

Will the proposed survey changes be detrimental to the assessment?

(no)

Surfclam

- Survey frequency unchanged
- Estimated abundance more precise

Will this hurt the assessment?

- How could it?
 - Only if distribution shifts – and we have that covered

Ocean quahog

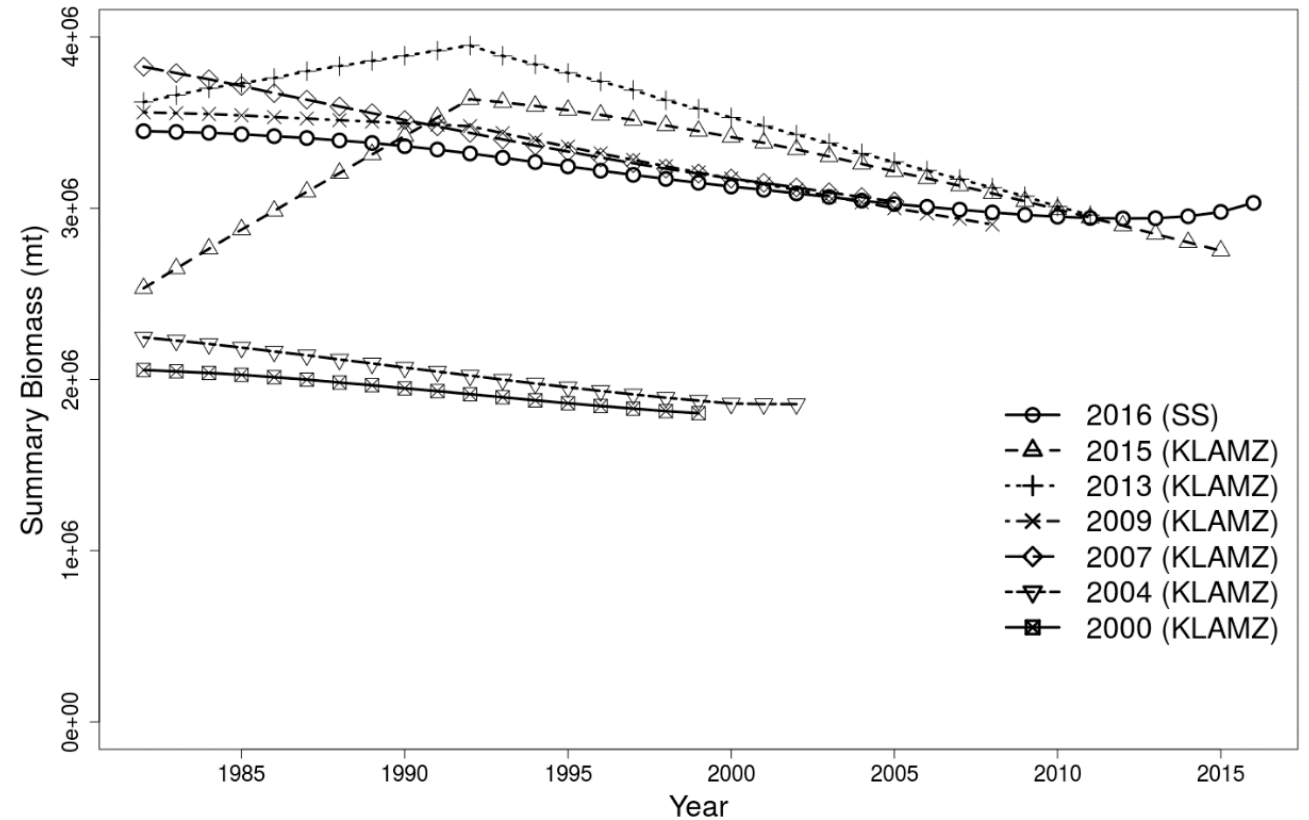
- Survey every 6 years instead of every 3
- Estimated abundance more precise

Will this hurt the assessment?

- Maybe?

Ocean Quahog

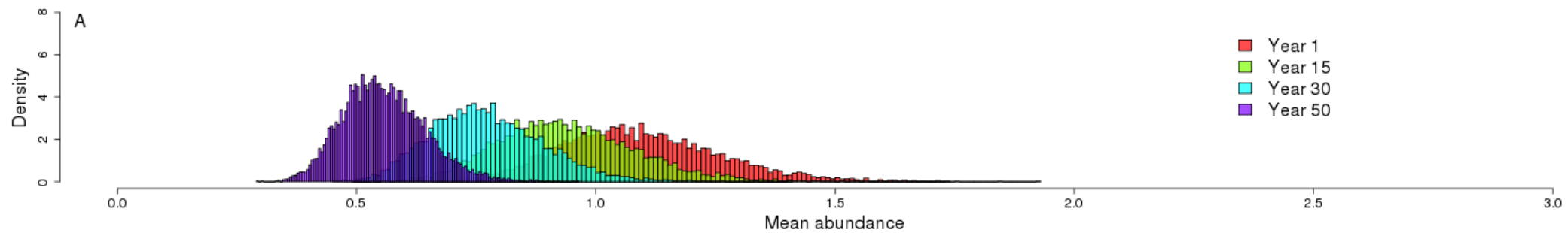
- Don't complicate things...
- Slow growing (reaches commercial size in about 30 years)
- Long lived ($a_{\max} \approx 300+$)
- Lightly fished ($F \approx .01$)
- Age/size structure not changing much
- Assessment can be approximated with linear model



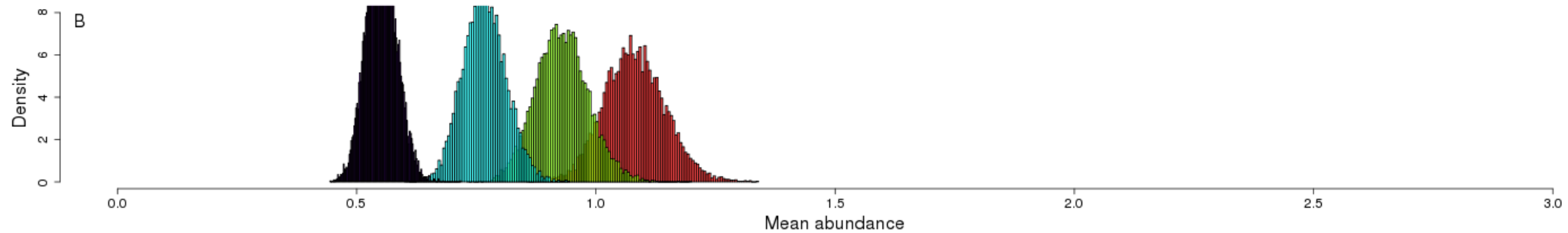
Simulation steps

- Generate distributions of the stratified mean catch density from many surveys.
 - Precision from bootstrap analyses (using current and recommended stratifications)
- Have the population change at a known rate over time
- Take samples from each of the distributions every three years (current) or 6 years (recommended)
- Can we get an accurate estimate of the slope (rate of change over time) from both?
 - Is one better?

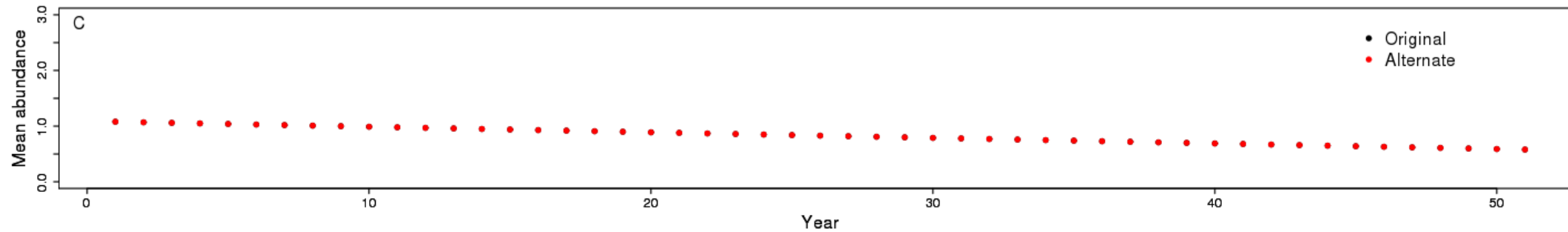
Distributions of abundance original design



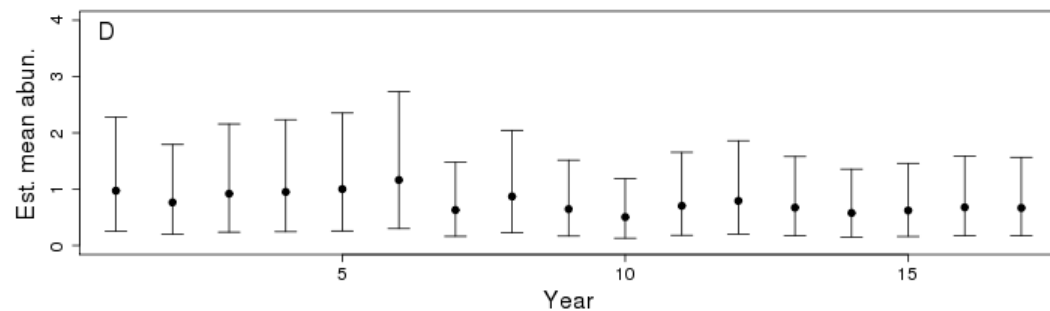
Distributions of abundance alternate design



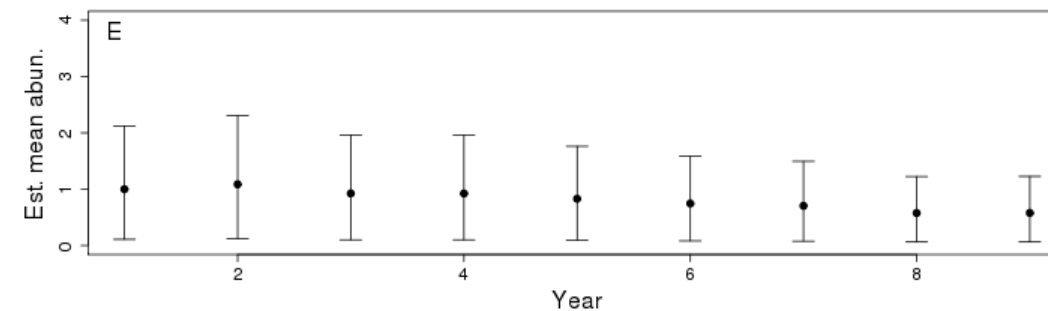
Abundance trend over time (truth)



Current survey

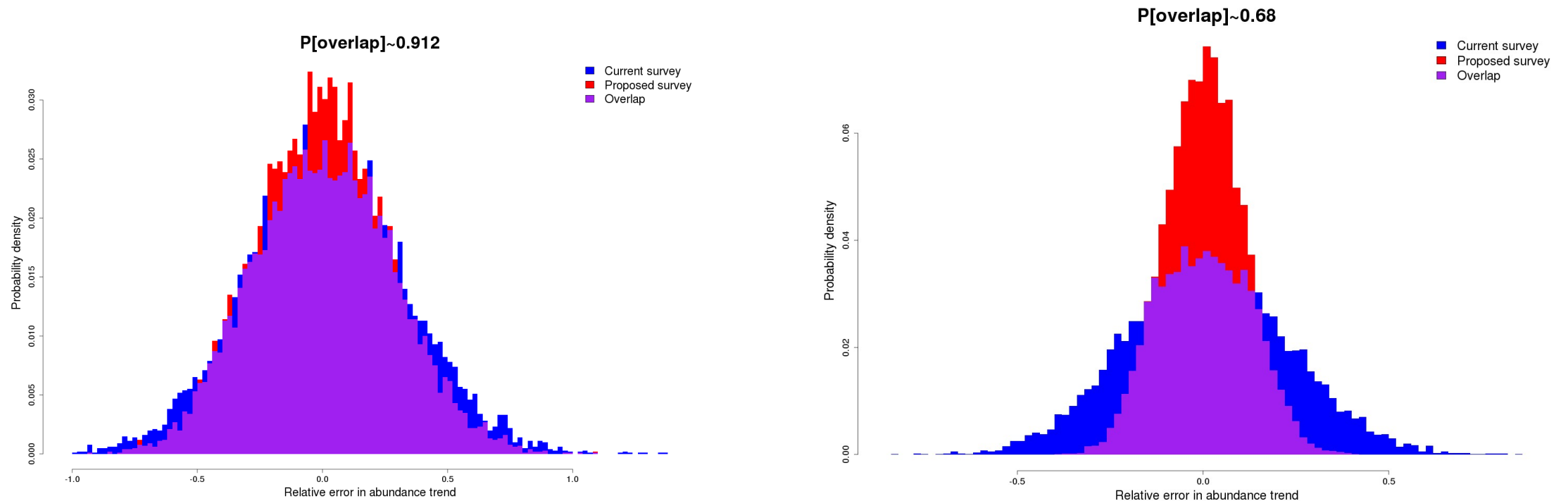


Proposed survey



Results

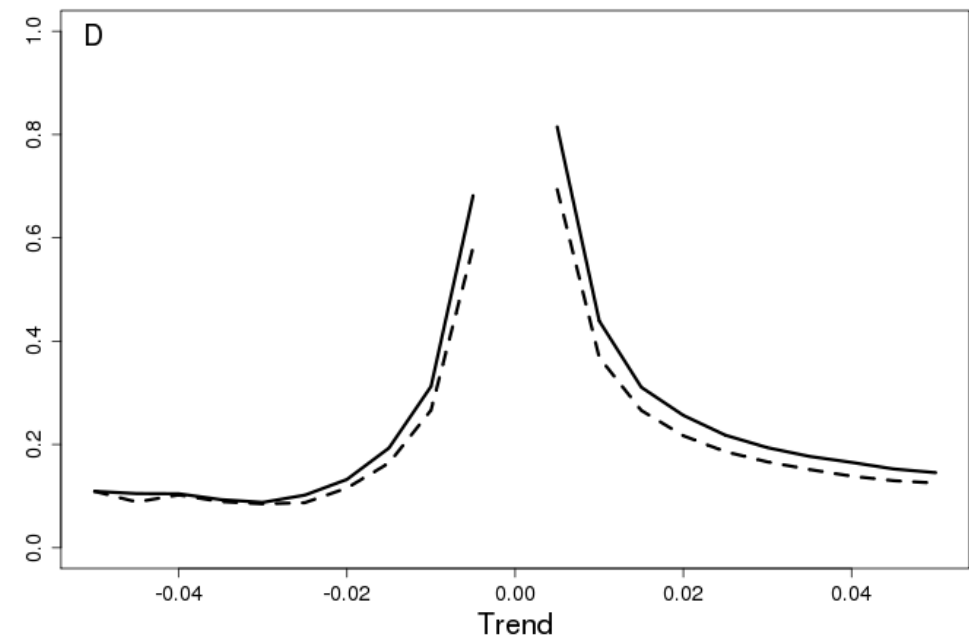
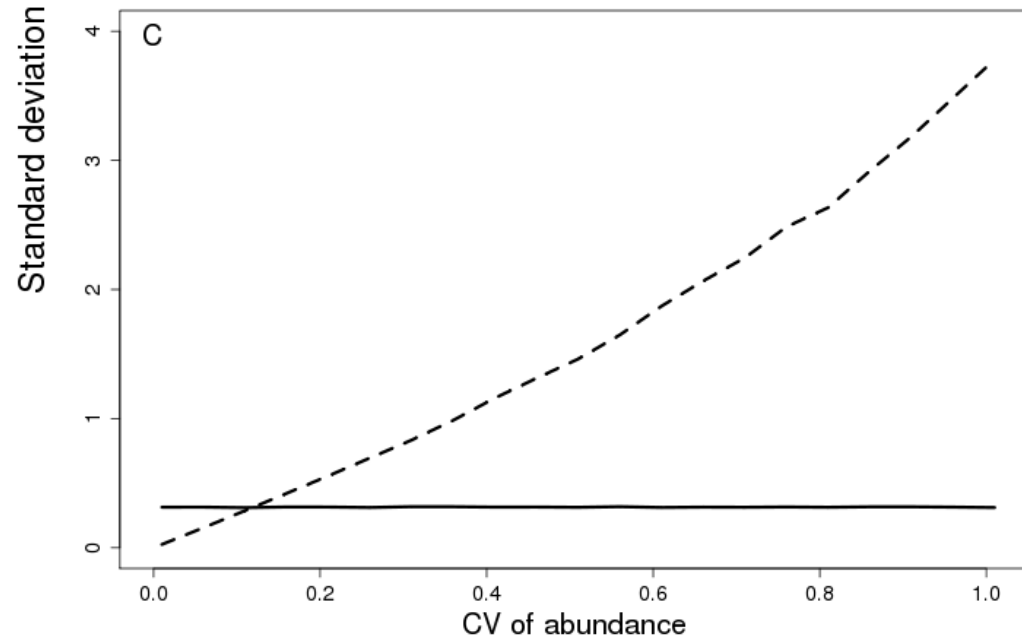
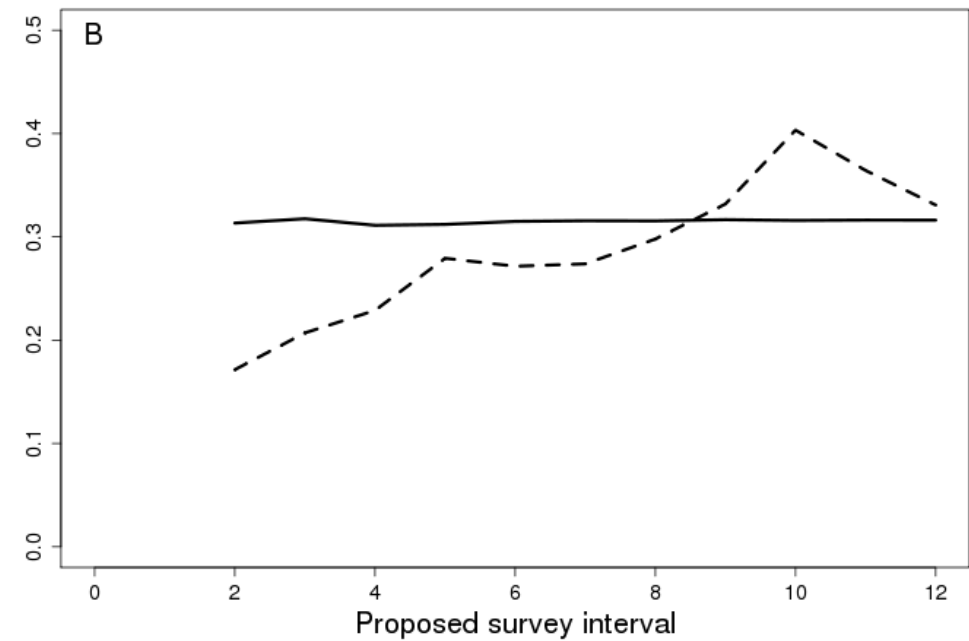
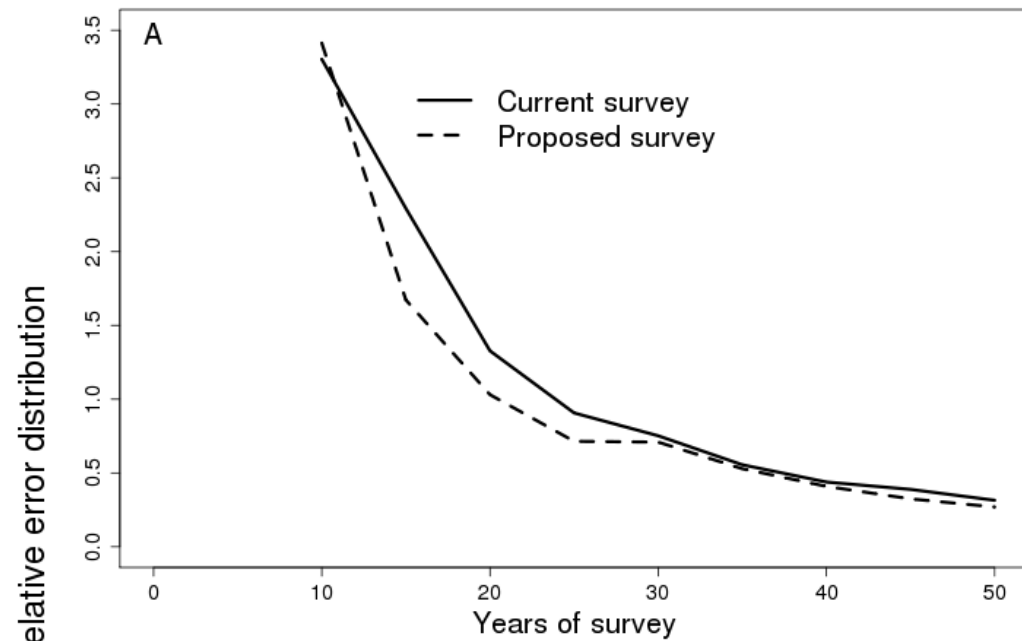
- Compare current and recommended stratifications using relative error.
 - $(\text{True trend} - \text{estimated trend}) / \text{true trend}$



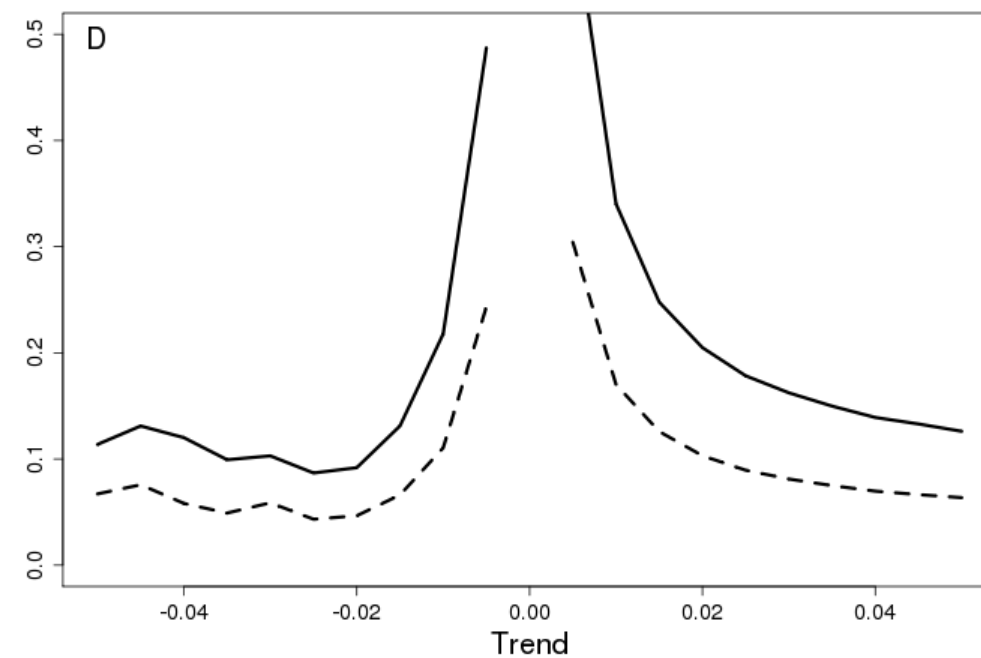
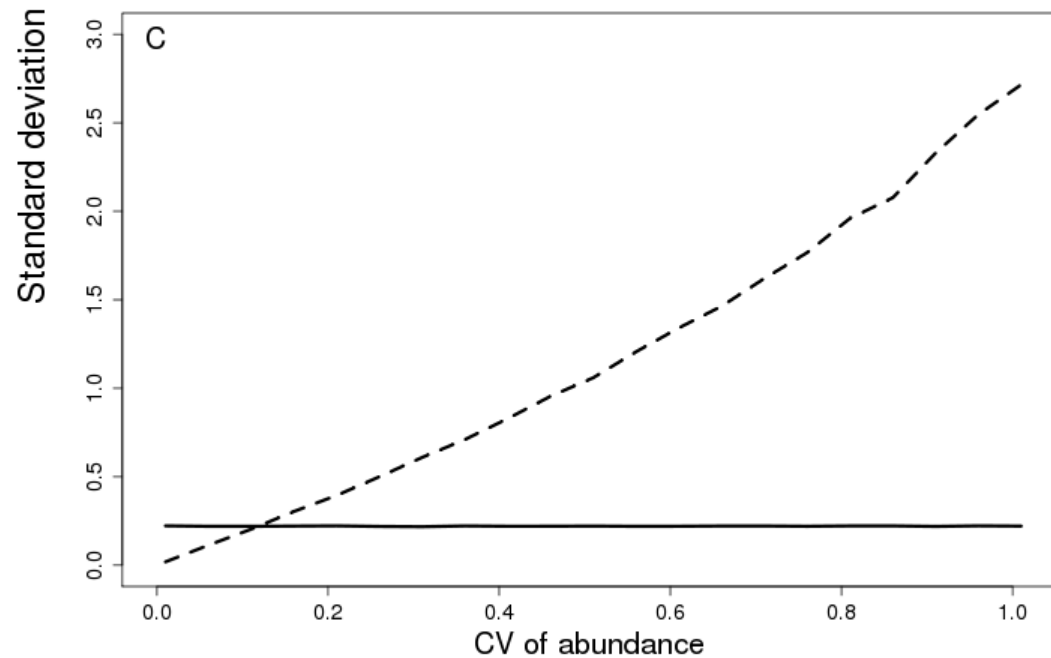
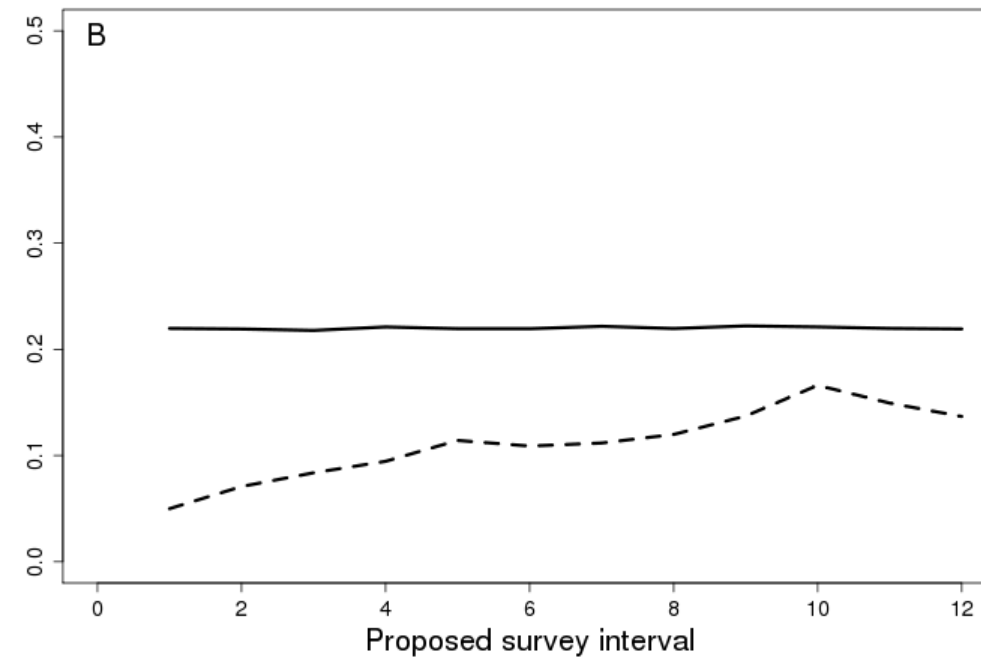
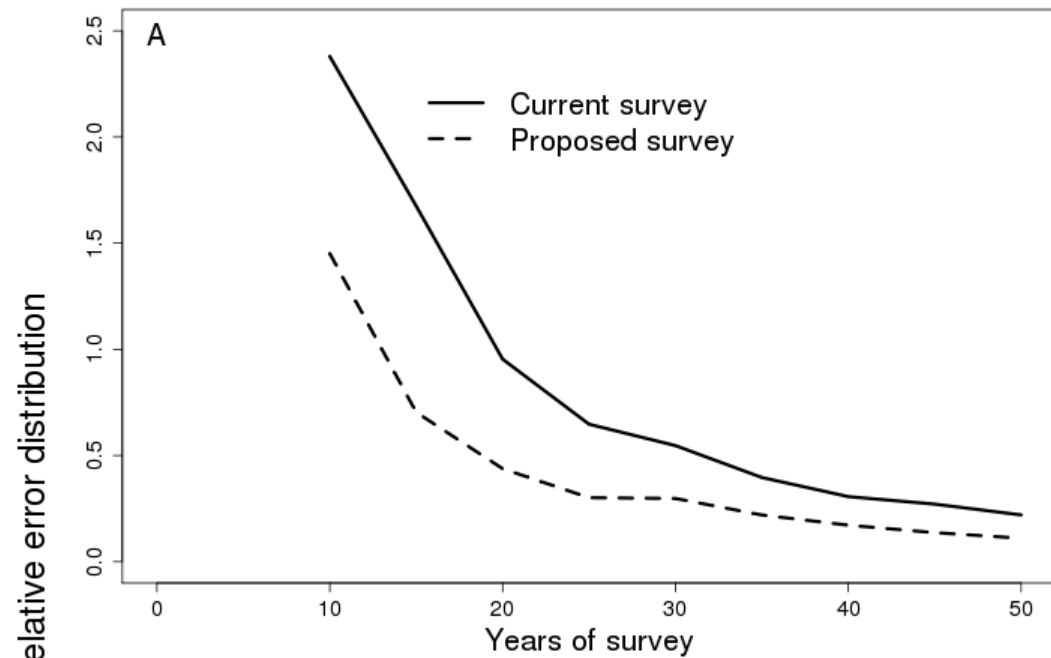
Sensitivities

- Length of survey (12 – 50 years)
- Survey interval (proposed survey)
- Cv of proposed survey
- Strength of trend

North



South



Bottom line: we should do this...

- Proposed changes to survey seem unlikely to hurt either assessment.
 - For SC, increase in precision and no reduction in sampling frequency = benefit
 - For OQ, gains in precision outweigh reductions in sampling frequency (less uncertainty around trend in abundance).
- Increased sample density provides fringe benefits
 - Less travel time
 - Better spatial resolution for understanding things like patch density, spatial correlation in size/age structure and recruitment.
 - Theoretical protection against reduced sea time in future from larger strata.