

# Abundance Based PSC limits for Pacific Halibut

Discussion paper

April 2016

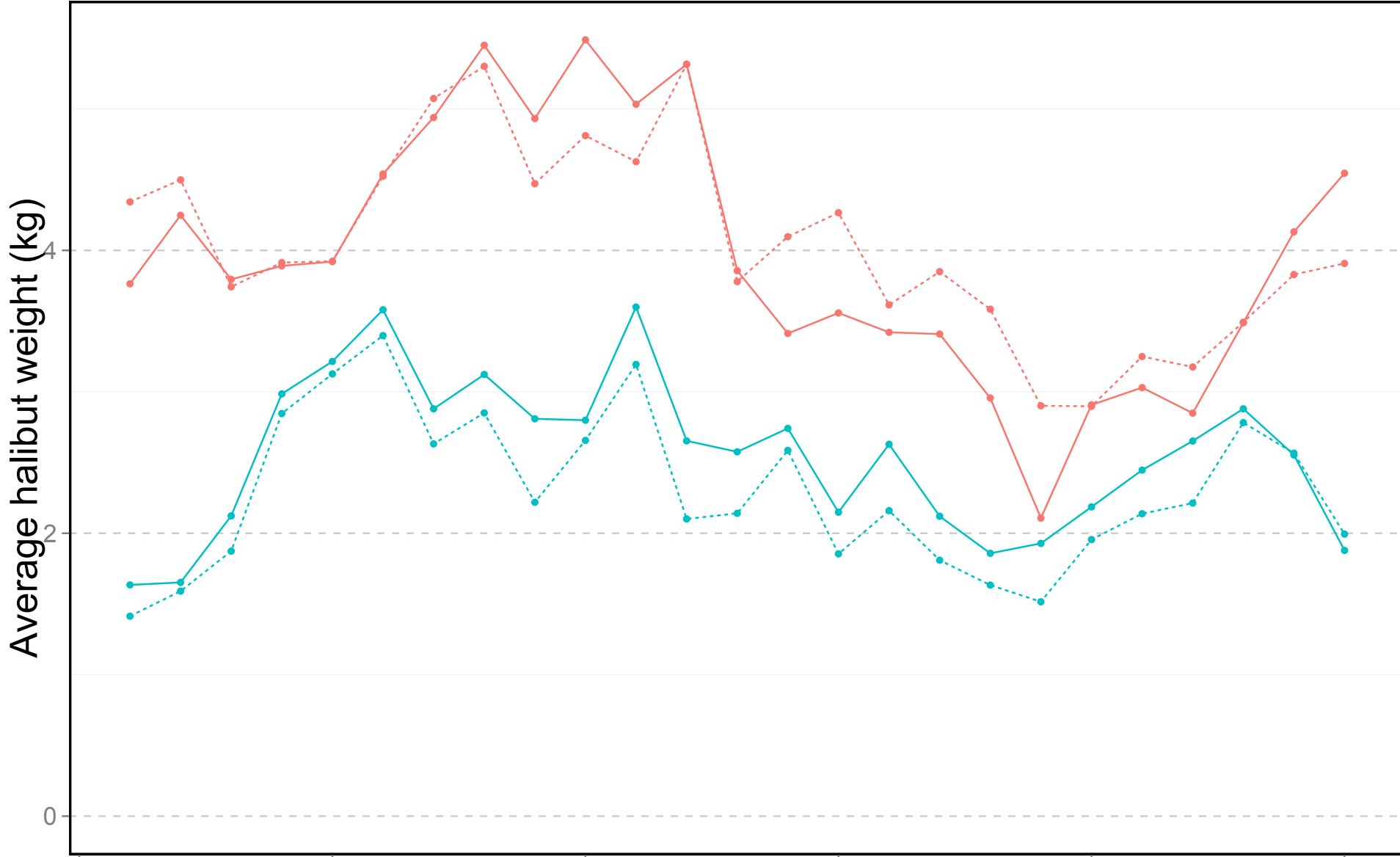
# Workgroup tasked to review

1. The current status of Halibut PSC limits and use in the BSAI
2. Indices that may be available to assess the abundance of halibut
  - Potential strengths and limitations of each
  - General models for combining different sources of information
3. Types of control rules that could be used
  - E.g., “stair-step” PSC limits with or without “floors” or “ceilings”
4. Types of policy decisions that the Council would need to consider as this effort progresses

# Contrasting bycatch-weighted estimates with “raw” data

C6 Halibut PSC  
April 2016

Average weight by gear

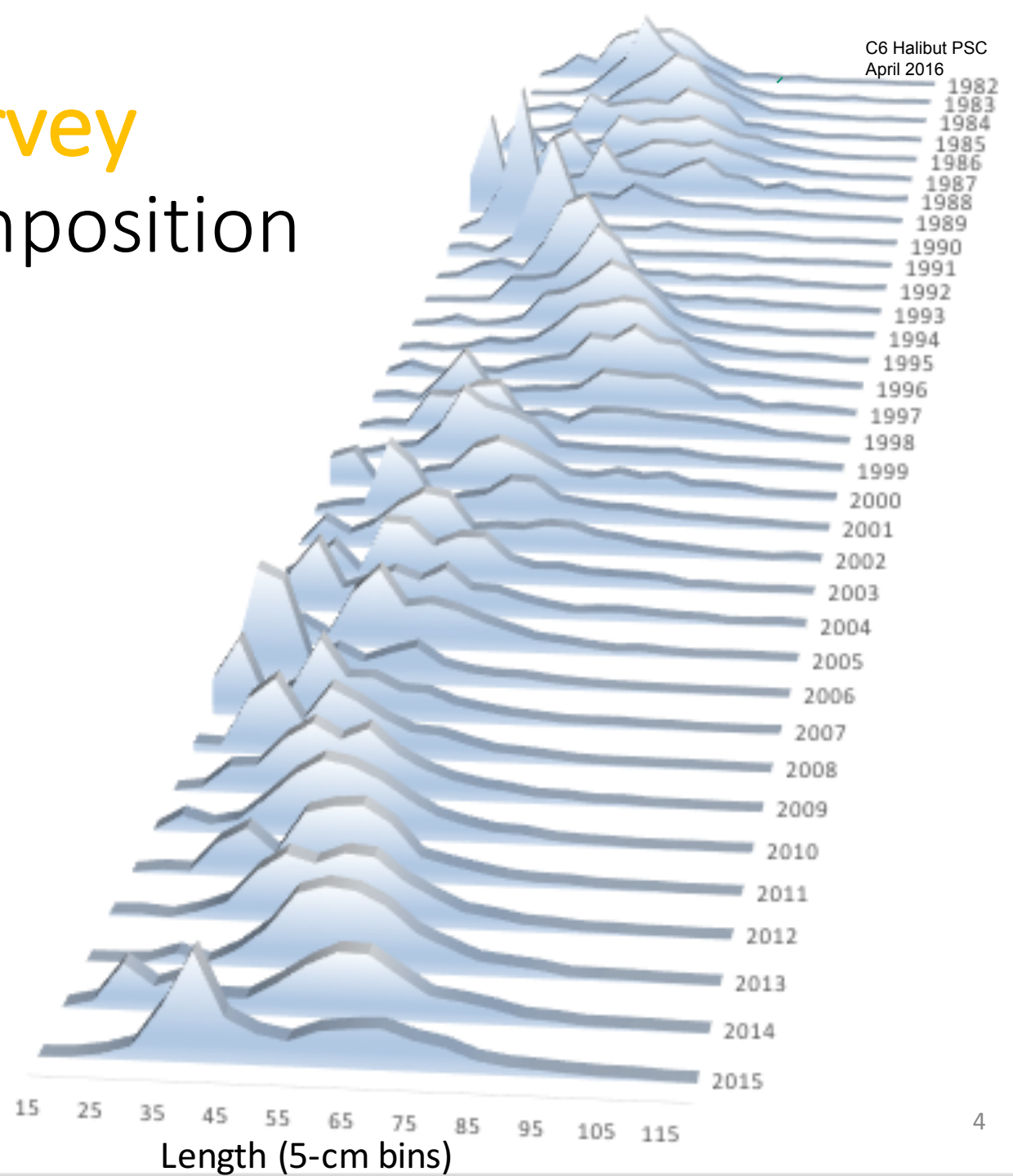


**LF\_Type**  
● Raw\_LF  
● Wtd\_LF

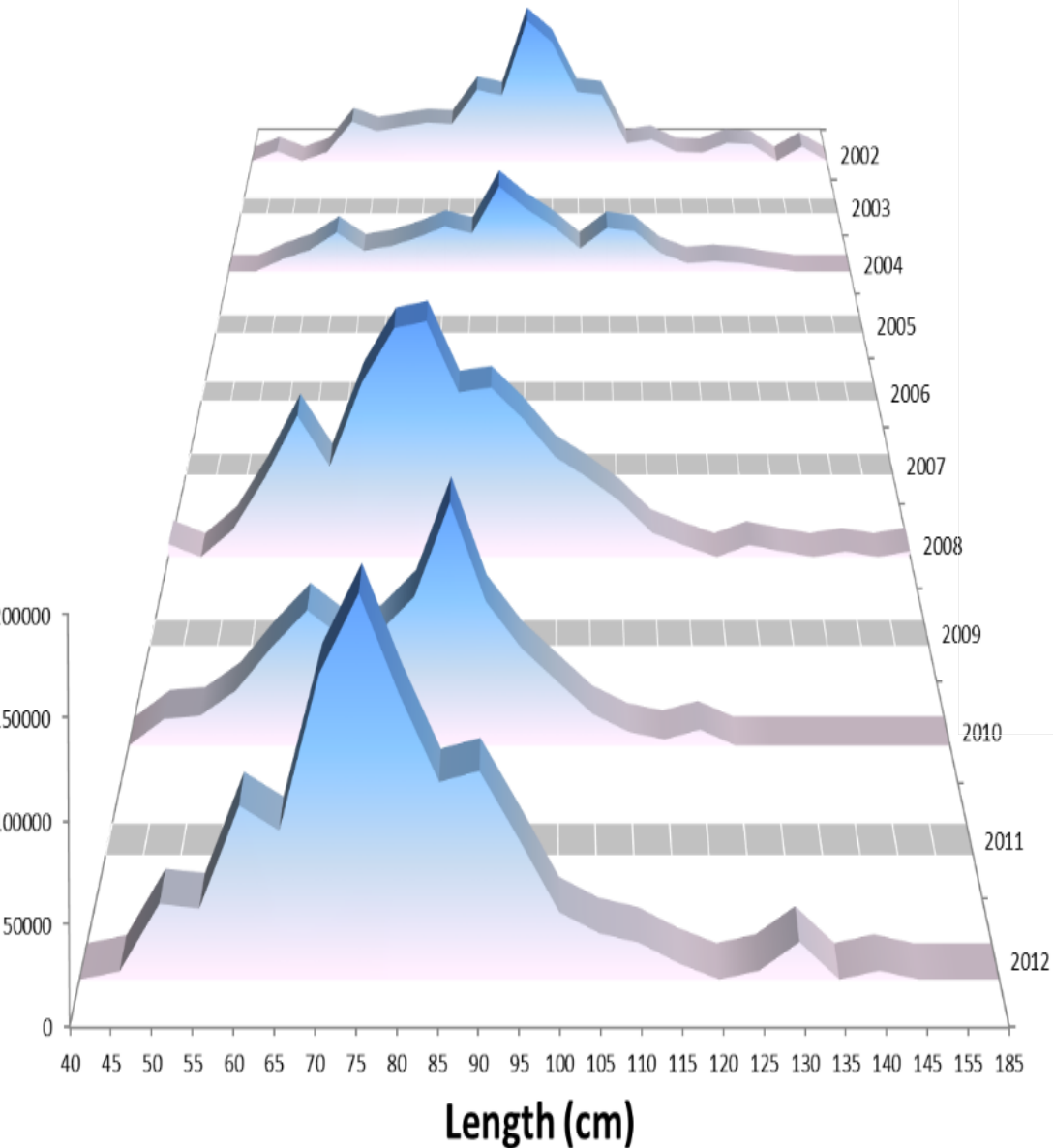
**gear**  
— Fixed  
— Trawl

# AFSC Bottom trawl **survey** Pacific halibut size composition

- Consistently apparent
- Variable over years
- Mostly U32 inches

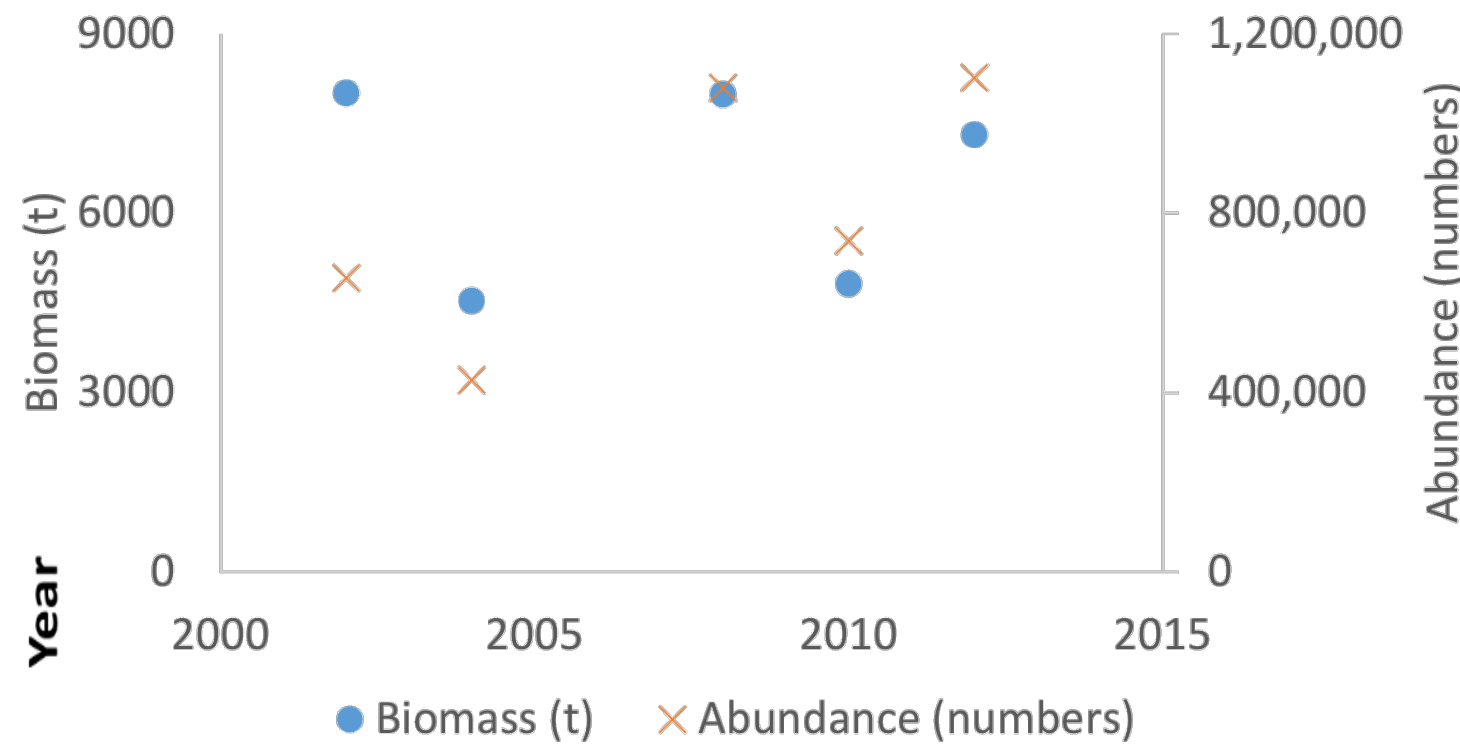


# AFSC Slope survey



C6 Halibut PSC  
April 2016

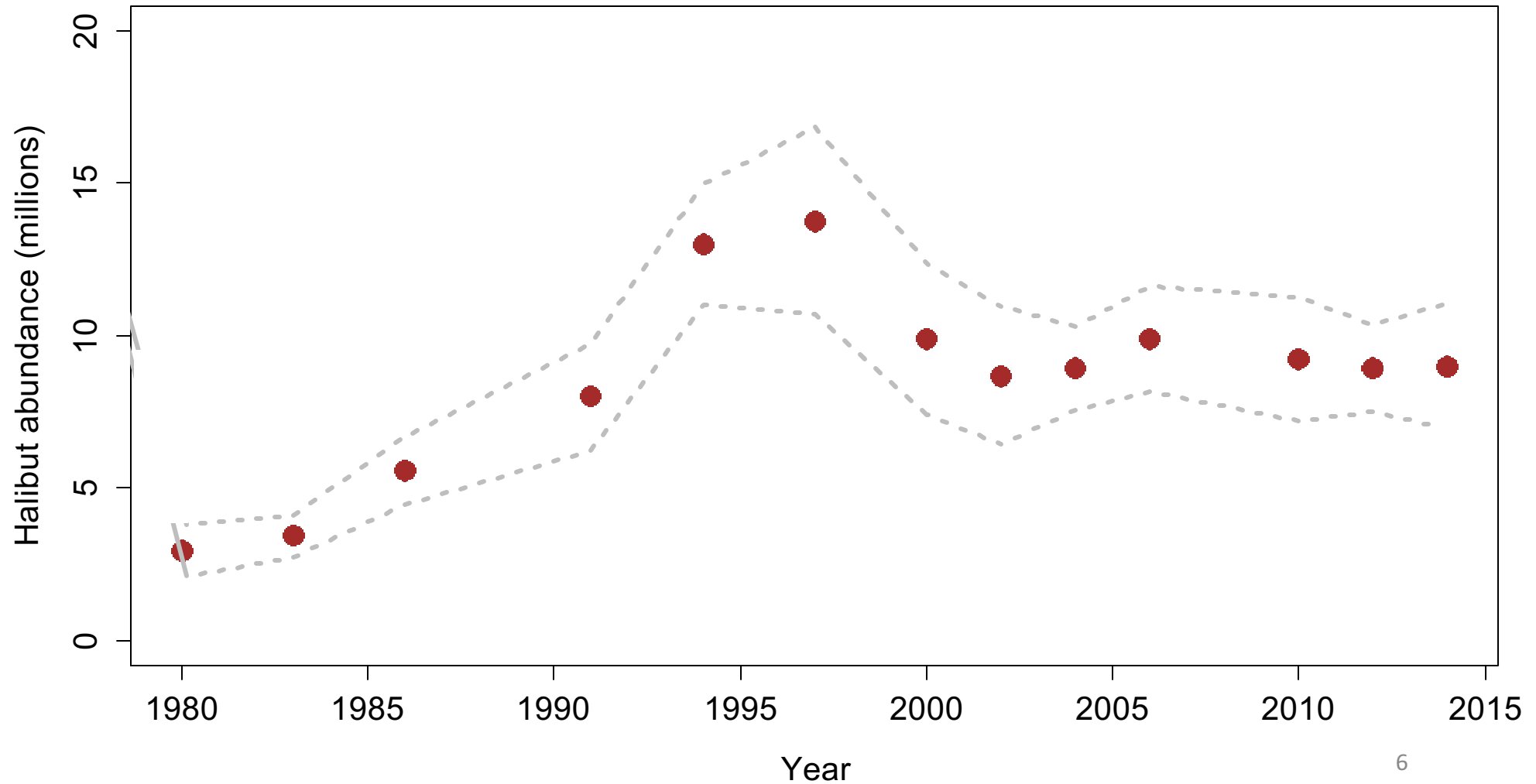
## AFSC EBS slope trawl survey Pacific halibut estimates



- Limited time series
- Variable mean weight (Table 3)

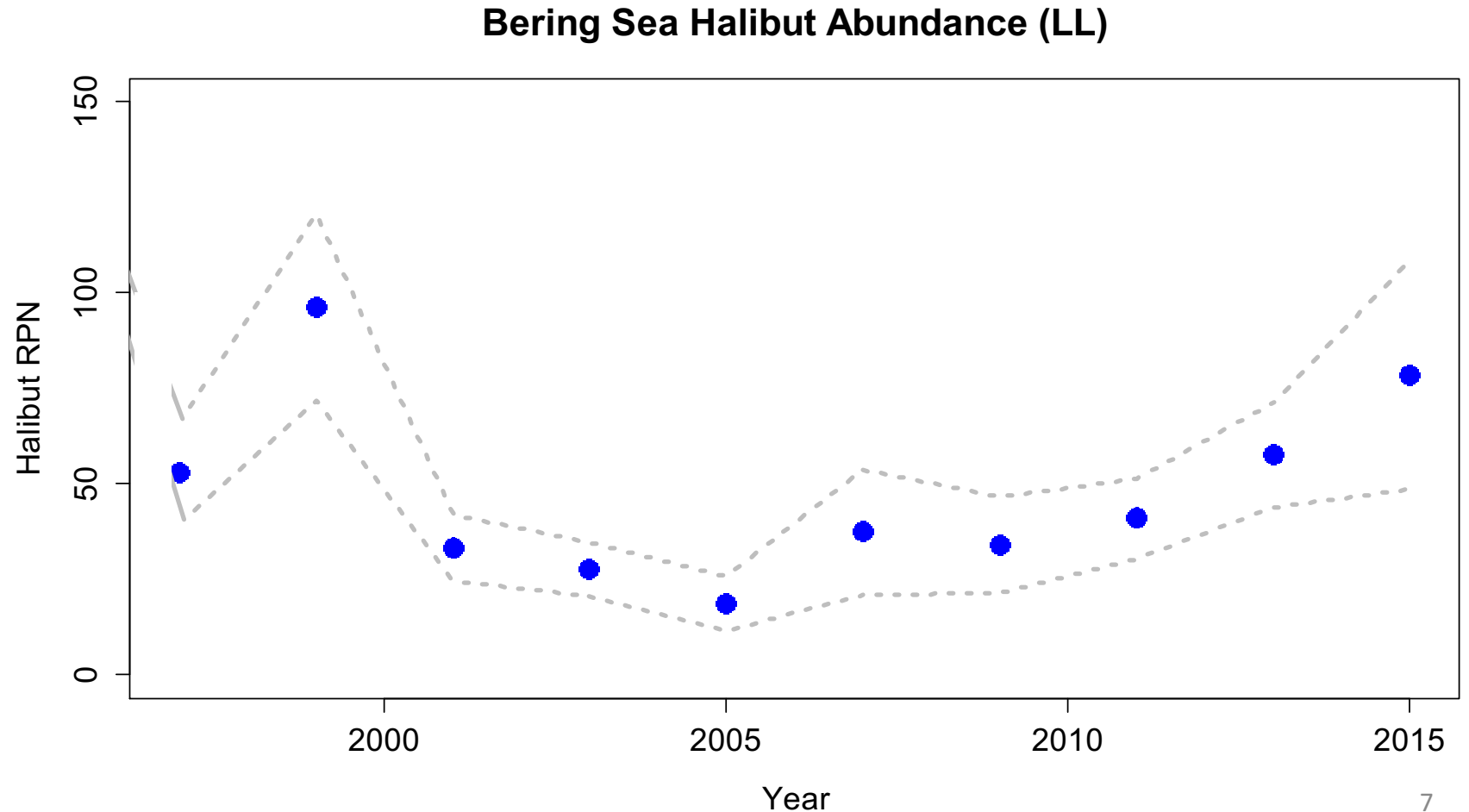
# Aleutian Island surveys

**Aleutian Islands Halibut Abundance (trawl)**



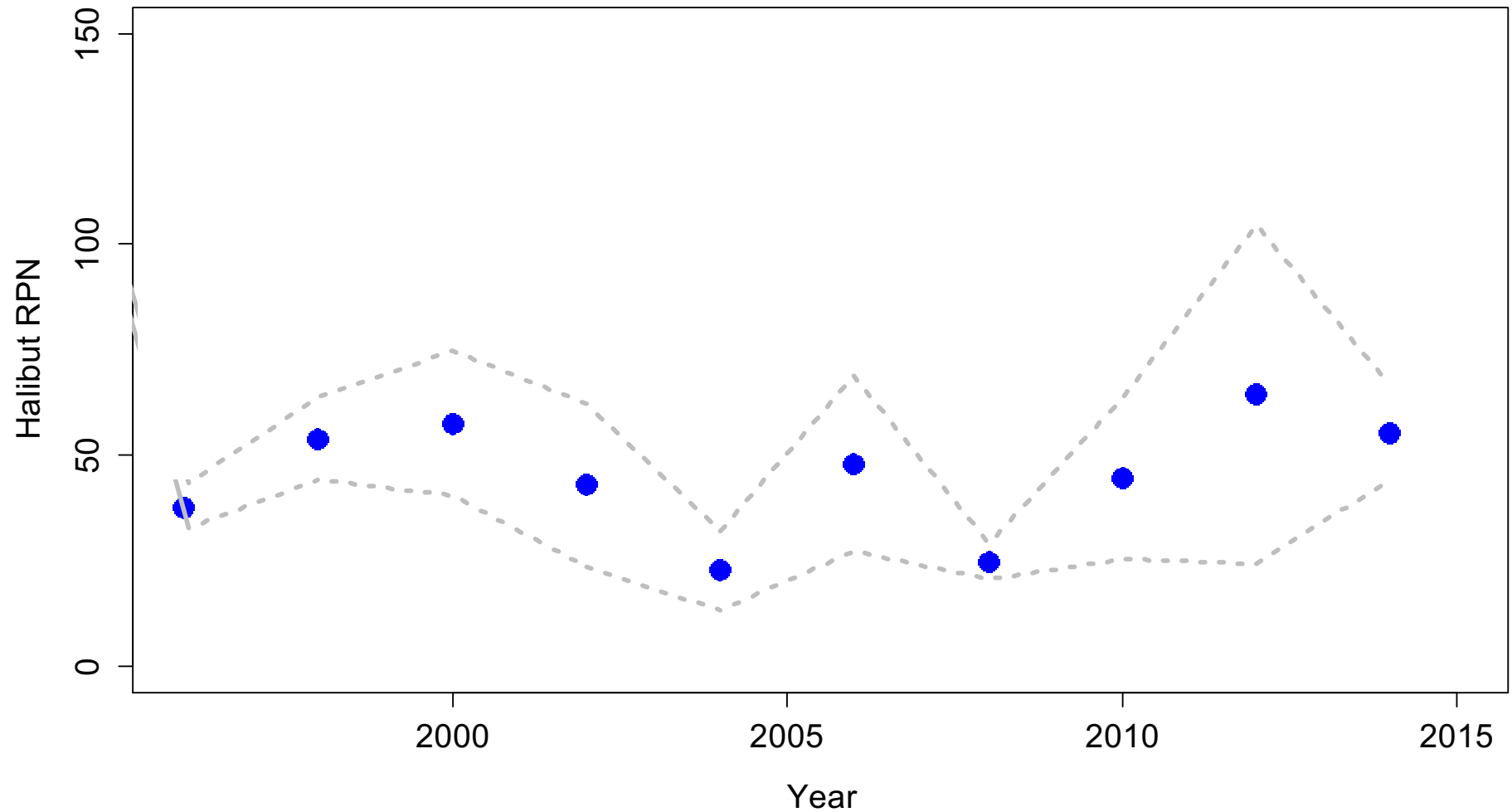
# AFSC Longline survey

- In EBS, occur every other year in May-June from 1997 – 2015
- Continental slope, stations spaced 30 - 50 km
- CPUE in numbers by depth strata



# Aleutian Island surveys

**Aleutian Island Halibut Abundance (AFSC longline)**

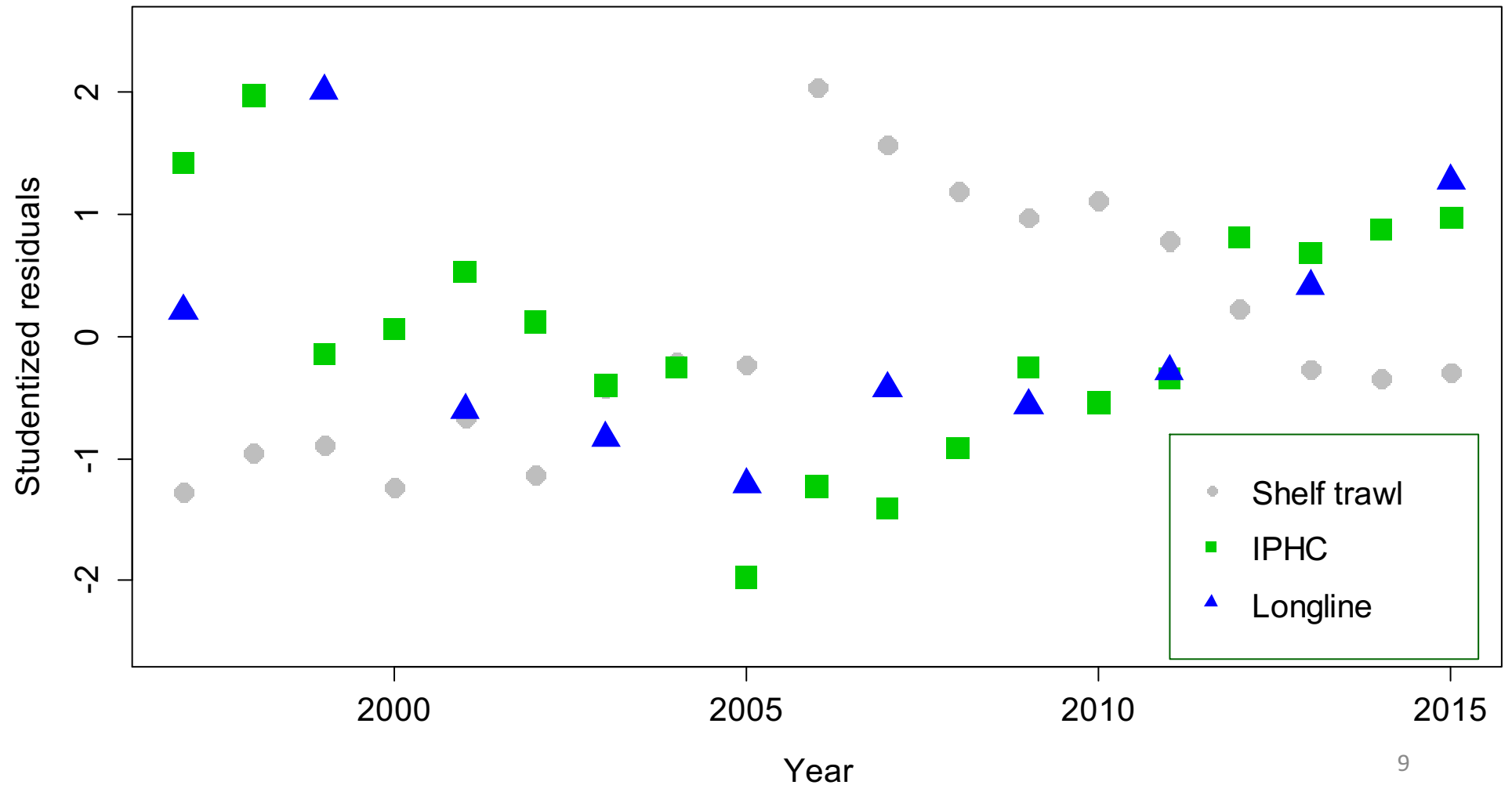




# Combining indices

- In numbers
- Inverse variance weighting

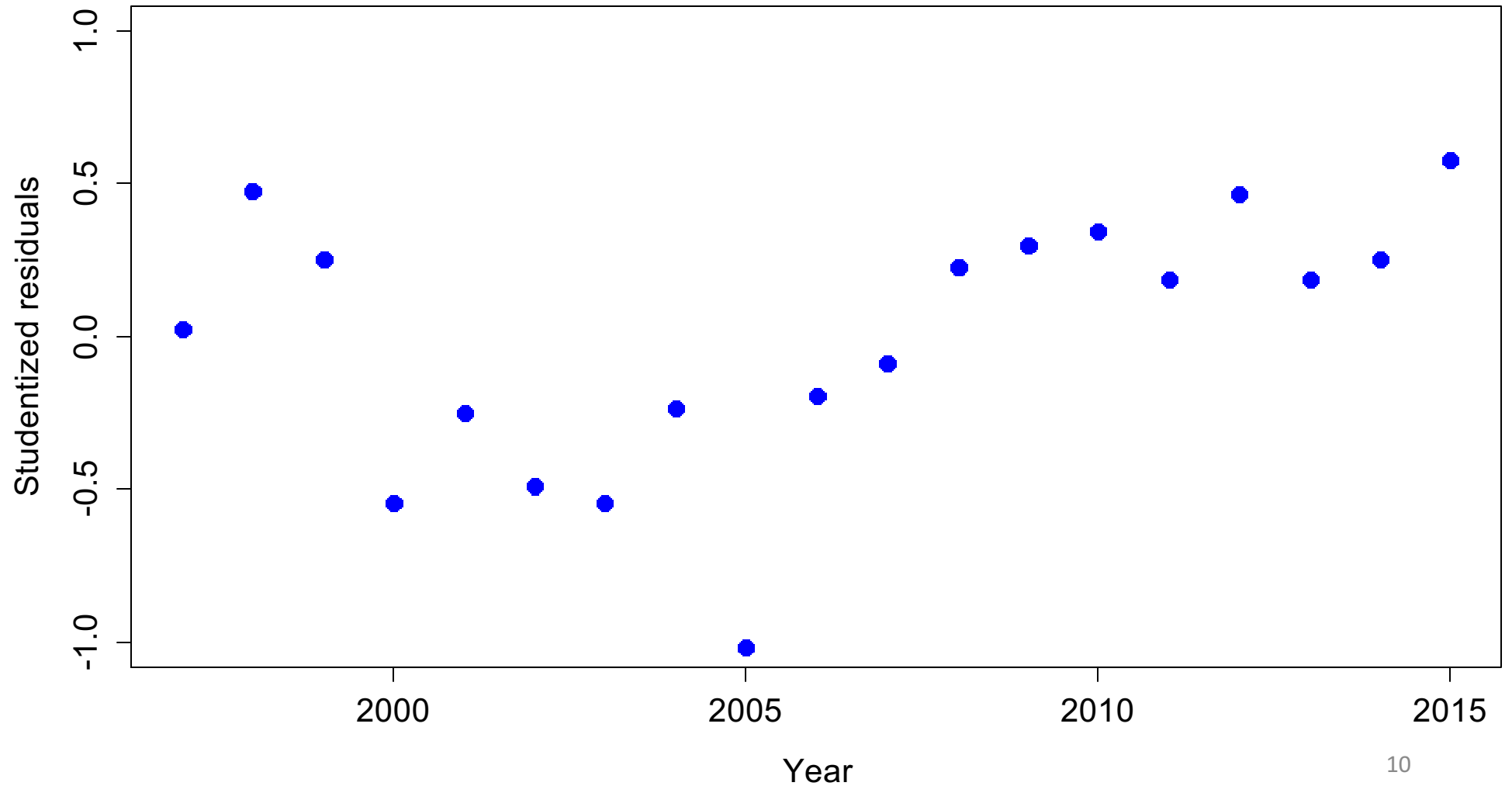
Comparison of three halibut indices



# Combining indices

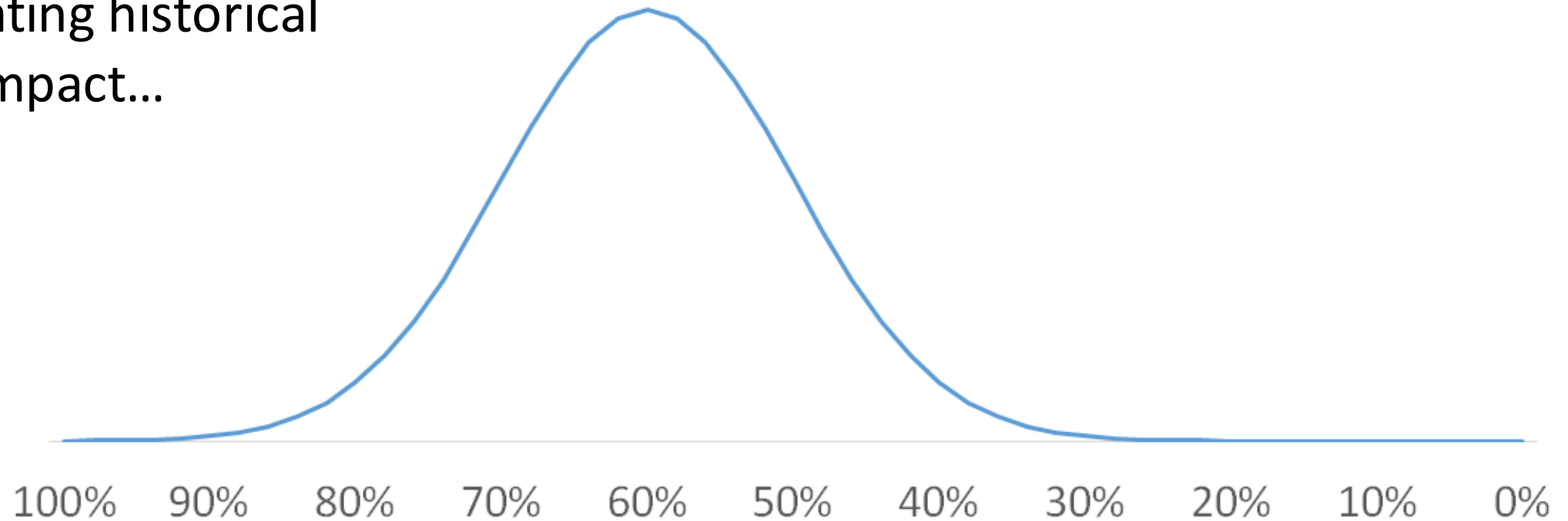
- Inverse variance weighting

Combined normalized halibut index



# SPR considerations...

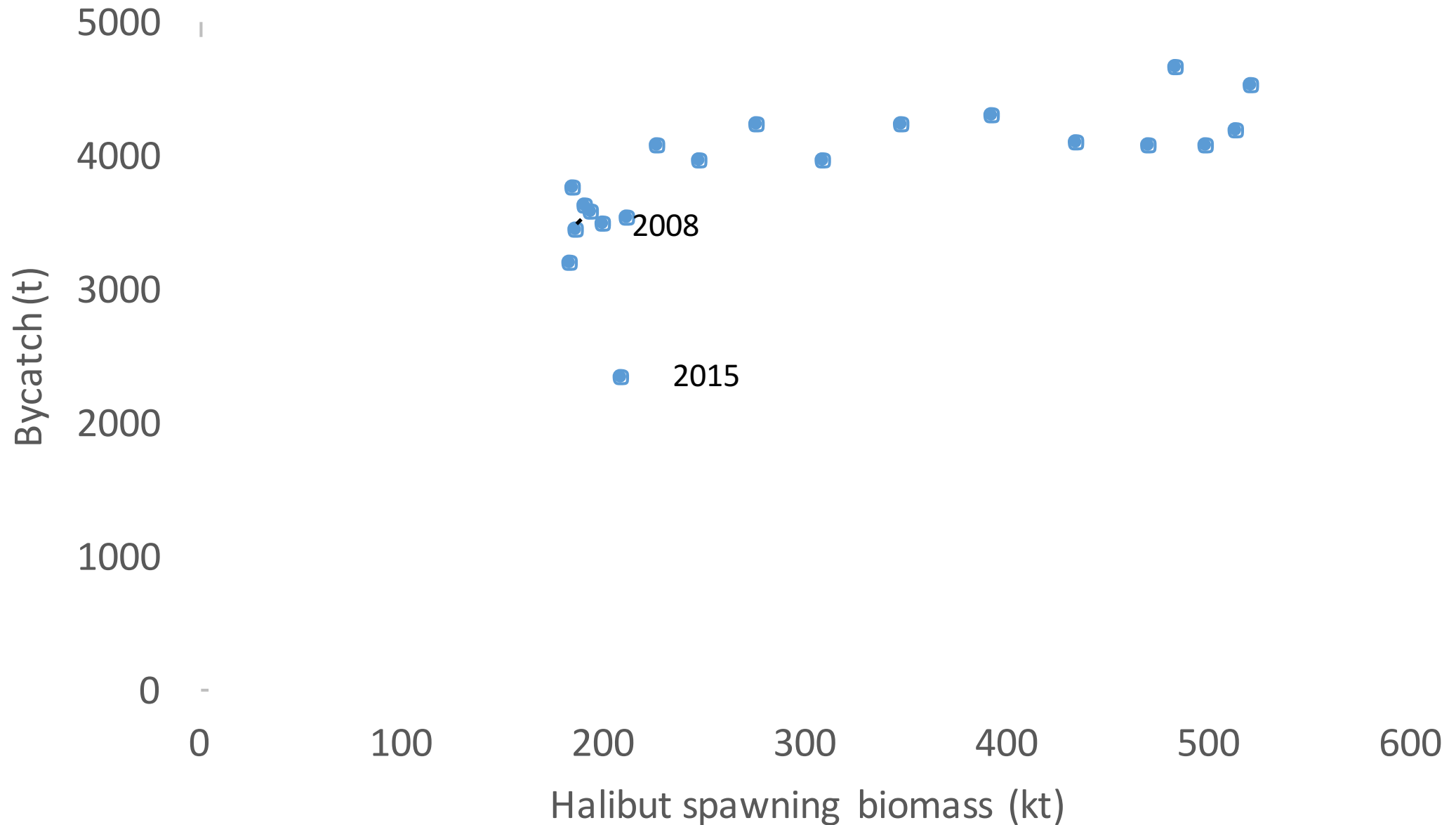
Example of presentation approach  
for evaluating historical  
bycatch impact...



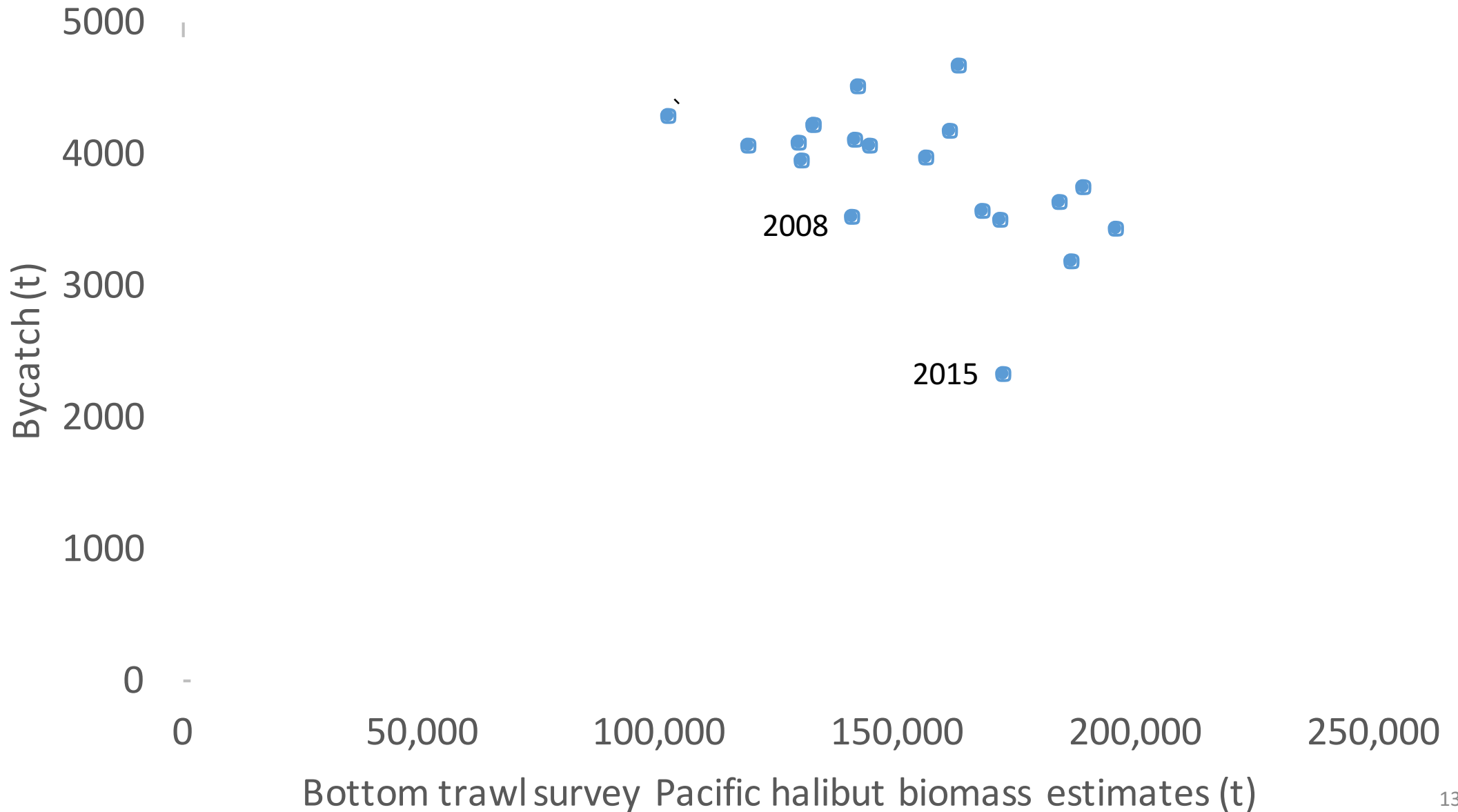
*Note that these computations and estimates are presently unavailable*

**Increasing fishing mortality**

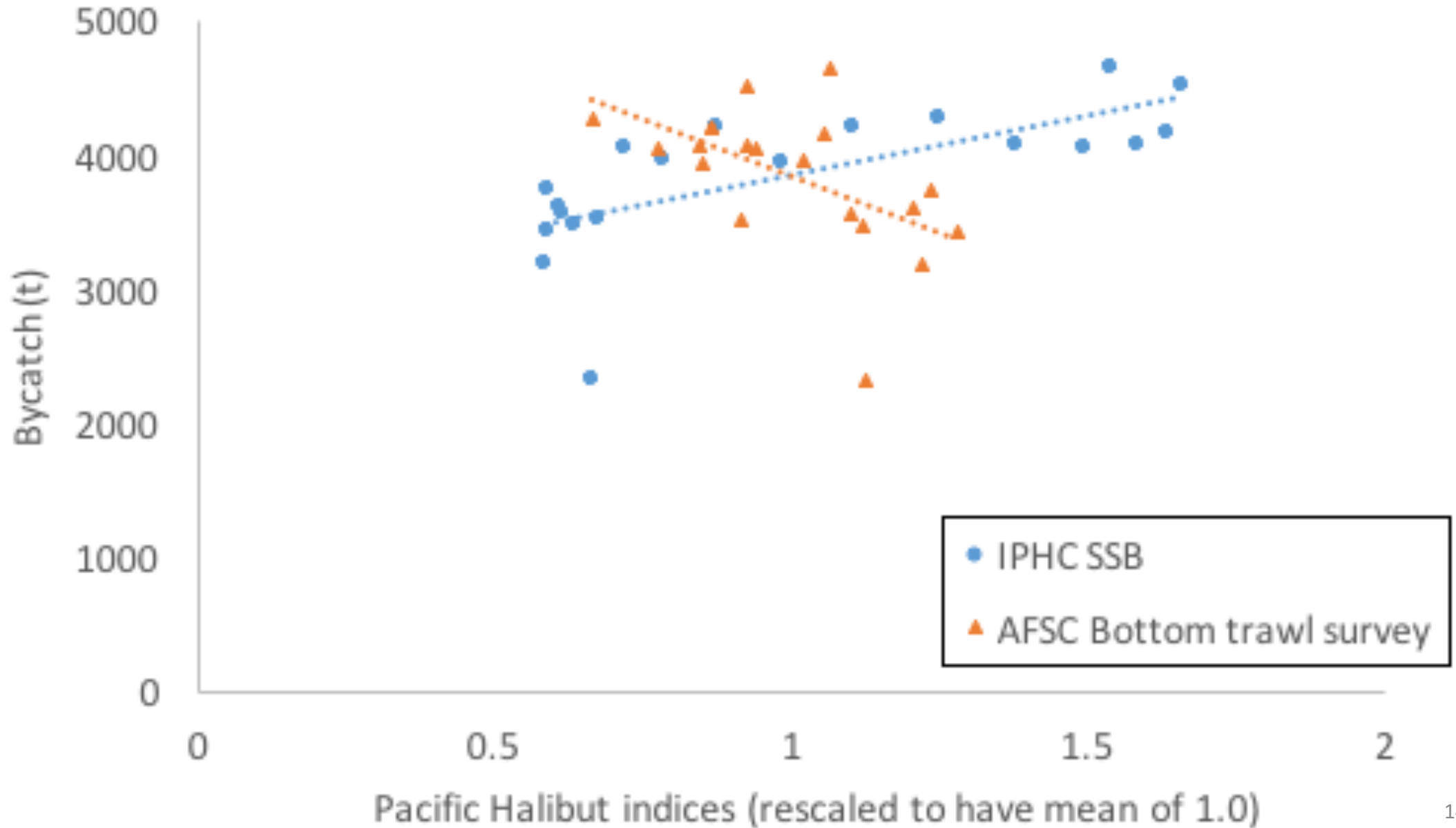
# IPHC spawning biomass compared to bycatch



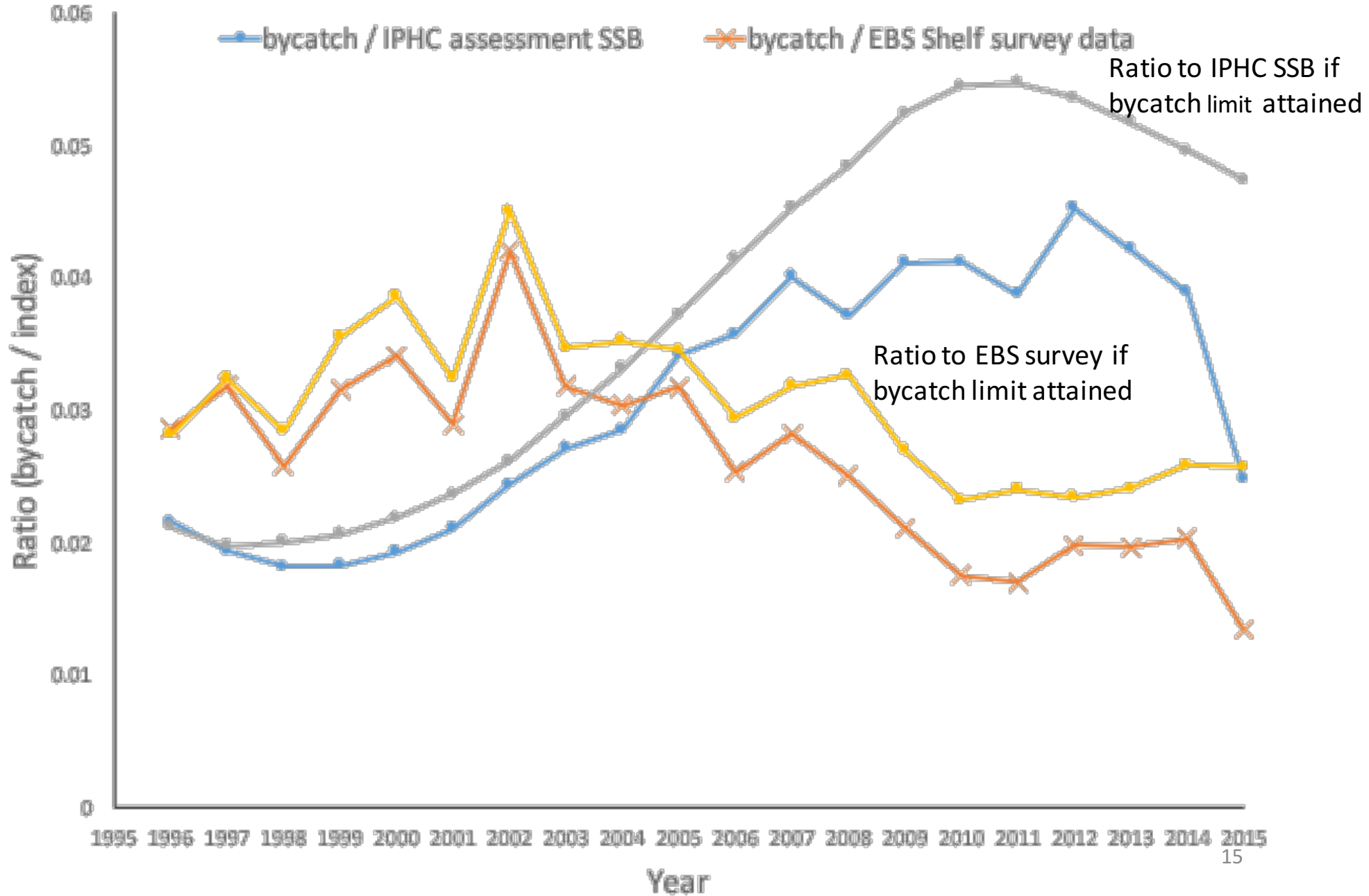
# EBS Trawl survey biomass compared to bycatch



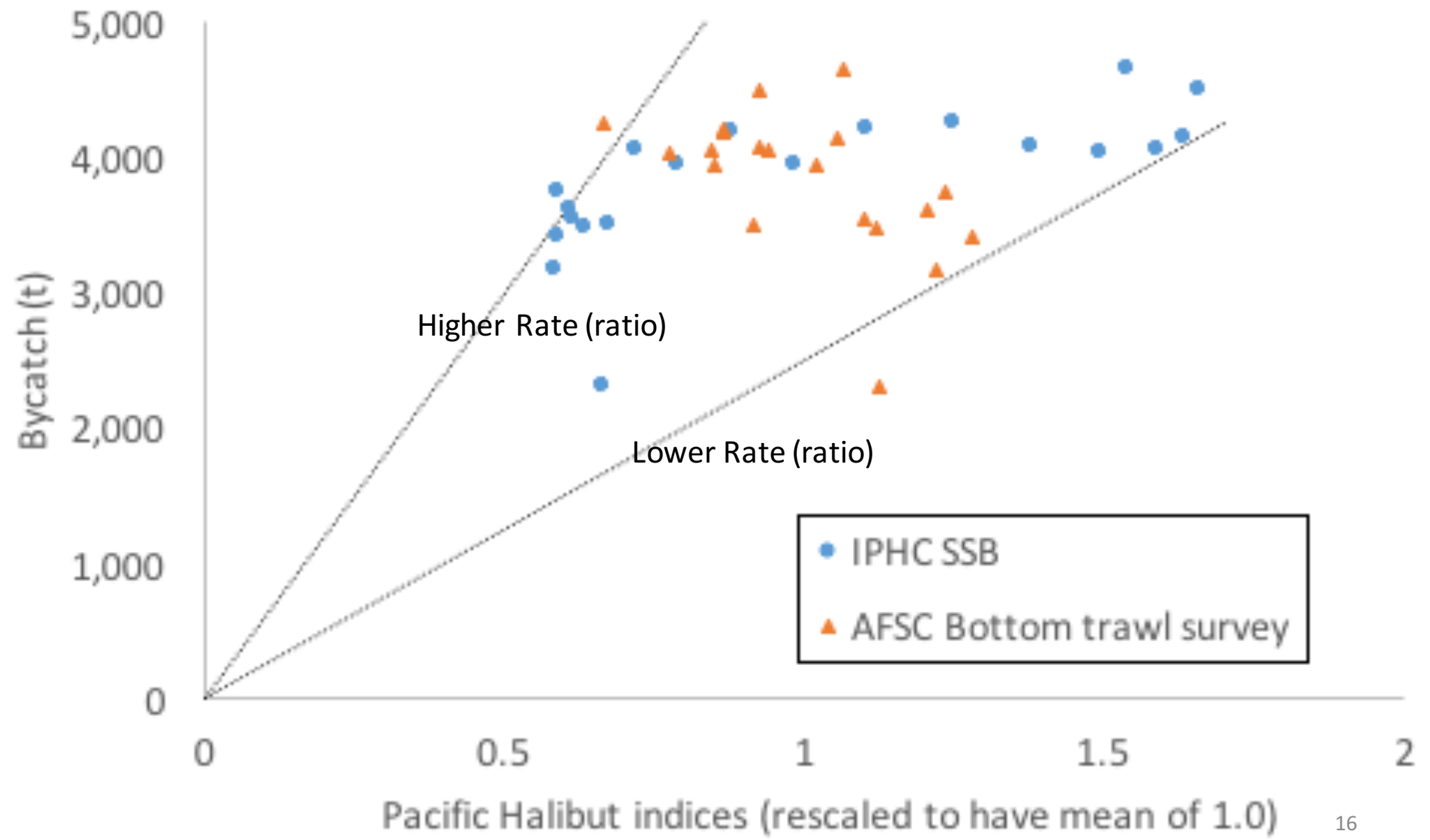
# EBS Trawl survey biomass compared to bycatch



What  
if Limit  
Reached?

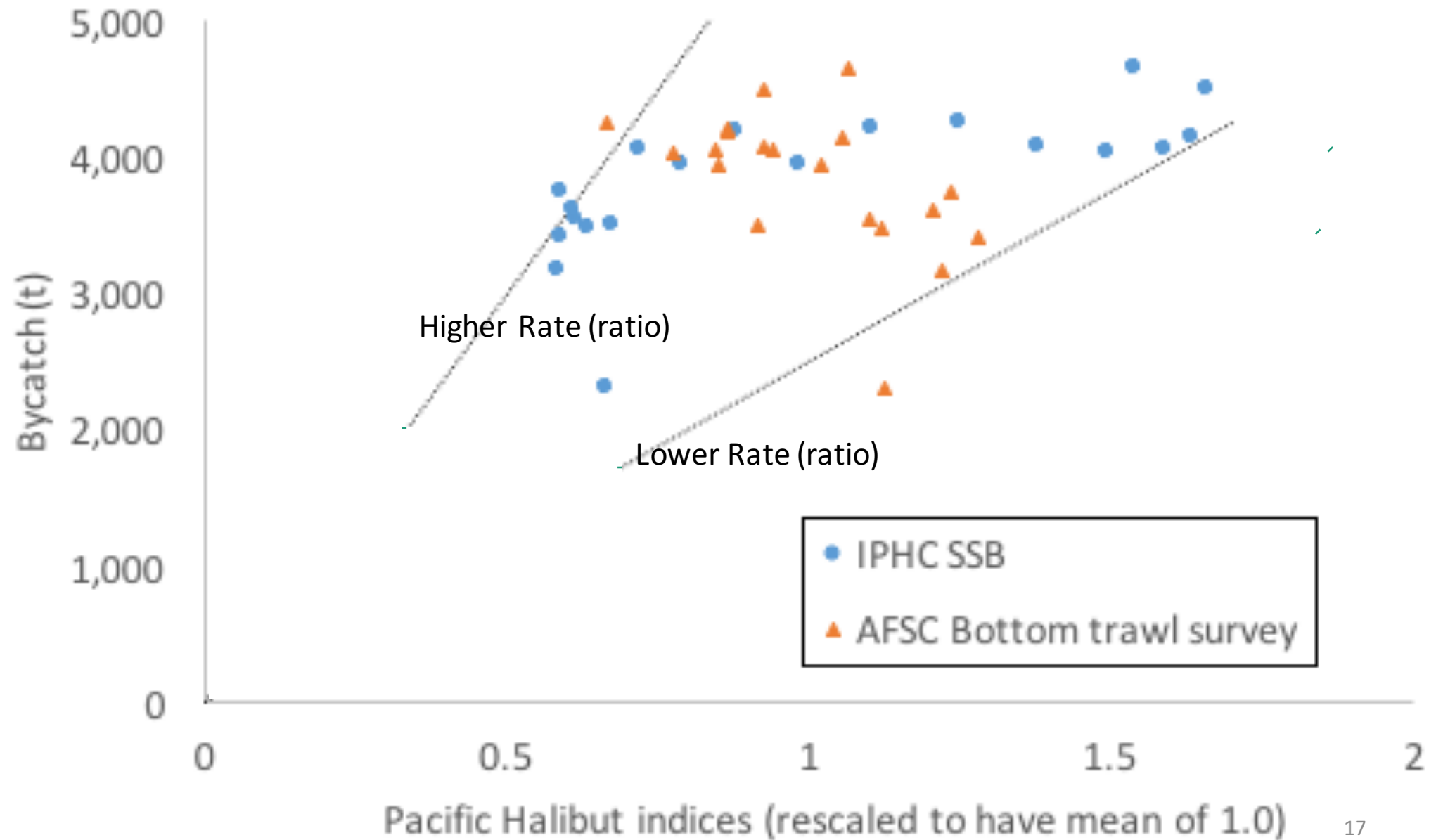


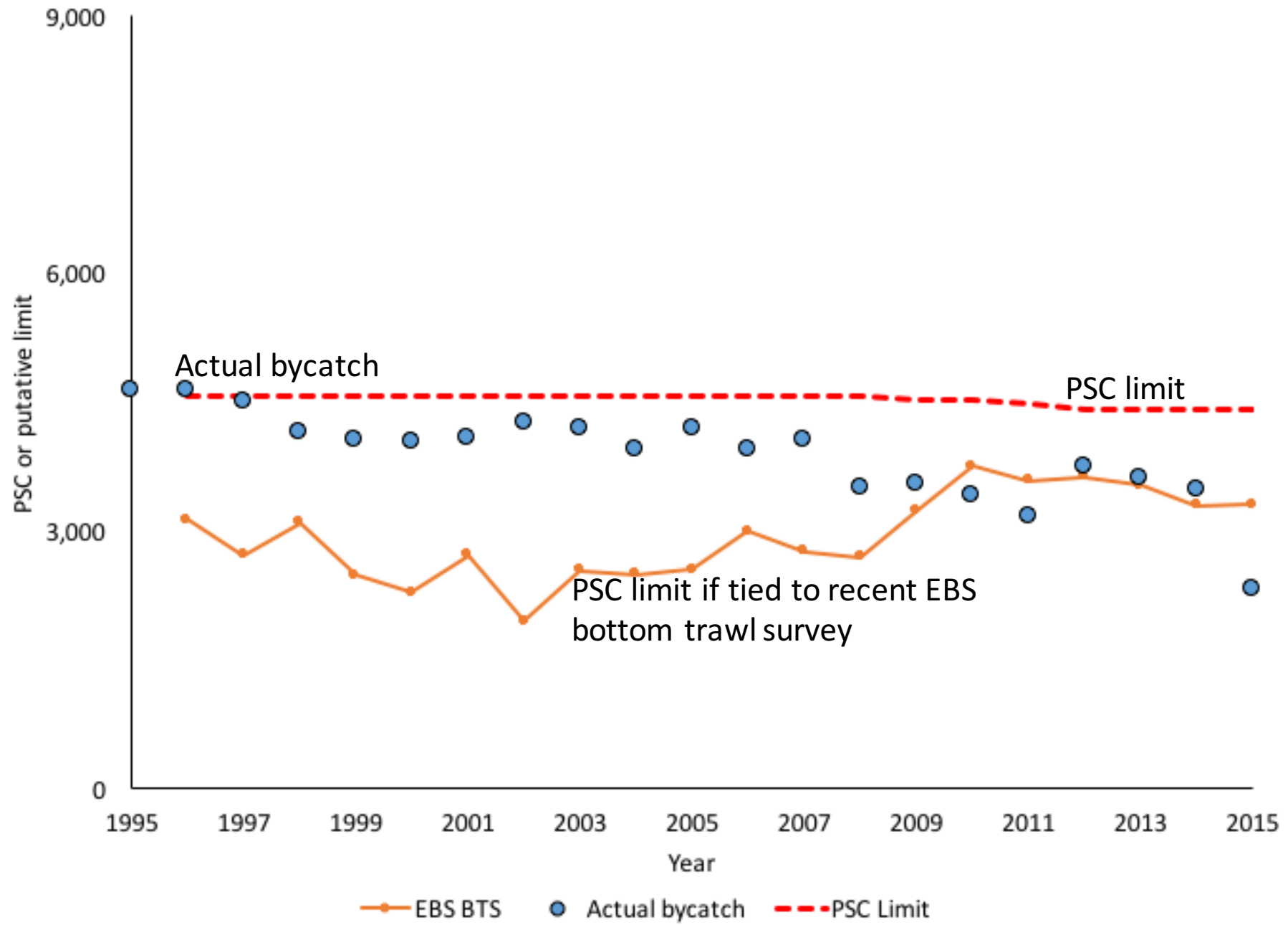
# "Rates" relative to some indices...

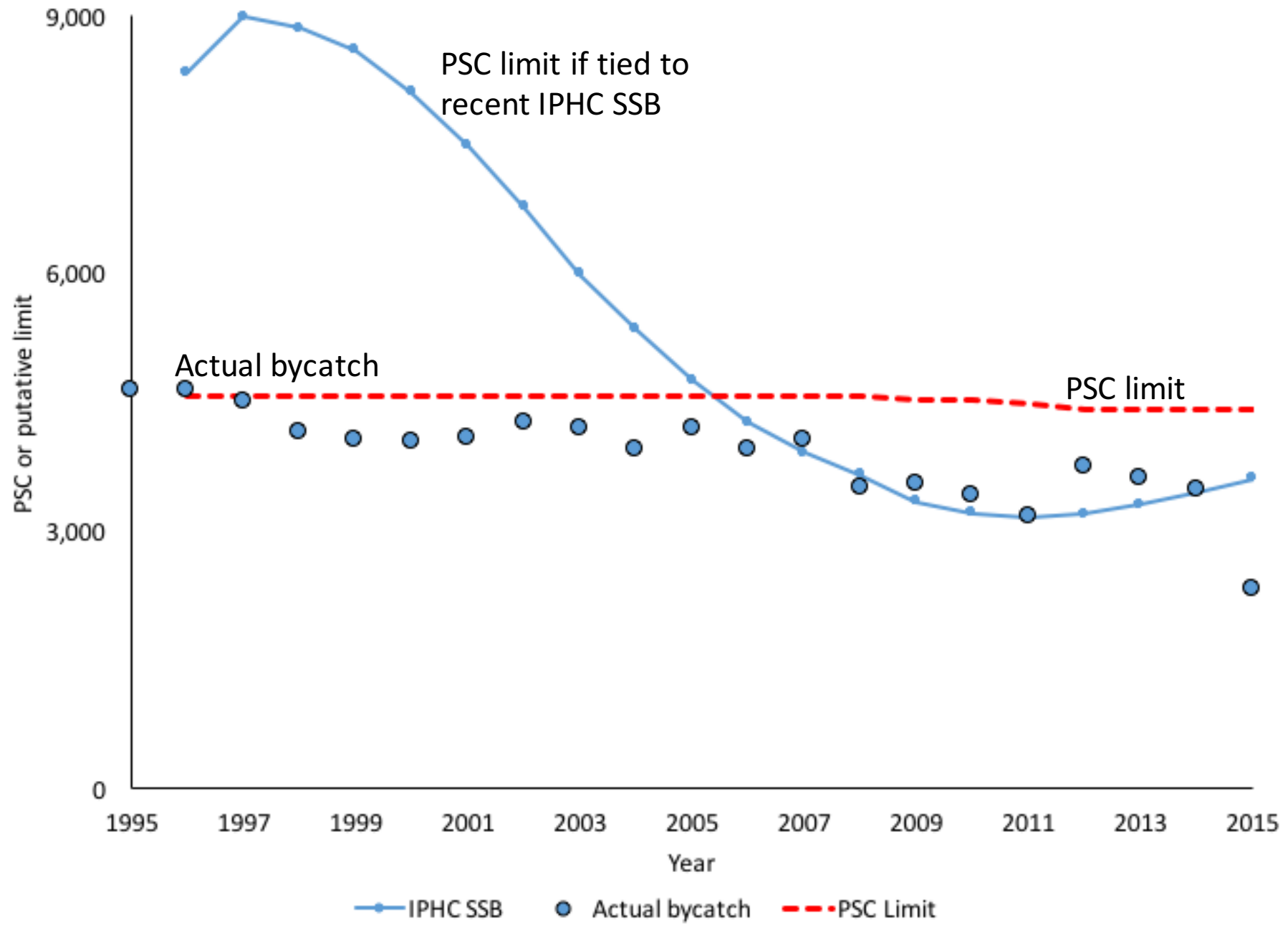


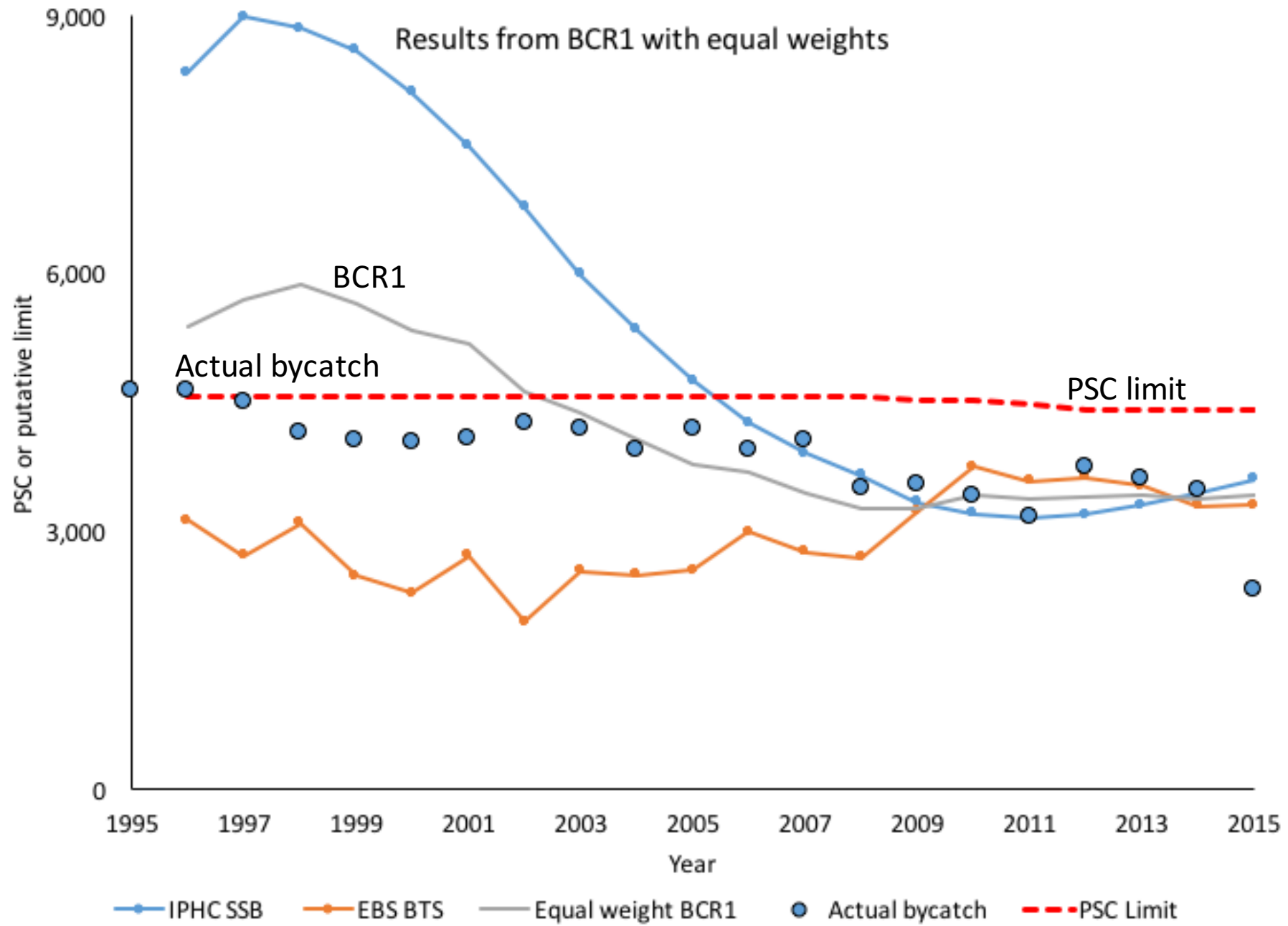


# "Rates" relative to some indices...with limits









# Issues

- Clear objectives ideal
  - And best performance metrics to be used to evaluate BCRs
- So far all in biomass units...
  - Converting to historical numbers of bycatch requires estimation framework
  - Framework also needed to estimate historical (and future) SPR impact
  - DMR estimates used
- Extent that alternatives can be analyzed...
  - One approach is w/ MSE work presented by Dr. Kotaro Ono
  - Set up to include simplified Pacific halibut dynamics

Technical interactions model

Simulate management process

Management Decisions



Human Activities

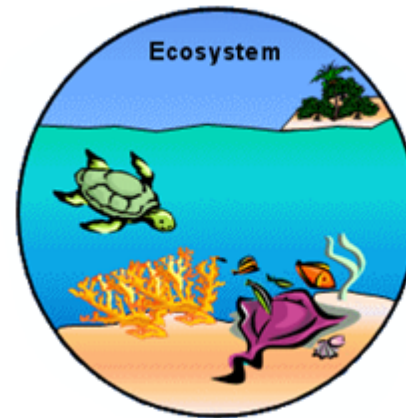


Current MSE Layout

Assessment



Simulate System Dynamics = Operating Model



Observations



Simulate assessment process

Modified from: CSIRO, Australia

# Performance metrics?

## SSC recommendations for evaluating candidate control rules?

- Will also be contingent on Council articulating their objective of this action

## Some considerations might be

- Implementation ease (computation and regulatory)
- Relative SPR impact on Pacific halibut stock
- Groundfish fishery impacts
- Inter-annual variability in PSC limits

# DMR issues

## Could use RO-like estimates for PSC setting from the CR

- Impact based on “refined” estimates after all the observer data is compiled
- Evidence of estimation bias?

## Uncertainty in DMR estimates?

- If so, what basis should be used for ascertaining the uncertainty?

## PSC with and without DMRs

- Implication for incentives...



# Council decision points for development of alternatives, elements and options

- Form of control rule
  - Slope
  - Thresholds (perhaps based upon Pacific halibut assessment benchmarks)
  - Floor and/or ceiling on harvest rate
  - Relative weights on components of the control rule
- PSC Limits based numbers or weight of Pacific halibut
- Accounting with or w/o DMR
- Allocation (e.g., status quo or refined based on reproductive impact)
  - Modifying sectors, target fishery, seasonal, allocation

# Workplan

## IPHC actions/review

- May/October 2016: Science Review Board: Review of discussion paper; MSE review(?) MSAB review of discussion paper; recommendations to IPHC/Council
- December 2016: IPHC interim meeting: Review/comment on alternatives to Council
- January 2017: IPHC meeting: Update from Council; Review/Comment on alternatives and integrated analysis with MSE; comments to Council

## Workplan to develop alternatives for analysis

- April Council meeting:**
  - Review discussion paper
    - Action as needed
  - (Related) review DMR progress
- October 2016 Council meeting:**
  - Develop alternatives
    - Control rule
    - Abundance estimate
  - Additional requests for next paper as needed
- December 2016 Council meeting:**
  - Further alternative development:
    - PSC allocations
  - Adopt/revise suite of alternatives/ Initiate analysis (T)
- February 2017 Council meeting:**
  - Adopt/revise suite of alternatives/ Initiate analysis (T)
  - Adopt timeline
  - SSC review of analytical workplan

## Council actions/review

- April: Council action on discussion paper; requests to analysts for October
- October: Receive MSAB and SRB comments (?)  
Action on development of alternatives  
MSE review by SSC/AP/Council; Comments to IPHC?
- December: Input from IPHC(T); Revise and/or finalize alternatives
- February 2017: Revise and/or finalize alternatives  
Adopt timeline for initial review  
SSC review of analytical workplan