Genetic Stock Composition of the Commercial Harvest of Chinook Salmon in the Copper River District, 2013-2017

A Report to the Alaska Board of Fisheries

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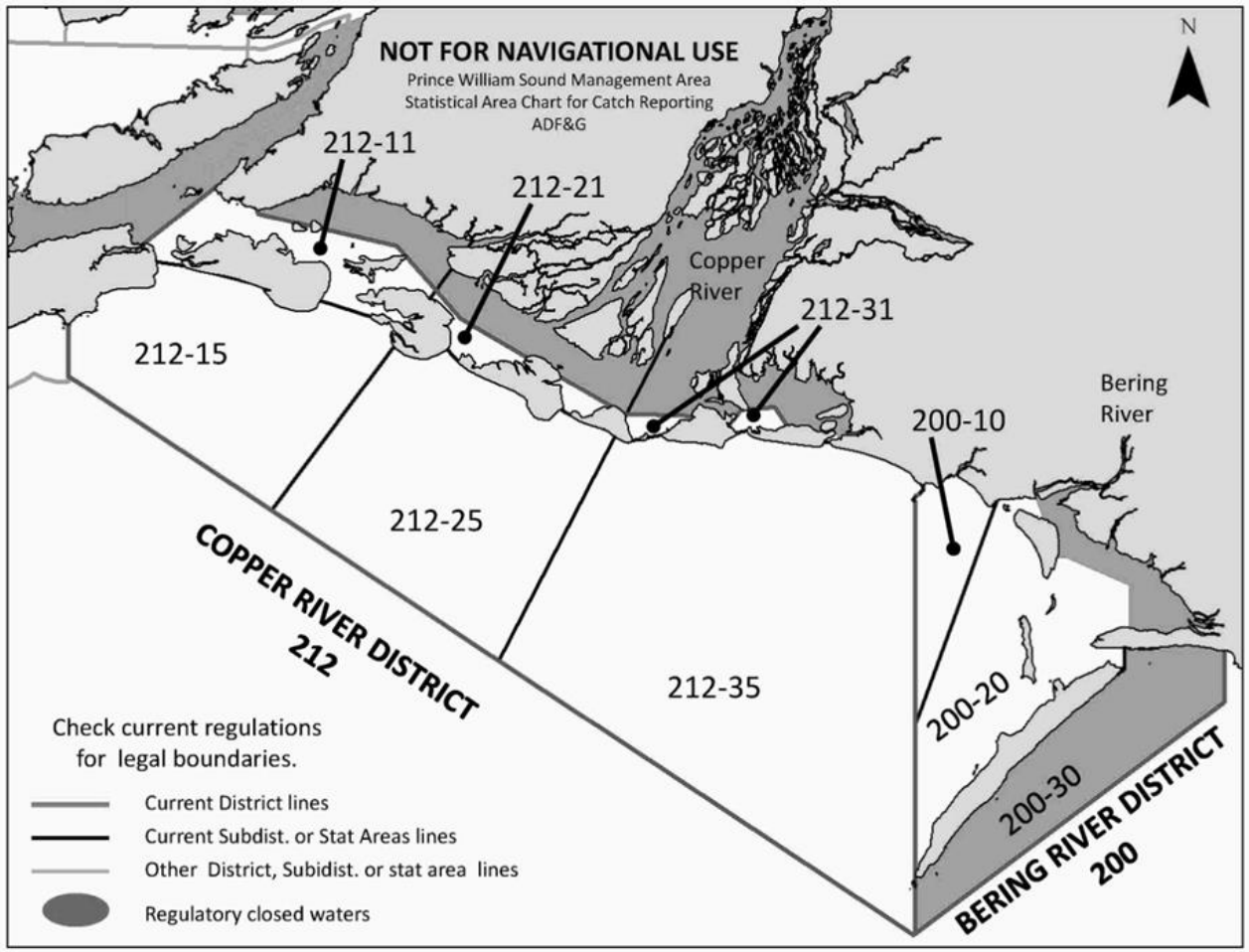
Outline

- Background
- Sampling methods
- Mixed stock analysis methods
- Results
- Summary and conclusions

Background

- Chinook Salmon Research Initiative (CSRI)
  - Copper as 1 of 12 indicator stocks
  - Information gaps identified
    - Adult spawning abundance
    - Juvenile abundance
    - Stock of origin of marine catches
- Project proposed for 2013–2017 to identify stock of origin in marine commercial fisheries in Copper River District

Background: Copper River District

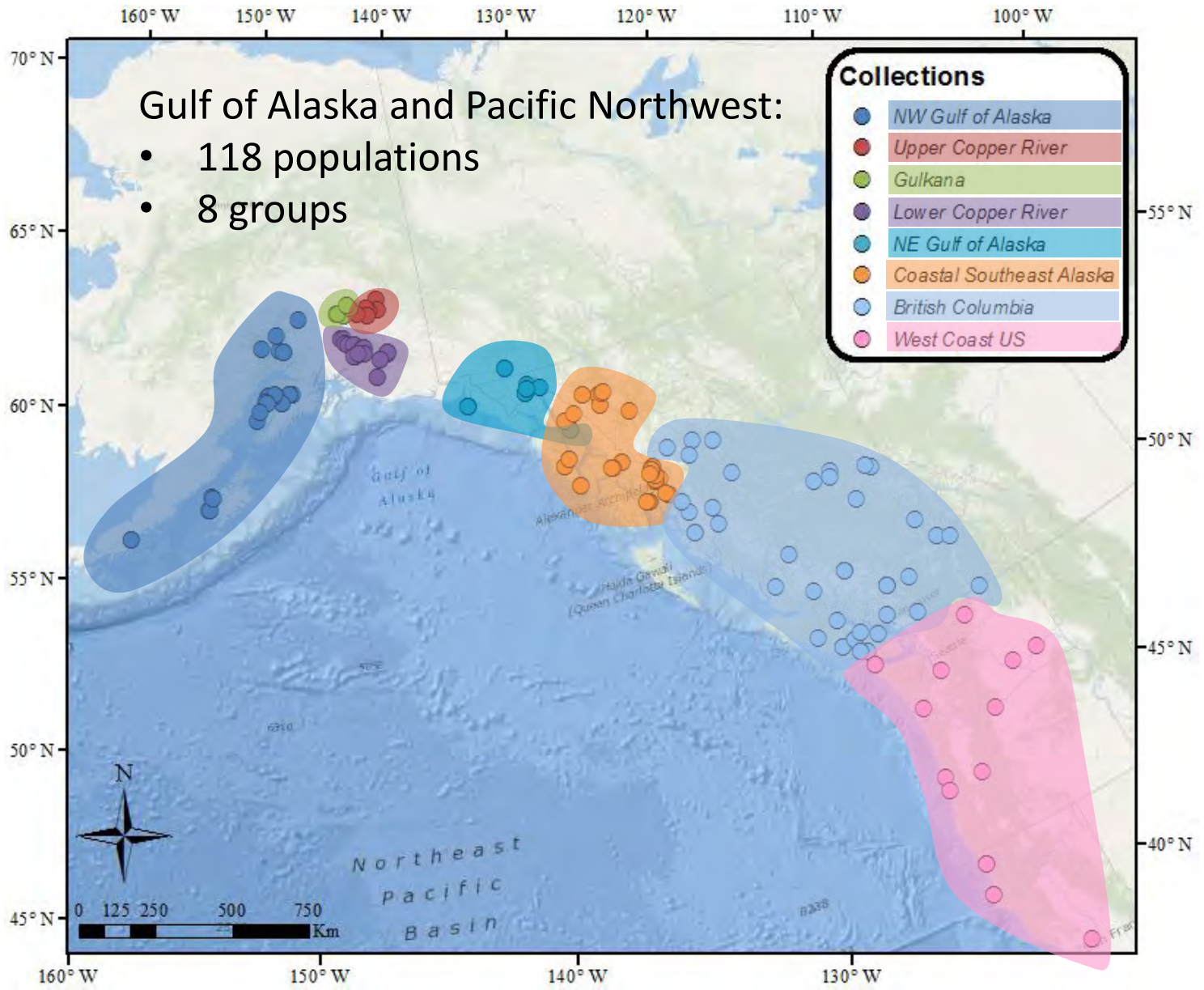


- Harvest of local and non-local stocks
- Management strategy: provide inriver passage from all stocks

Sampling Methods

- Chinook salmon from commercial gillnet harvest in marine waters
- By period, 5-6 weeks beginning mid-May
- Sample size: 200 samples per period
- Genetic tissue: axillary process
- Some paired with age (scale), sex, and length

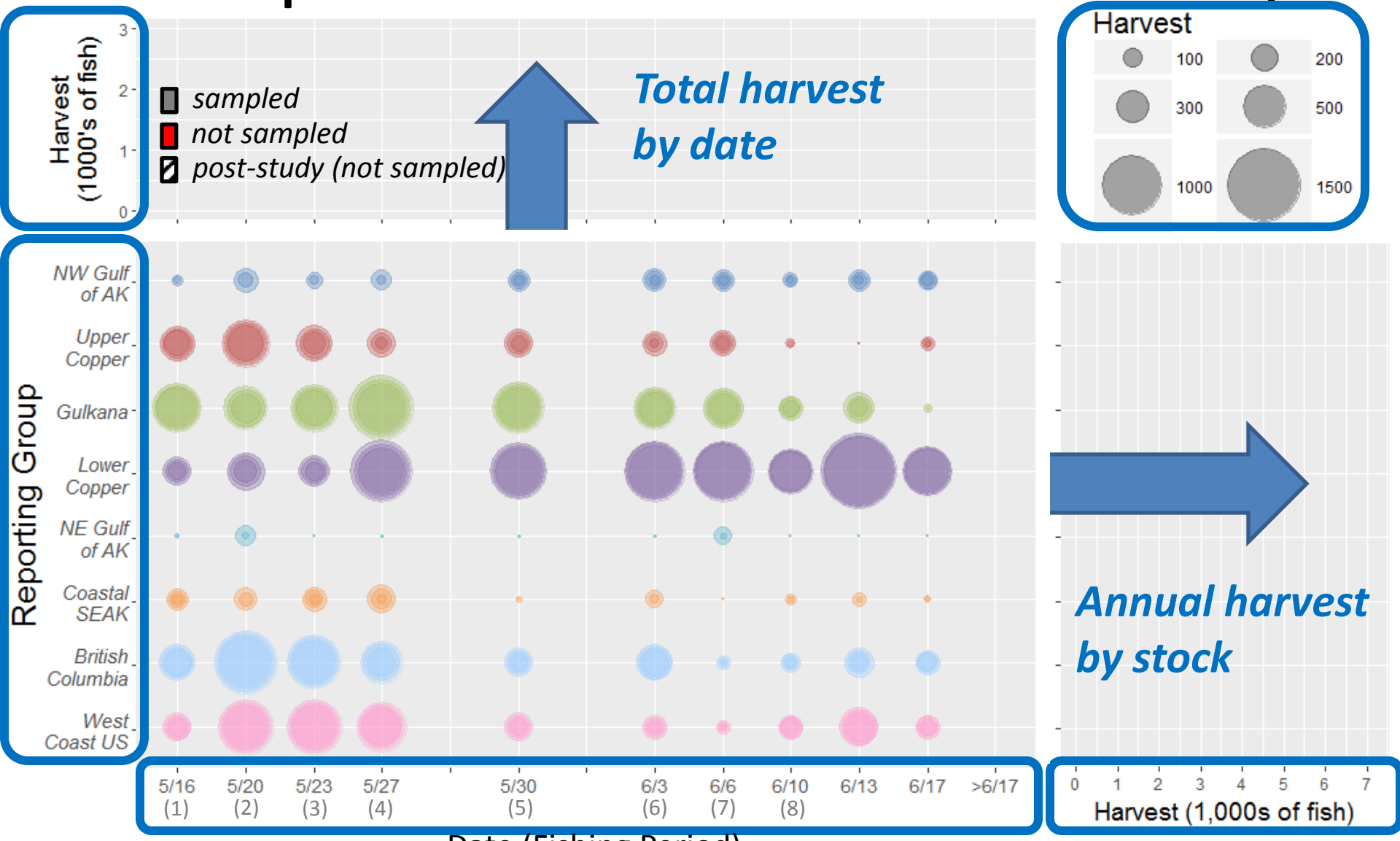
Mixed Stock Analysis: Genetic Baseline



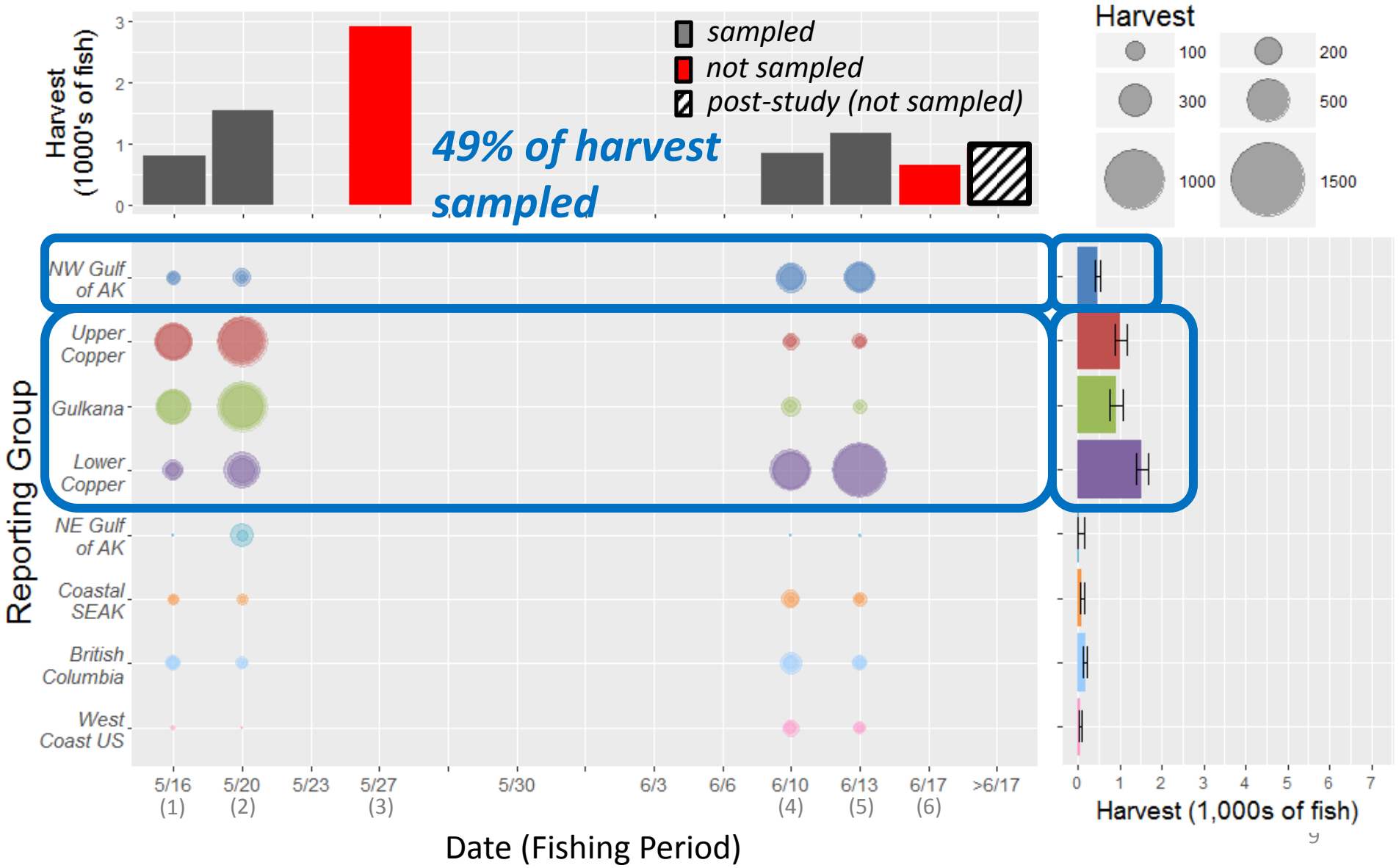
Mixed Stock Analysis Methods

- Harvest samples genotyped for 43 SNP markers in common with baseline
- Estimate relative stock composition

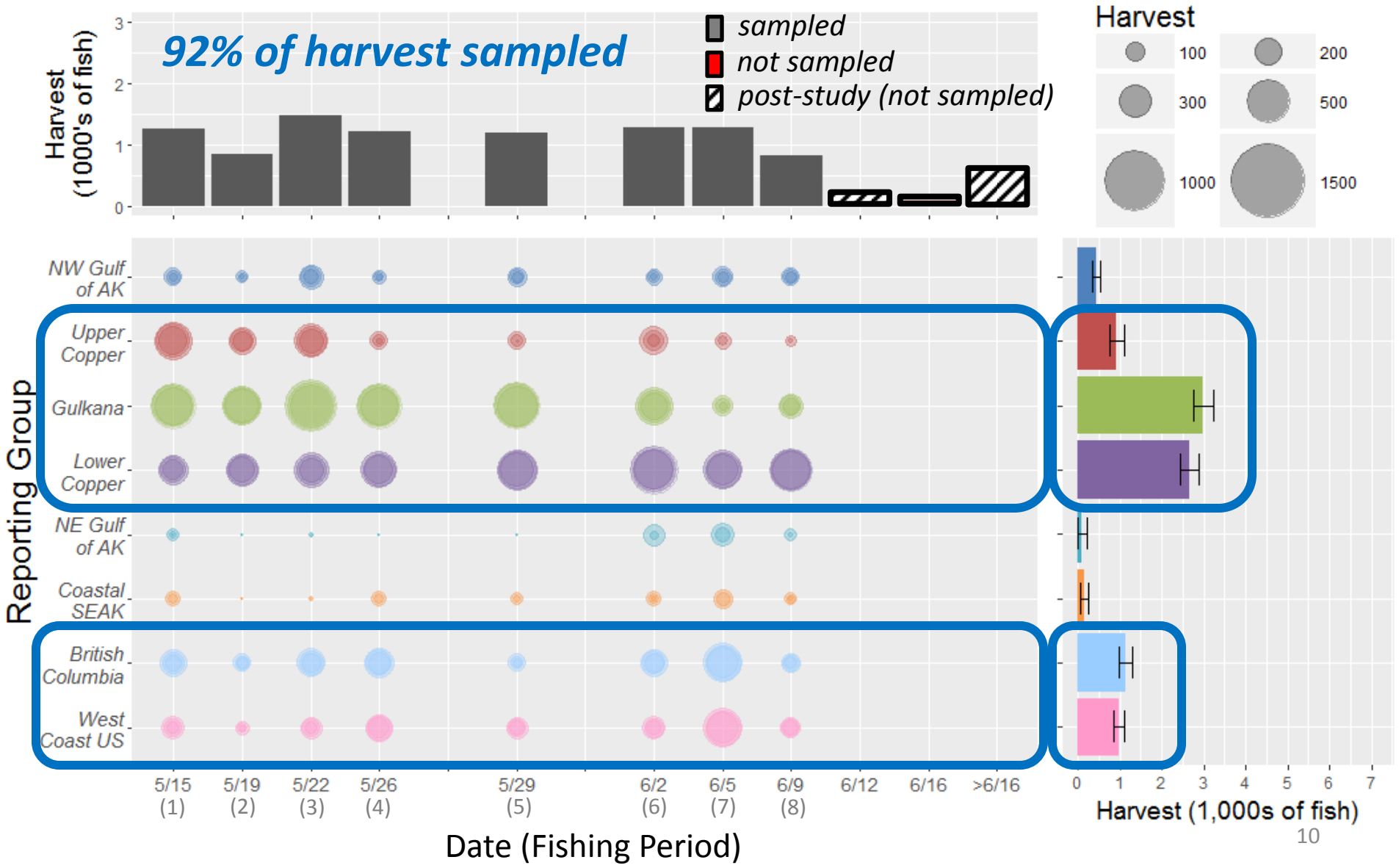
Stock-specific harvest results: Example



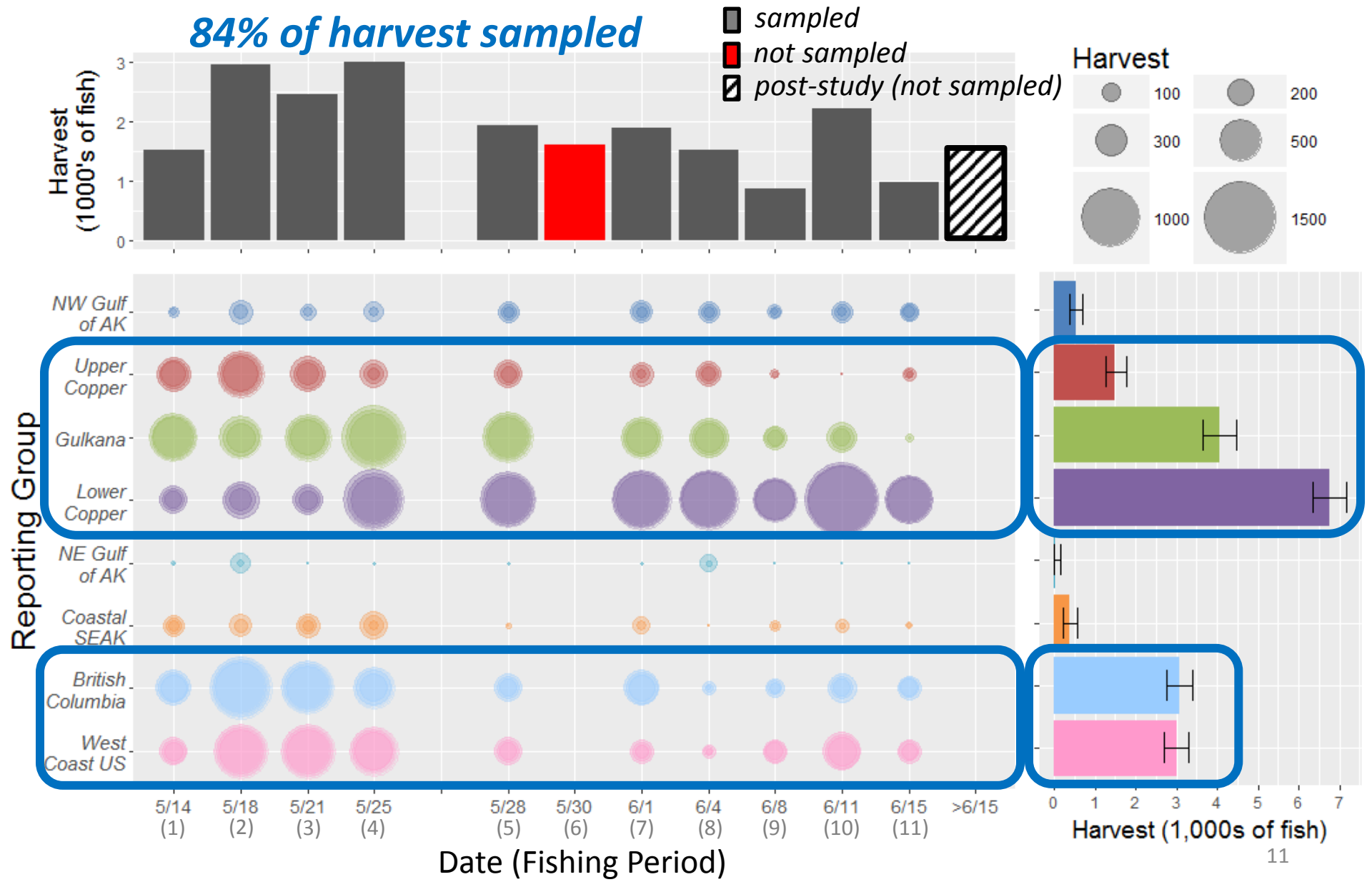
Stock-Specific Harvest: 2013



Stock-Specific Harvest: 2014

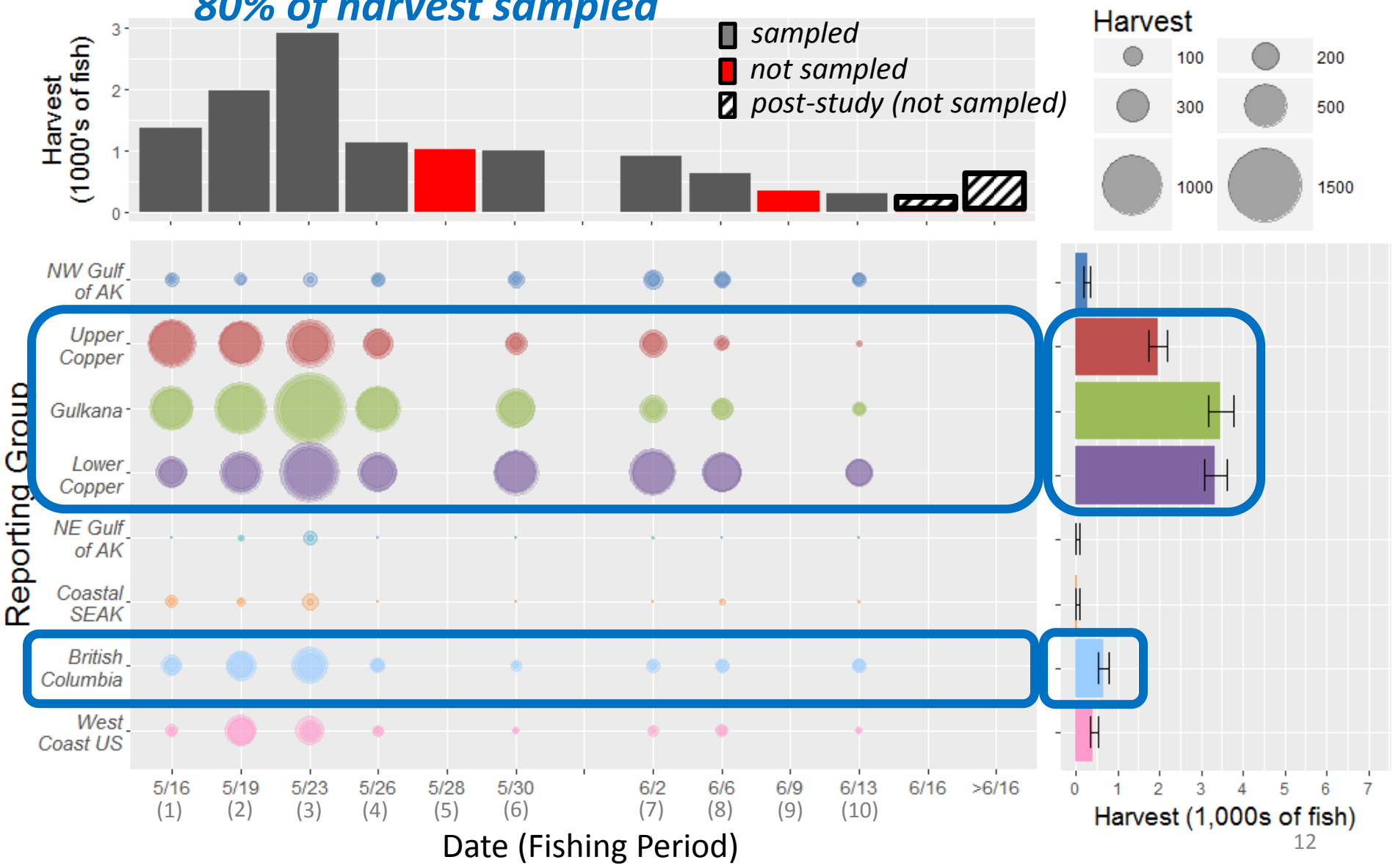


Stock-Specific Harvest: 2015

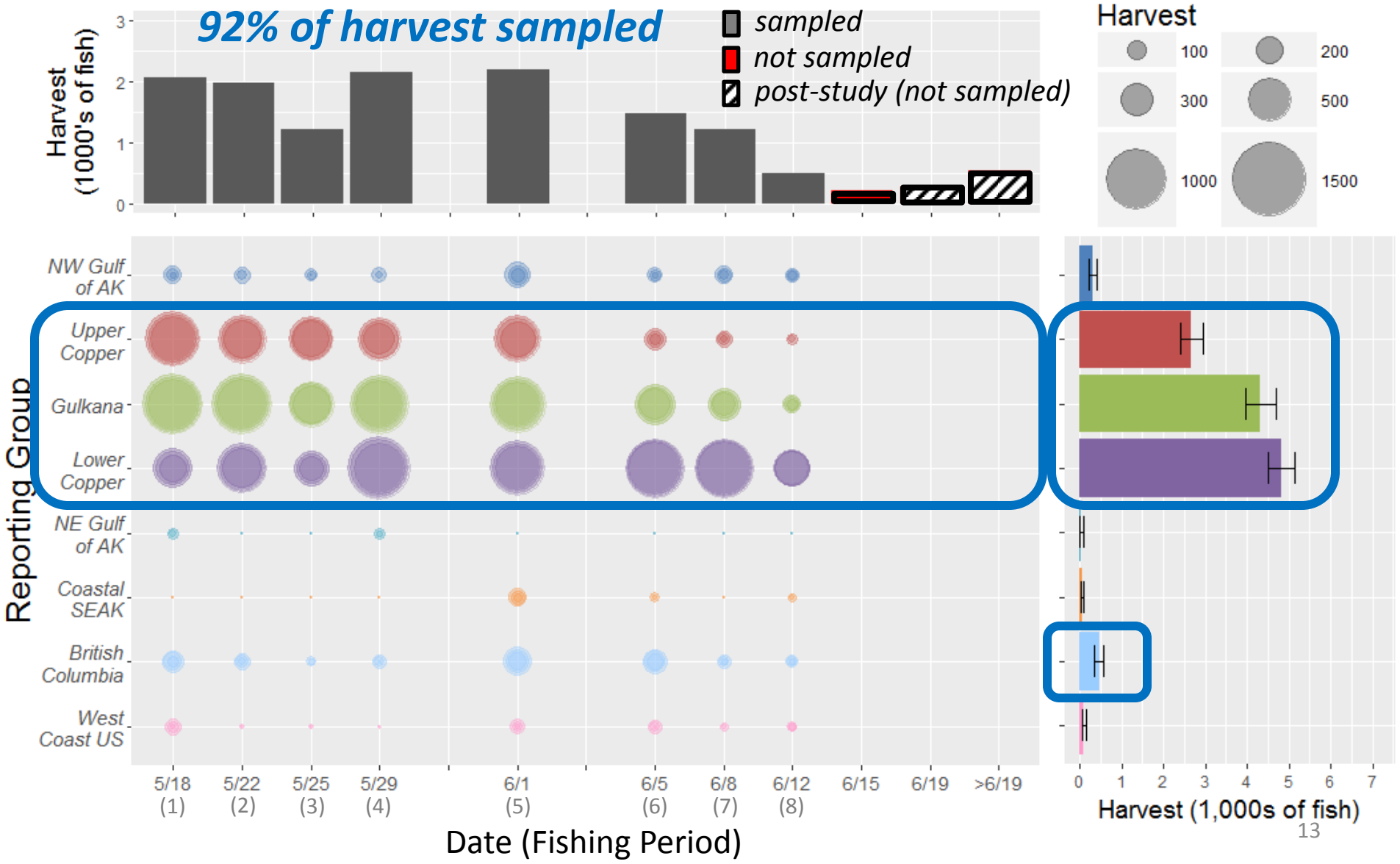


Stock-Specific Harvest: 2016

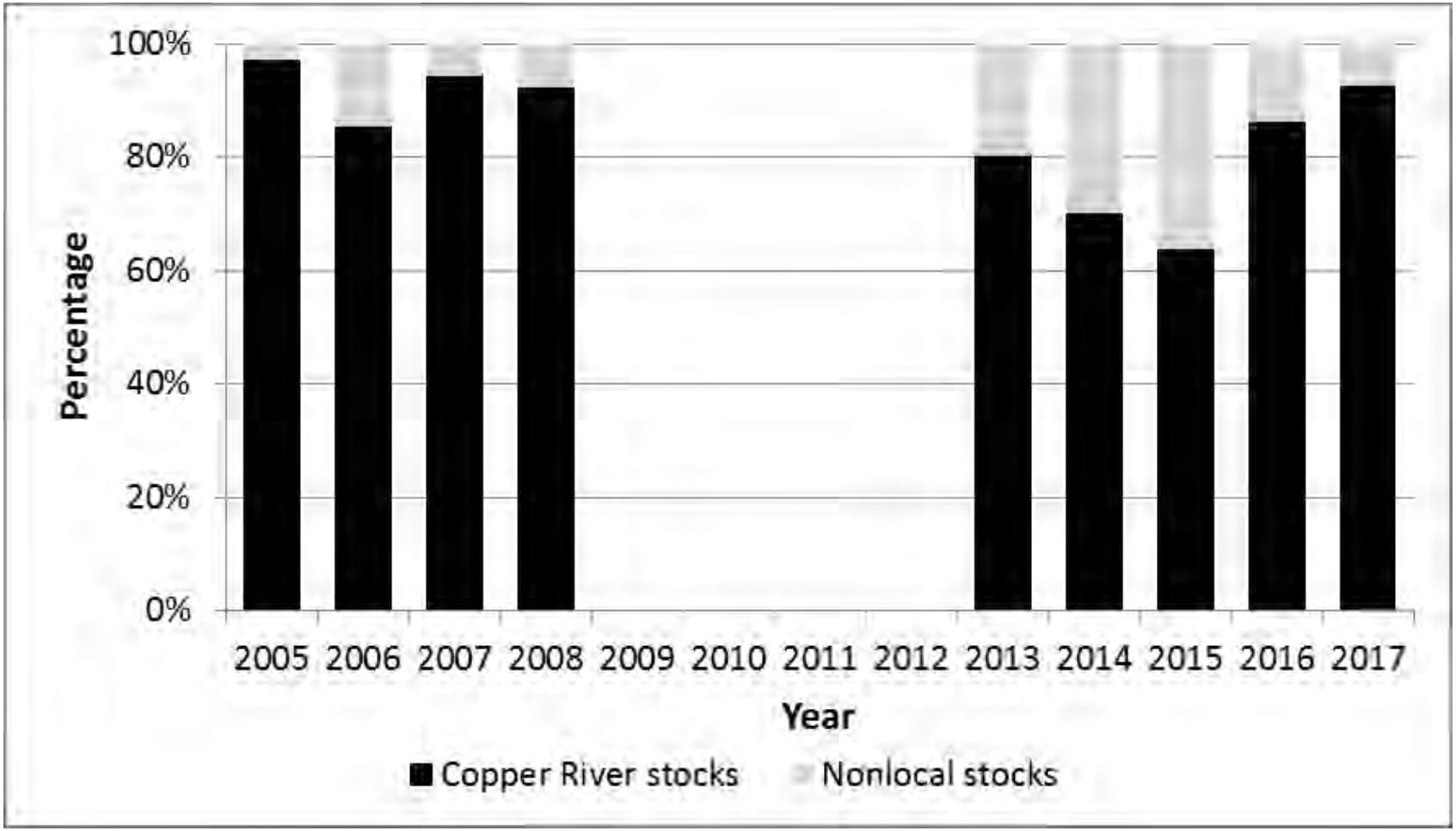
80% of harvest sampled



Stock-Specific Harvest: 2017

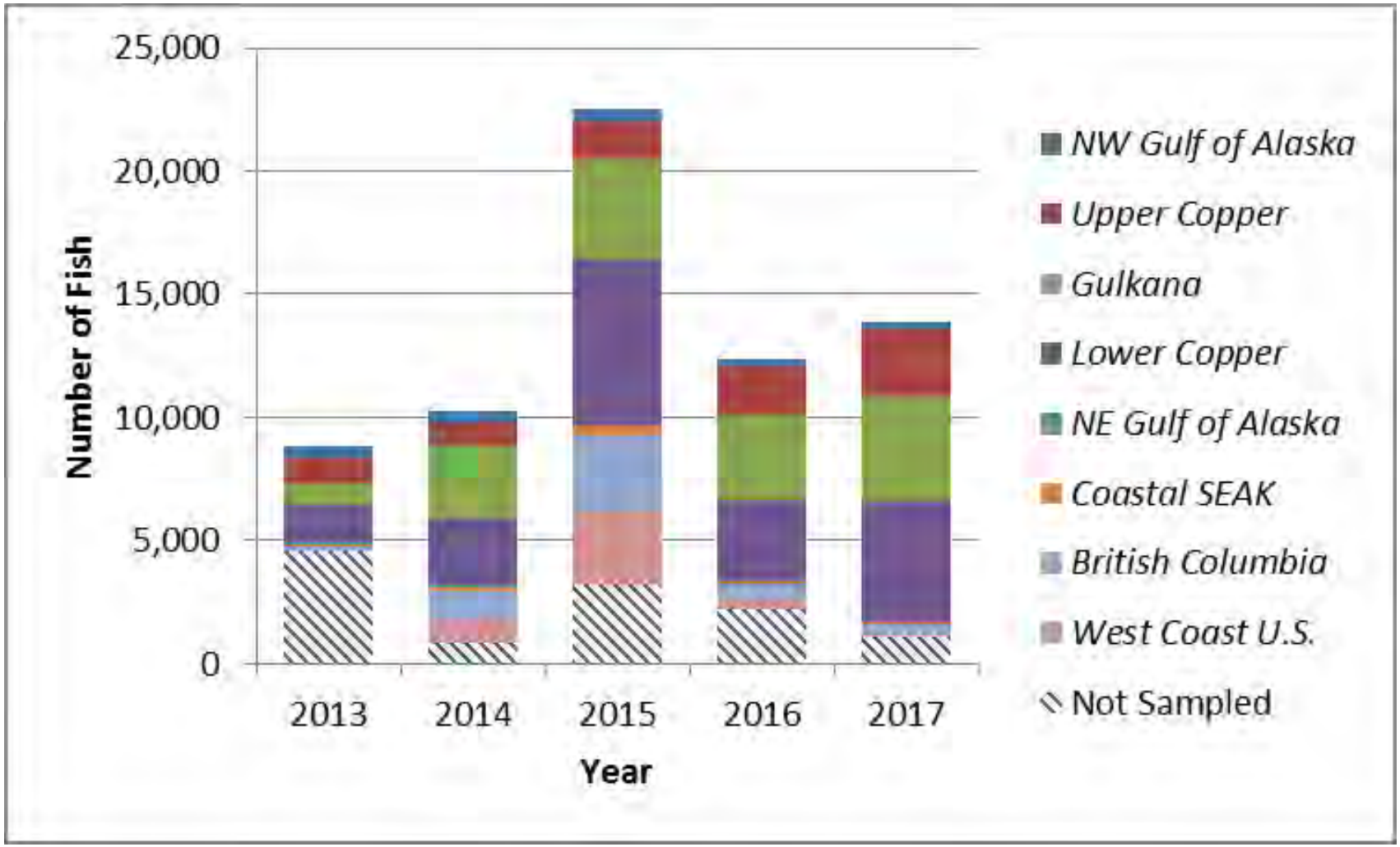


Summary: Stock Composition



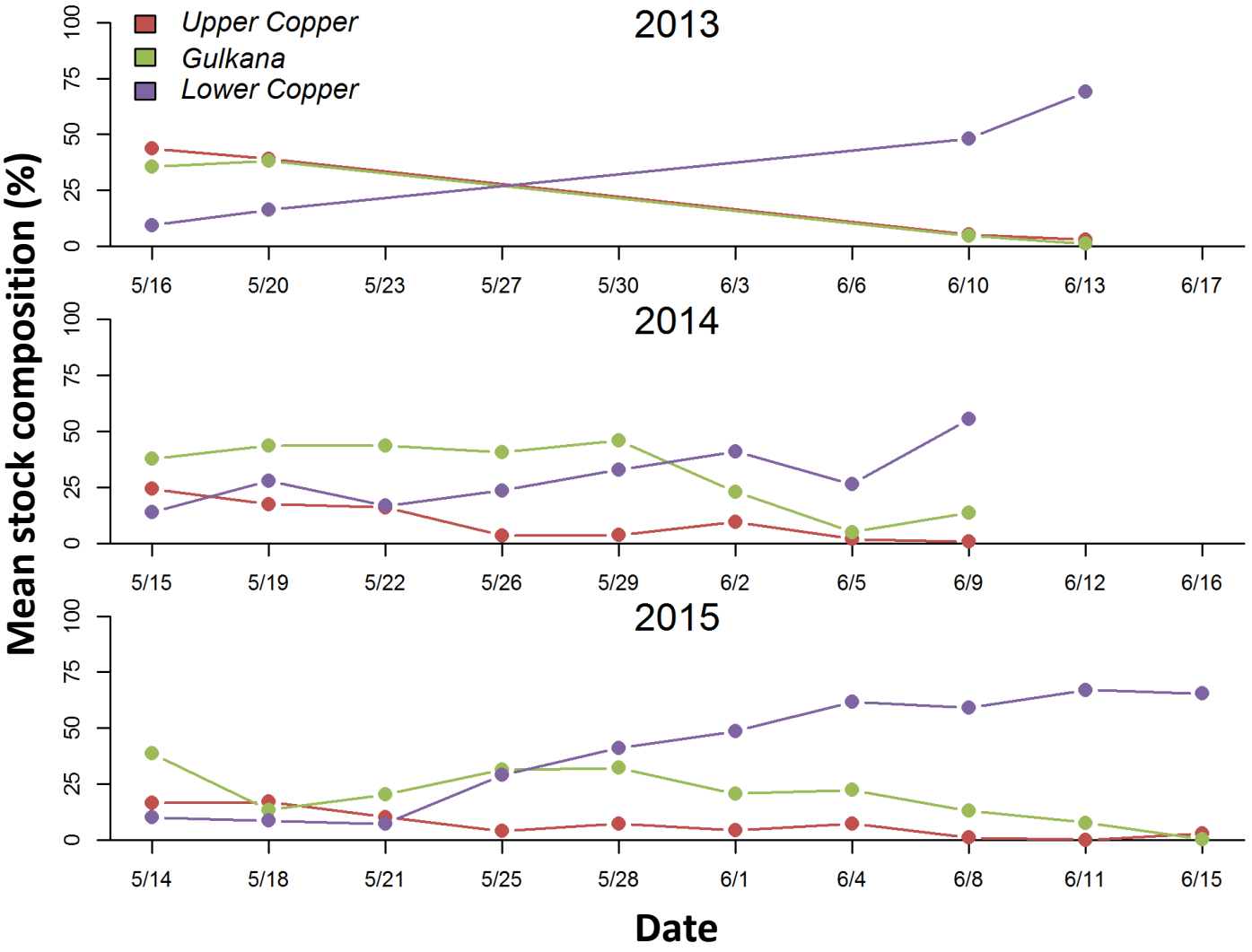
Fishery dominated by Copper River stocks

Summary: Stock Composition



Largest contributor: typically Lower Copper group

Summary: Run Timing



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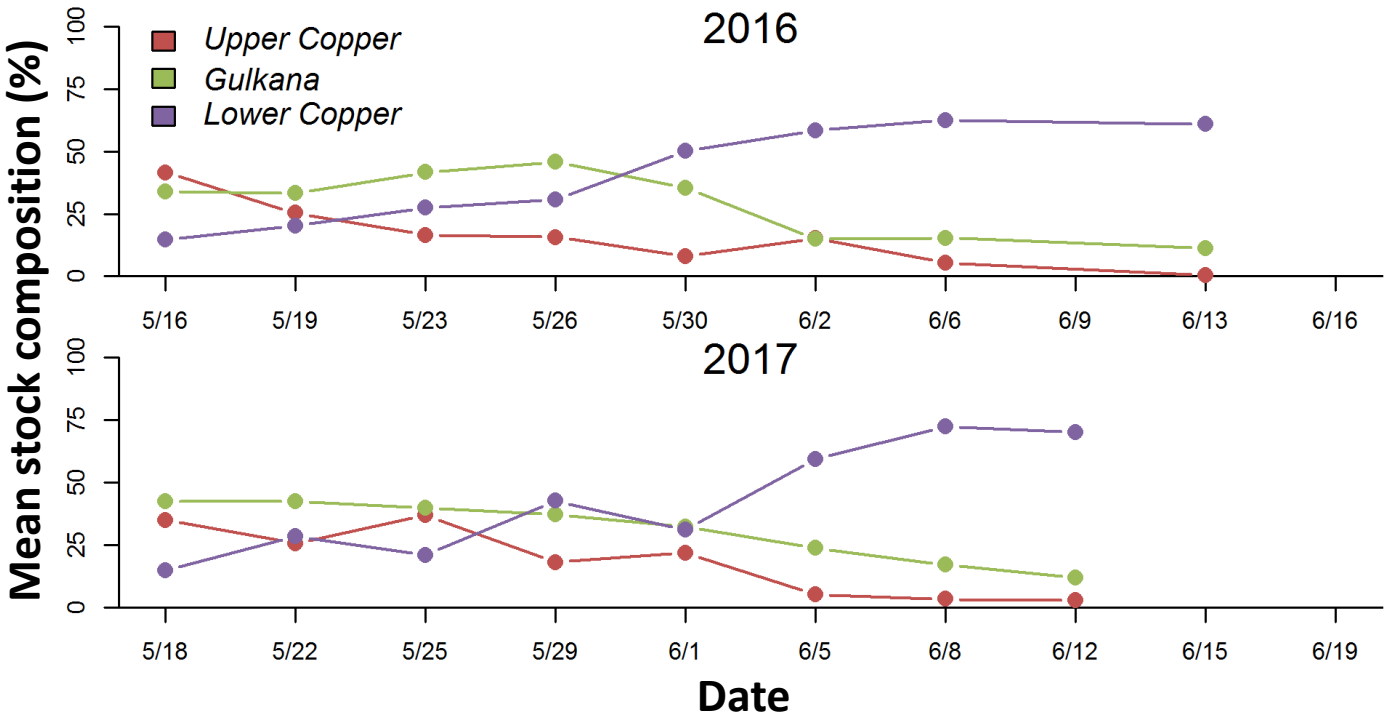

Upper Copper group declined,

Lower Copper group increased

Conclusions

- Caveats:
  - Small contributions with large relative error
  - Not all strata sampled
- Run timing patterns useful for management
- Most harvest originated from populations in the Copper River
- Estimation of non-local stocks could provide information for production models

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