

# Updated spatial analysis of BSAI blackspotted/rougheye exploitation rates

Paul Spencer



## Background

In 2013, report on spatial analysis of survey and fishery data was presented to the BSAI Plan Team.

The report identified 1 genetic and 6 non-genetic attributes related to the estimated low abundance and relatively high exploitation rates of blackspotted rockfish in the western Aleutian Islands.

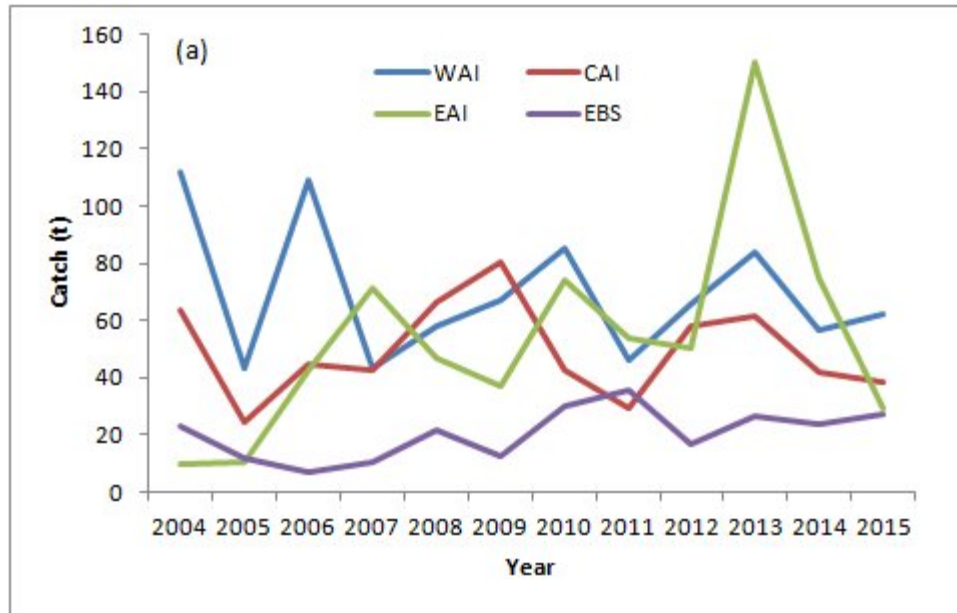
The BSAI Plan Team found the information "*compelling*", and expressed "*more concern over the local exploitation of this assemblage than other stocks that have been subjected to the stock structure template*".

The Team requested updates of the 7 metrics for the September, 2014 meeting. At this meeting, the BSAI Plan Team "*recommends continued annual reporting on the status of the population in each management area*".

# Outline

- 1) Updated data on catch and distribution of catch
- 2) Calculation of mean age by area
- 3) Introduction of additional exploitation rate reference point, and comparison to observed exploitation rates
- 4) Management activity

# Updated catch information

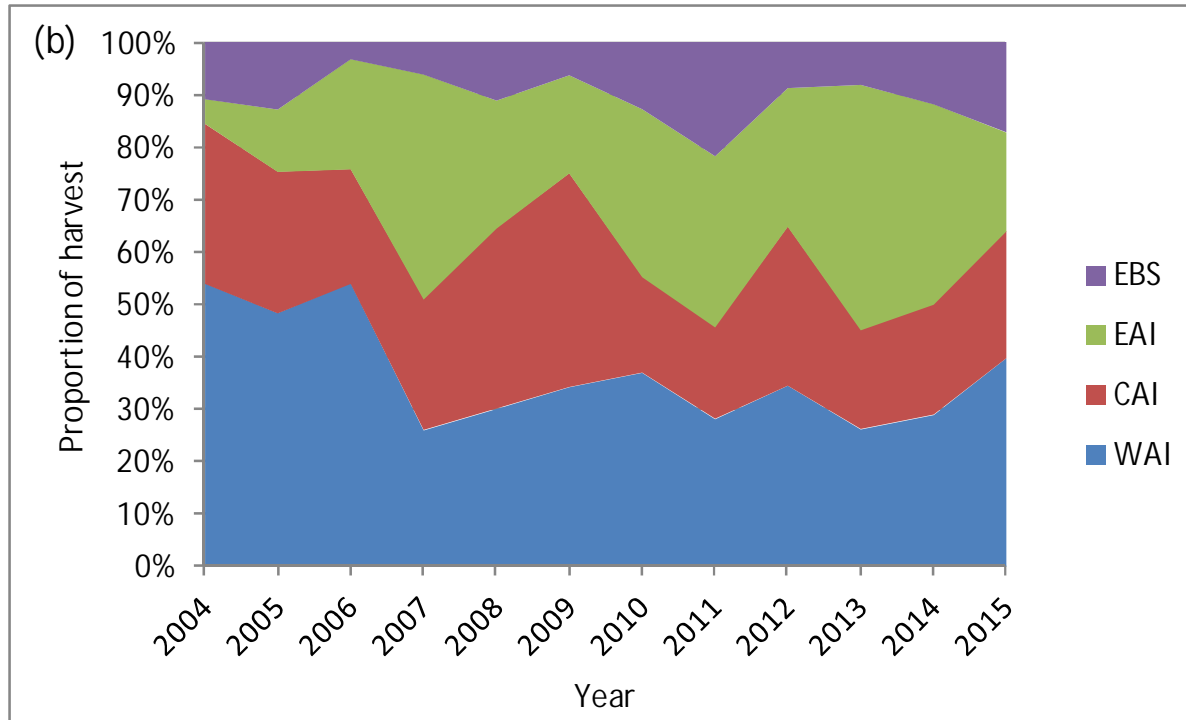


The 2015 catch in the western AI (WAI), through August 29, was 62 t.

This exceeds the 2015 WAI “maximum subarea species catch” of 46 t.

Catches in the eastern Bering Sea have been increasing in recent years.

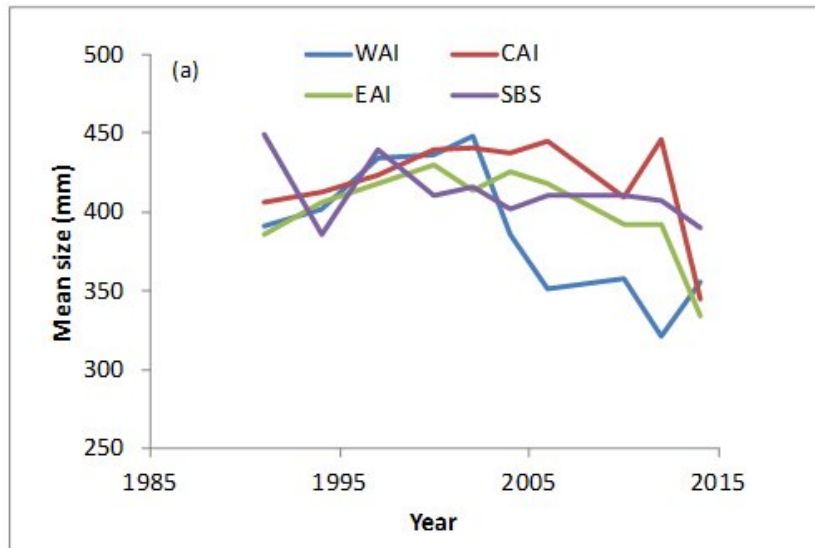
# Distribution of catch



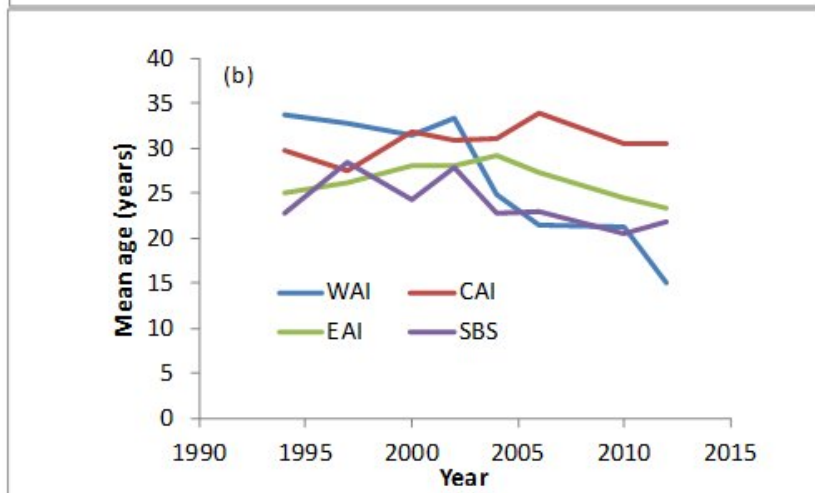
Relatively stable, although the proportion in the eastern AI has increased. The area with the highest proportion of the catch is the WAI.

# Calculation of mean age from in trawl survey data

Mean size has been presented earlier, but not mean age



The data on mean size and age are consistent with each other, and show declines in the WAI



I am mentioning this because one of the assumptions of our exploitation rate reference point (UF40%) is that the age structure is equivalent between subareas

# Exploitation rate reference points

$U_{F40\%}$  - a reference value that is the exploitation rate that would occur from fishing at  $F_{40\%}$

Comparing the subarea exploitation rates to  $U_{F40\%}$  assumes that:

- 1) The age structure is equivalent between subareas

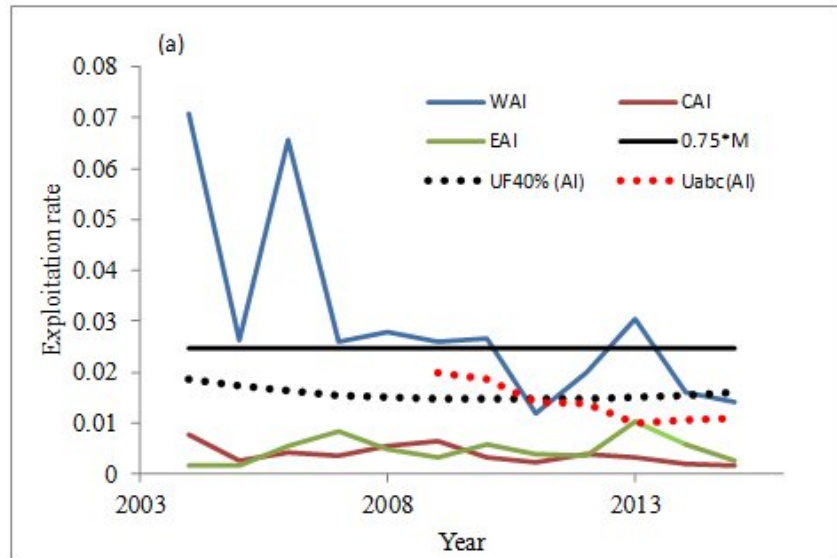
*This is not likely to be true for AI blackspotted/rougheye, but it difficult to resolve without an spatially-explicit population model.*

- 2) The actual catch recommendations were based on fishing at  $F_{40\%}$

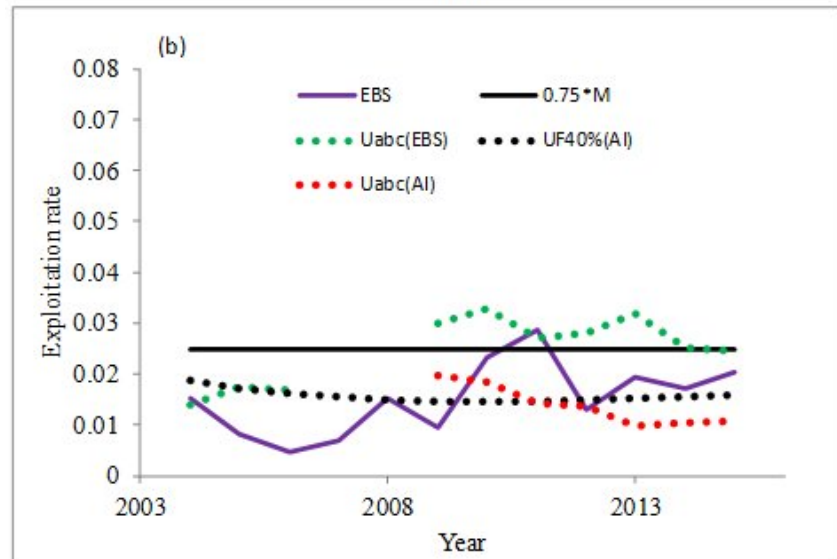
*This is also not true for AI blackspotted/rougheye because they have been determined to be a Tier 3b stock (i.e., the  $F$  rates used for management advice have been less than  $F_{40\%}$ ). This can be resolved with reference point  $U_{abc}$*

$U_{abc}$  - the exploitation rate that results from removing the recommended ABC from the *current* estimate of beginning year biomass.

# BSAI blackspotted/rougheye exploitation rates



The 2015 WAI exploitation rate is just below  $U_{F40\%}$ , but above  $U_{abc}$



Catch advice for the EBS area is based on Tier 5 calculations.

The recent exploitation rates have been below the EBS  $U_{abc}$ , but above the  $U_{F40\%}$  and  $U_{abc}$  computed for the AI model.



# Management Response in 2013

## Moving towards subarea ABCs

Nov 2013 Plan Team - *"If the SSC concurs with [ a ranking of 'strong concern'], the Team anticipates a management response in 2014".* In the September, 2014 meeting, *"the Team will review the WAI stock status again and evaluate the effect of any management response in 2014".*

Dec 2013 SSC - *"The SSC shares [the Plan Team's] concern and agrees with the Plan Team recommendation to have the authors update the seven reasons for concern and bring this forward in 2014 for consideration of separating the WAI ABC from other sub-areas".*

In late fall, the trawl fishery volunteered to take steps to reduce bycatch for 2014.

# Management Response in 2014

## Creation of an additional type of management recommendation

October, 2014 SSC – *"The SSC recommends that a recommended area specific catch level [be provided] when a stock or stock complex is elevated to the level of 'concern'. This would provide a clear guide to industry regarding what reductions in catch would be needed to alleviate the 'concern'".*

November, 2014 Plan Team – *"The Teams recommend that any suggested subarea catch level be reviewed by the respective Team, be obtained in a **transparent** process, and be **accessible to the public** so that **progress in meeting management goals can be easily monitored**. The term "maximum subarea species catch" was proposed as a label for subarea harvest recommendations that are not included in the OFL/ABC specifications."*

# Management Response in 2014

Adopted scale of concern in the context of the Council's stock structure and spatial management policy

BSAI blackspotted/rougheye rockfish have been ranked as "strong concern", which require that steps 2 and 3 of the Council's process "must be activated". These steps are:

*2) With input from the agency, the public, and its advisory bodies, the Council (and NMFS) should identify the economic and management implications and potential options for management response to these findings and identify the suite of tools that could be used to achieve conservation and management goals. In the case of crab and scallop management, ADF&G needs to be part of this process.*

*3) To the extent practicable, further refinement of stock structure or other spatial conservation concerns and potential management responses should be discussed through the process described in recommendations 1 and 2 above.*

## Current spatial management policy

Desired outcome (SSC December 2014) – *"scientifically-based and transparent process for determining subarea harvest recommendations and allow better tracking in meeting the management goals"*

Spatial management of blackspotted/rougheye has the following features:

- 1) The 'maximum subarea species catch' is not reported in the harvest specification table.
- 2) Comparisons between subarea catch and subarea harvest recommendations are not available on Regional office websites (i.e., not easily available to the public)
- 3) In-season monitoring and management has not occurred.
- 4) The Council process for stock structure and spatial management has not been followed.

## Unresolved management issues

- 1) Not clear what the management response is when the 'maximum subarea species catch' is exceeded.
- 2) Not clear if everyone would view the 'maximum subarea species catch' as a management goal (i.e., what is the meaning of this number?).
- 3) Not clear what the roles of the Plan Team are in implementing the Council policy (the November 2013 and November 2014 Plan Team minutes ask for clarification on this, as well as several other issues related to stock structure and spatial management. In December 2014, the SSC recommended that a group be formed to address these issues).
- 4) More generally, not clear who has responsibility for implementing the Council policy.

## Conclusions

- 1) The catch in the WAI for 2015 (62 t) exceeded the 'maximum subarea species catch' of 46 t.
- 2) Catches in the eastern Bering Sea have increased recently.
- 3) The 'maximum subarea species catch' was not reported in the harvest specification table.
- 4) Monitoring subarea catches and tracking progress in meeting subarea management goals is more difficult relative to other stocks with subarea management.
- 5) Following the Council policy on stock structure and spatial management, and addressing the issues raised in the 2013 and 2014 Plan Team minutes, may improve management.