

# Other approaches to adjusting Chinook abundance

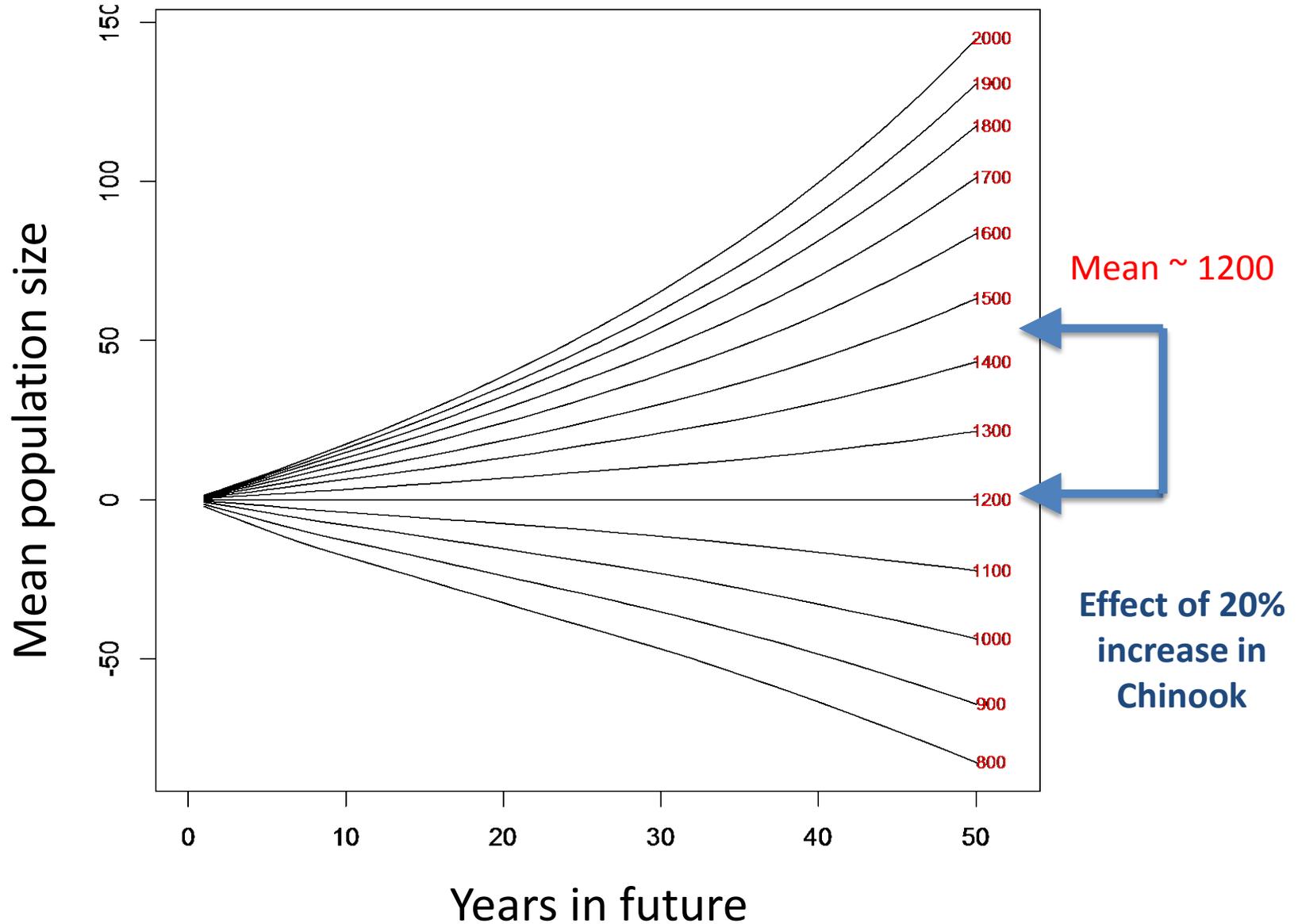
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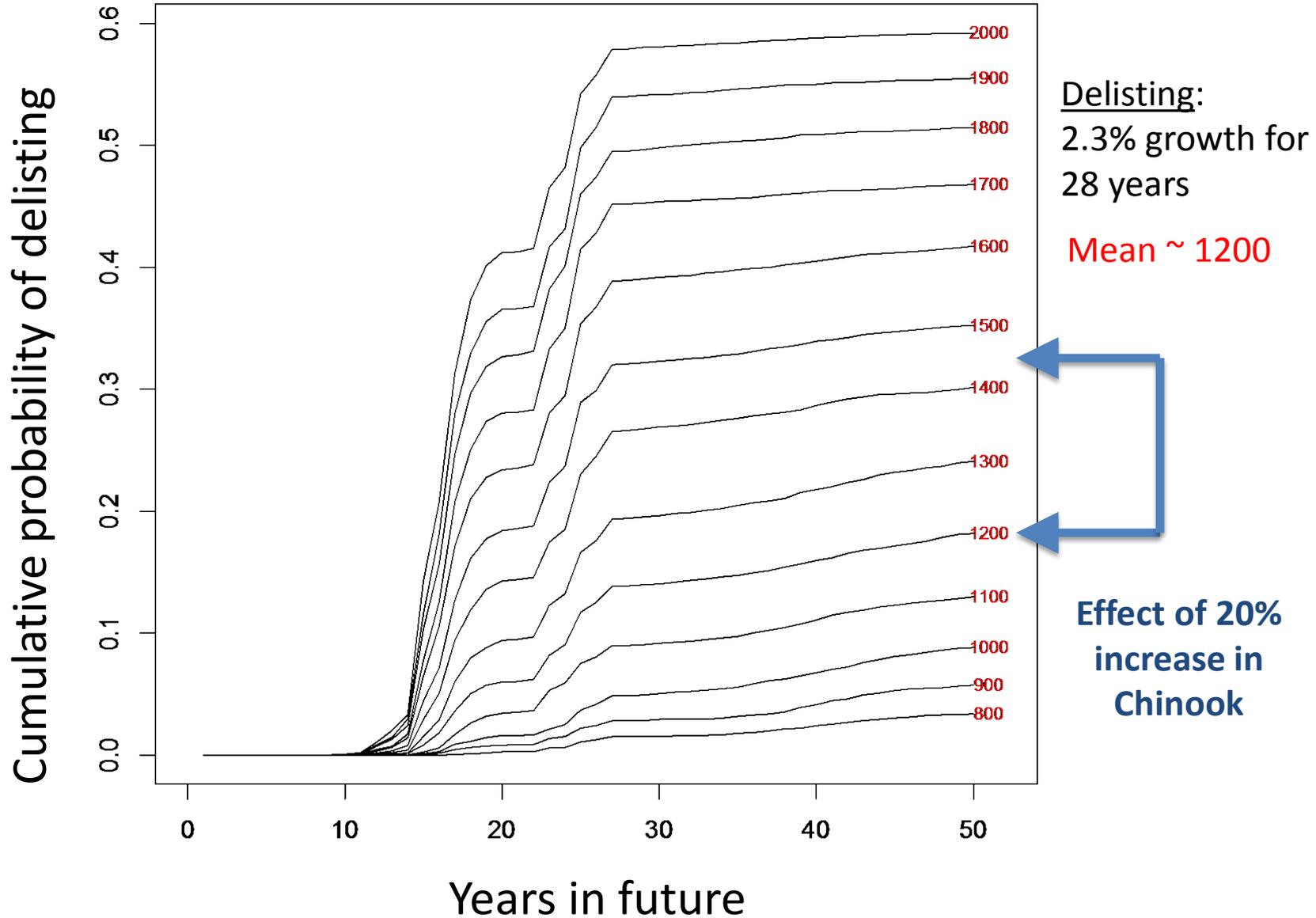
# Recap

- Workshop 2:
  - Parken-Kope Fall terminal run (-CA) most correlated with killer whale survival
  - I explored effects of adjusting this index by 0-20%
- All material related to Question 5 from the panel post-workshop 2, on ESSA website, [http://essa.com/kw\\_workshop/](http://essa.com/kw_workshop/)

# Change in total SRKW population size



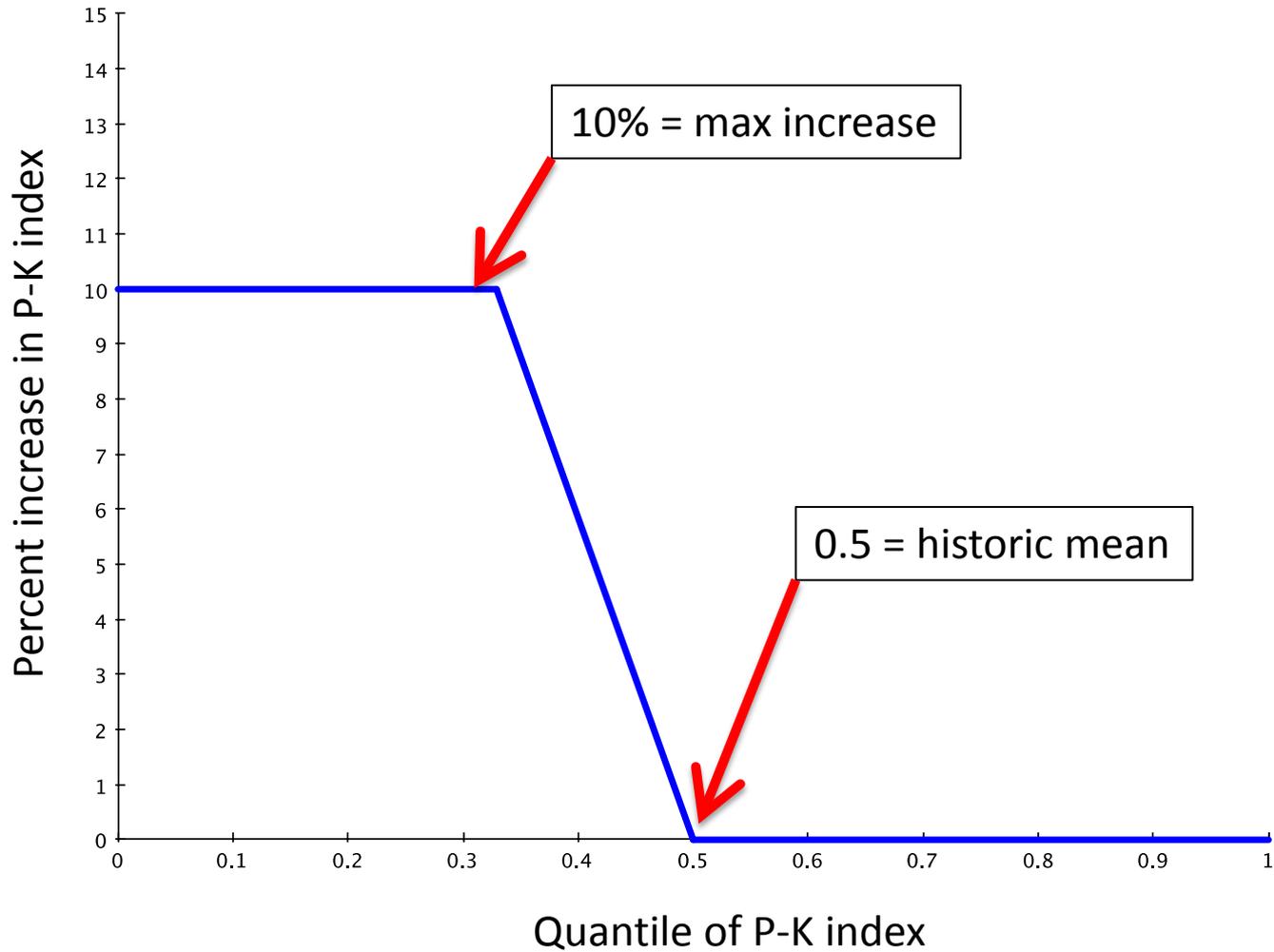
# Probability of delisting



# Analyses following workshop 2

- Scenario 1: increase P-K Chinook index by 10% in all years
  - (we already covered this in my results for workshop 2)
- Scenario 2: increase P-K Chinook by a maximum of 10%, ONLY when Chinook index is less than the historical mean

# Graphically



# Relative change to status quo

- Effect of scenario 2 is very similar to if we increased P-K index by 5% in all years

<b>Increase in Mean Population Size</b>	<b>5 year</b>	<b>15 year</b>	<b>30 year</b>
Baseline (status quo fisheries)	92.1	98.1	115.8
Scenario 1: Increase P-K index by 10% all years	2.12	5.99	12.50
Scenario 2: Increase P-K index by up to 10% only when P-K index < mean of 1200	0.88	2.99	5.96
<b>Increase in Median Population Size</b>	<b>5 year</b>	<b>15 year</b>	<b>30 year</b>
Baseline (status quo fisheries)	92	96	108
Scenario 1: Increase P-K index by 10% all years	3	6	12
Scenario 2: Increase P-K index by up to 10% only when P-K index < mean of 1200	1	3	5
<b>Increase in Mean Whales / Yr</b>	<b>5 year</b>	<b>15 year</b>	<b>30 year</b>
Baseline (status quo fisheries)	1.02	0.74	0.96
Scenario 1: Increase P-K index by 10% all years	0.42	0.40	0.42
Scenario 2: Increase P-K index by up to 10% only when P-K index < mean of 1200	0.18	0.20	0.20

# Recovery criteria v. status quo

- Scenario 2 has < 50% the effect of scenario 1

<b>Pr (Downlisting)</b>	<b>5 year</b>	<b>15 year</b>	<b>30 year</b>
Baseline (status quo fisheries)	0.0368	0.1514	0.2598
Scenario 1: Increase P-K index by 10% all years	0.0242	0.0876	0.0860
Scenario 2: Increase P-K index by up to 10% only when P-K index < mean of 1200	0.0020	0.0132	0.0196
<b>Pr (Delisting)</b>	<b>5 year</b>	<b>15 year</b>	<b>30 year</b>
Baseline (status quo fisheries)	0	0.0054	0.1250
Scenario 1: Increase P-K index by 10% all years	0.0000	0.0102	0.0684
Scenario 2: Increase P-K index by up to 10% only when P-K index < mean of 1200	0.0000	0.0000	0.0000
<b>PSP Recovery</b>	<b>2020</b>		
Baseline (status quo fisheries)	0.48 (48%)		
Scenario 1: Increase P-K index by 10% all years	0.11		
Scenario 2: Increase P-K index by up to 10% only when P-K index < mean of 1200	0.00		

# Summary

- We modeled adjustment to P-K terminal index as a function of the index itself
- Scenario 2 is possibly more realistic than scenario 1
  - but still limited in that we're only adjusting the index, not the index via manipulating fisheries
- 1 additional scenario explored: only manipulating index in good years
  - But resulted in generally worse performance than status quo

# Why not other P-K indices?

- Simultaneous analysis (after workshop 2)
- Q1: Instead of just looking at stock groupings used in workshop 2, can we identify individual stocks that are correlated?
- Q2: What about larger groupings?
  - Total index= “All the fish in the sea”
- Best predictor: total index