CPUE is between  $>$  Limit and  $<$  Trigger
- Recommended: 0-60% if CPUE  $>$  Limit and  $<$  Trigger
  - Ex. EC declined 74% and MC declined 50% from 14/15 to 15/16 seasons;





# Post Decision Rules



- **Re-Opening an Area**

- Remove 7,500 lb min GHL for reopening an area after a closure;
- Utilize % approach
  - Re-open area at 5%-10% of upper end of GHR;
  - Area specific

Area	GHR	5%-10% of upper end of GHR
Northern	0–145,000	7,250–14,500
Icy Strait	0–55,000	2,750–5,500
North Stephens Passage	0–25,000	1,250–2,500
East Central	0–225,000	11,250–22,500
Mid-Chatham	0–150,000	7,500–15,000
Lower Chatham	0–50,000	2,500–5,000
Southern	0–25,000	1,250–2,500

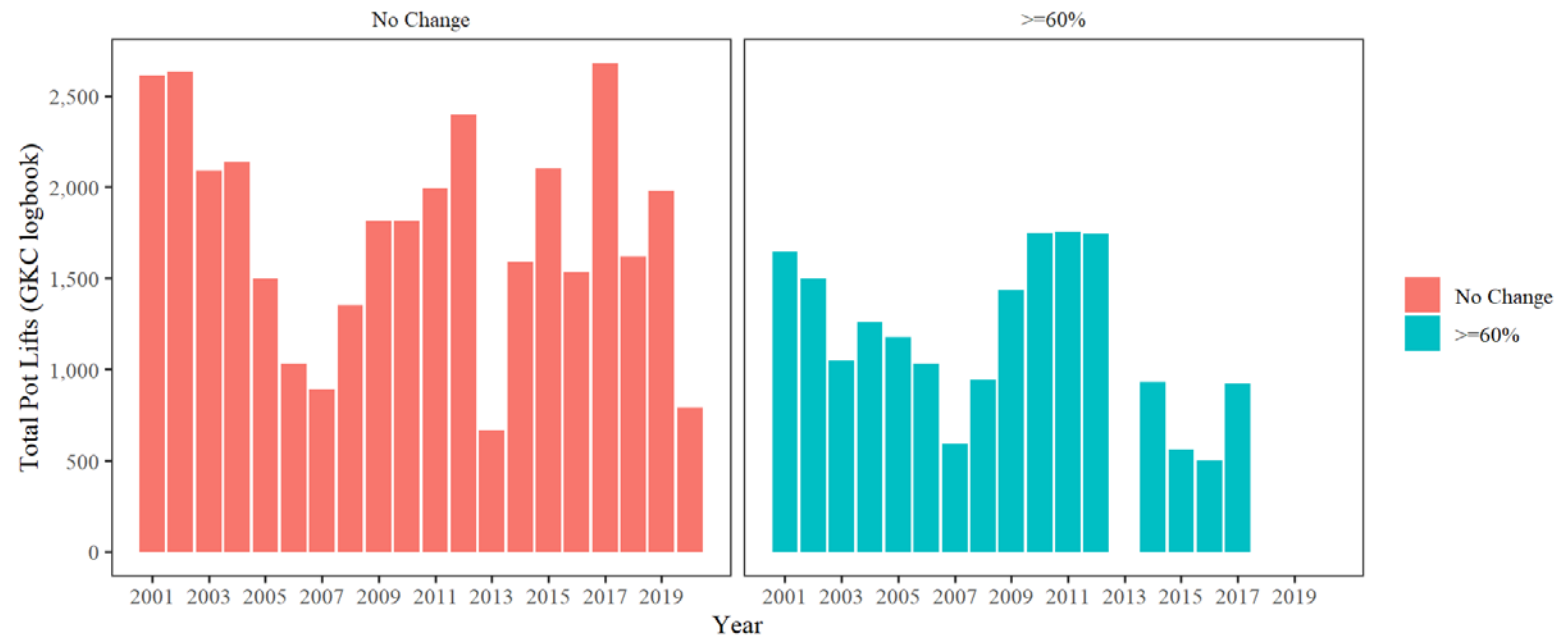
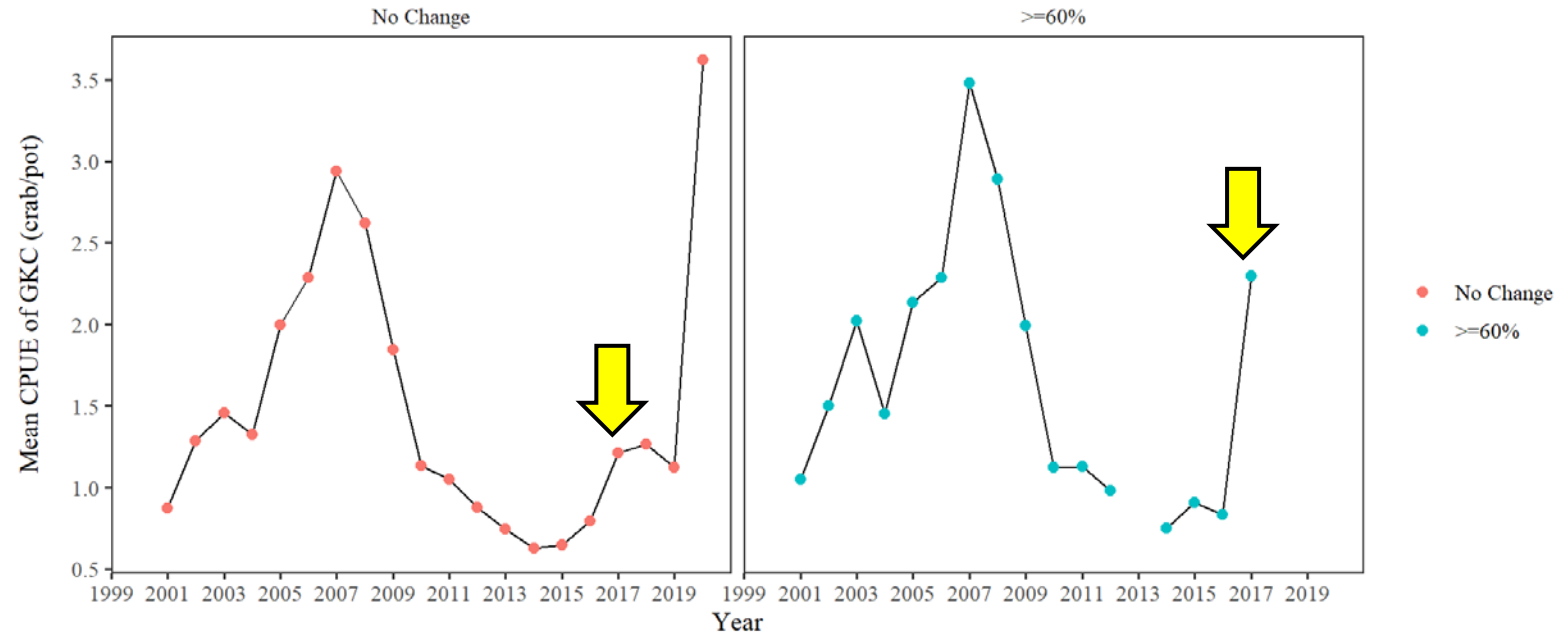
# Bycatch Metric

- **Bias from Tanner fishery**

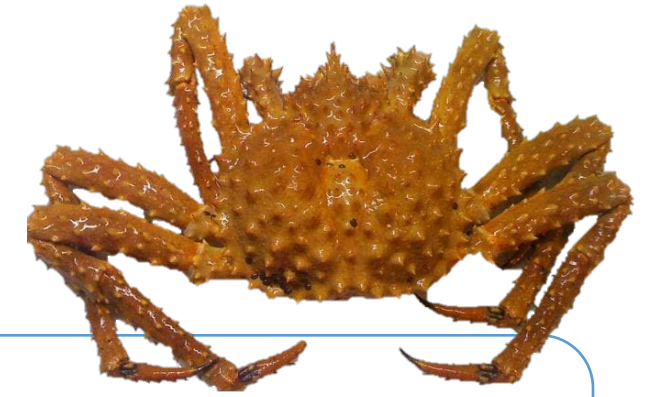
- GKC are not recorded consistently in logbooks as either bycatch or targeted;
- Dept. utilized a proportion of GKC approach  $\geq 60\%$  to determine targeted effort and remove Tanner fishery bias;
- Pros:
  - Repeatable metric that can look at logbook data and see how Tanner effort influences CPUE;
  - Aids management decisions
- Cons:
  - Less data to work with

## North Stephens Passage

Removing Tanner bycatch based on proportion of harvest from logbooks



# Timeline and next steps...



December–  
February

- Update and revise harvest strategy

April

- Release harvest strategy for internal and public review/input
- Format document to mirror NPFMC SAFE Reports
  - i.e. Appendix for scenarios, industry requests, ADF&G recommendations, etc.



Questions?