

# Age Structure, Growth, and Mortality of Eastern Beaufort Sea Belugas: A Comparison Among Canadian Populations

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Canada

ASM 2006

# Healthy EBS Beluga Stock?



- Nearly constant availability of old, large individuals from 1980 to 1999
- Relatively stable abundance estimates until early 90's (although small spatial coverage of surveys)
- Contrasting status of E Arctic stocks
- E Hudson Bay belugas smaller to some others
- How do EBS belugas compare?

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ebs

estuary

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earctic

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earctic

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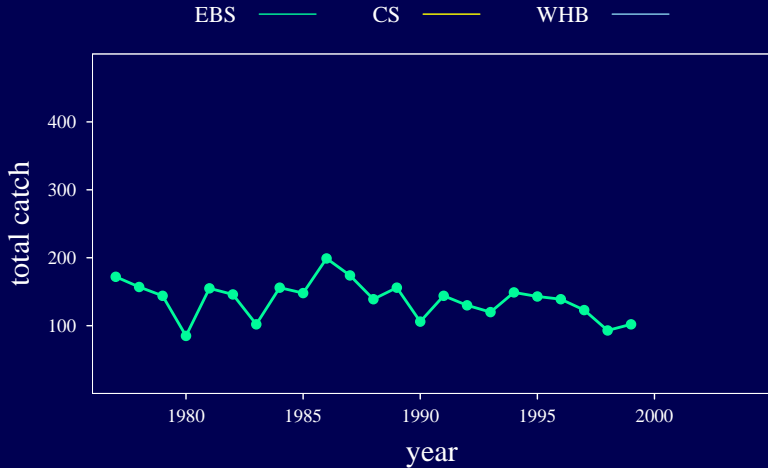
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earctic

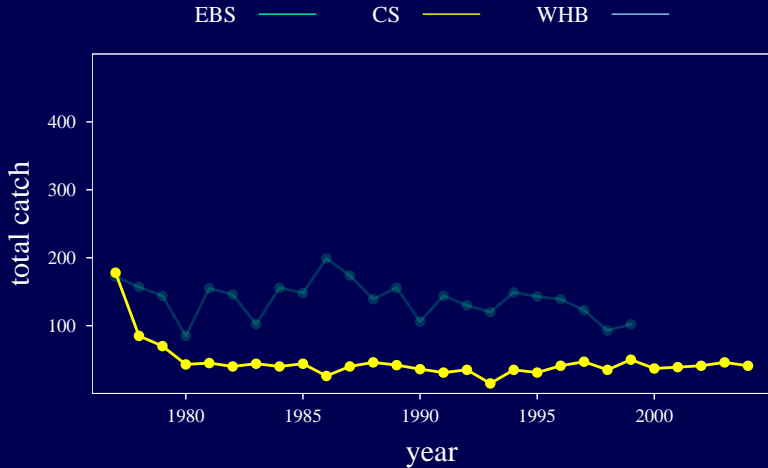
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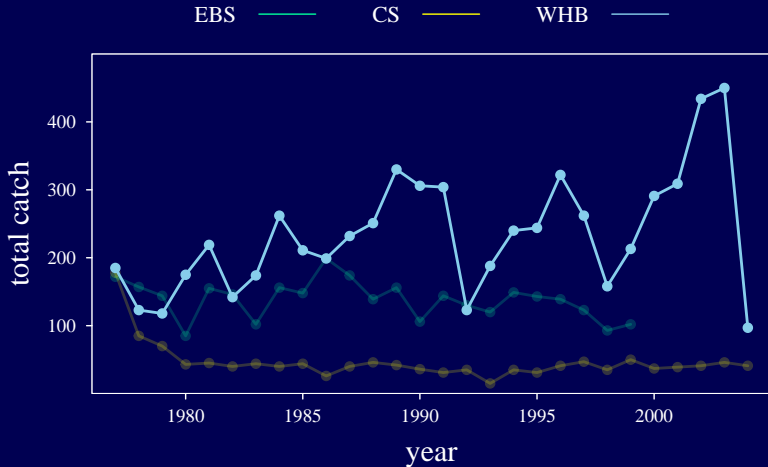
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# Questions Addressed

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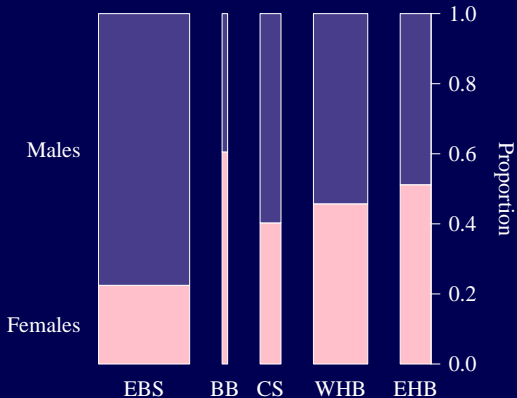
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# Canadian Beluga Stocks Studied

studyarea

# Males caught much more frequently in EBS

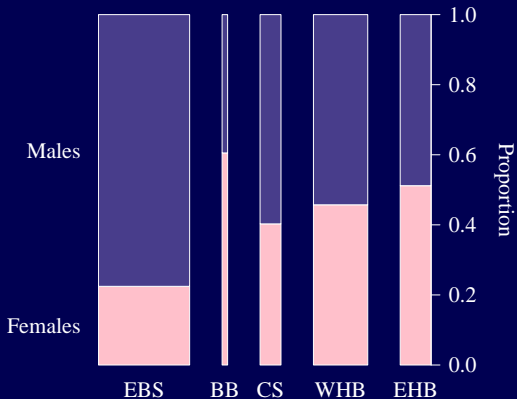


$$\chi^2 = 97.8,$$

Differences due to EBS

Males more frequent in EBS and CS

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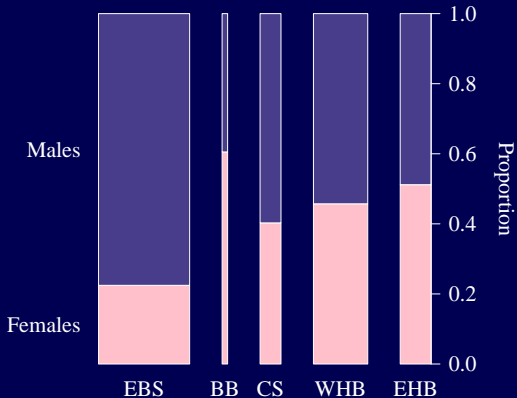


●  $\chi^2 = 97.8, P < 0.001$

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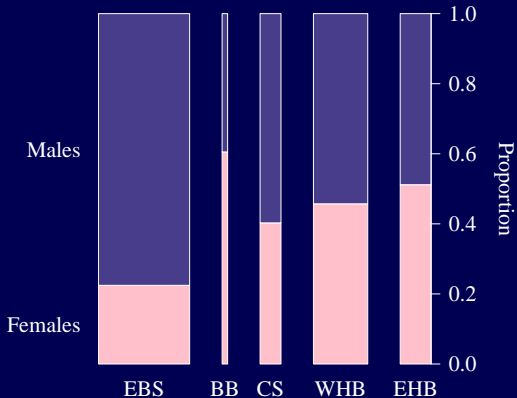


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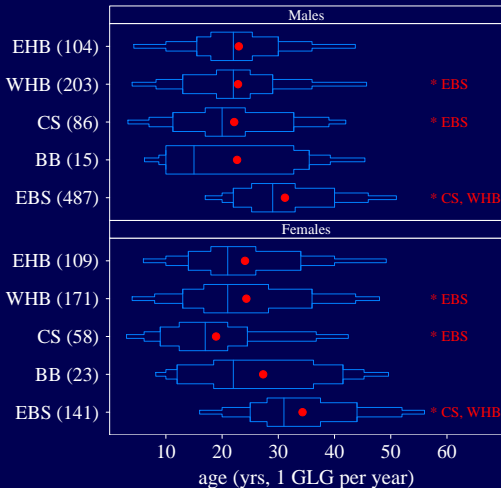
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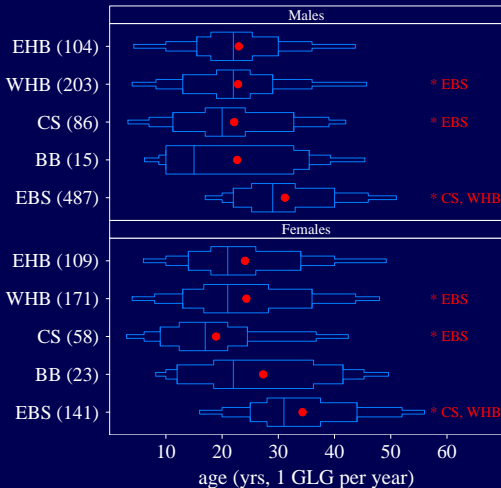
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# Belugas caught in EBS Older Overall



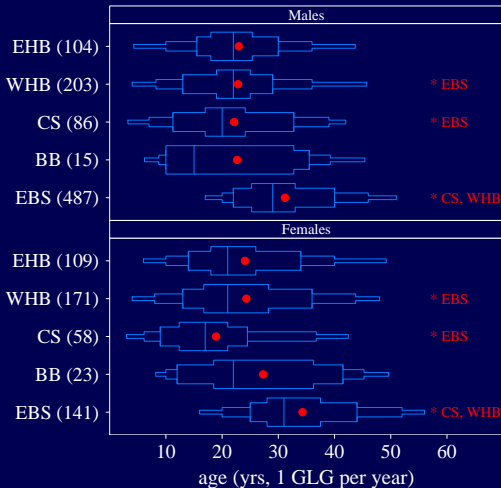
Kruskal-Wallis  $\chi^2 = 75.53$ ,  
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sex differences

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- No sex differences

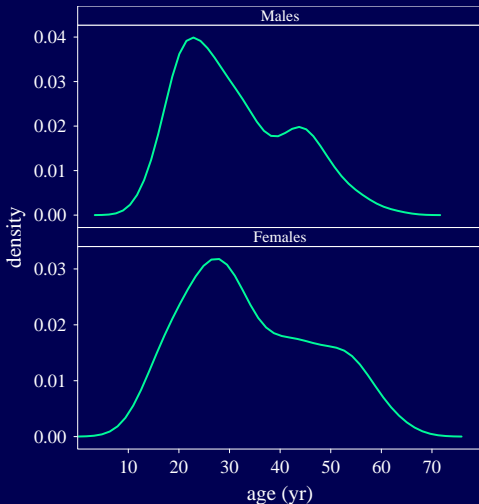
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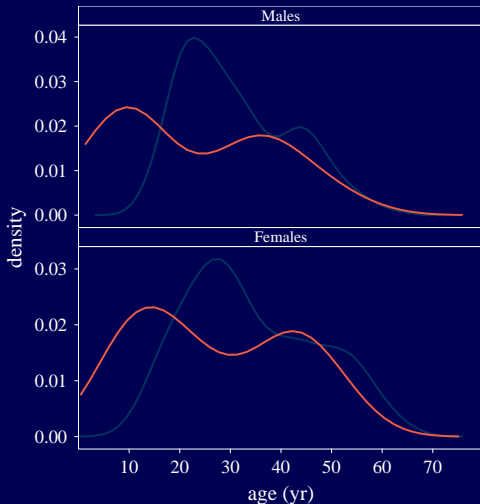
EBS — CS — EHB —  
BB — WHB —



- Age structures differed between stocks
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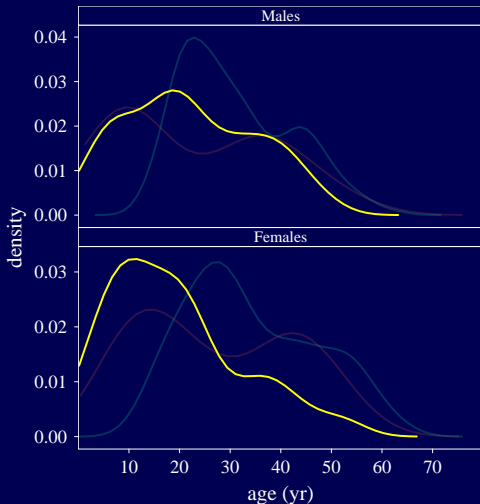
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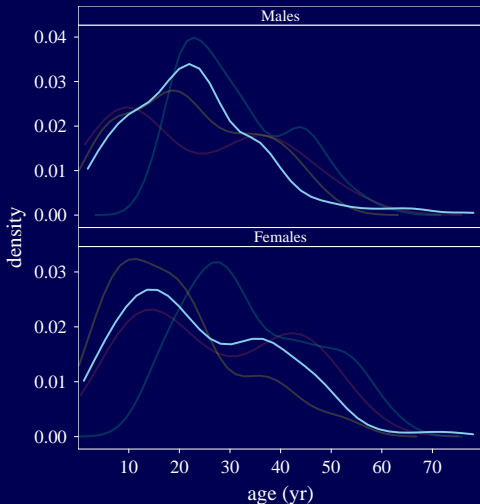
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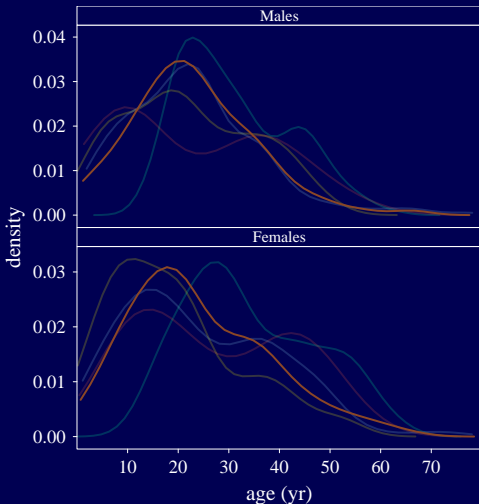
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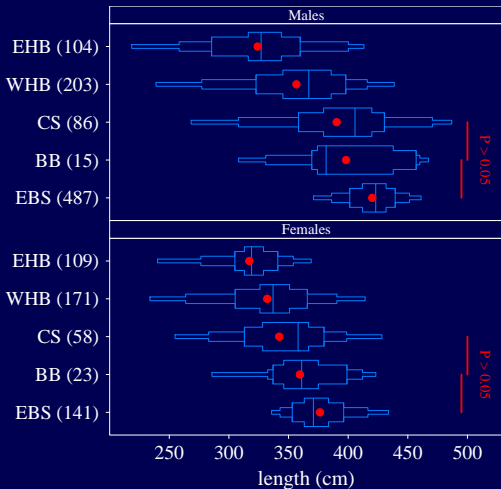
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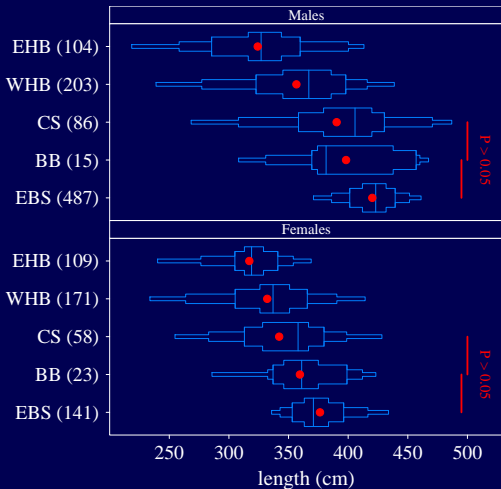
# Belugas caught in EBS Larger Overall



$$F_{4,1100} = 4.94,$$

Consistent geographic  
gradient in body length

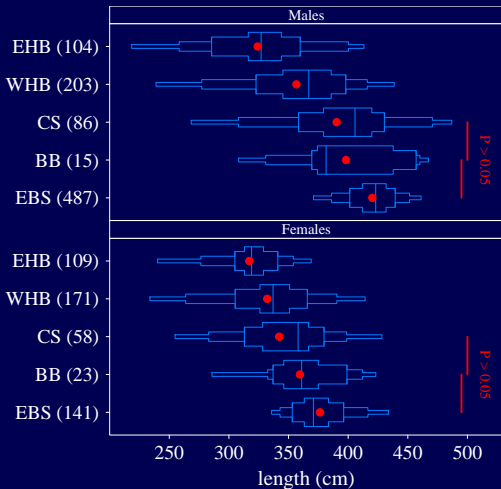
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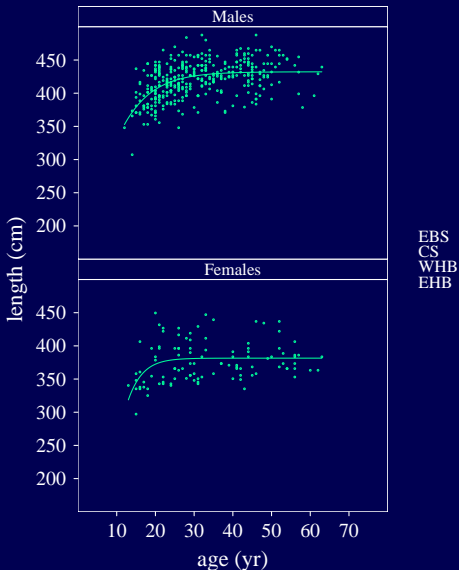
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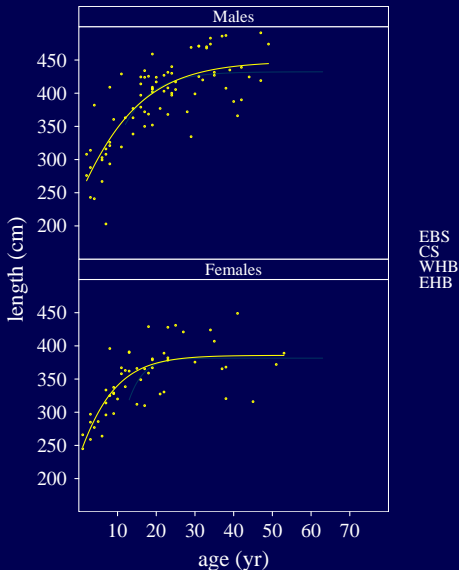
## Males

- $432.3 \cdot e^{-1.2} \cdot e^{-0.15 \cdot \text{age}}$
- $448.2 \cdot e^{-0.6} \cdot e^{-0.09 \cdot \text{age}}$
- $411.5 \cdot e^{-0.6} \cdot e^{-0.08 \cdot \text{age}}$
- $389.7 \cdot e^{-0.7} \cdot e^{-0.07 \cdot \text{age}}$

## Females

- $381.5 \cdot e^{-7.6} \cdot e^{-0.29 \cdot \text{age}}$
- $385.7 \cdot e^{-0.5} \cdot e^{-0.14 \cdot \text{age}}$
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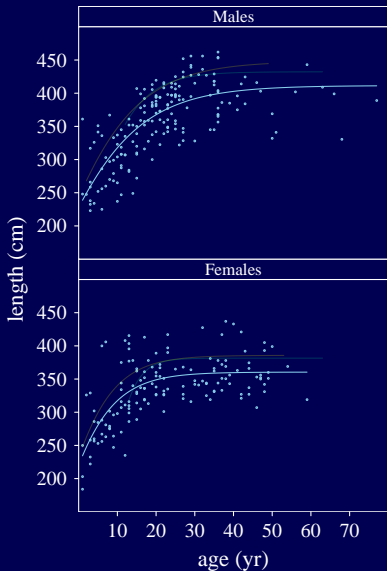
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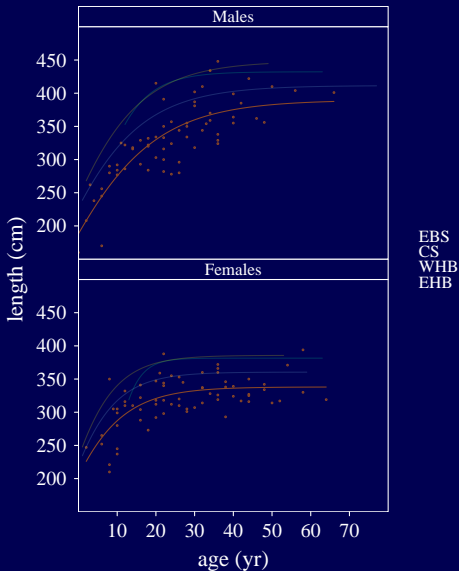
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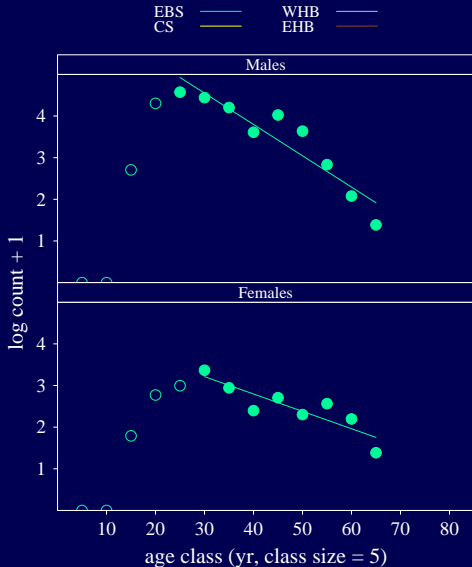
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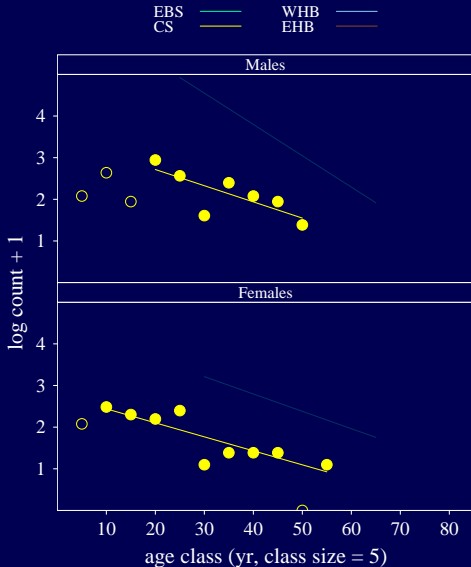
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- 5.8% ± 0.008
- 5.5% ± 0.006

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- 3.4% ± 0.008
- 5.0% ± 0.007
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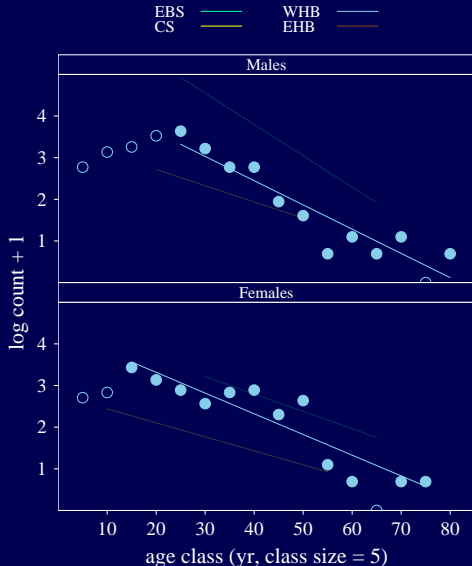
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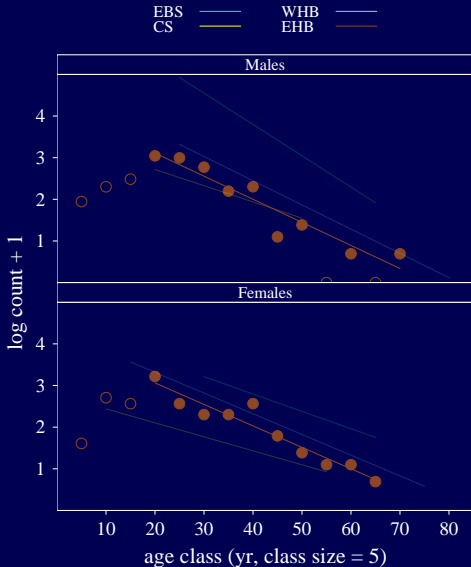
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- Males were significantly more frequent than females in EBS catches, a bias that is not significant in other stocks.
- Median age of belugas caught in EBS were 29 and 31 yr (males and females, respectively): significantly higher than CS and WHB.
- EBS belugas were significantly longer and their growth rate differed, compared to eastern Arctic populations.
- Geographic trend in a S to NNW direction, where EHB belugas were the smallest and those from EBS were the largest.
- Mortality rate estimates were highest for EBS belugas, but they did not differ significantly from other populations.
  
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