

Susitna River Chinook Salmon Escapement Goals

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RC 4
Tab 12

Terms for Speaking about Salmon Production

Return = Adult salmon produced from a single brood year escapement; synonymous with **Recruitment**. Returns for Chinook salmon happen over several years for a given brood year.

Run = Adult salmon returning to the vicinity of the natal stream in a calendar year

Escapement = Estimated number of **spawners** in a year (or index)

Stock = Two or more salmon populations which occur in the same geographic area and are managed as a unit.

Sustainable Salmon Fisheries Policy 5 AAC 39.222(f)(34)

Yield = Adult salmon produced in excess of escapement from a single brood year

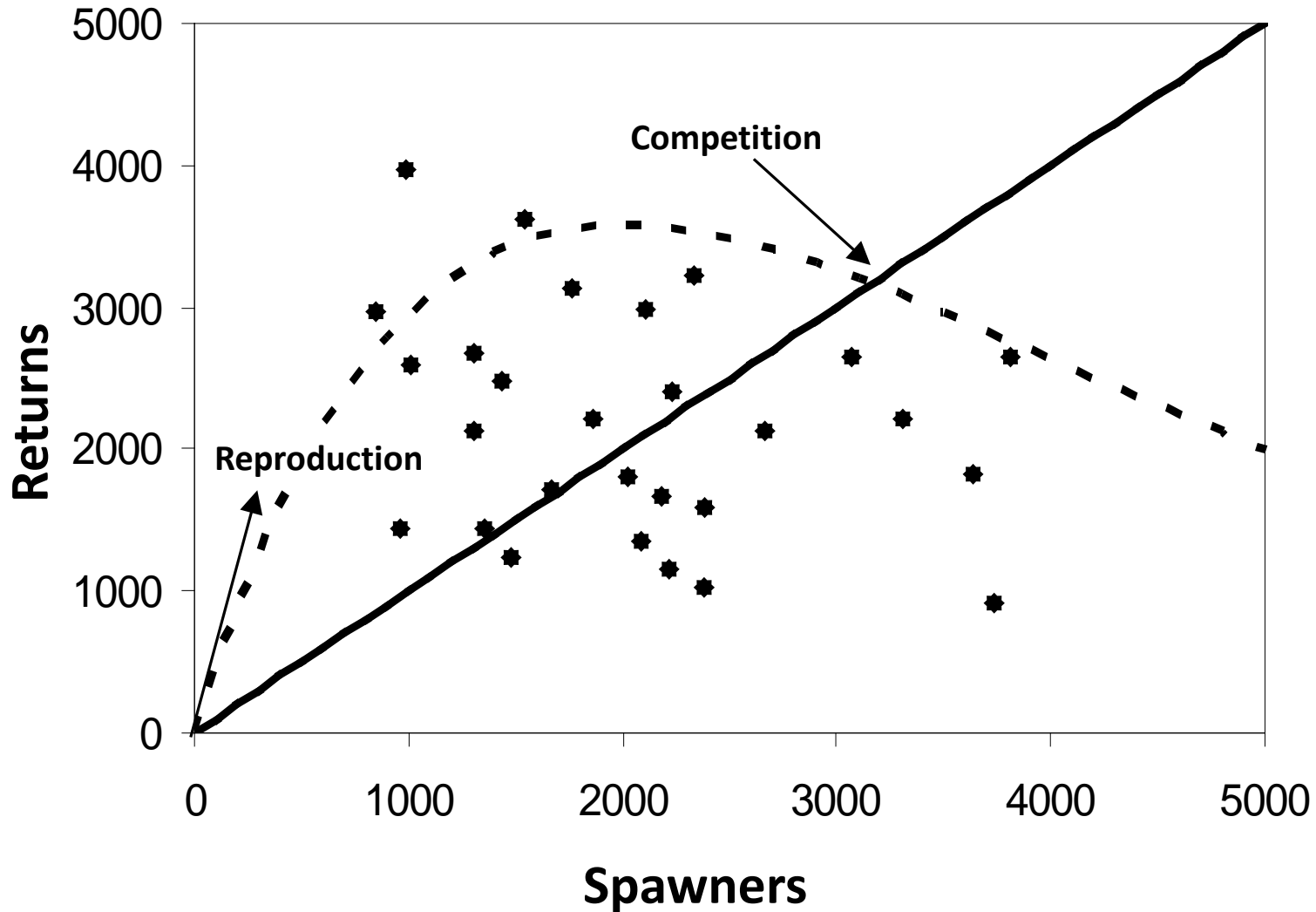
Understanding Age Structure

Brood Year	Spawners	Number per Age Class			
		Age 3	Age 4	Age 5	Age 6
2010	18223	195	4544	15190	1883
2011	18553	504	5858	14047	1512
2012	13952	654	8616	4090	2399
2013	18378	771	4200	11471	3222
2014	16099	1526	6963	6986	2129
2015	23627	2832	7026	12625	3289
2016	22099	4024	10828	8639	1743
2017	11034	1101	1501	8826	1174
2018	8549	3352	2148	3008	86

Brood Year	Spawners	Total	Return per	Yield
		Return	Spawner	
2010	18223	22102	1.2	3879
2011	18553	18365	1.0	0
2012	13952	22572	1.6	8620

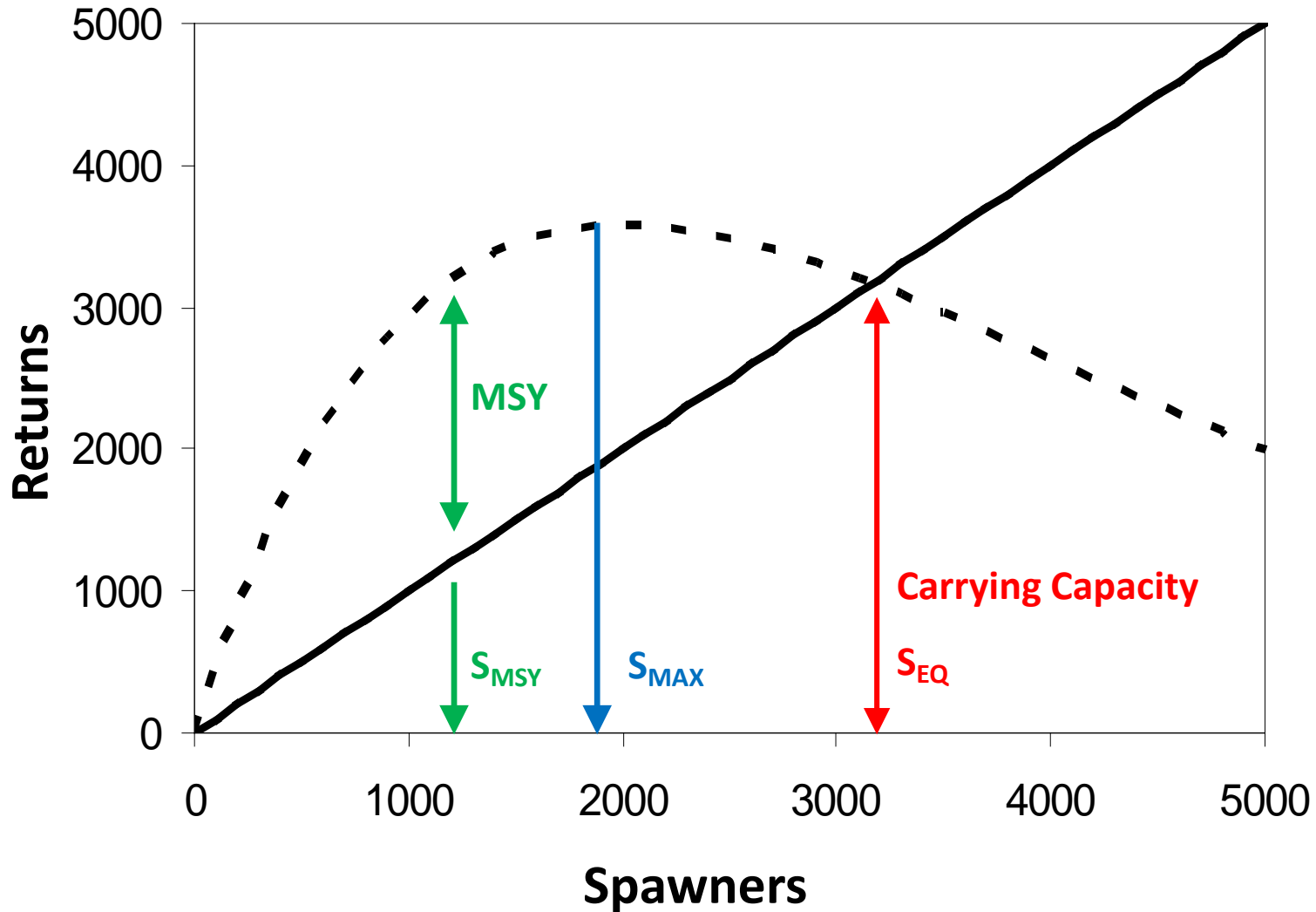
Theory of Salmon Production

We can model the interaction of reproductive potential and competition using our data.

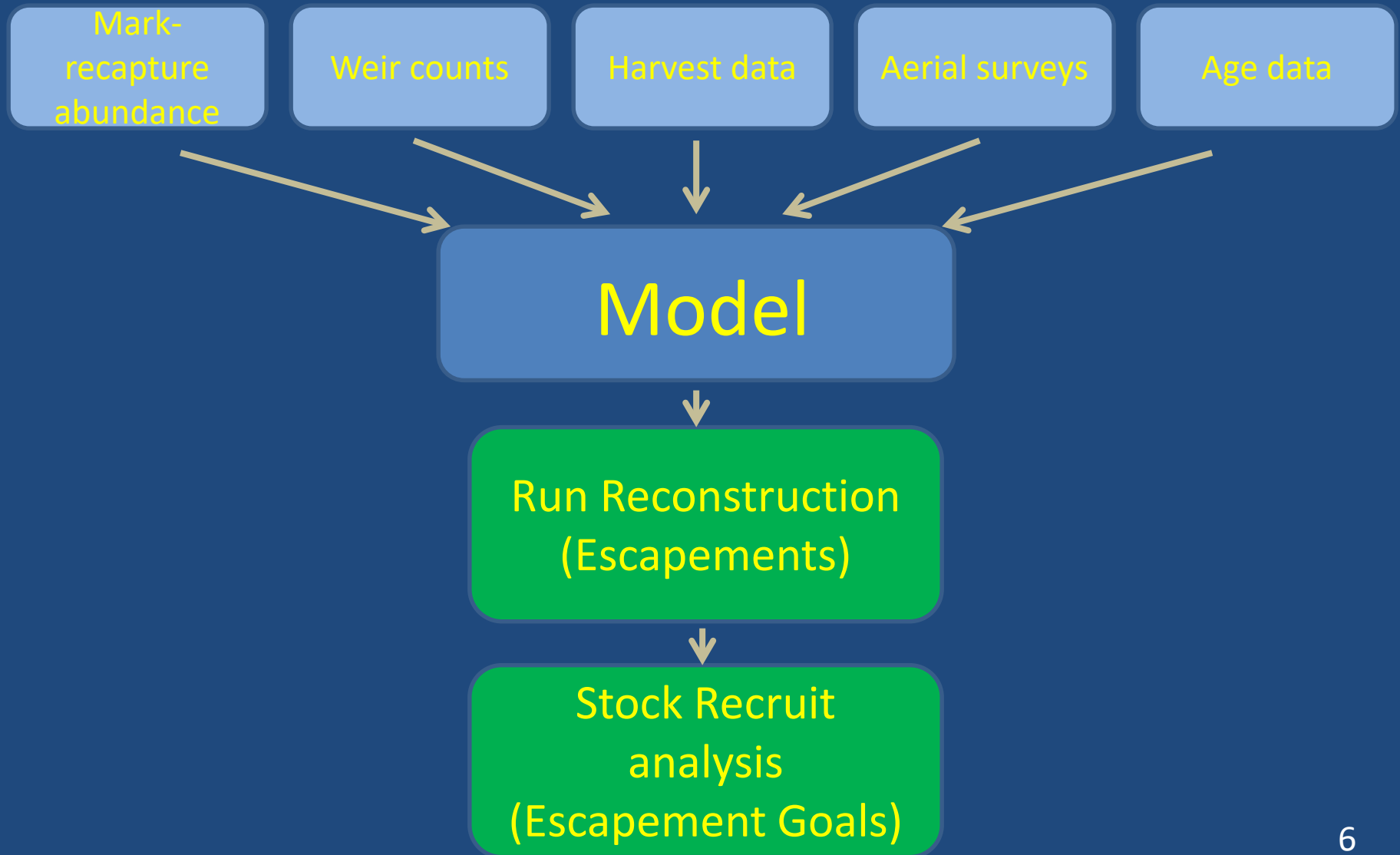


Theory of Salmon Production

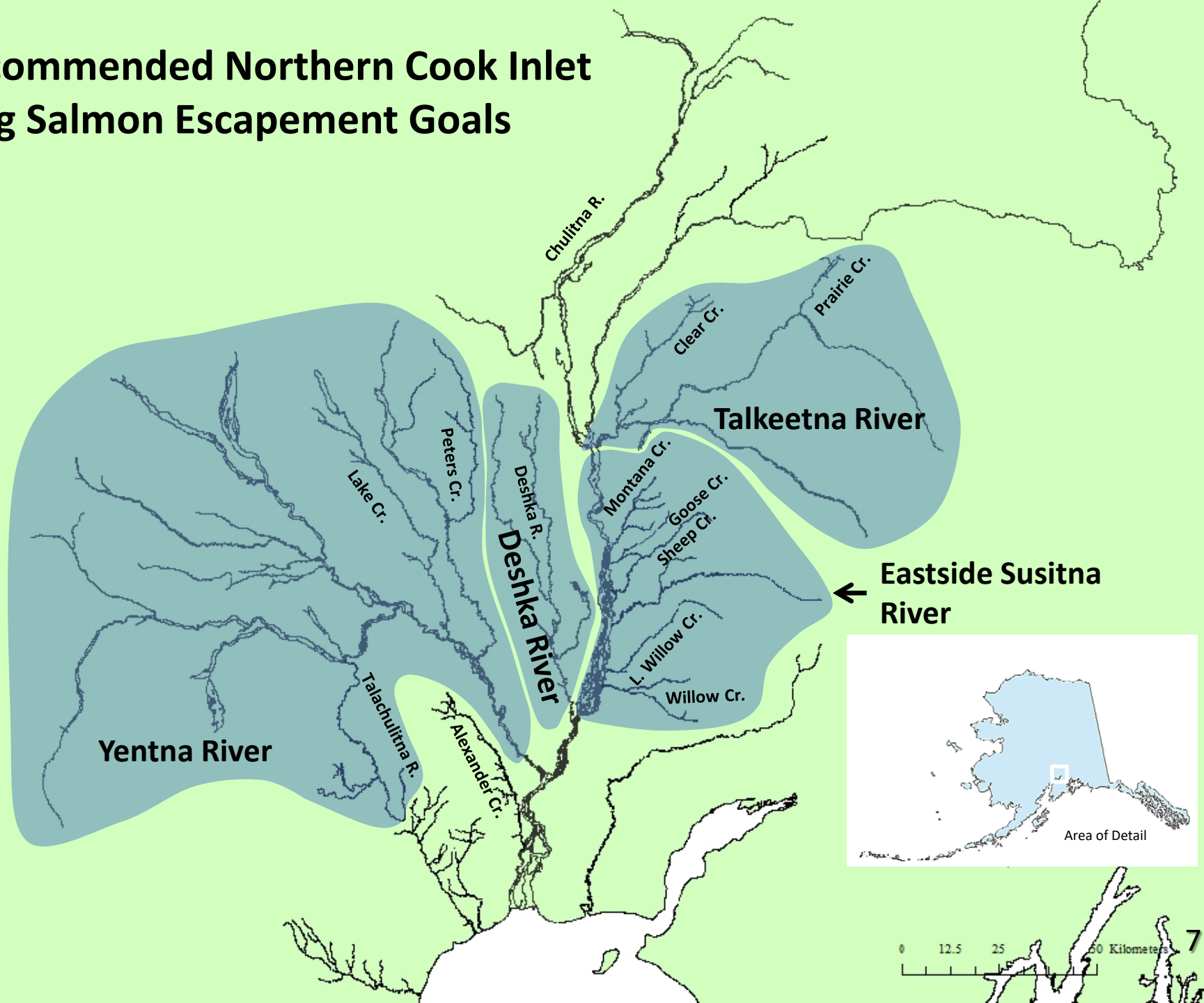
...and is associated with a level of escapement that is expected to produce MSY.



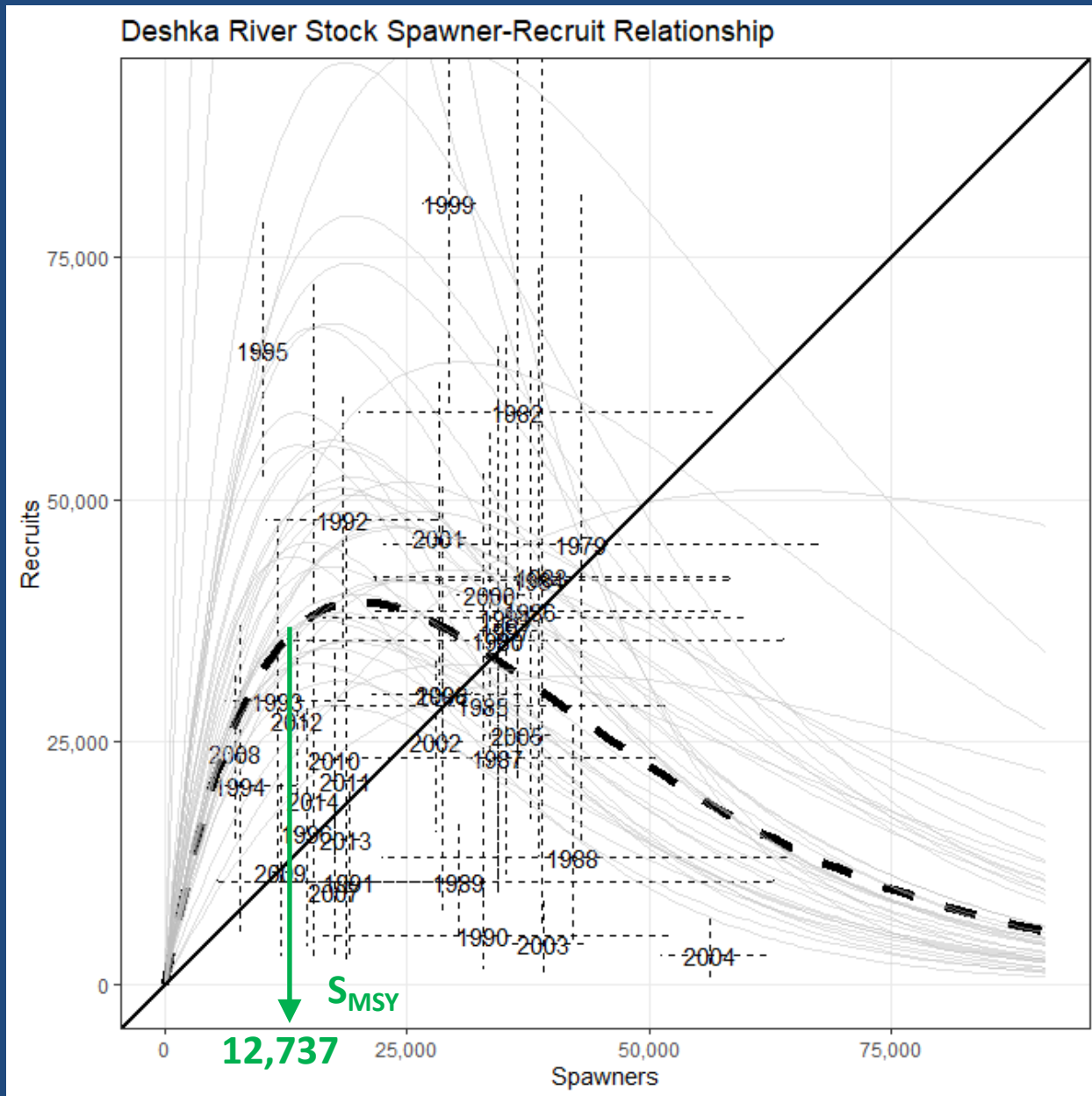
Susitna Chinook Run Reconstruction Design



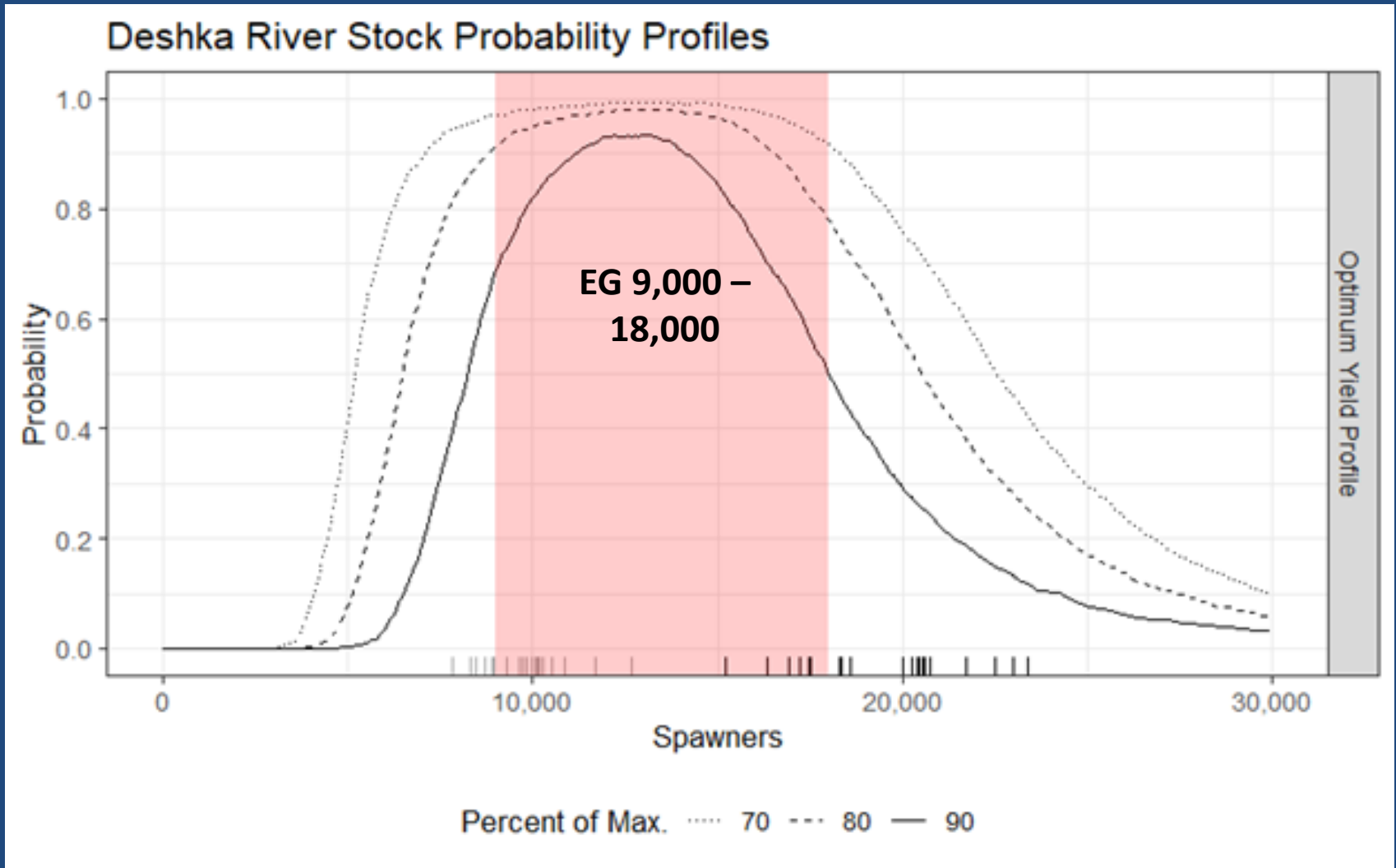
Recommended Northern Cook Inlet King Salmon Escapement Goals



Deshka River Stock

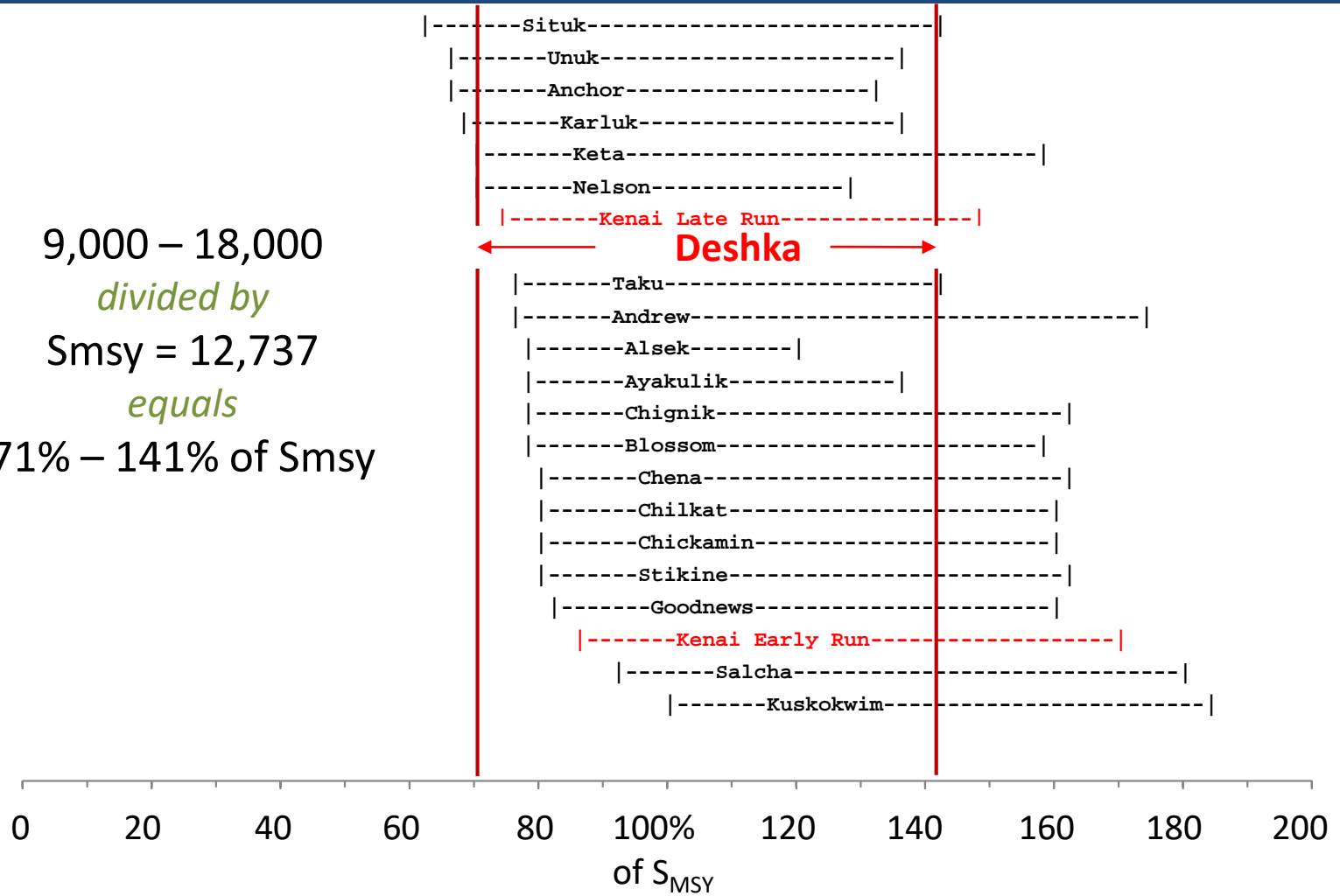


Deshka River Stock



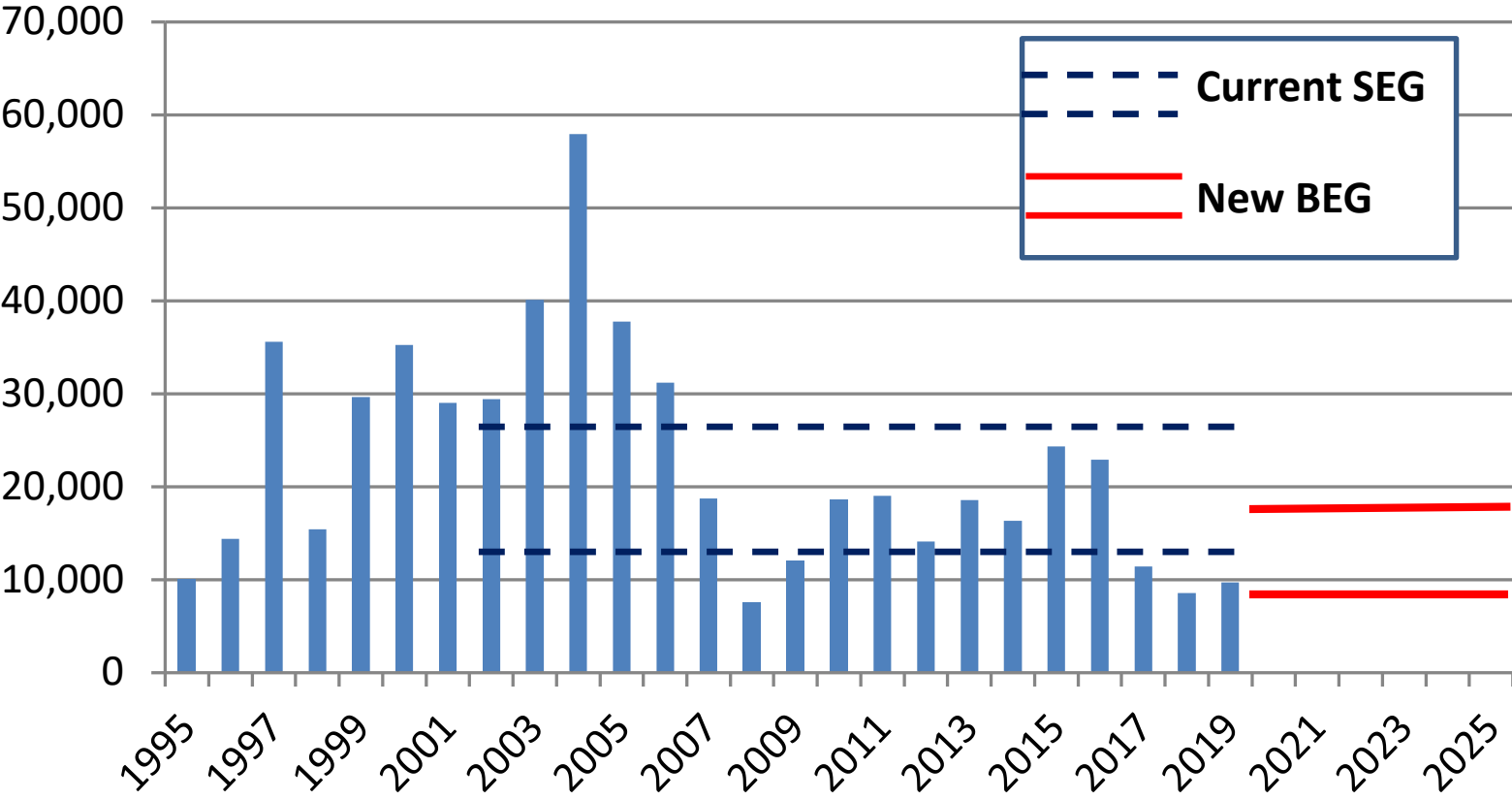
Deshka River Stock

9,000 – 18,000
divided by
 Smsy = 12,737
equals
 71% – 141% of S_{MSY}

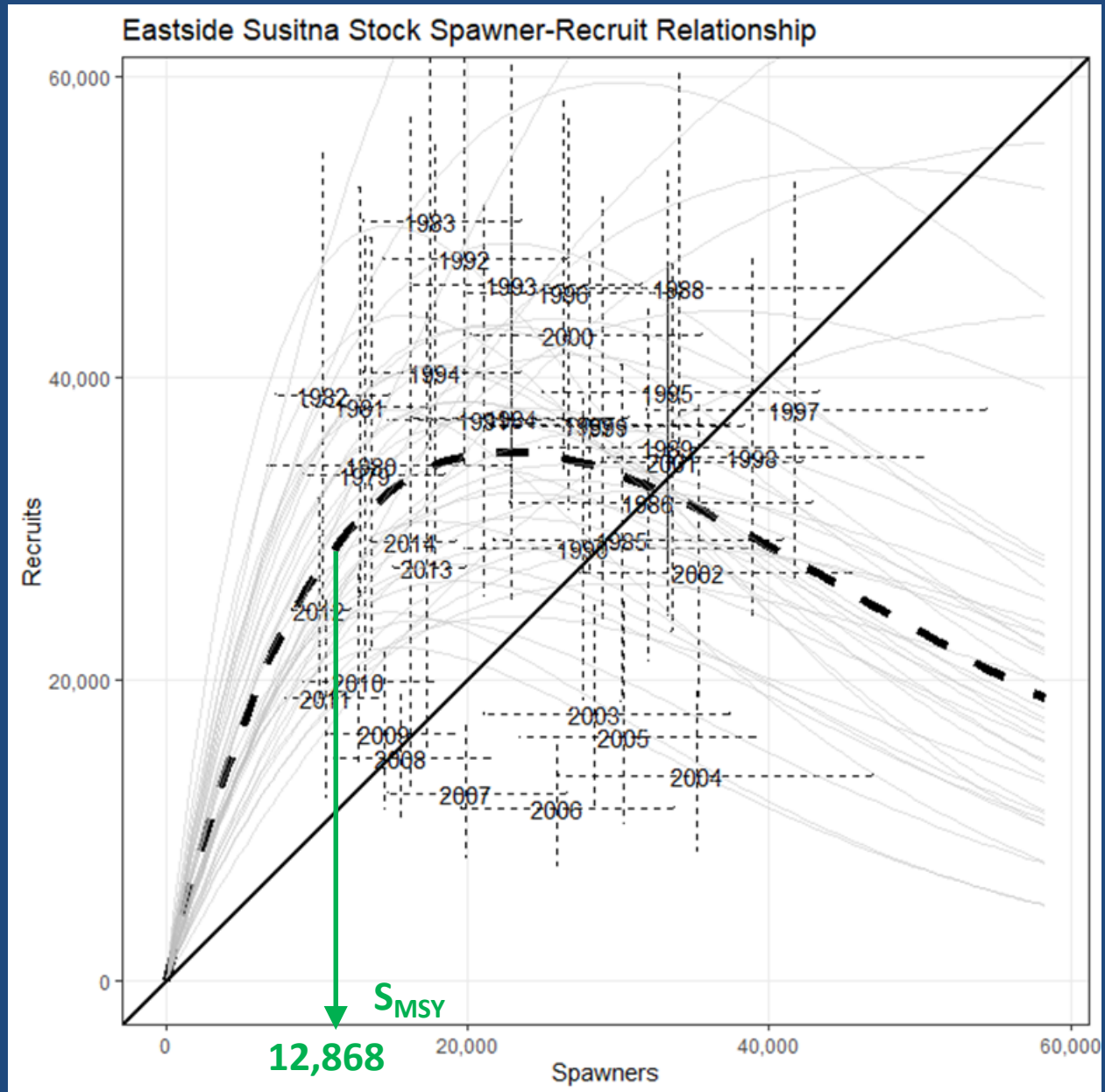


Stock Goals and Recent Escapements

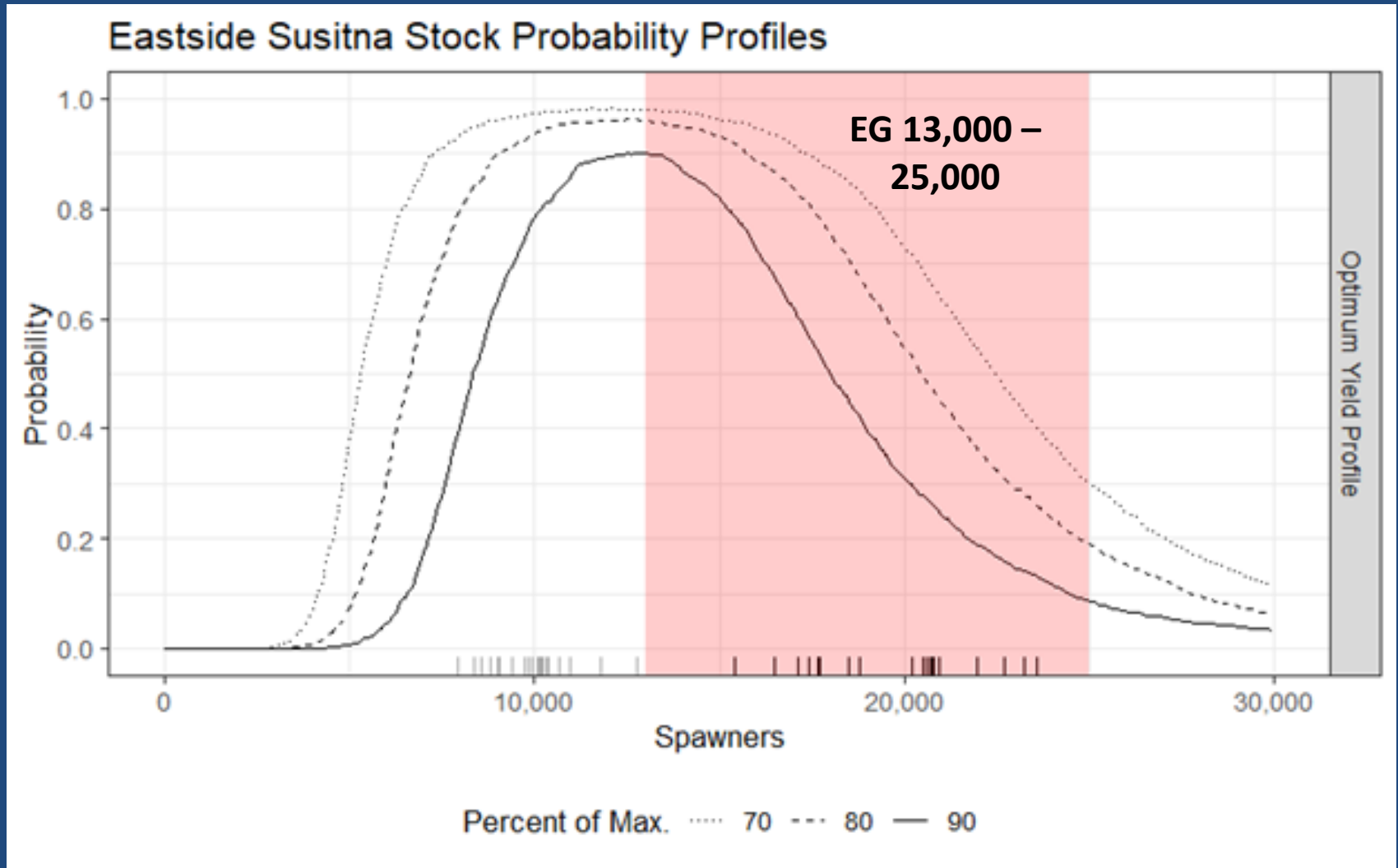
Deshka River



Eastside Susitna Stock

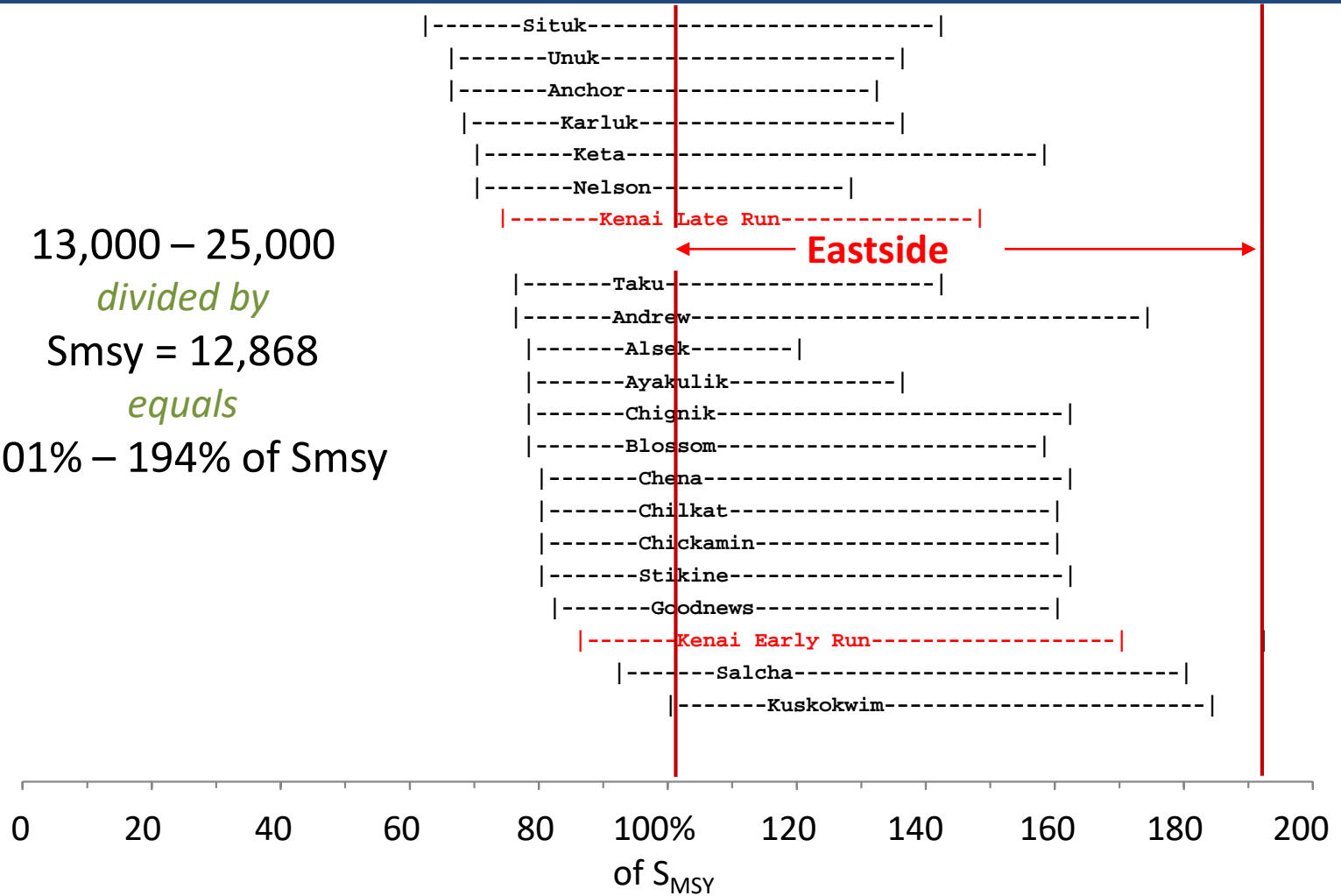


Eastside Susitna Stock

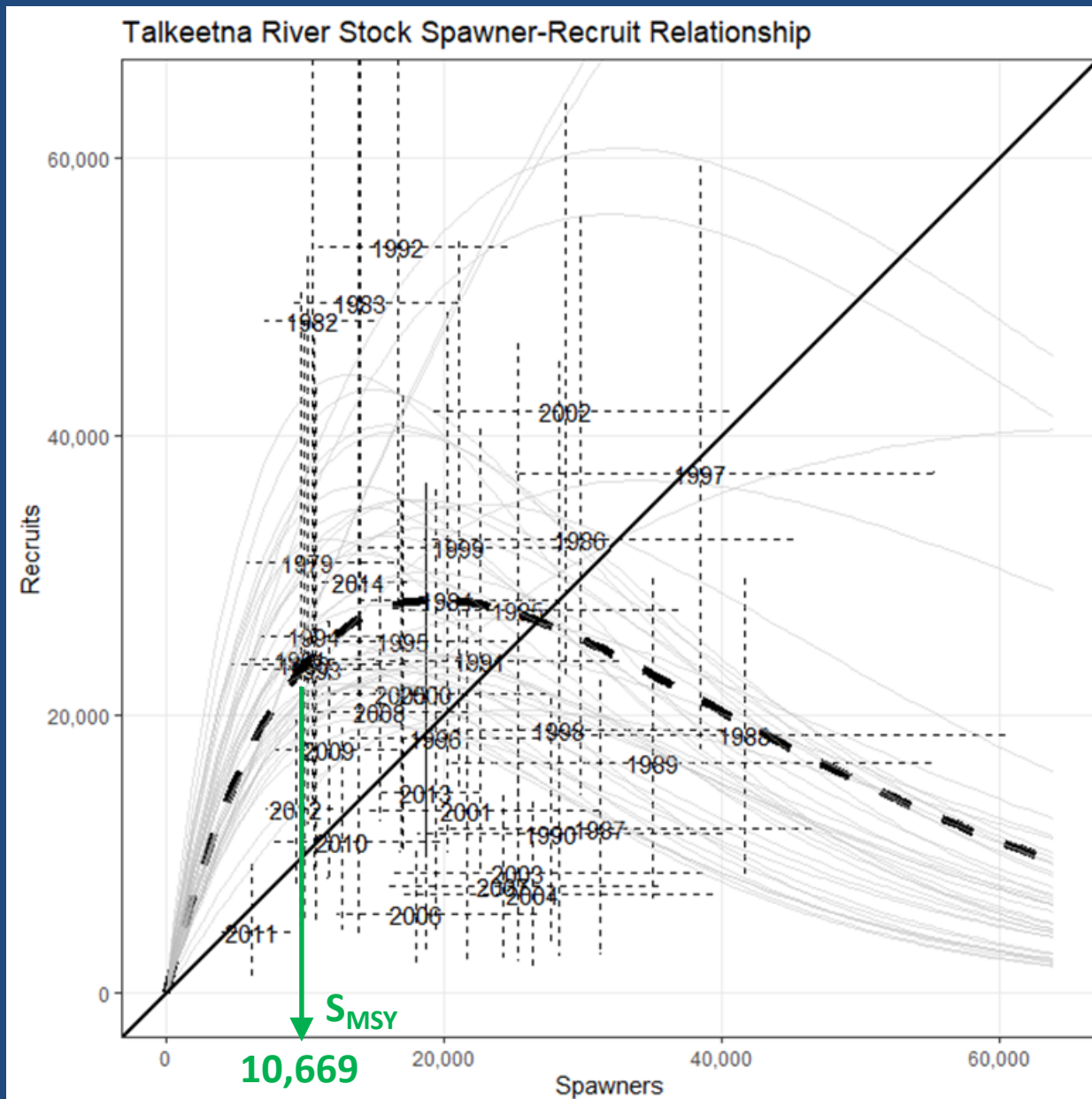


Eastside Susitna Stock

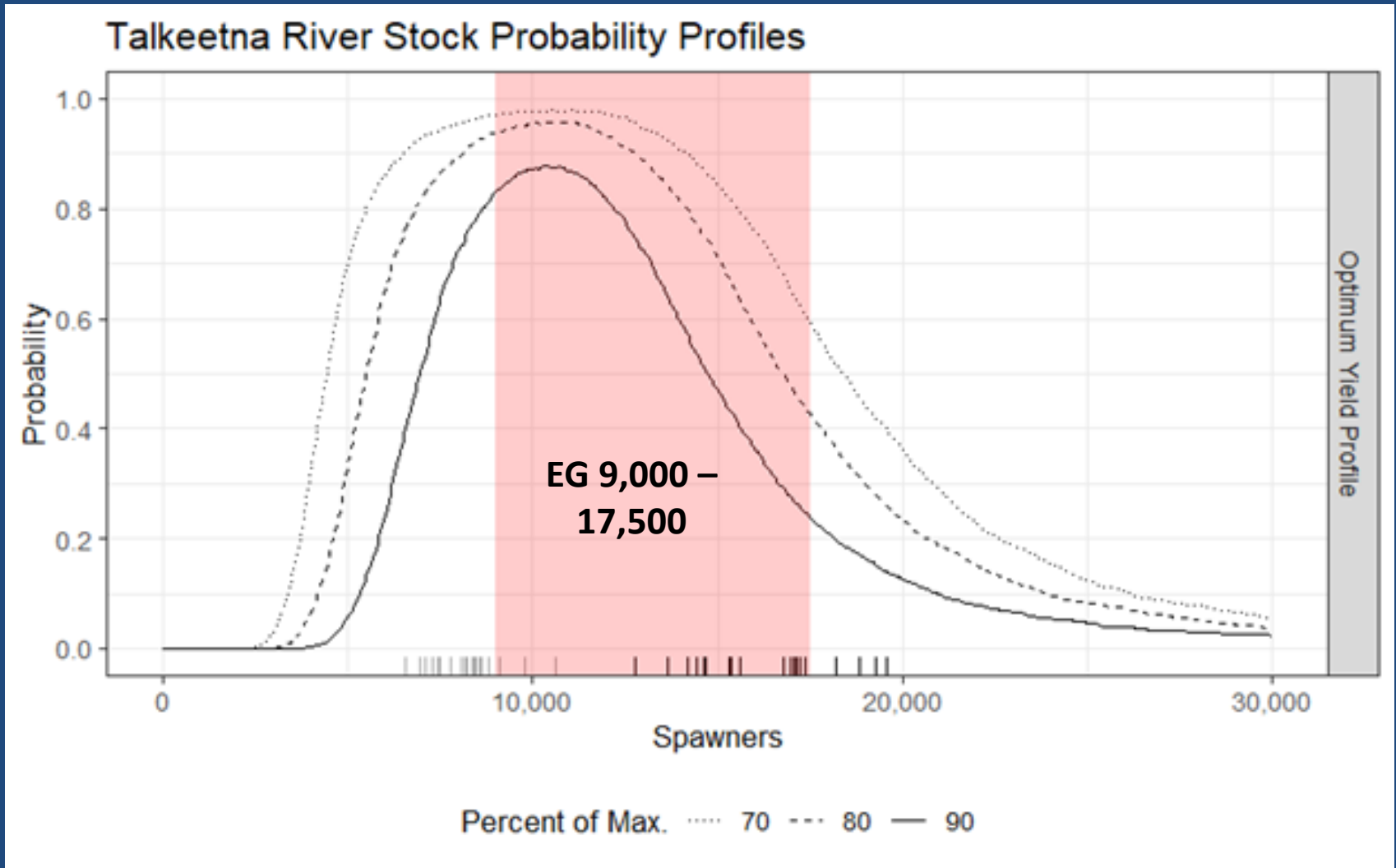
13,000 – 25,000
divided by
 Smsy = 12,868
equals
 101% – 194% of S_{MSY}



Talkeetna River Stock

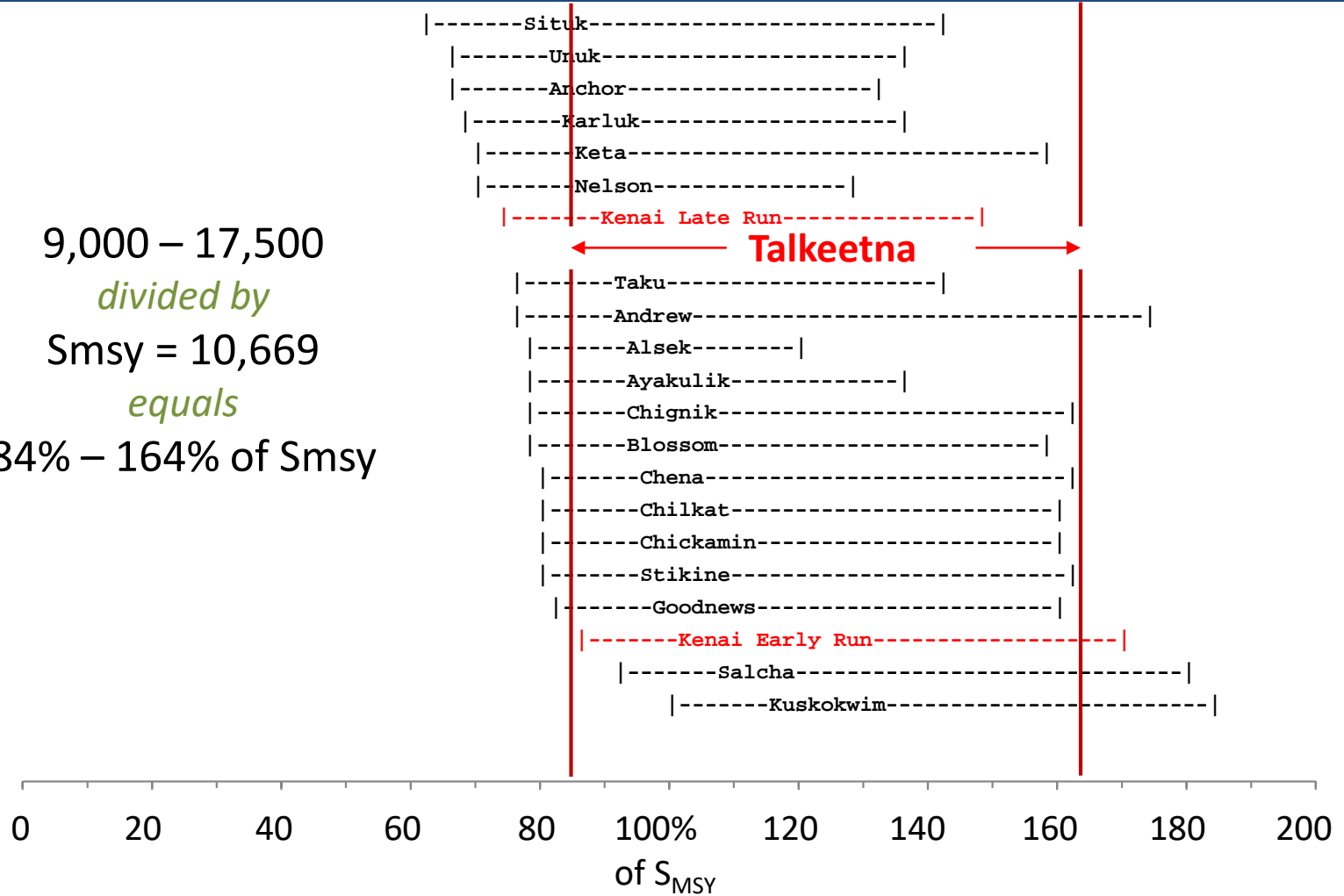


Talkeetna River Stock

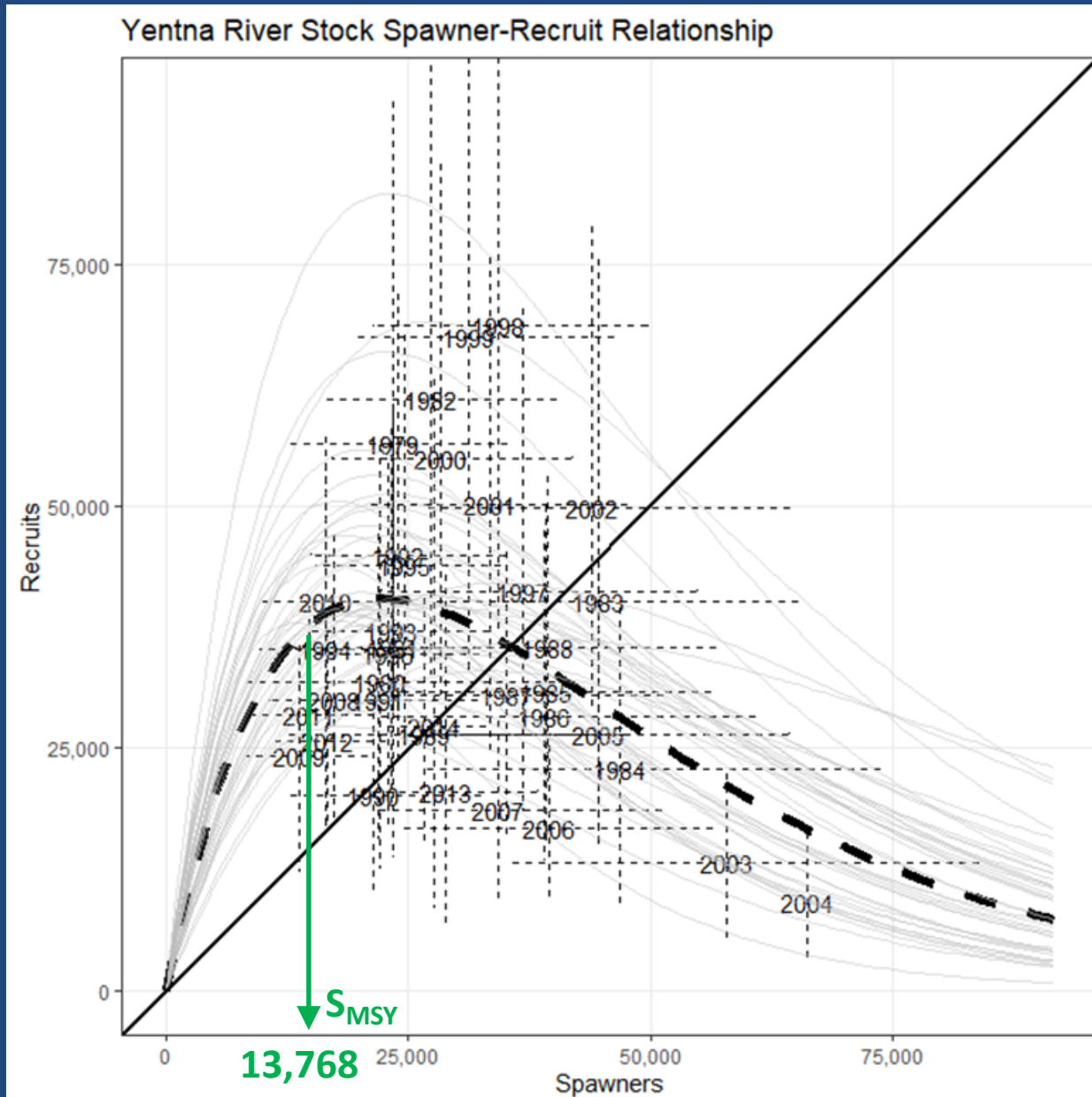


Talkeetna River Stock

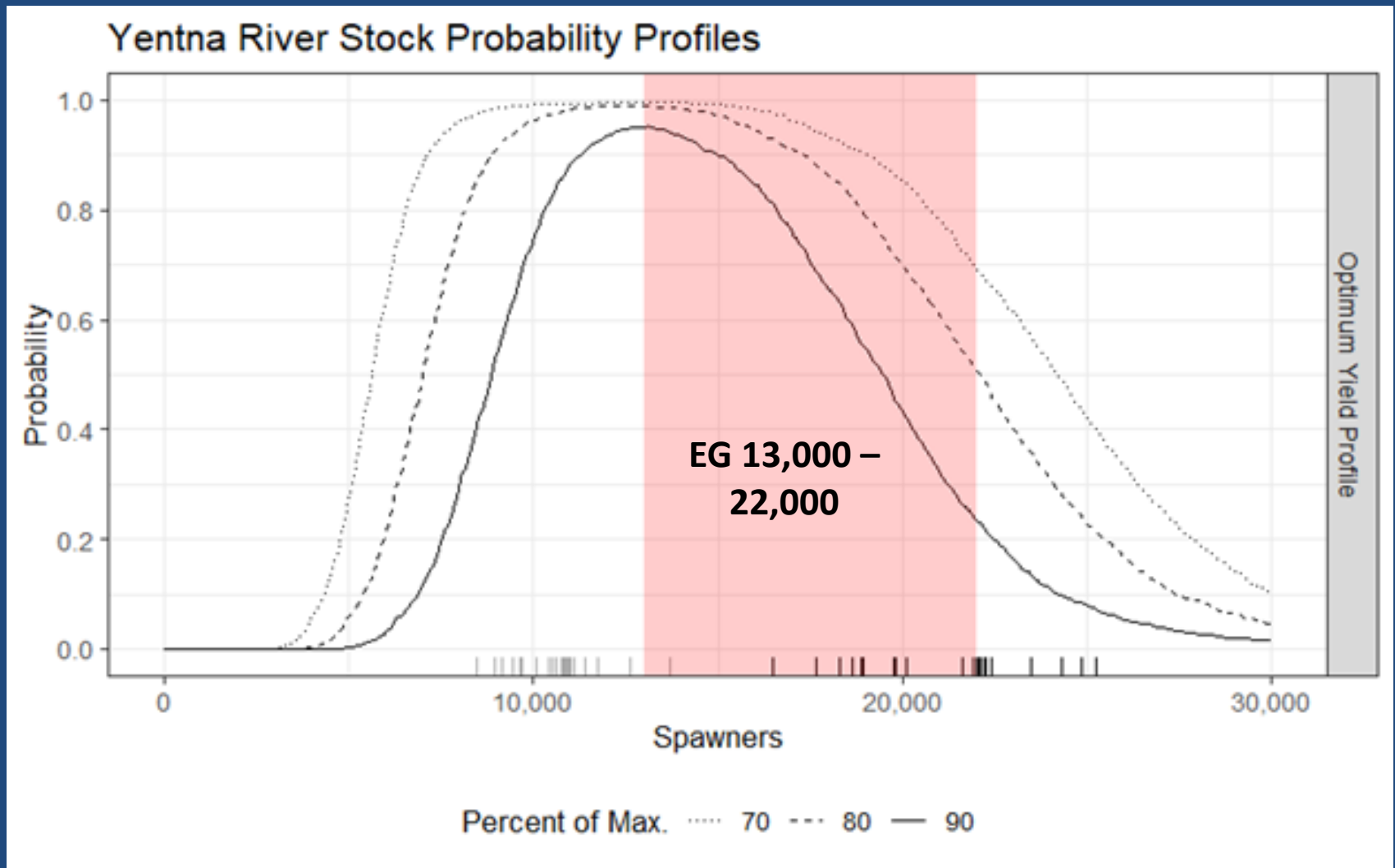
9,000 – 17,500
divided by
 Smsy = 10,669
equals
 84% – 164% of S_{MSY}



Yentna River Stock

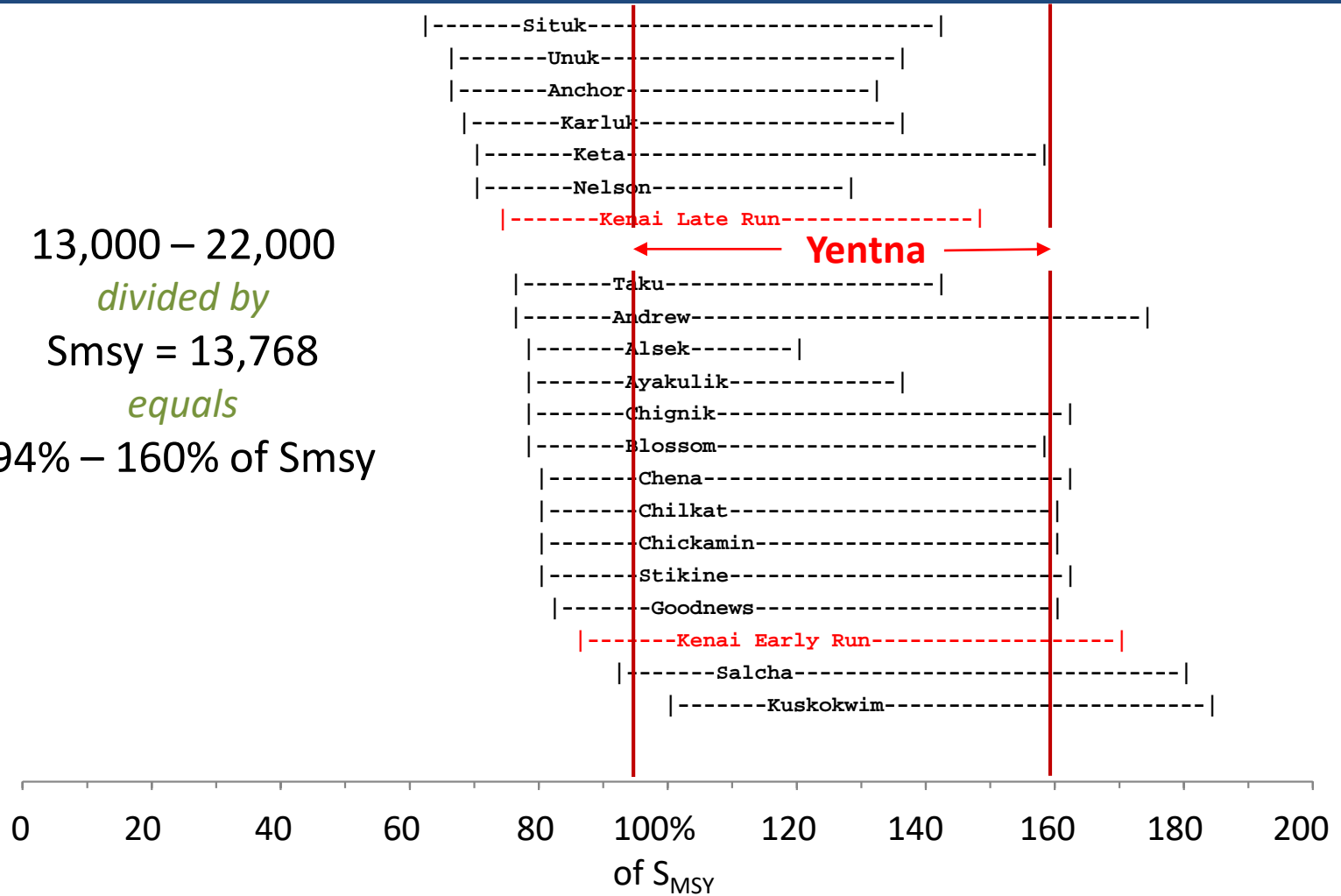


Yentna River Stock



Yentna River Stock

13,000 – 22,000
divided by
Smsy = 13,768
equals
94% – 160% of S_{MSY}



How do the new goals compare with the old goals?

- Old lower or upper bounds for aerial index SEG's summed by stock will not match new stock goals, as old goals are based on an index, and new stock goals are based on estimates of abundance.
- In general, when we achieve most or all of the old aerial goals, we make the new stock goals. When we miss most or all of the aerial goals, we miss or nearly miss the new stock goals.

Stock based escapement goal advantages

- Estimates of actual escapements allows for direct measurement of effects of harvest on each stock.
- This approach is advantageous for setting escapement goals because it uses all available data sets to describe the stock recruit relationship, and stocks are the level we manage to.
- Productivity varies between stocks, so management should not be the same for all stocks.