

Susitna River Chinook Salmon Run Reconstruction

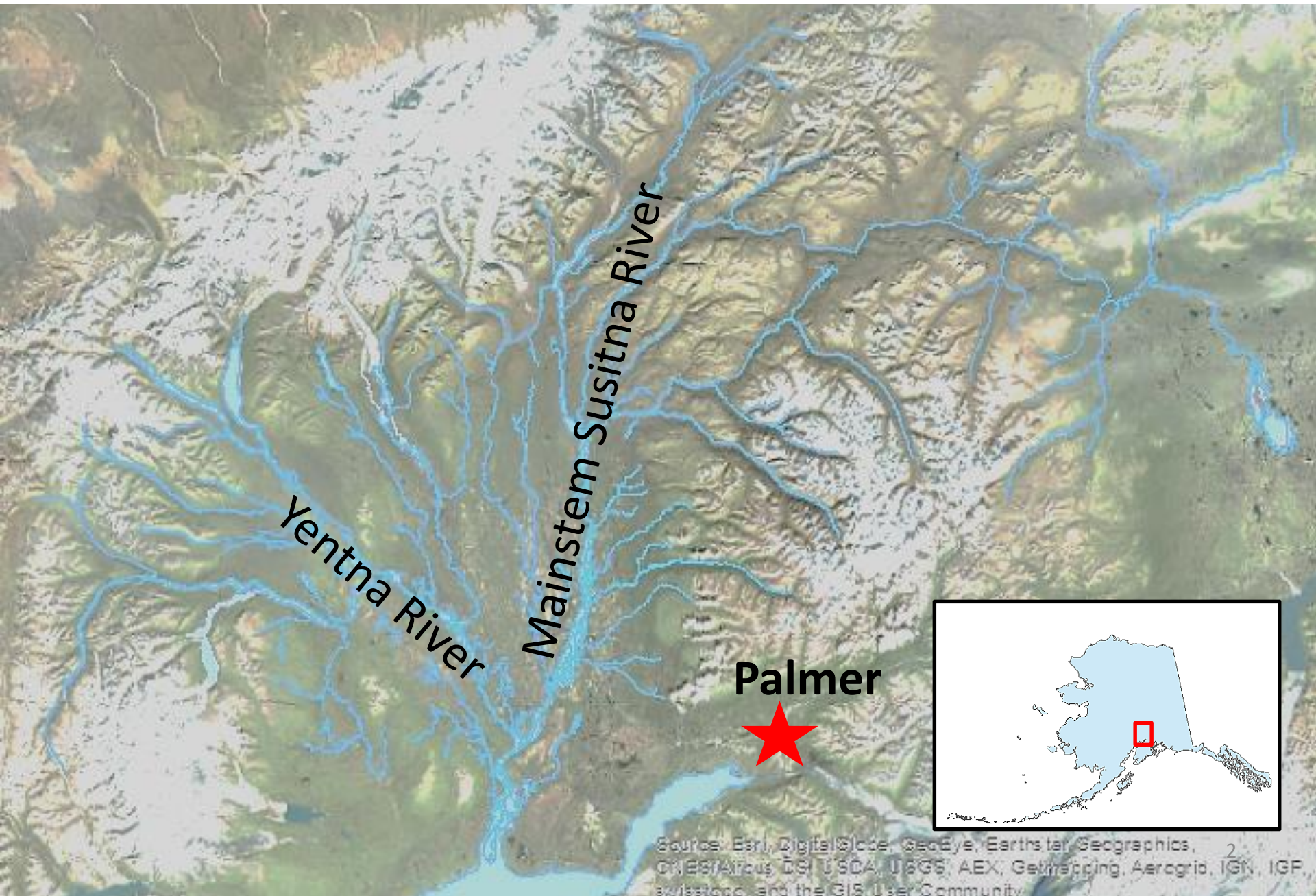


Adam Reimer

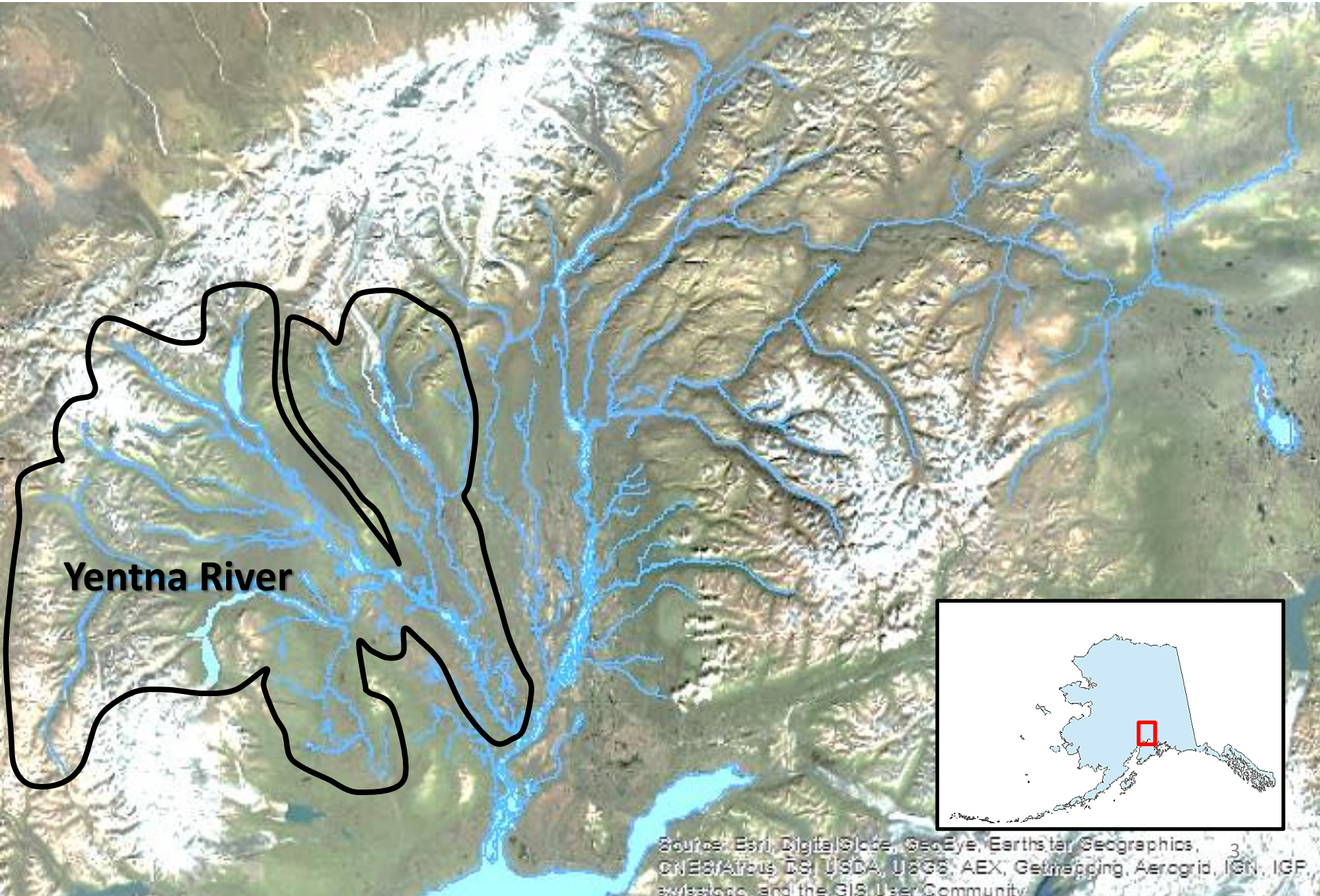
Nick DeCovich

**Alaska Department of Fish and Game
Division of Sport Fish**

Susitna River Chinook Salmon Run Reconstruction

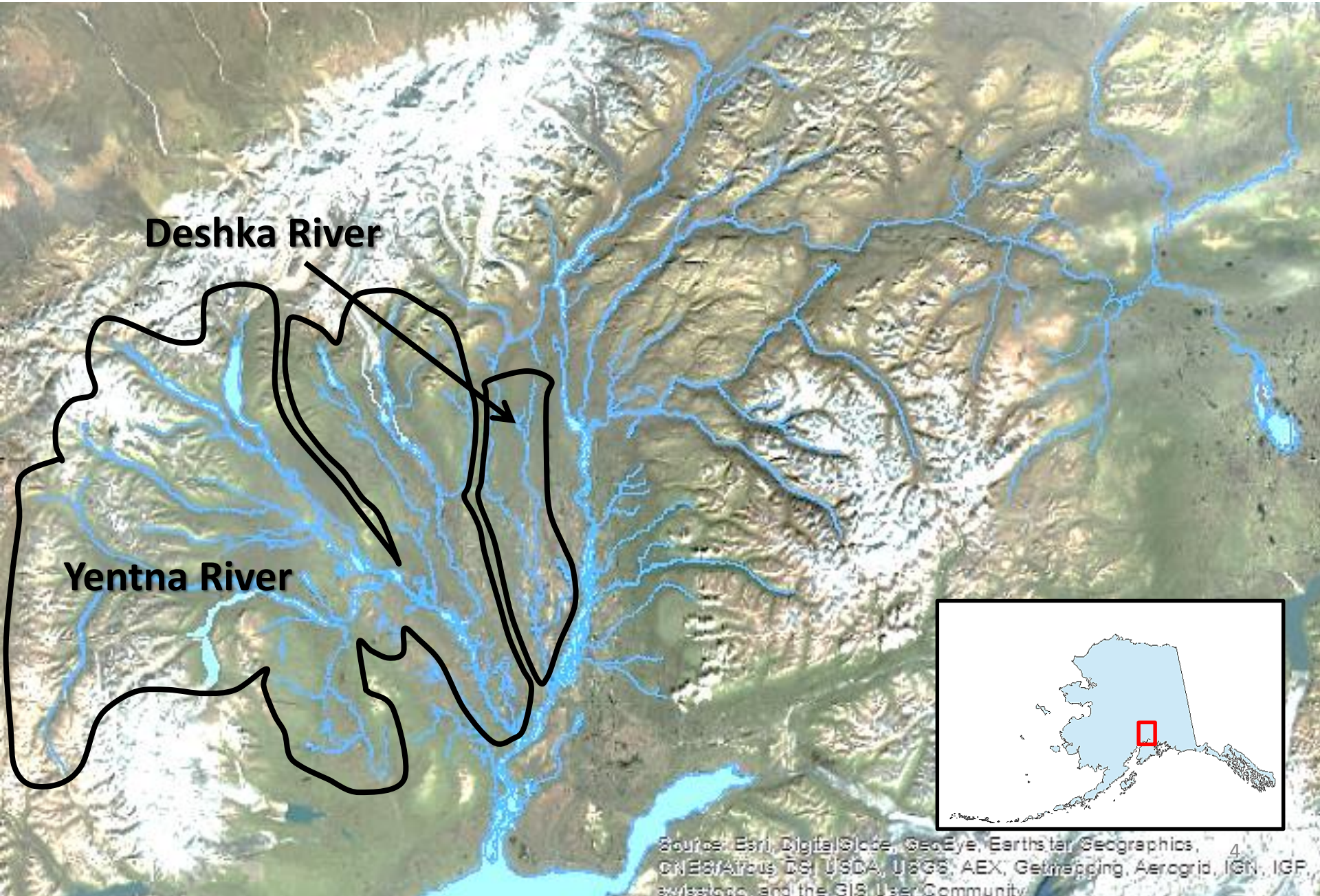


Susitna Chinook Run Reconstruction Groups



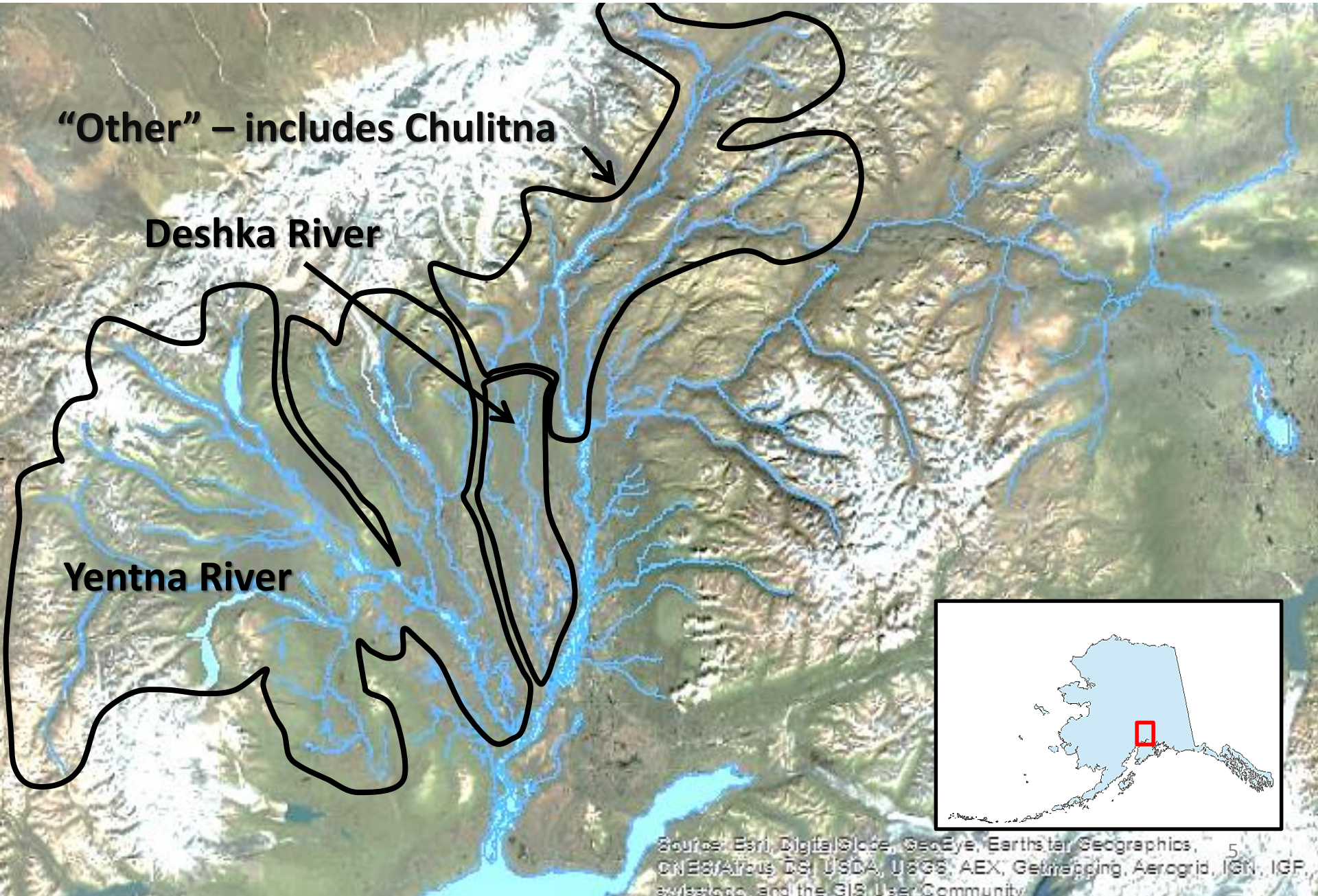
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Susitna Chinook Run Reconstruction Groups

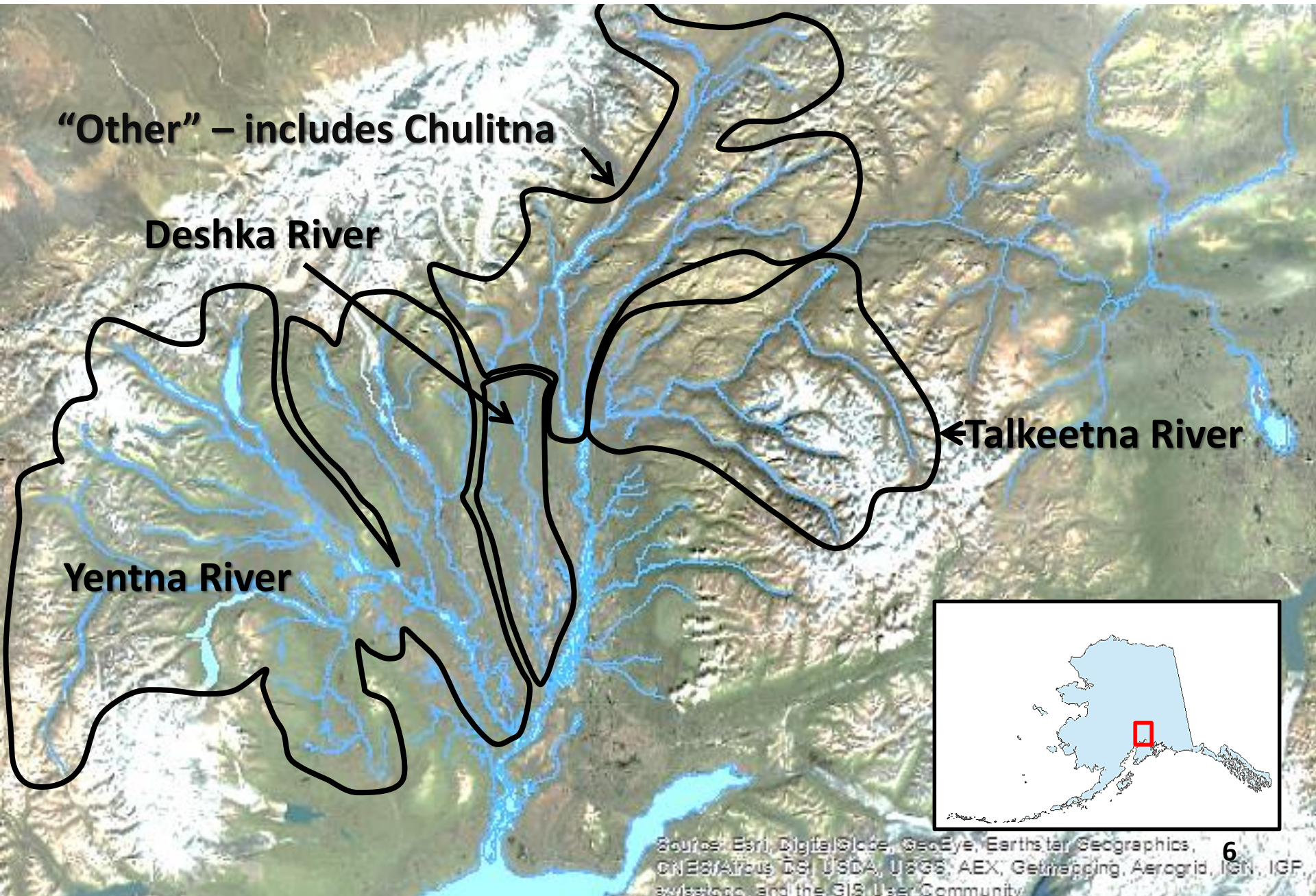


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Susitna Chinook Run Reconstruction Groups



Susitna Chinook Run Reconstruction Groups



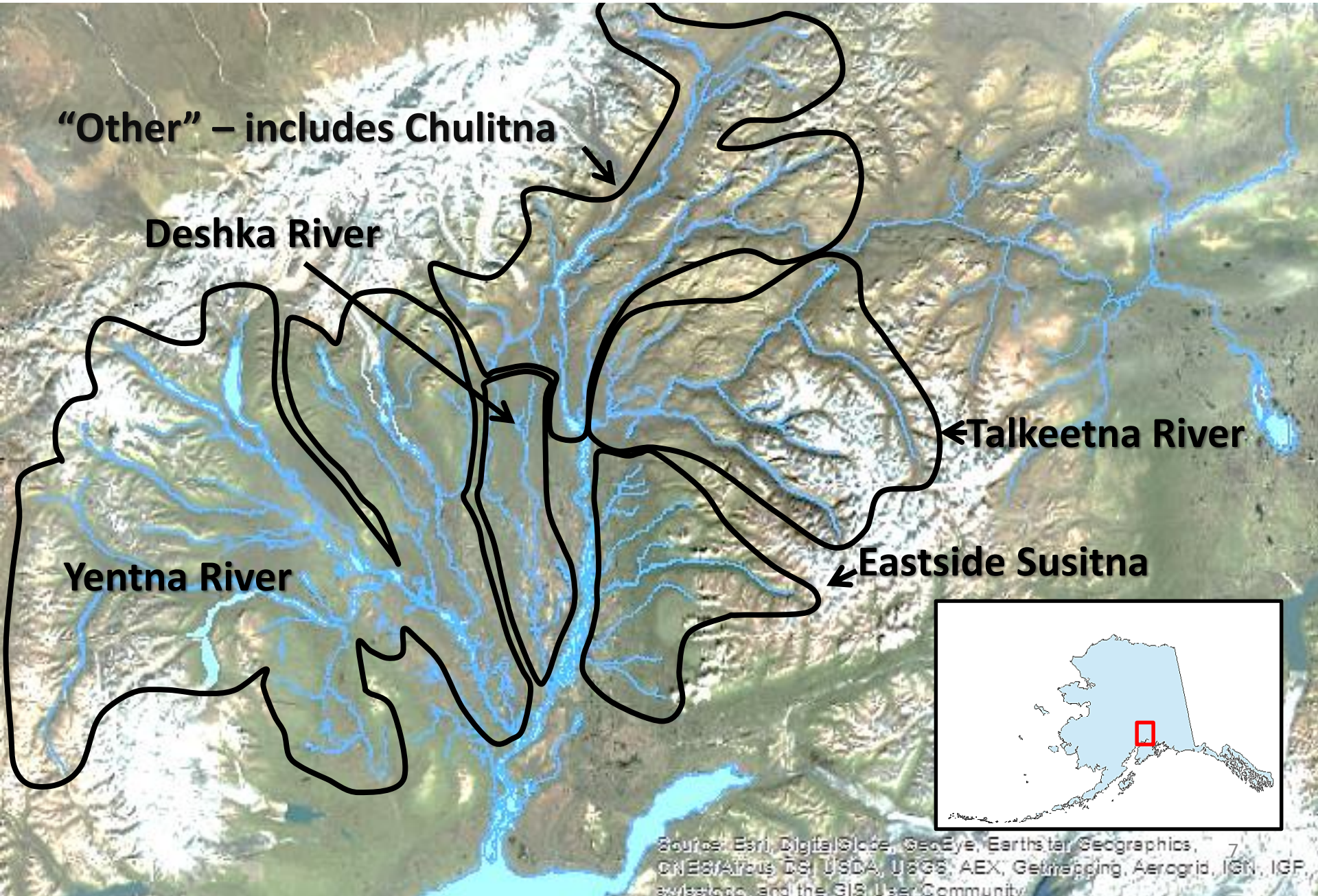
"Other" - includes Chulitna

Deshka River

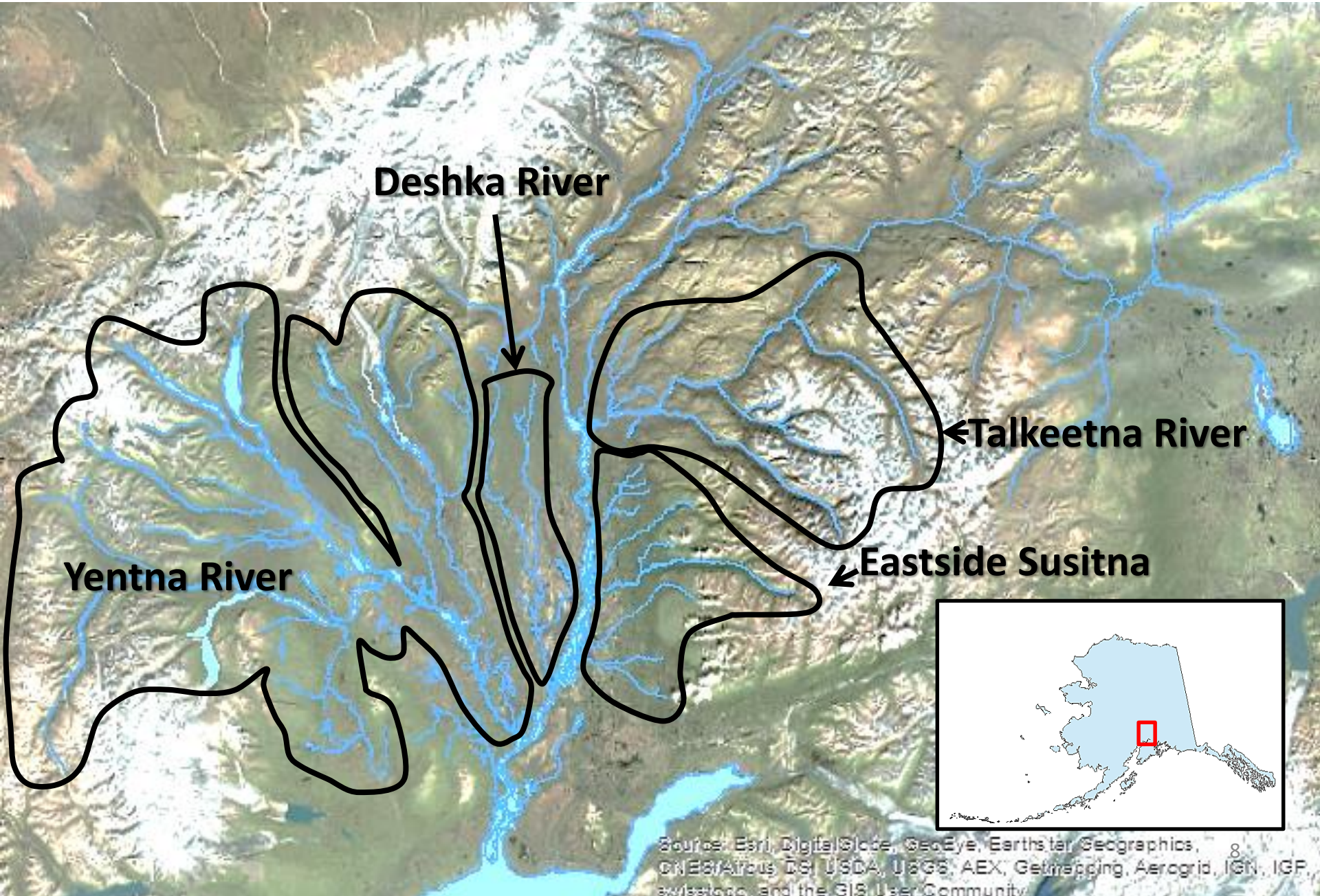
Yentna River

Talkeetna River

Susitna Chinook Run Reconstruction Groups



Susitna Chinook Run Reconstruction Groups



Susitna Chinook Run Reconstruction Design

Mark-
recapture
abundance

Weir counts

Harvest data

Aerial surveys

Age data



Data

Susitna Chinook Run Reconstruction Design



- Abundance estimates by management unit, 2013 – 2017

Susitna Chinook Run Reconstruction Design



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Age data

- Deshka River weir, 1995 – 2017
- Montana Creek weir, 2013 – 2014
- Willow Creek weir, 2000 – 2002

Susitna Chinook Run Reconstruction Design

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Age data

- In-river sport harvest from the SWHS
- Marine harvest data from NCI commercial set net and Tyonek subsistence fisheries

Susitna Chinook Run Reconstruction Design

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Weir counts

Harvest data

Aerial surveys

Age data

- Single aerial surveys for 17 tributaries, 1979 – 2017
- 12 of the 17 have escapement goals

Susitna Chinook Run Reconstruction Design

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Weir counts

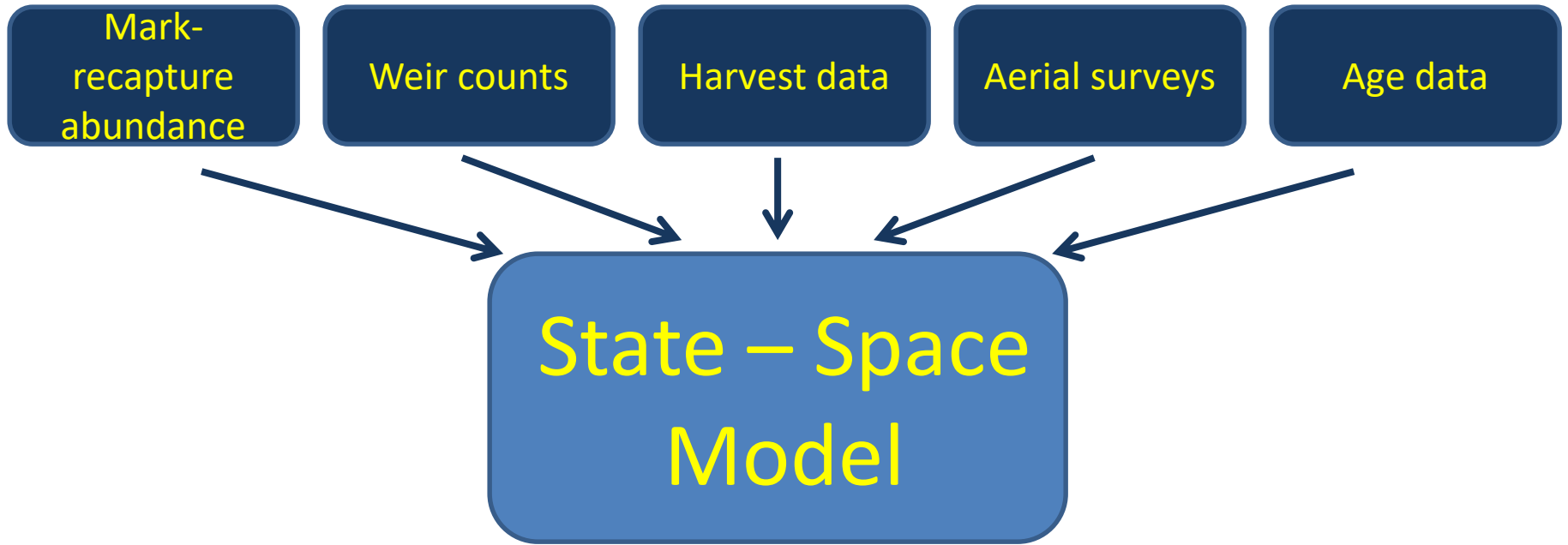
Harvest data

Aerial surveys

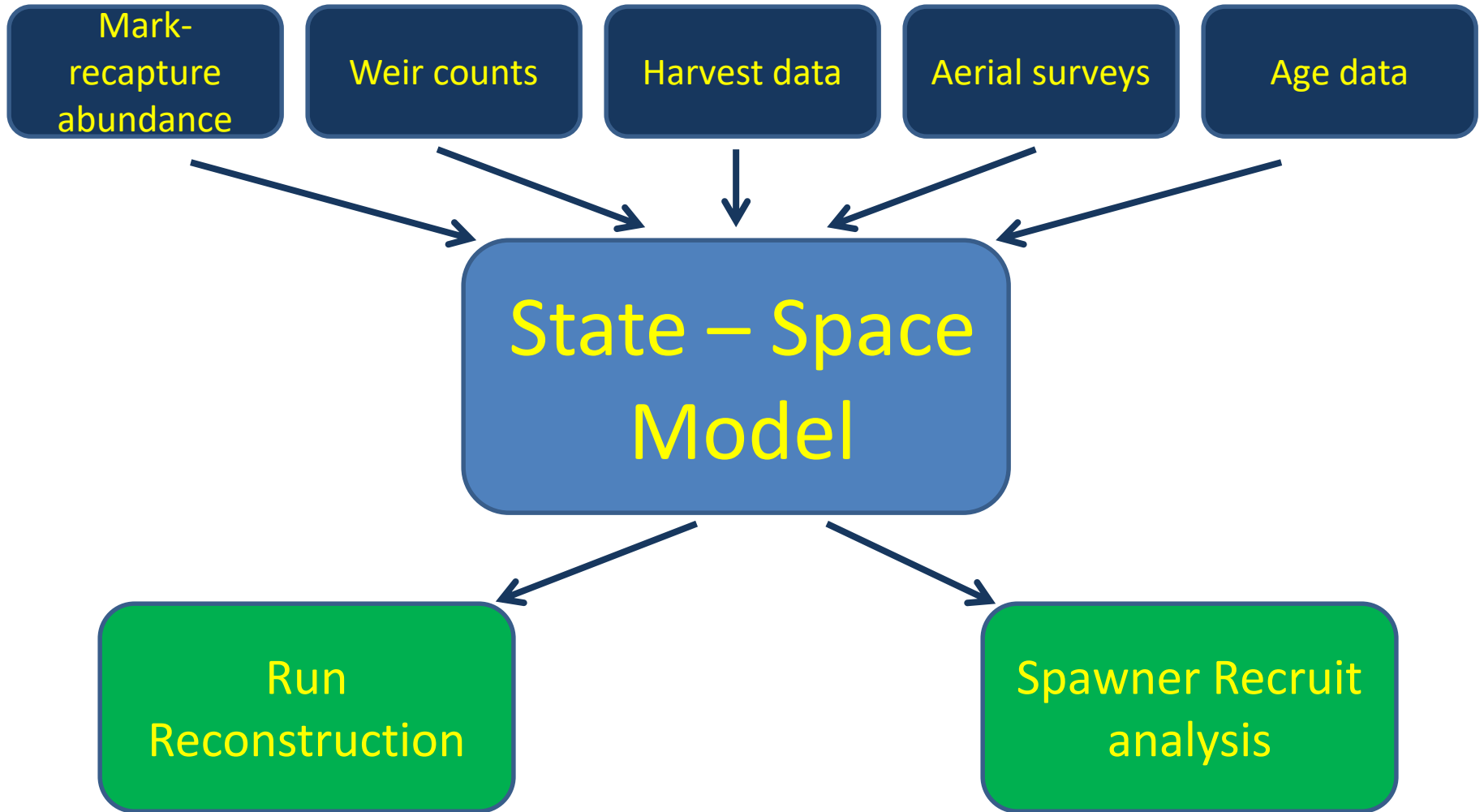
Age data

- Primarily Deshka River weir, but some creel survey data available.

Susitna Chinook Run Reconstruction Design



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Susitna Chinook Run Reconstruction Design



Run Reconstruction

Estimates by year by management group of:

- Escapement
- In river run
- Total Run
- Recruitment
- Harvest Rate
- Stock composition
- Age composition

Susitna Chinook Run Reconstruction Design

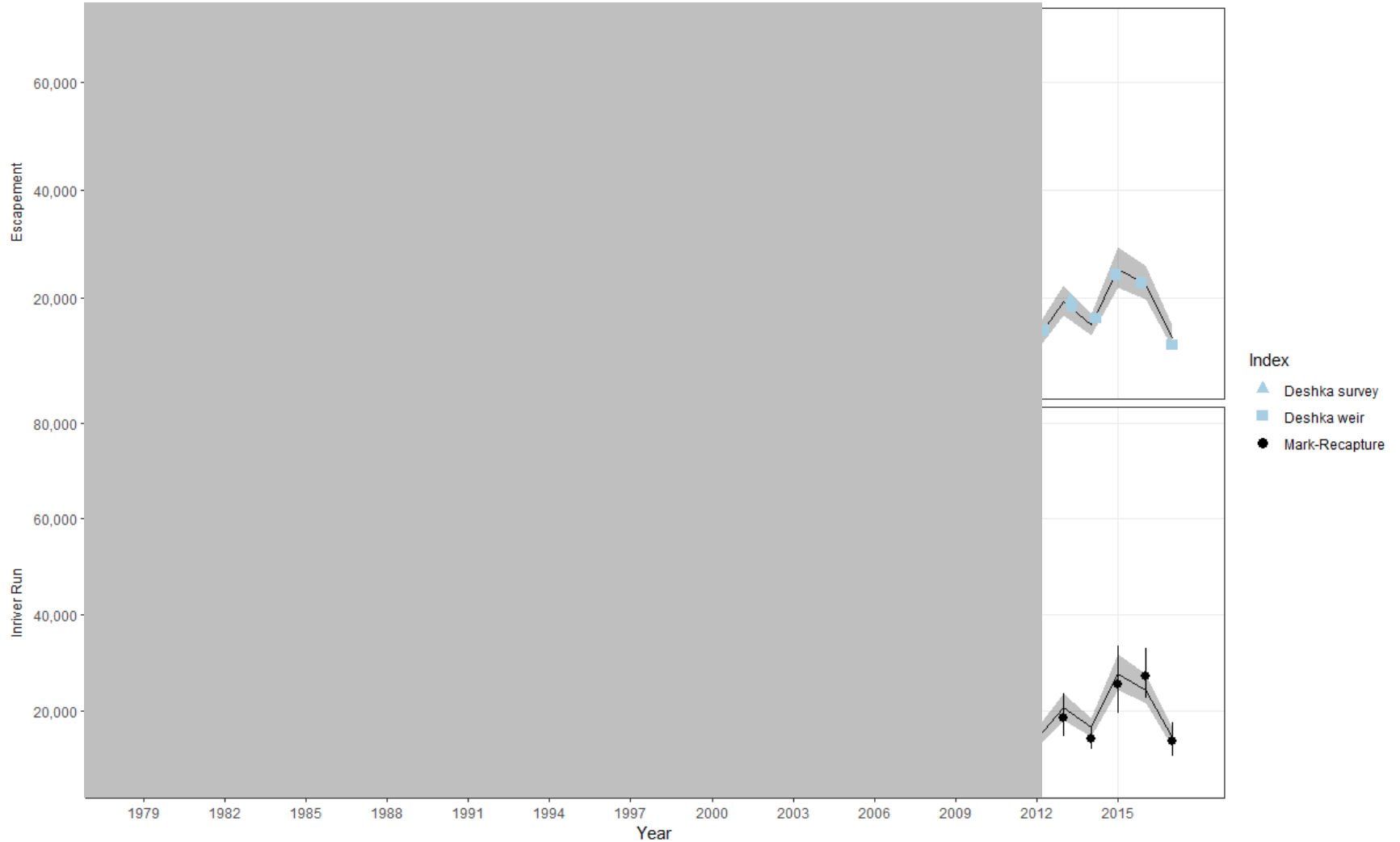
Spawner Recruit analysis

Estimates by management group of:

- Productivity
- Spawner- recruit relationship
- Spawner – recruit biological reference points (S_{msy} , S_{max} , etc.)
- Optimal yield, recruitment, and overfishing profiles

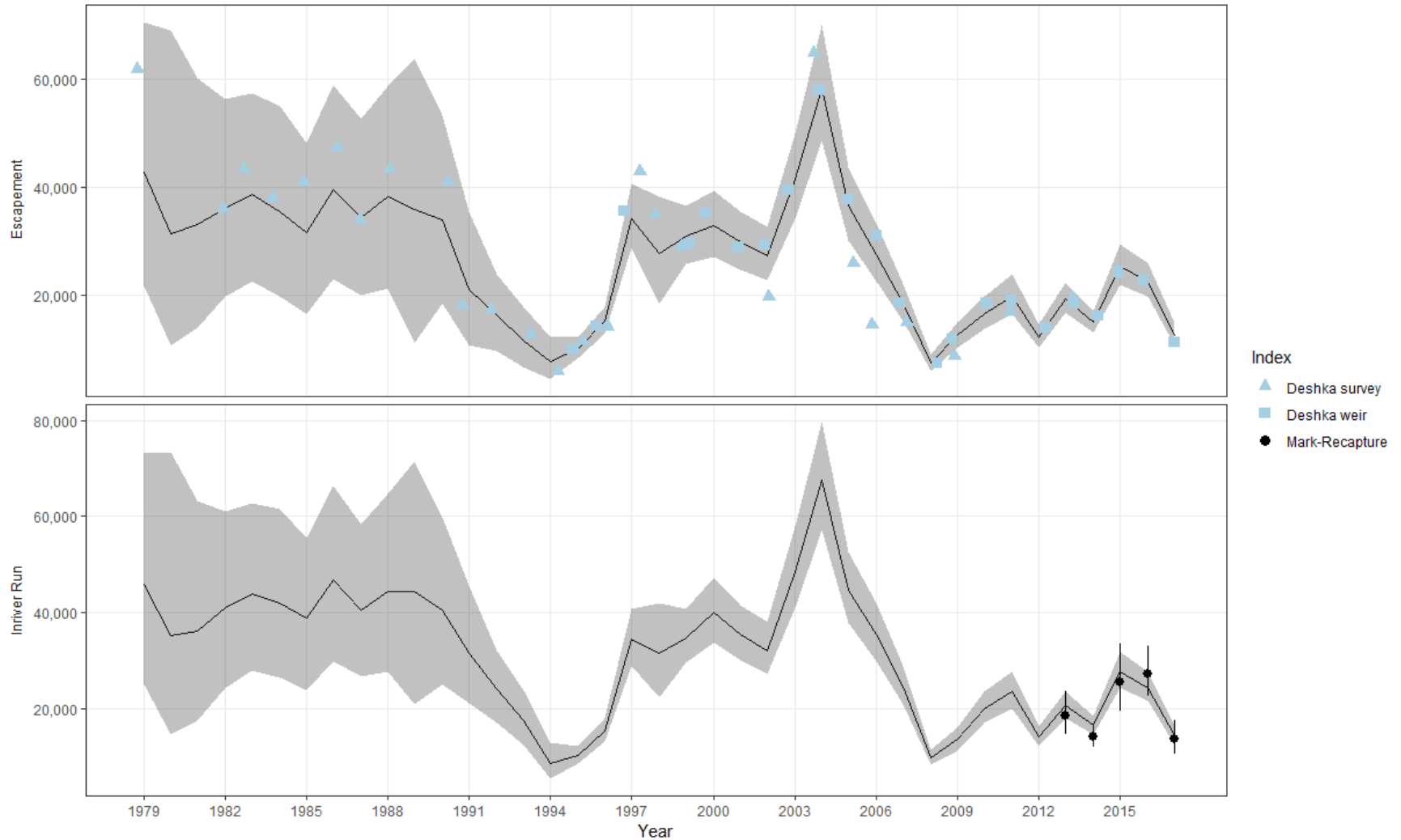
Susitna Chinook Run Reconstruction Preliminary Results

Deshka River



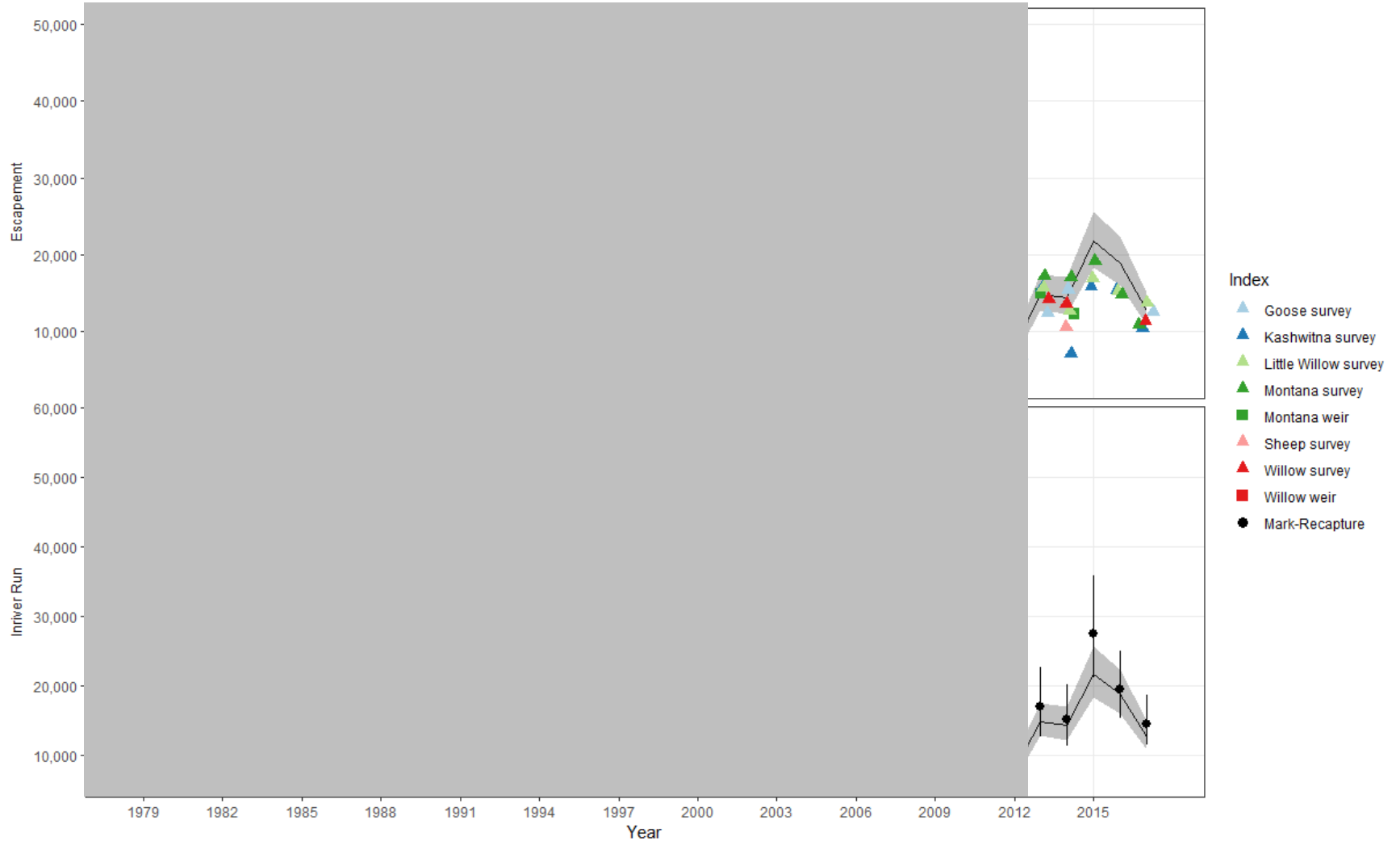
Susitna Chinook Run Reconstruction Preliminary Results

Deshka River



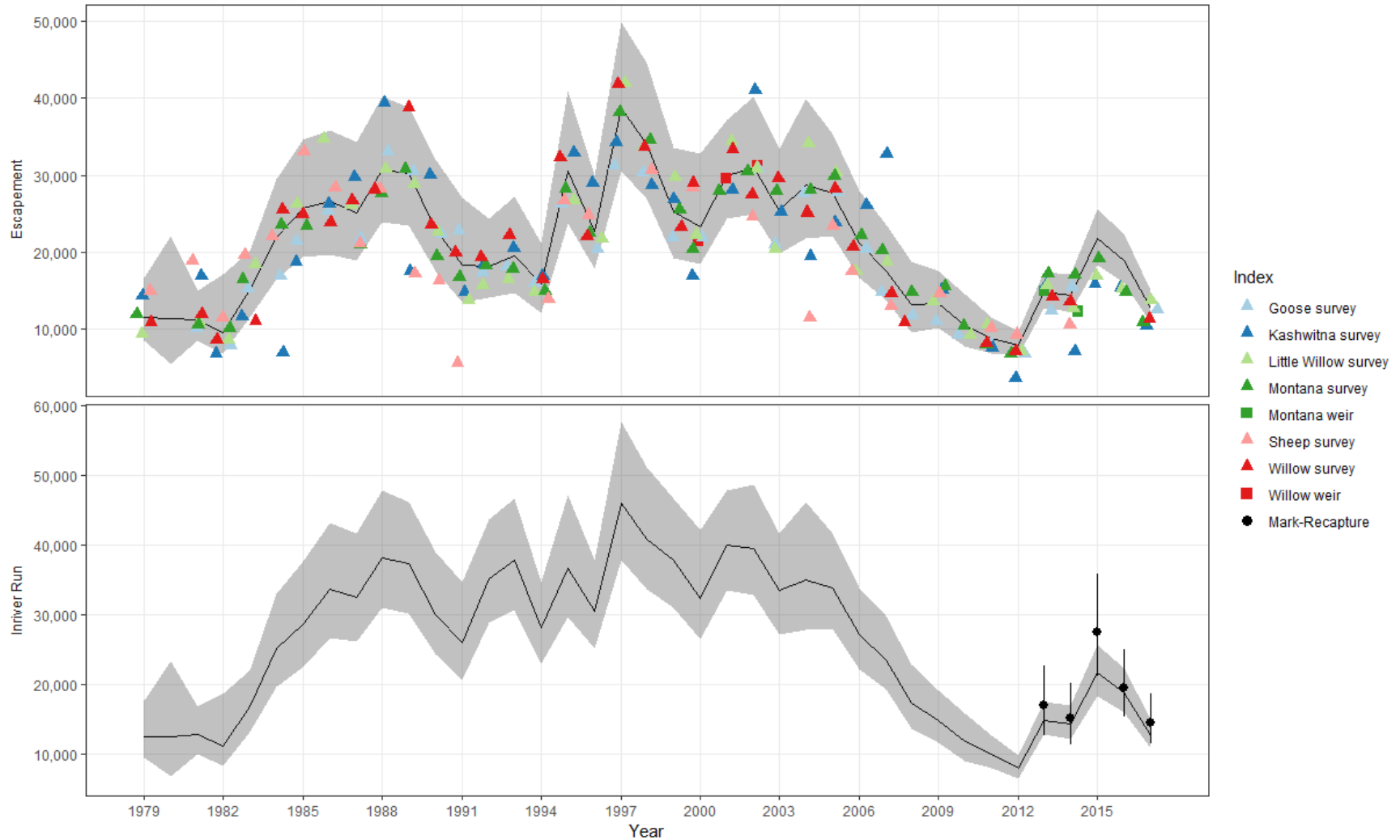
Susitna Chinook Run Reconstruction Preliminary Results

Eastside Susitna River



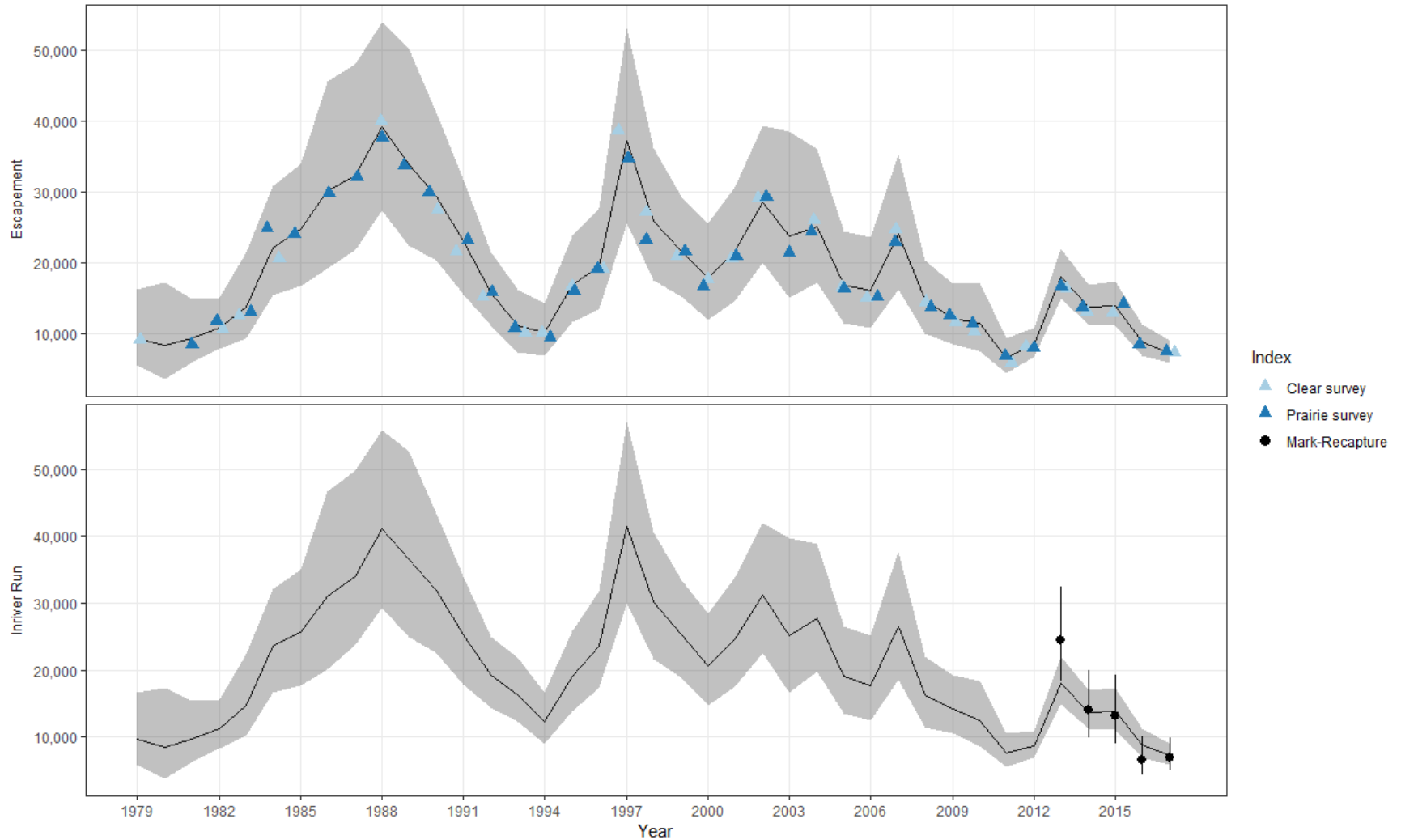
Susitna Chinook Run Reconstruction Preliminary Results

Eastside Susitna River



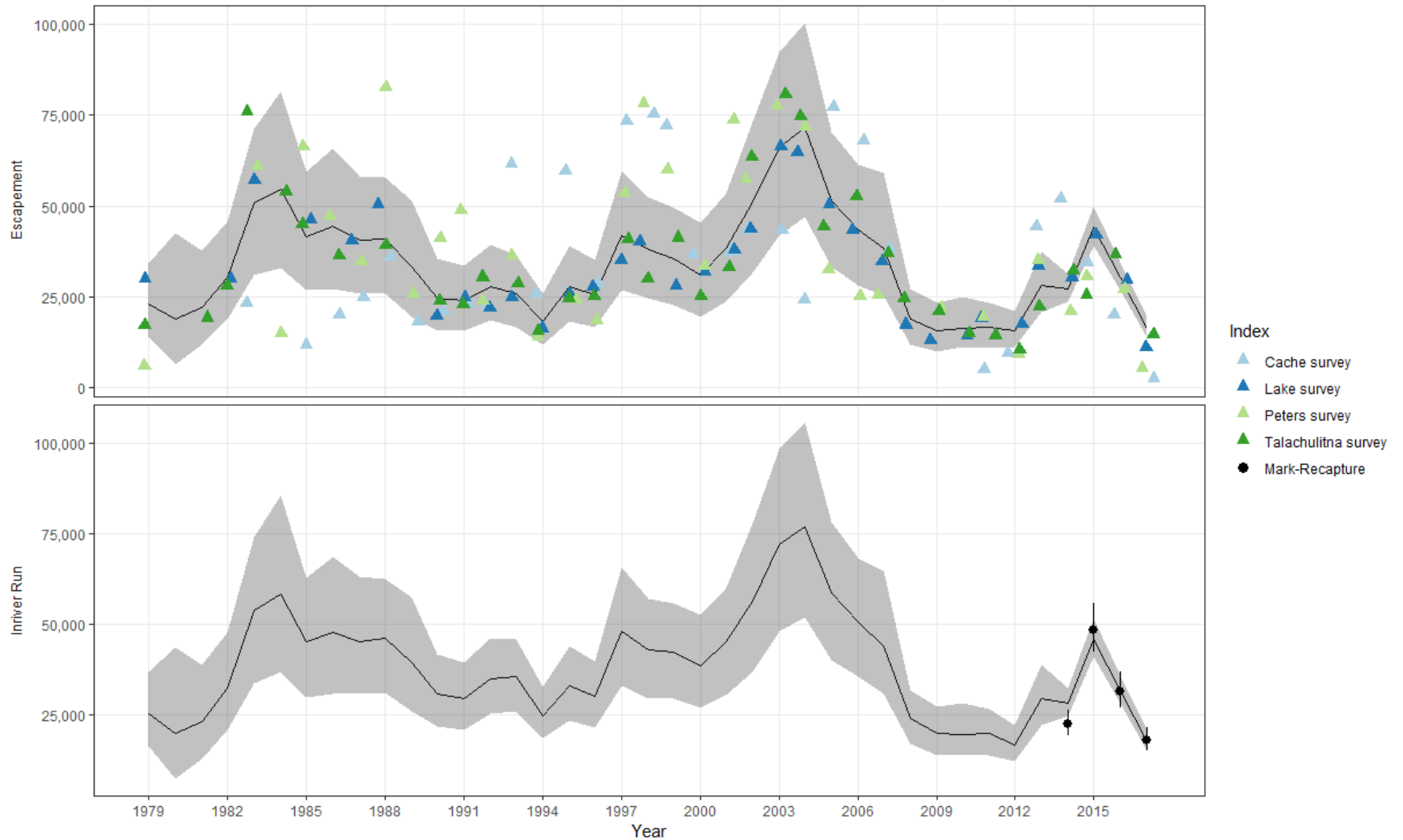
Susitna Chinook Run Reconstruction Preliminary Results

Talkeetna River



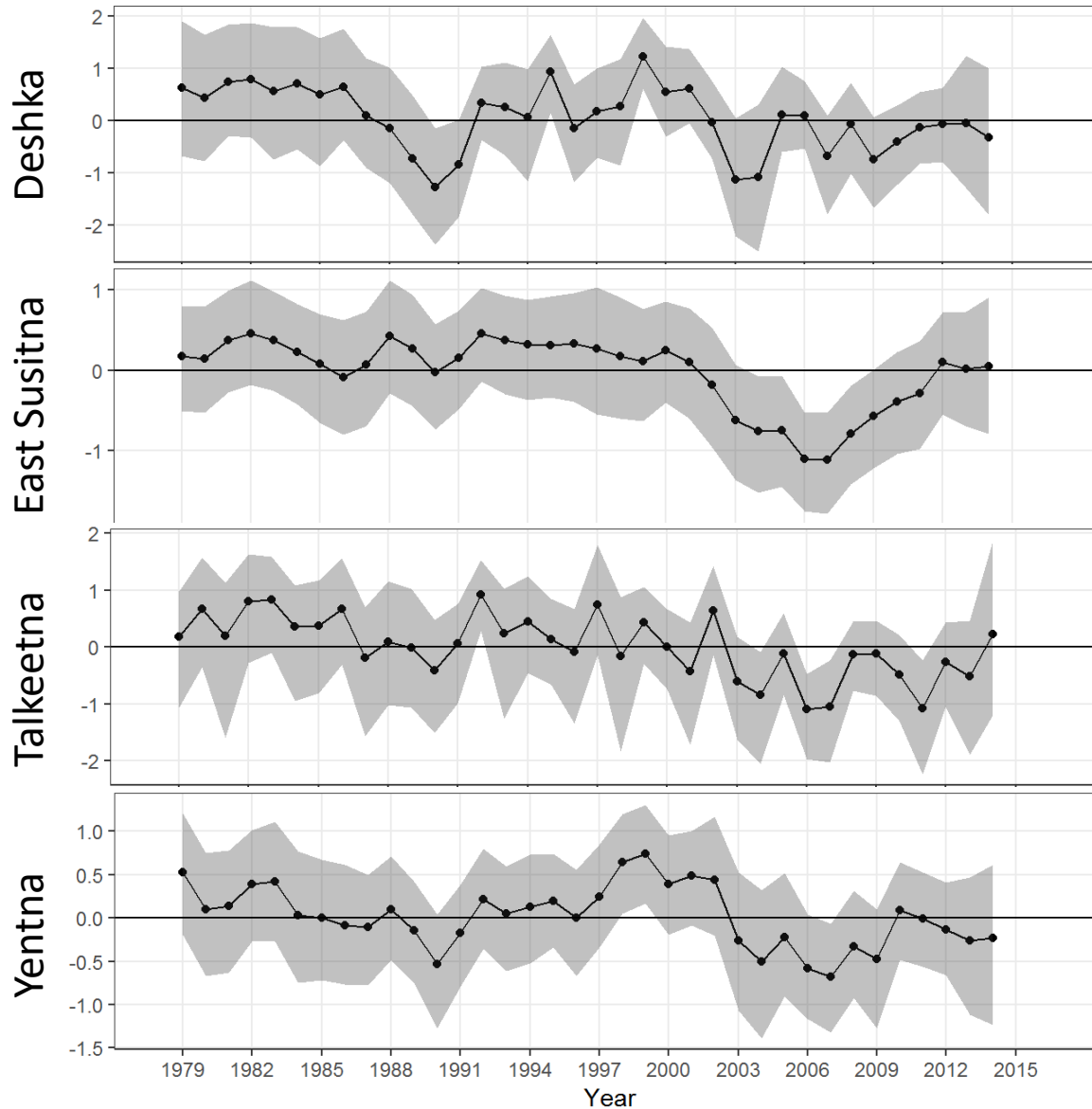
Susitna Chinook Run Reconstruction Preliminary Results

Yentna River



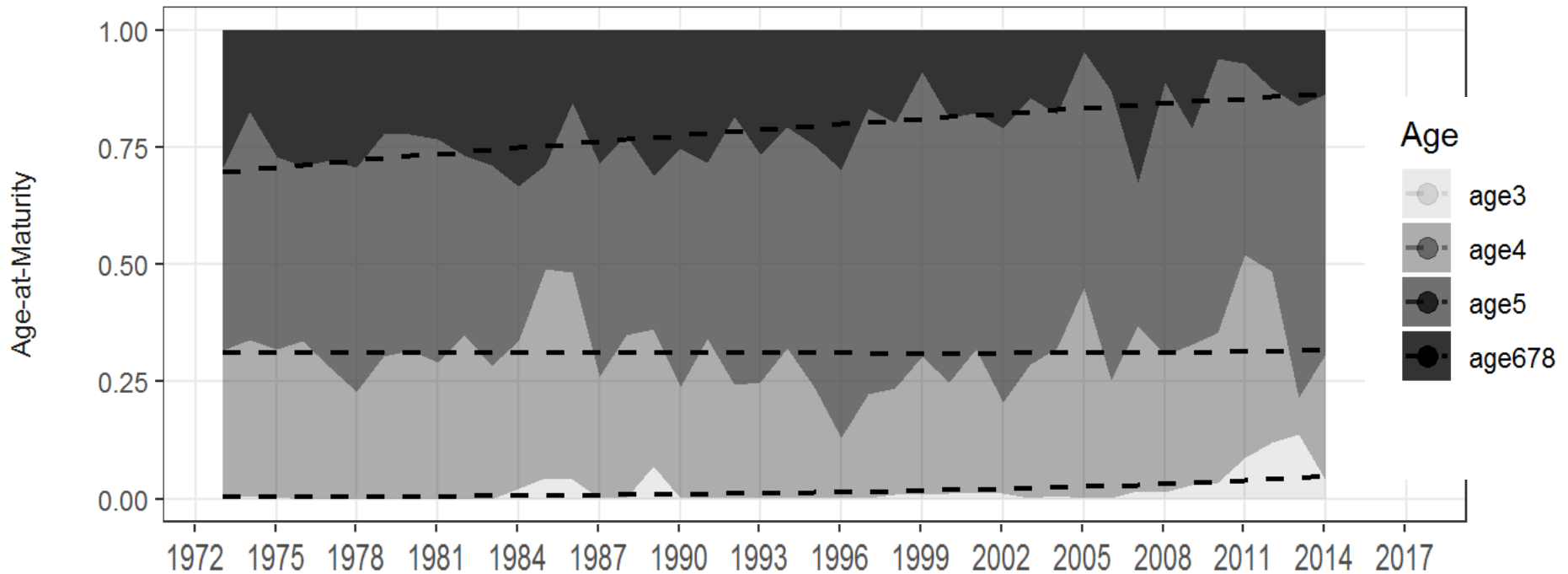
Susitna Chinook Run Reconstruction Preliminary Results

Productivity (Ricker residuals)



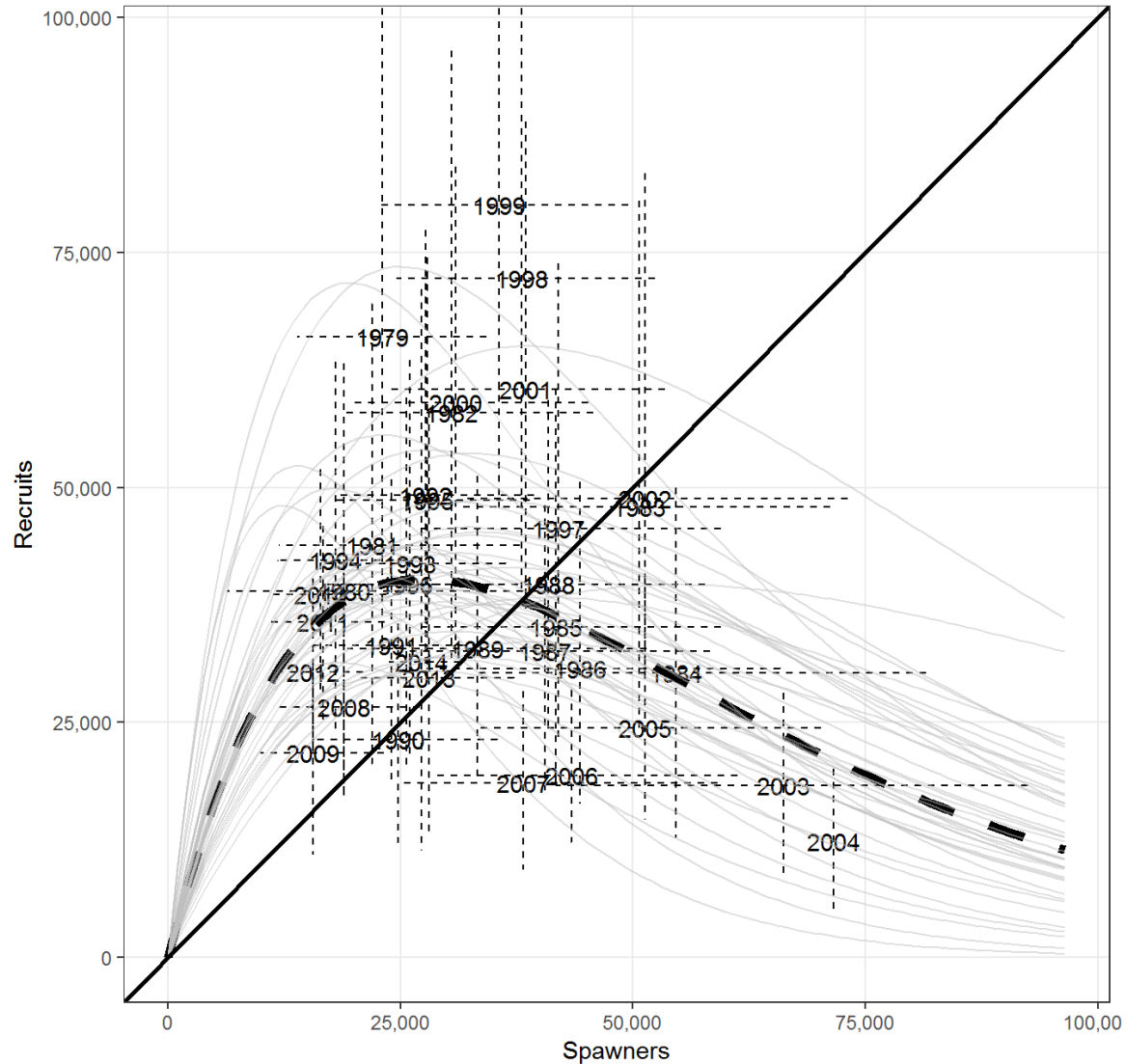
Susitna Chinook Run Reconstruction Preliminary Results

Age at maturity – drainage-wide



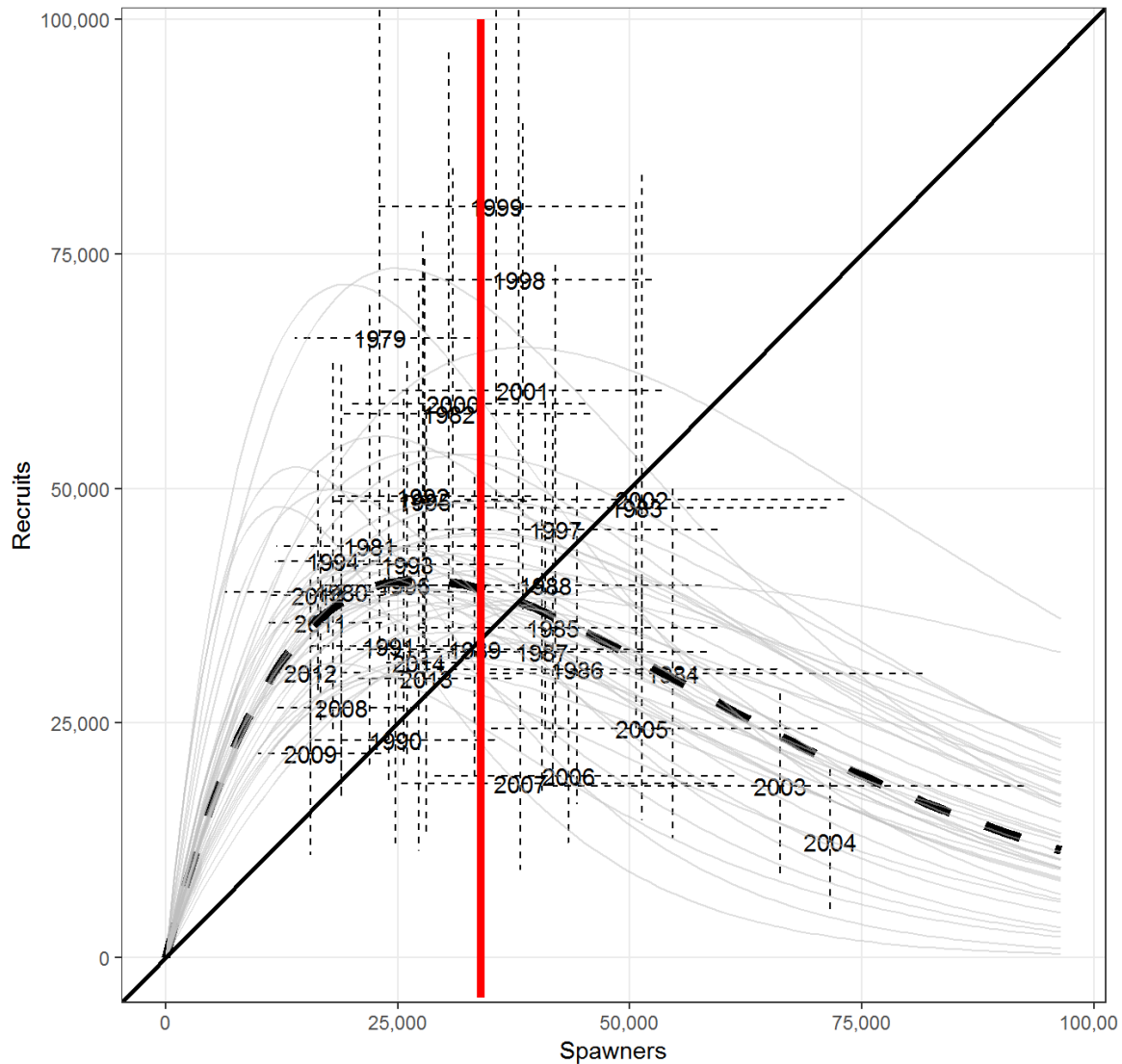
Susitna Chinook Spawner – Recruit Preliminary Results

Yentna River



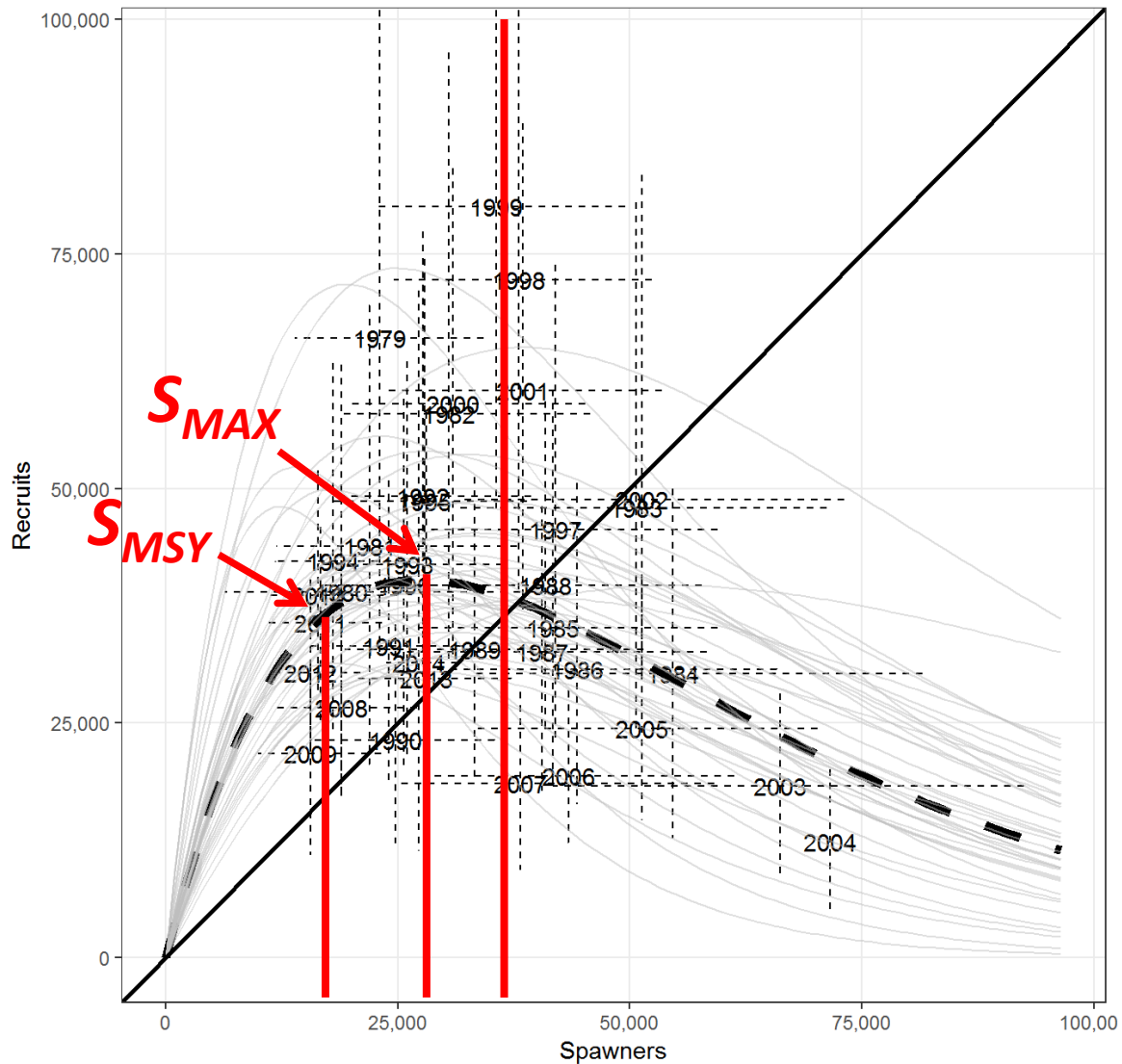
Susitna Chinook Spawner – Recruit Preliminary Results

Yentna River



Susitna Chinook Spawner – Recruit Preliminary Results

Yentna River



Susitna Chinook Run Reconstruction

Conclusions

- This approach is advantageous because it uses several data sets to derive parameter estimates of a single management group, versus the current approach which uses a single survey to infer only escapement of a single tributary.
- This analysis has the potential to shape future management strategies.
- A detailed report of this analysis is under construction and planned for publication in the spring of 2019.

Thanks to many!!!

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Susitna Chinook Stock – Recruit Preliminary Results

