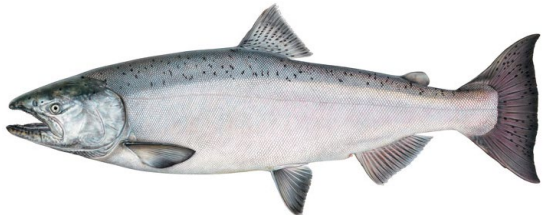
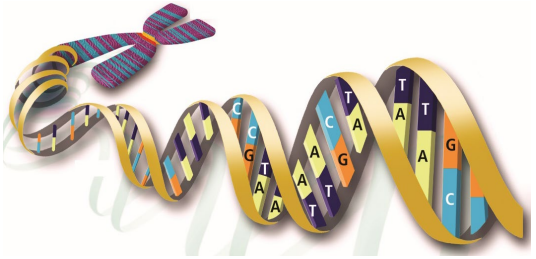
Genetic Stock Composition of Chum and Chinook Salmon Harvested in Commercial Salmon Fisheries of the South Alaska Peninsula, 2022-2025

Oral Report: RC #3; Tab #9



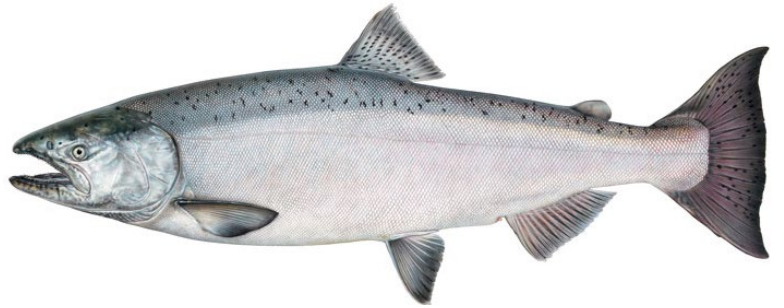


A Report to the Alaska Board of Fisheries
February 2026
Division of Commercial Fisheries
Tyler H. Dann

GENE CONSERVATION LABORATORY
Alaska Department of Fish & Game

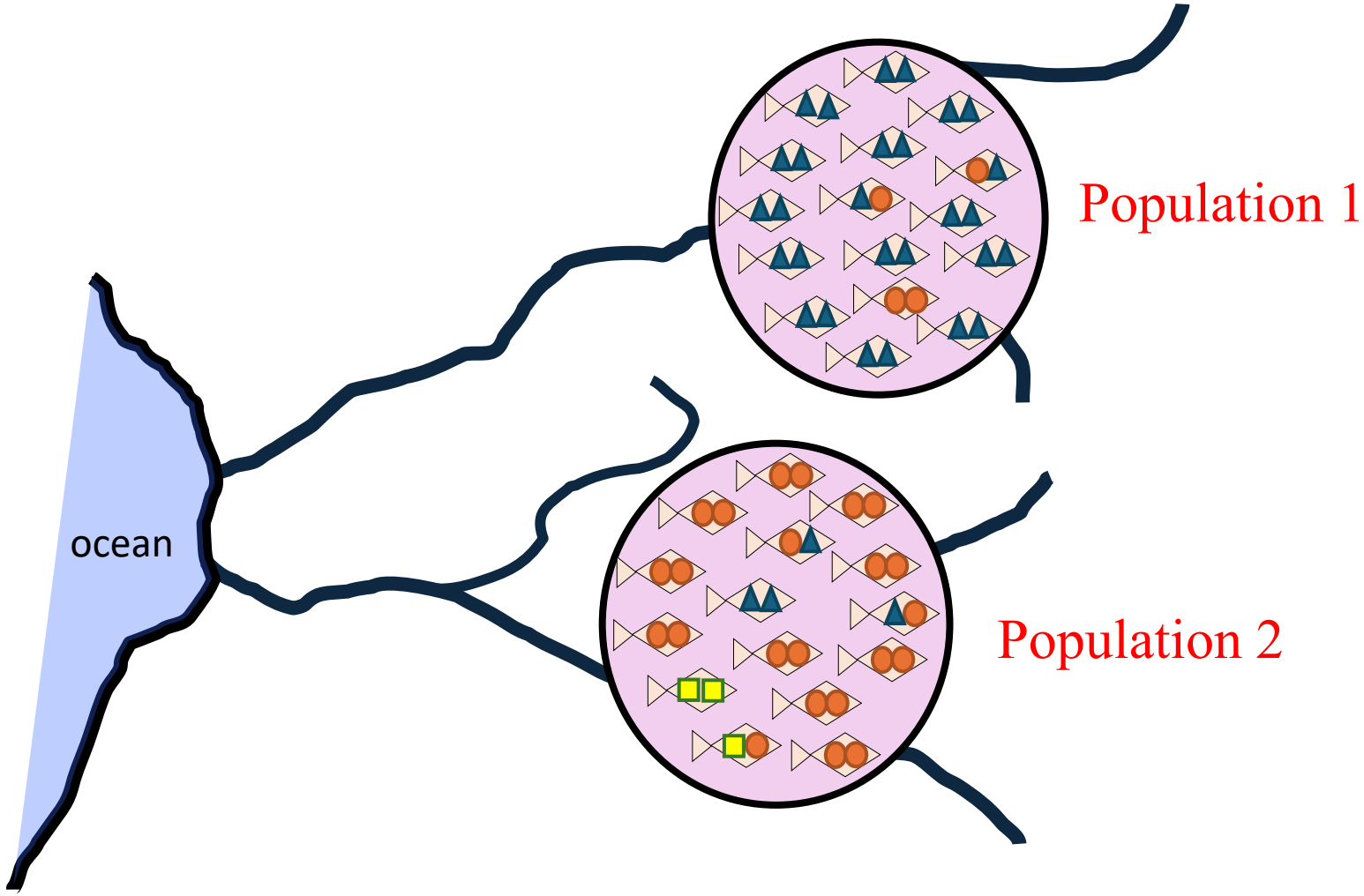
Outline of Presentation

- Overview of Genetic Stock Identification (GSI) Methods
- Chum Salmon
  - Analysis Design
  - June Fishery Results
  - Post-June Fishery Results
  - Overall South Peninsula Results
  - Western Alaska stocks
- Chinook Salmon
  - Analysis Design
  - June Fishery Results
  - Post-June Fishery Results
  - Overall South Peninsula/Chignik Results
  - Western Alaska stocks
- Guide to Other Results in Chum Report
- Summary and Next Steps



Genetic Stock Identification in Fisheries Management

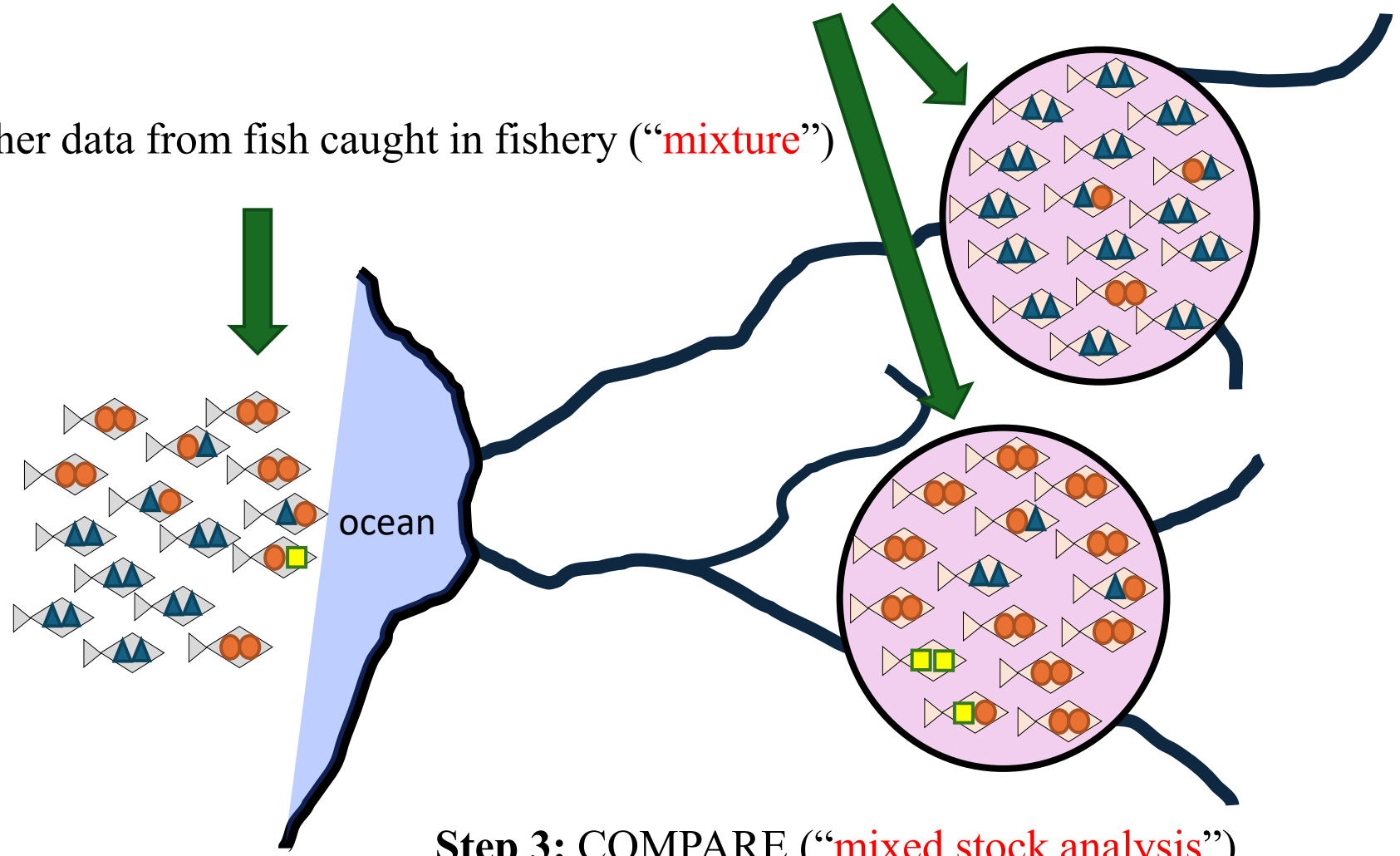
Genetic variation between populations



Genetic Stock Identification in Fisheries Management

Step 1: Gather data from spawning fish ("baseline")

Step 2: Gather data from fish caught in fishery ("mixture")

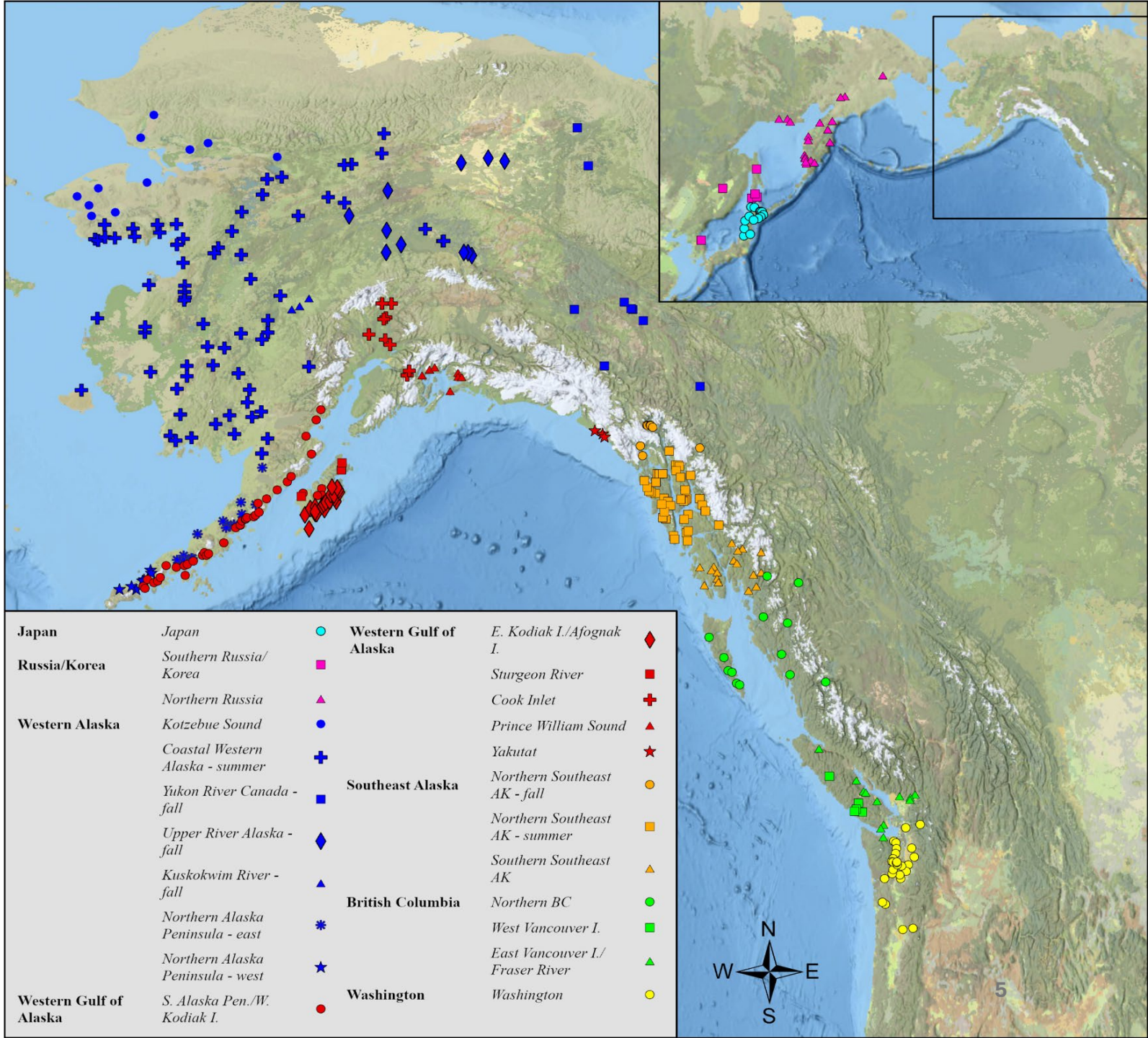


Step 3: COMPARE ("mixed stock analysis")

Chum Baseline

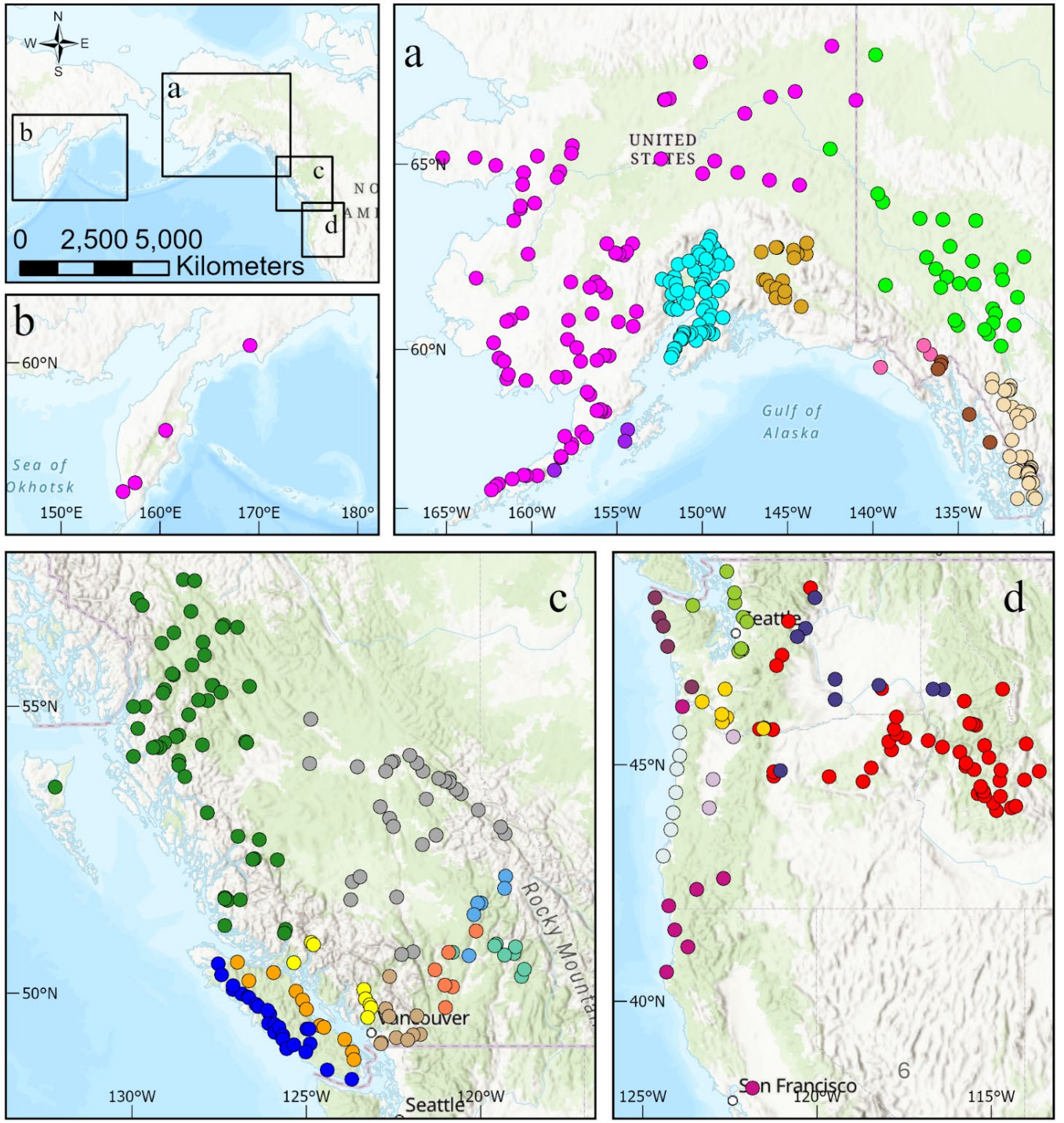
- 42,165 Fish; 382 Populations; 96 SNPs; 13 Reporting Groups
- Reporting groups:
  - Japan*
  - Russia*
  - Kotzebue Sound
  - Coastal Western Alaska
  - Upper Yukon River
  - North Peninsula East
  - North Peninsula West
  - South Peninsula/West Kodiak*
  - Kodiak*
  - Cook Inlet*
  - Prince William Sound*
  - Southeast Alaska*
  - British Columbia/Washington*

***New Groups**



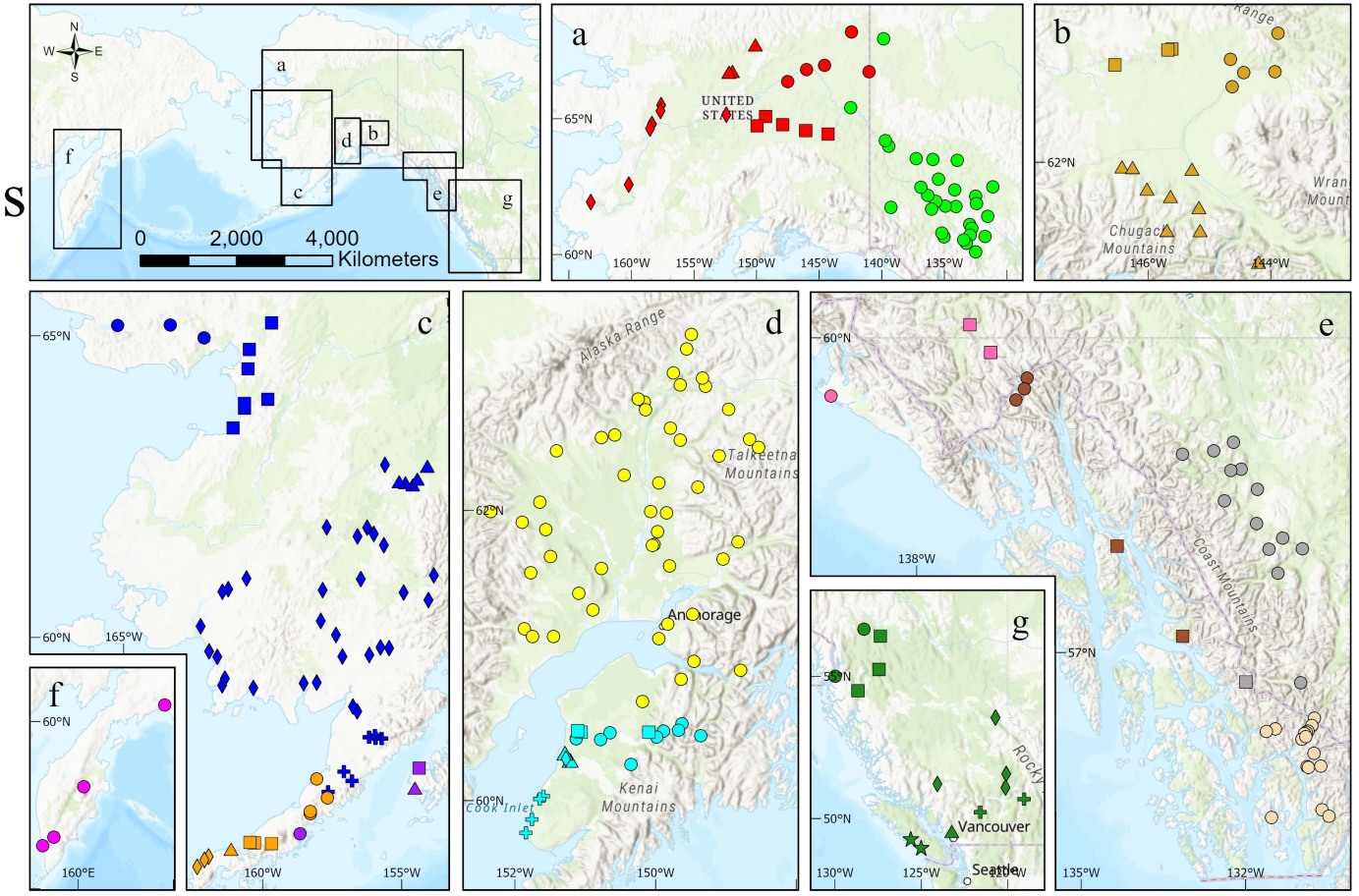
2 Chinook Baselines

- Coastwide baseline
  - 55,240 Fish; 508 Populations; 81 SNPs



2 Chinook Baselines

- Coastwide baseline
  - 55,240 Fish; 508 Populations; 81 SNPs
- Alaska baseline
  - 25,877 Fish; 240 Populations; 245 SNPs
- 11 Reporting groups:
  - Norton Sound*
  - Yukon Canada
  - Yukon Alaska*
  - Kuskokwim/Bristol Bay*
  - North Peninsula
  - Chignik
  - Kodiak
  - Cook Inlet
  - Copper
  - Southeast Alaska
  - Non-Alaska



***New Groups**

Chum Salmon Genetic Stock Identification

Summary of Strata Definitions - Chum

- 2 Areas
  - Unimak and Southwestern Districts
  - Southeastern and South Central Districts
- 2 Gear Types
  - Seine
  - Gillnet (Drift and Set)
- 3 Months (28 Strata)
  - June (13 Strata)
  - Post-June
    - July (10 Strata)
    - August (5 Strata)
  - Overall South Alaska Peninsula

Sample Selection – June 2022 Unimak Seine

Stratified Estimates of Stock-Specific Harvest

- Weighted each set of stock composition estimates by represented harvest
- Summed stock-specific harvests hierarchically
- Temporal strata within gear types, areas, months
  - Gear types within areas, months
    - Areas within months
      - Months within June and post-June
        - South Alaska Peninsula as a whole

Hierarchical Structure in Space and Time

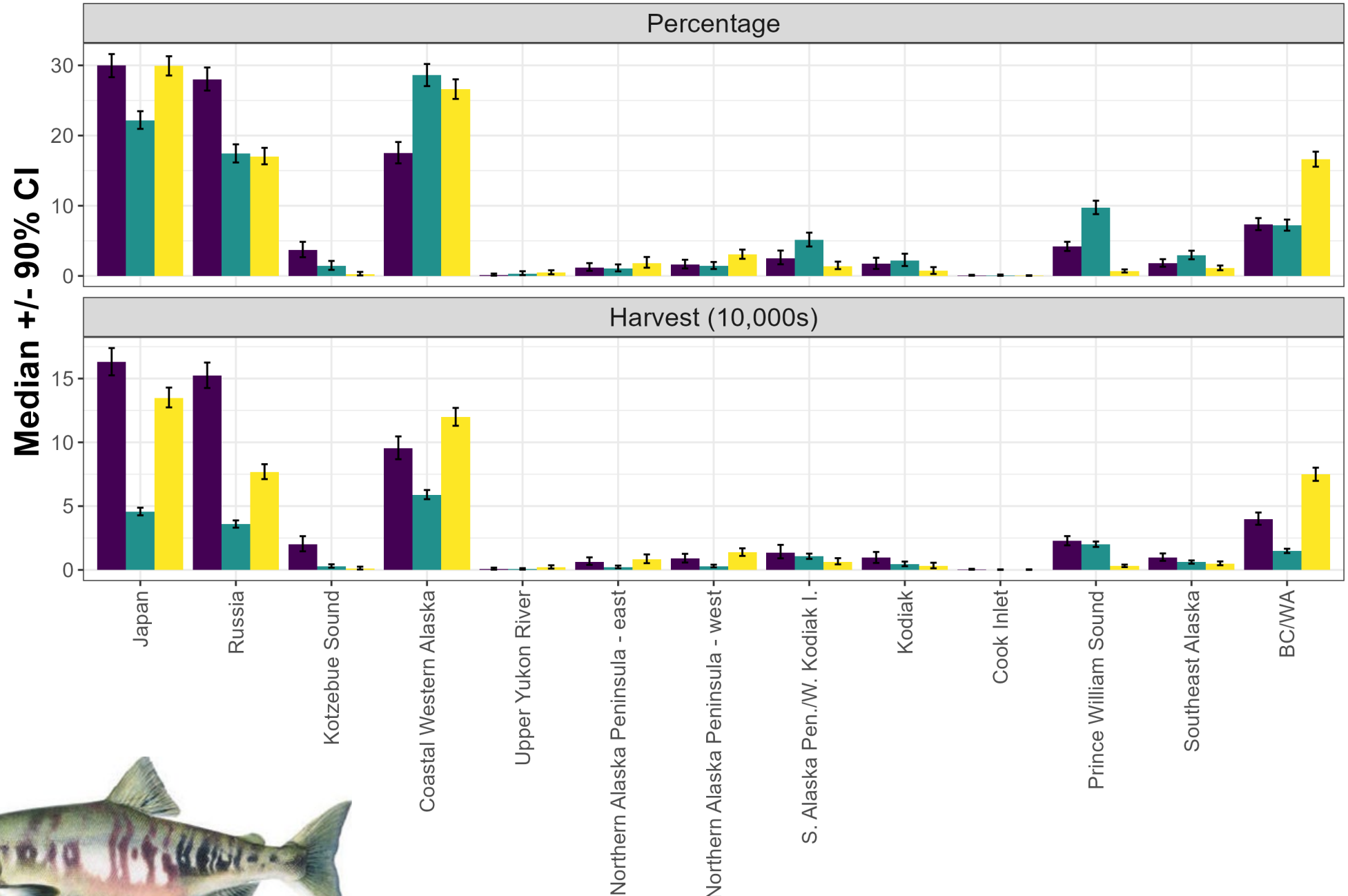
Table 5 in Chum Report FDS25-63

Harvest in each Stratum

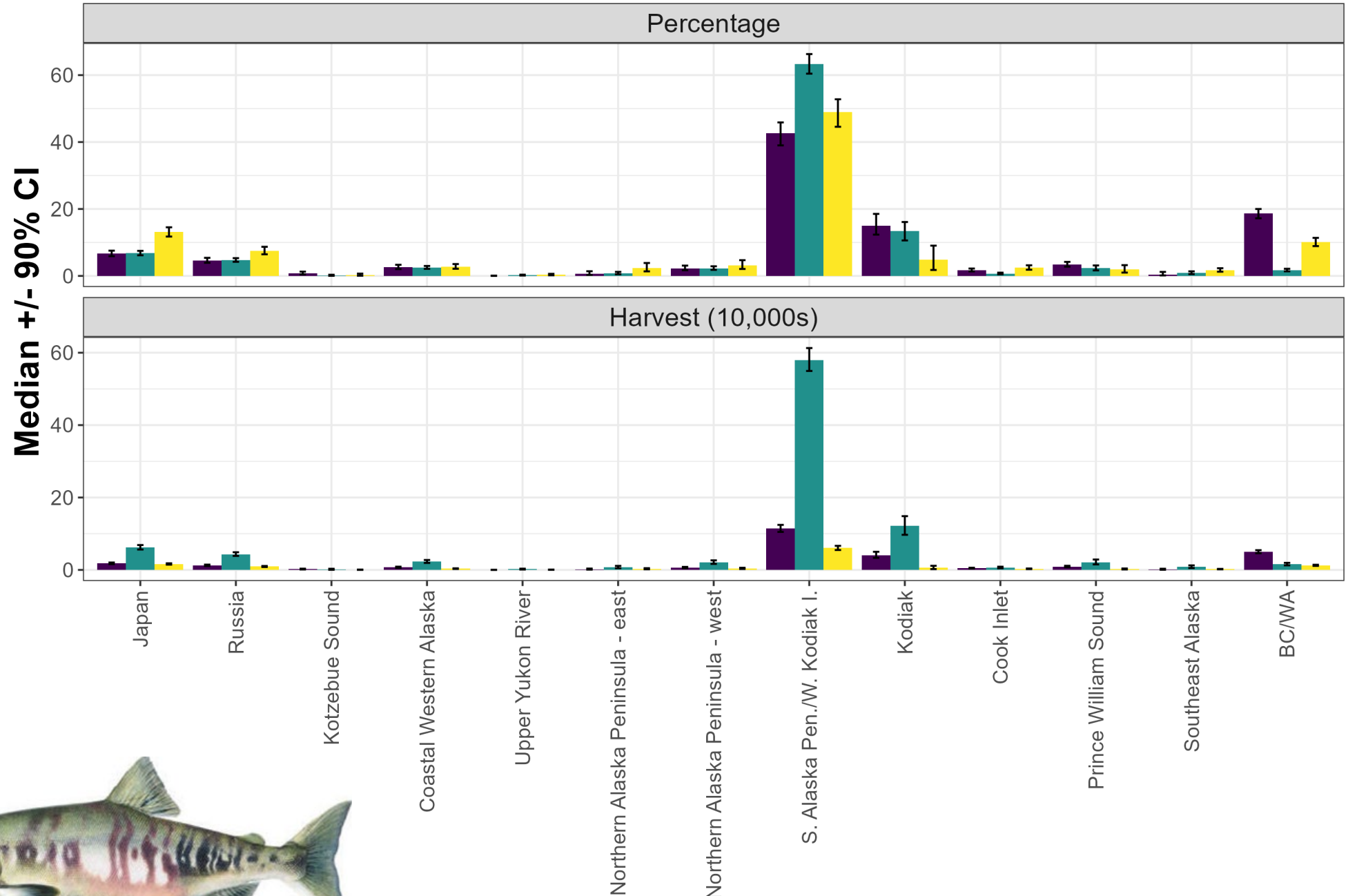
% is % of Total South Peninsula Harvest represented by each Grouping

Overall	June/Post-June	Post-June Months	Areas	Area/Gear	Spatiotemporal Strata	Harvest
South Peninsula (100%)	June (67%)		Unimak/SW (45%)	Unimak/SW Seine (40%)	June Seine 1	24,254
					June Seine 2	123,139
					June Seine 3	120,443
					June Seine 4	54,039
				Unimak/SW Gillnet (5%)	June Gillnet 1	10,797
					June Gillnet 2	15,665
					June Gillnet 3	16,302
					June Gillnet 4	1,487
			SE/SC (22%)	SE/SC Seine (21%)	June Seine 1	16,419
					June Seine 2	41,246
					June Seine 3	34,281
					June Seine 4	75,336
				SE/SC Gillnet (1%)	June Gillnet	10,729
	Post-June (33%)	July (23%)	Unimak/SW (6%)	Unimak/SW Seine (5%)	July Seine 1	30,008
					July Seine 2	12,708
				Unimak/SW Gillnet (1%)	July Gillnet 1	2,027
					July Gillnet 2	3,812
			SE/SC (17%)	SE/SC Seine (15%)	July Seine 1	32,704
					July Seine 2	36,682
					July Seine 3	56,716
				SE/SC Gillnet (2%)	July Gillnet 1	4,092
					July Gillnet 2	4,833
					July Gillnet 3	5,189
		August (10%)	Unimak/SW (4%)	Unimak/SW Seine (4%)	August Seine 1	18,807
					August Seine 2	10,017
			SE/SC (6%)	SE/SC Seine (6%)	August Seine 1	35,706
					August Seine 2	9,793
			South Pen (1%)	Gillnet (1%)	August	7,048

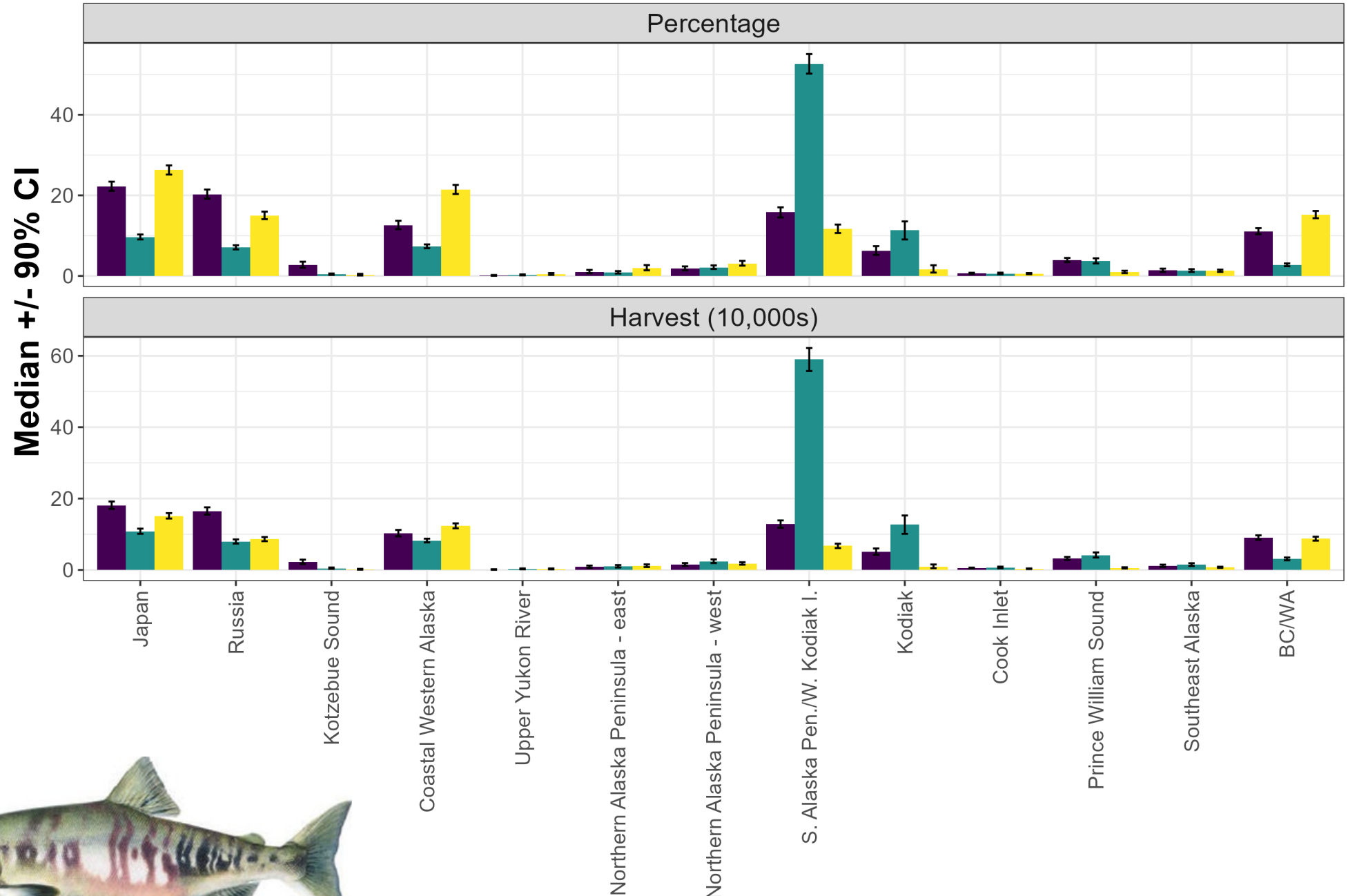
South Alaska Peninsula - June Fishery 2022-2024



South Alaska Peninsula - Post-June Fishery 2022-2024



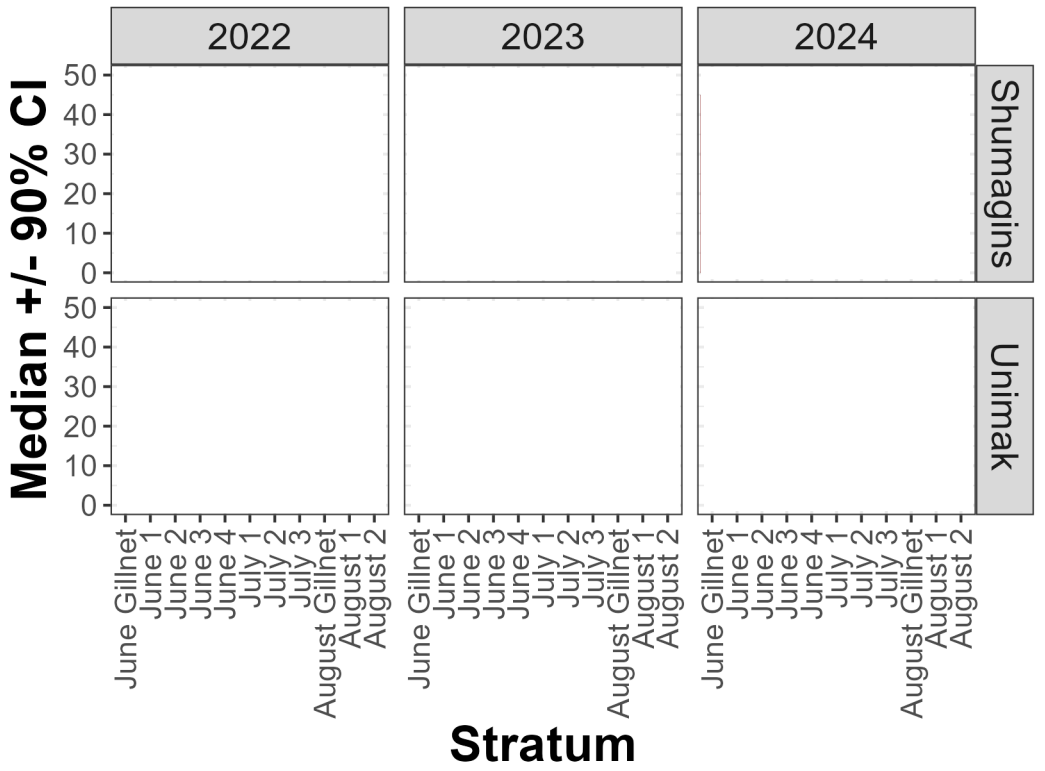
South Alaska Peninsula 2022-2024



Stock-specific Percentages and Harvests

Years

Value
(Percentages/Harvests)

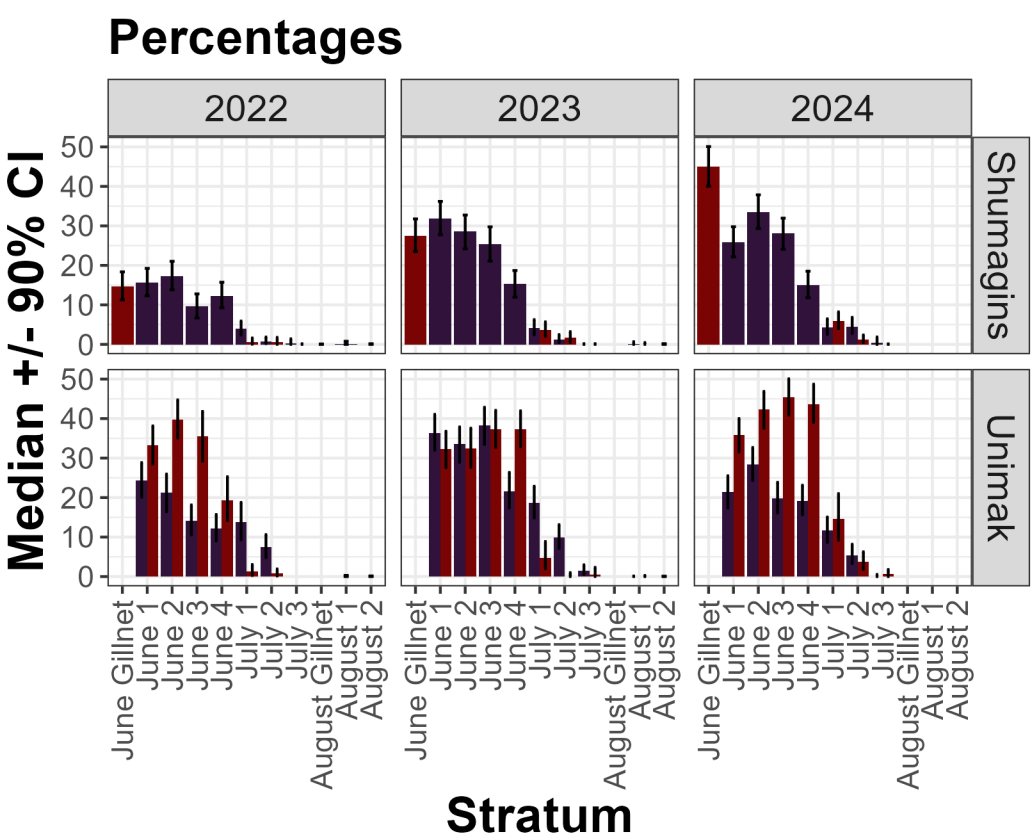


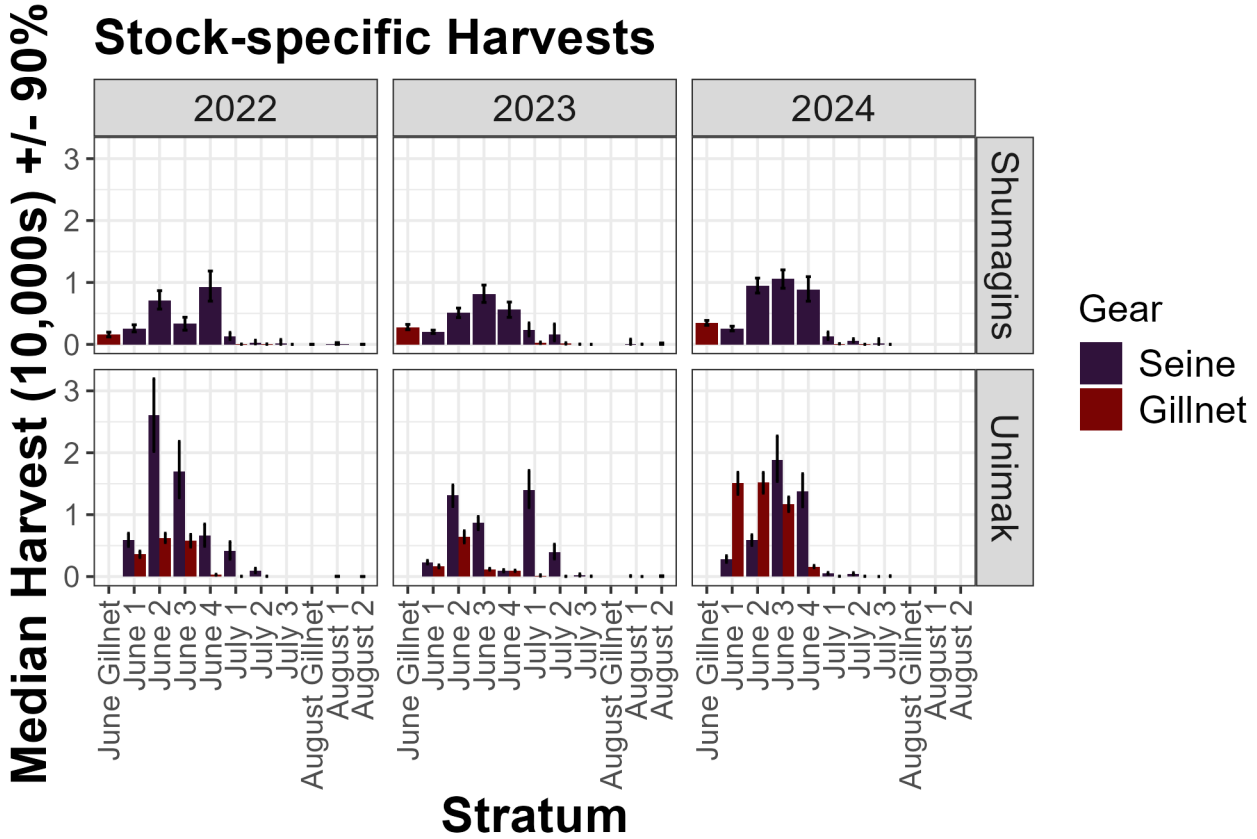
Areas

Time (June – August)

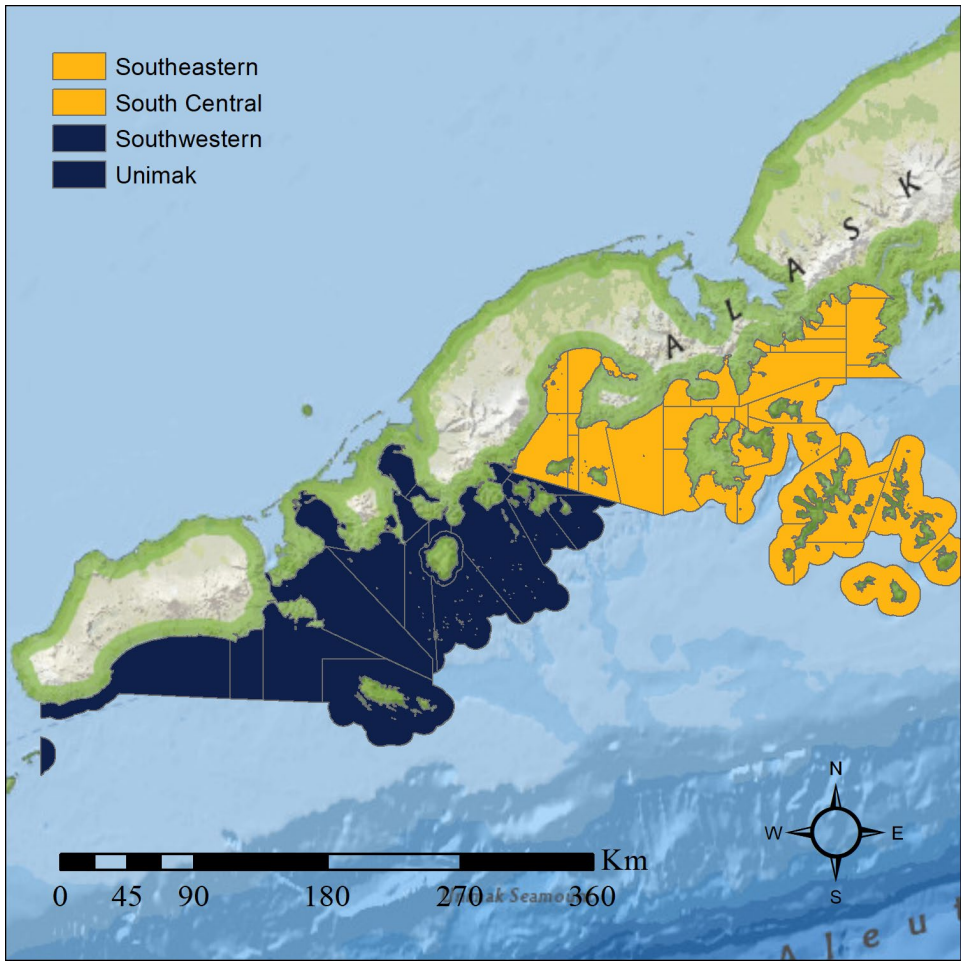
Coastal Western Alaska Percentages and Harvests

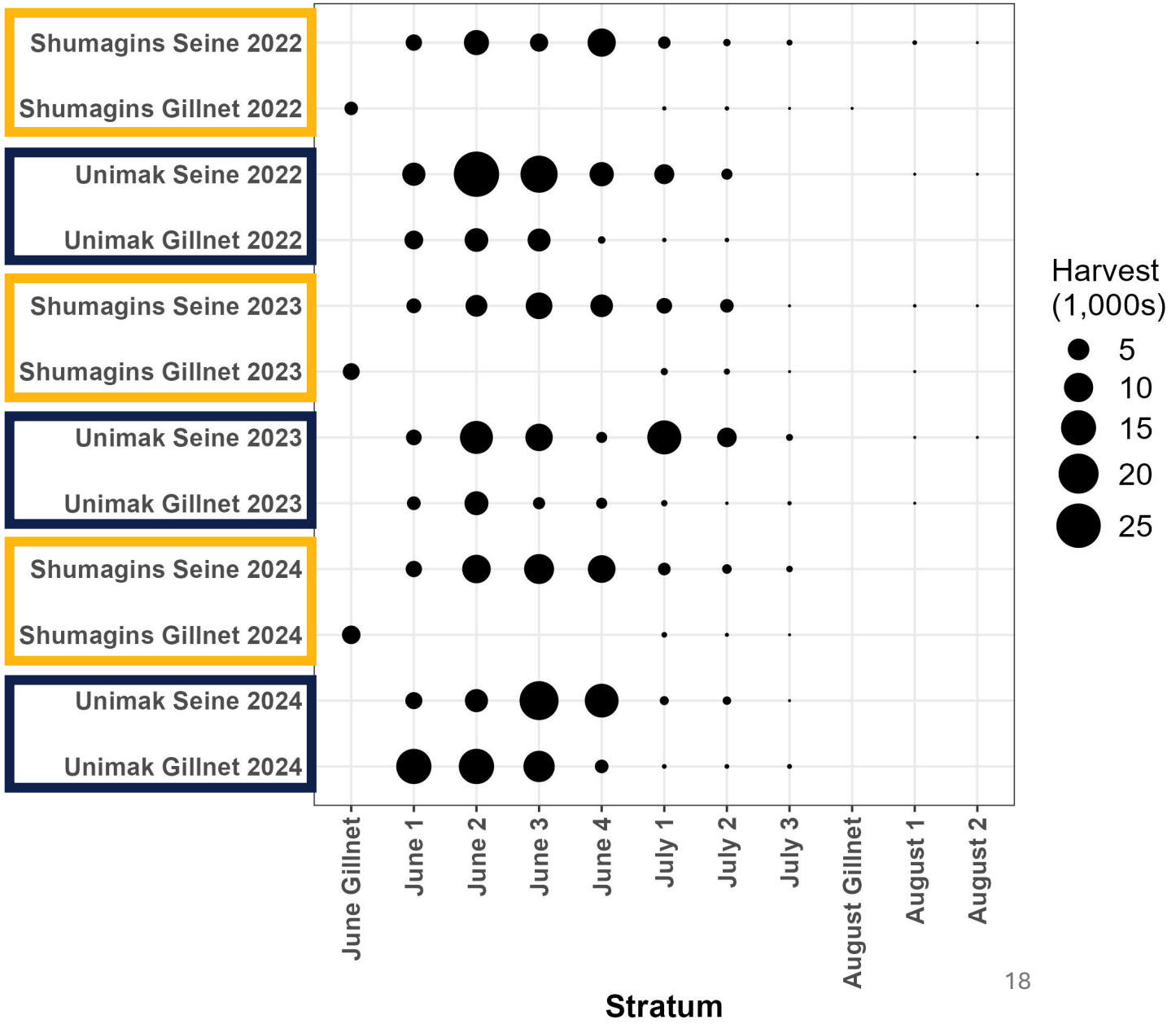
2022-2024





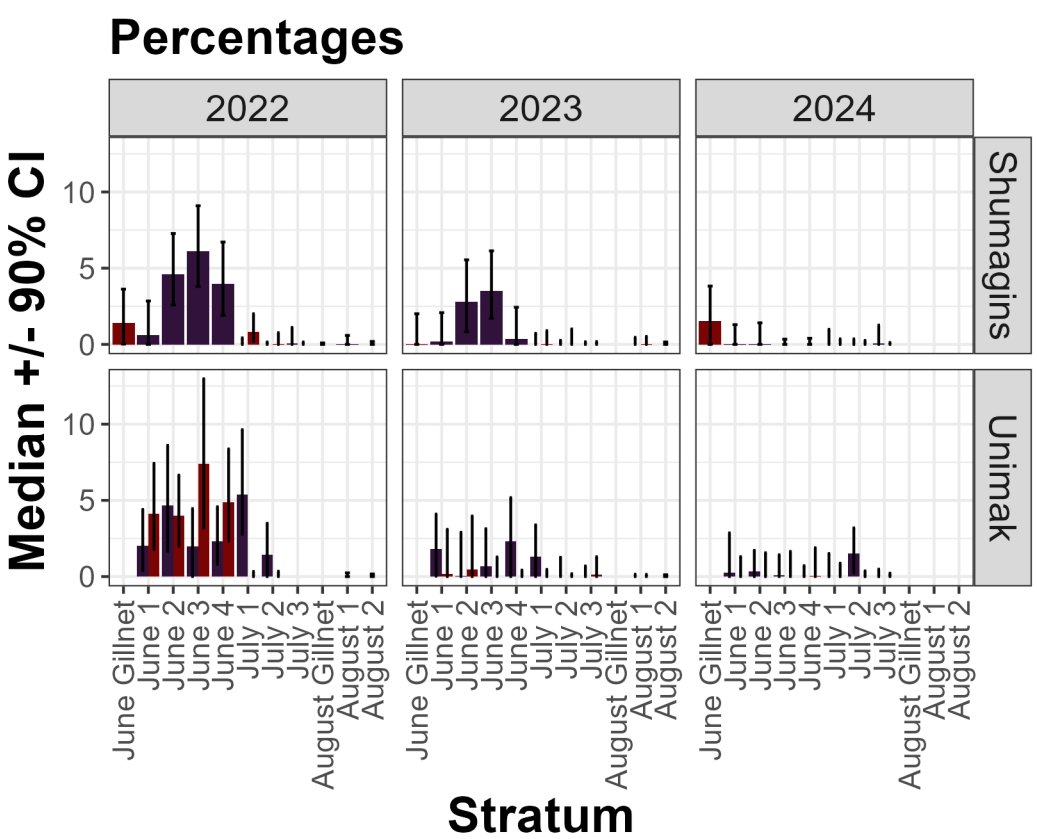
Coastal Western Alaska Harvests 2022-2024

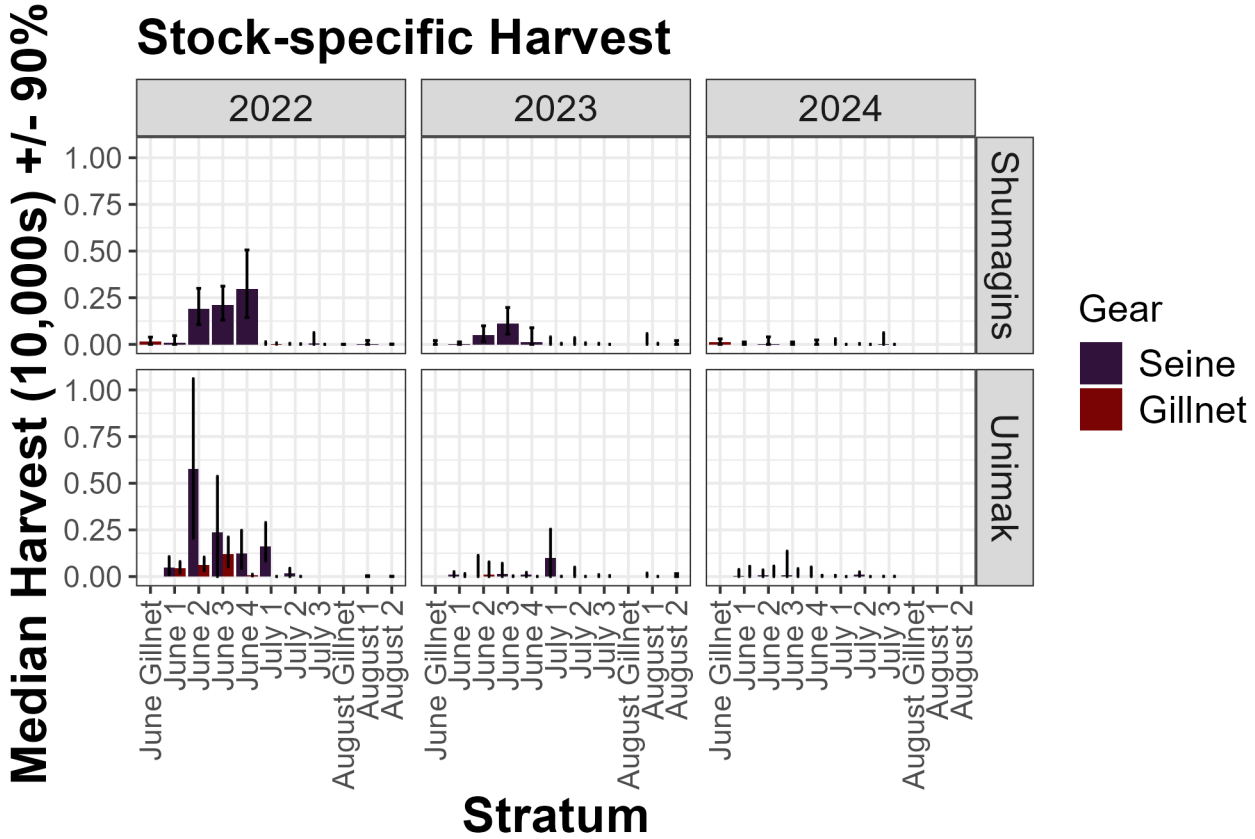




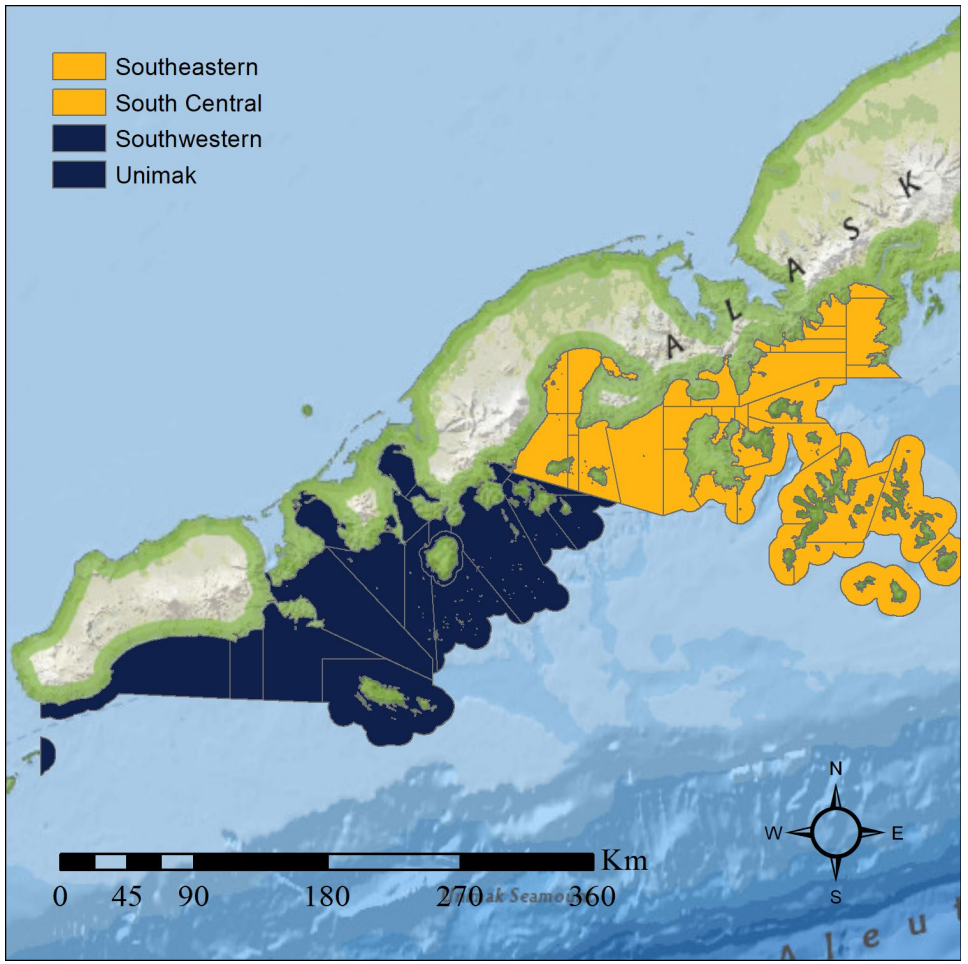
Kotzebue Sound Percentages and Harvests

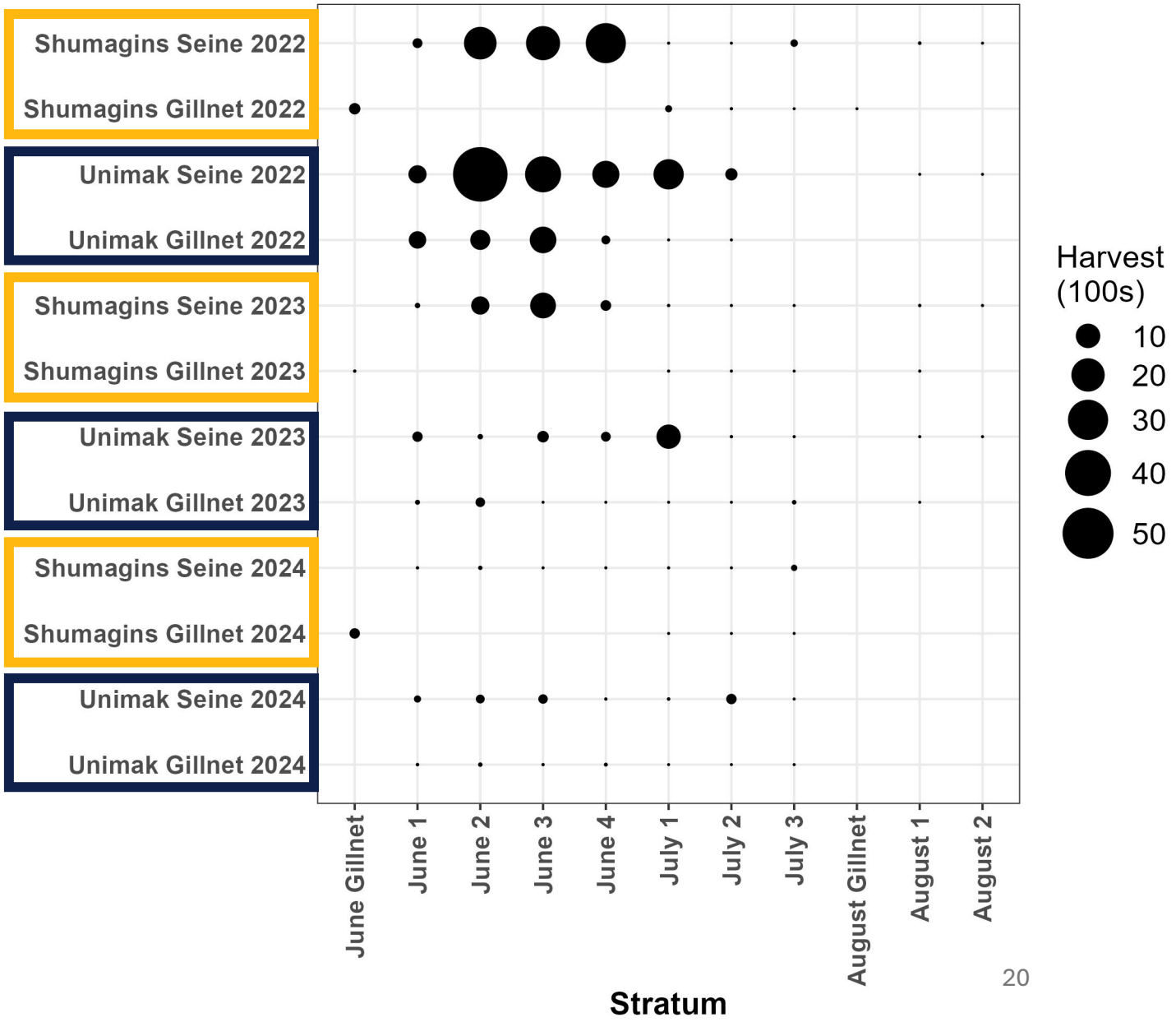
2022-2024





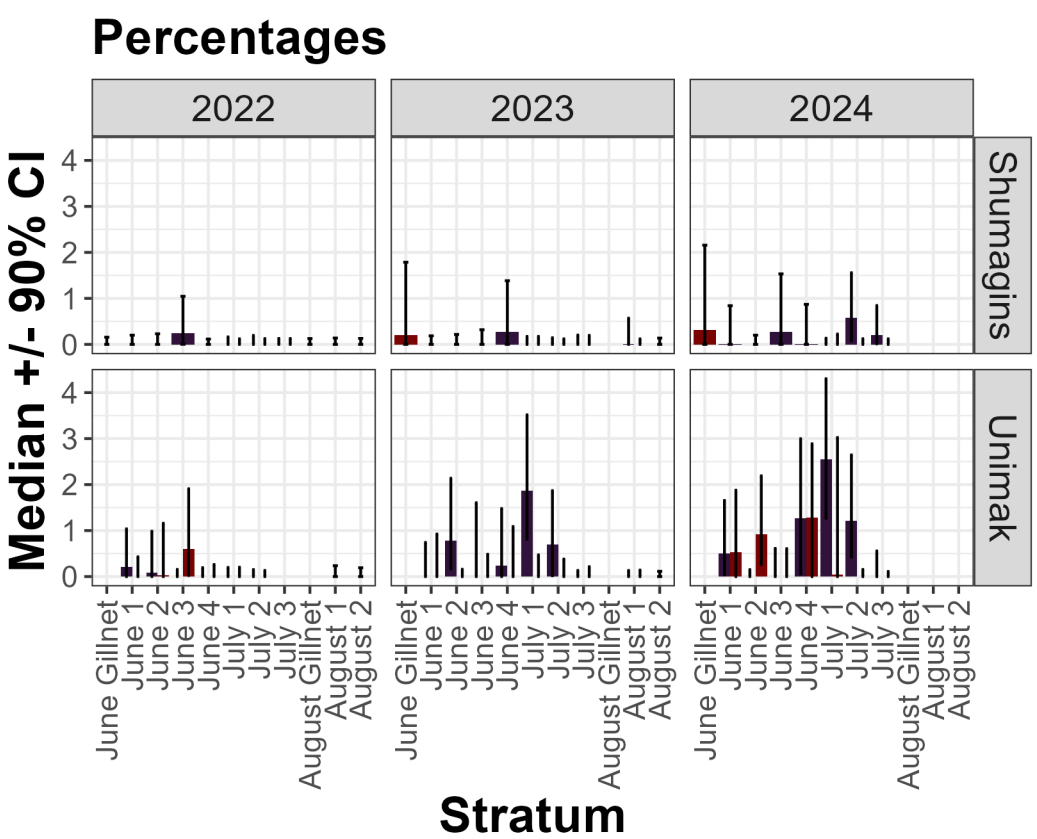
Kotzebue Sound Harvests 2022-2024

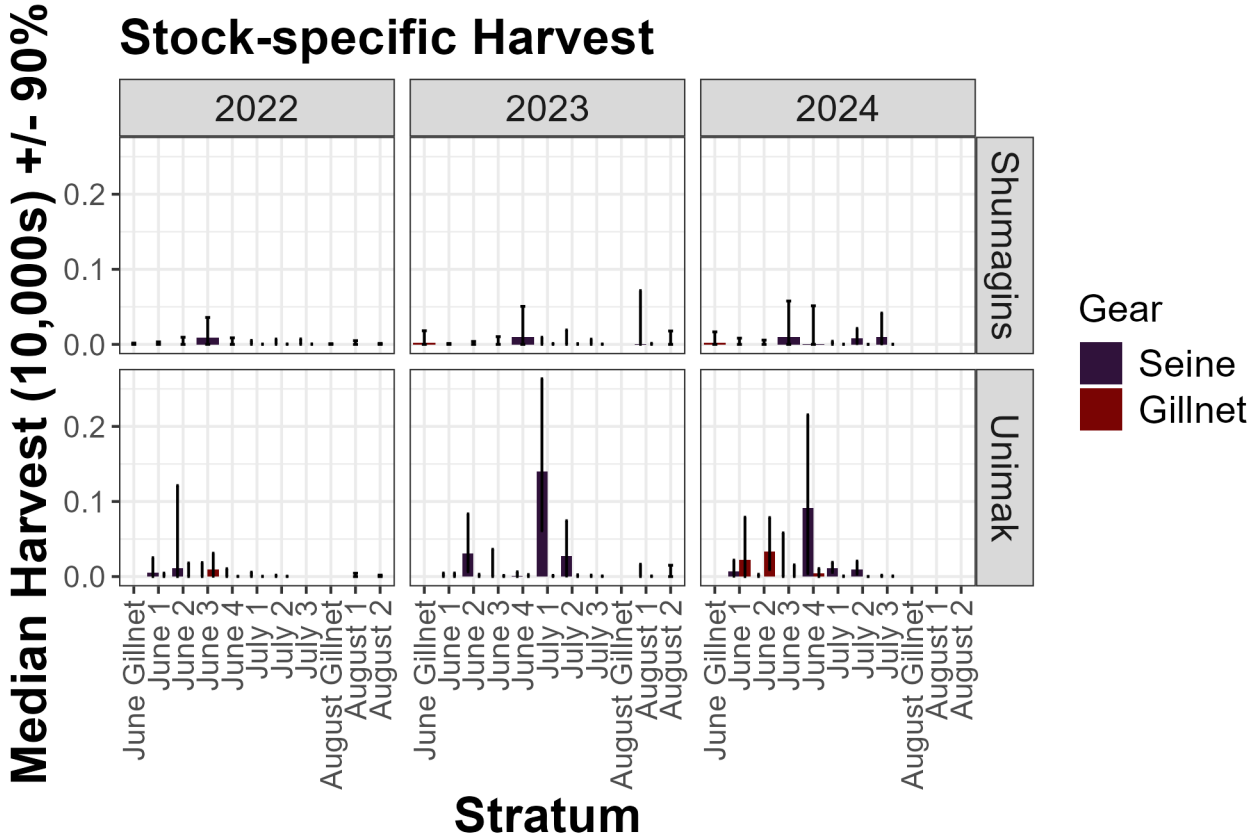




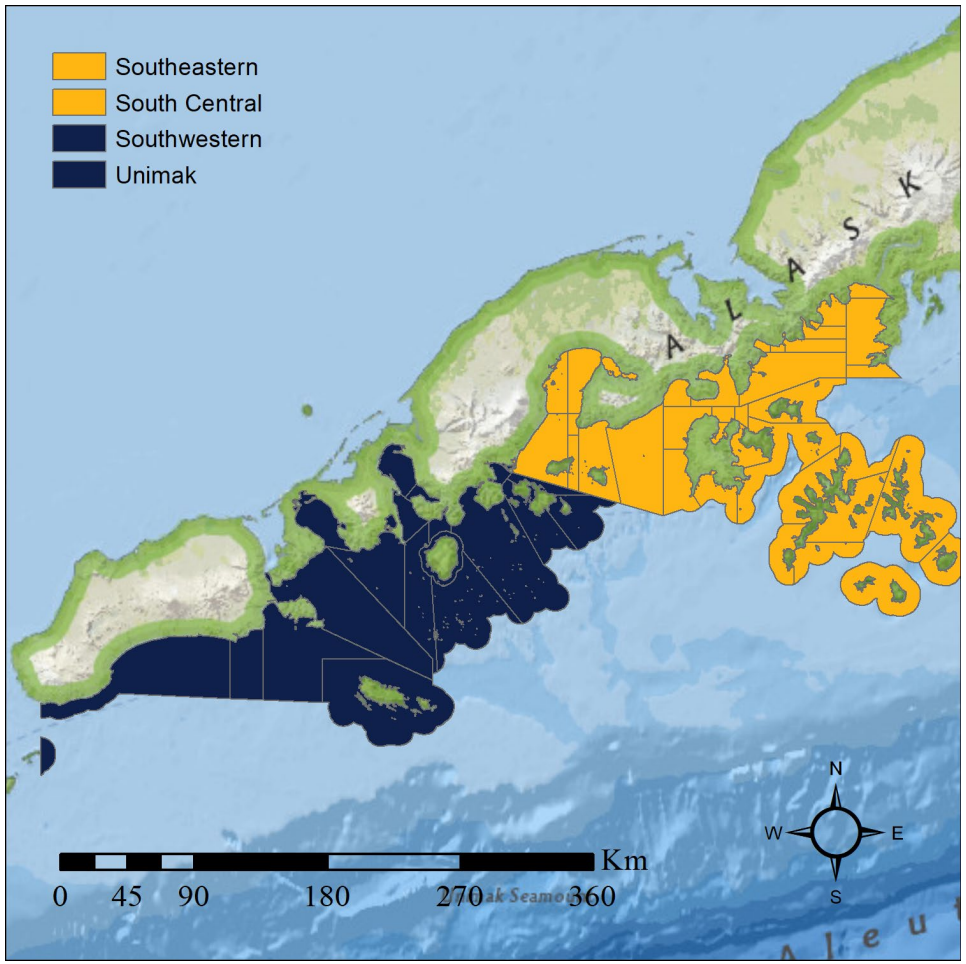
Upper Yukon Percentages and Harvests

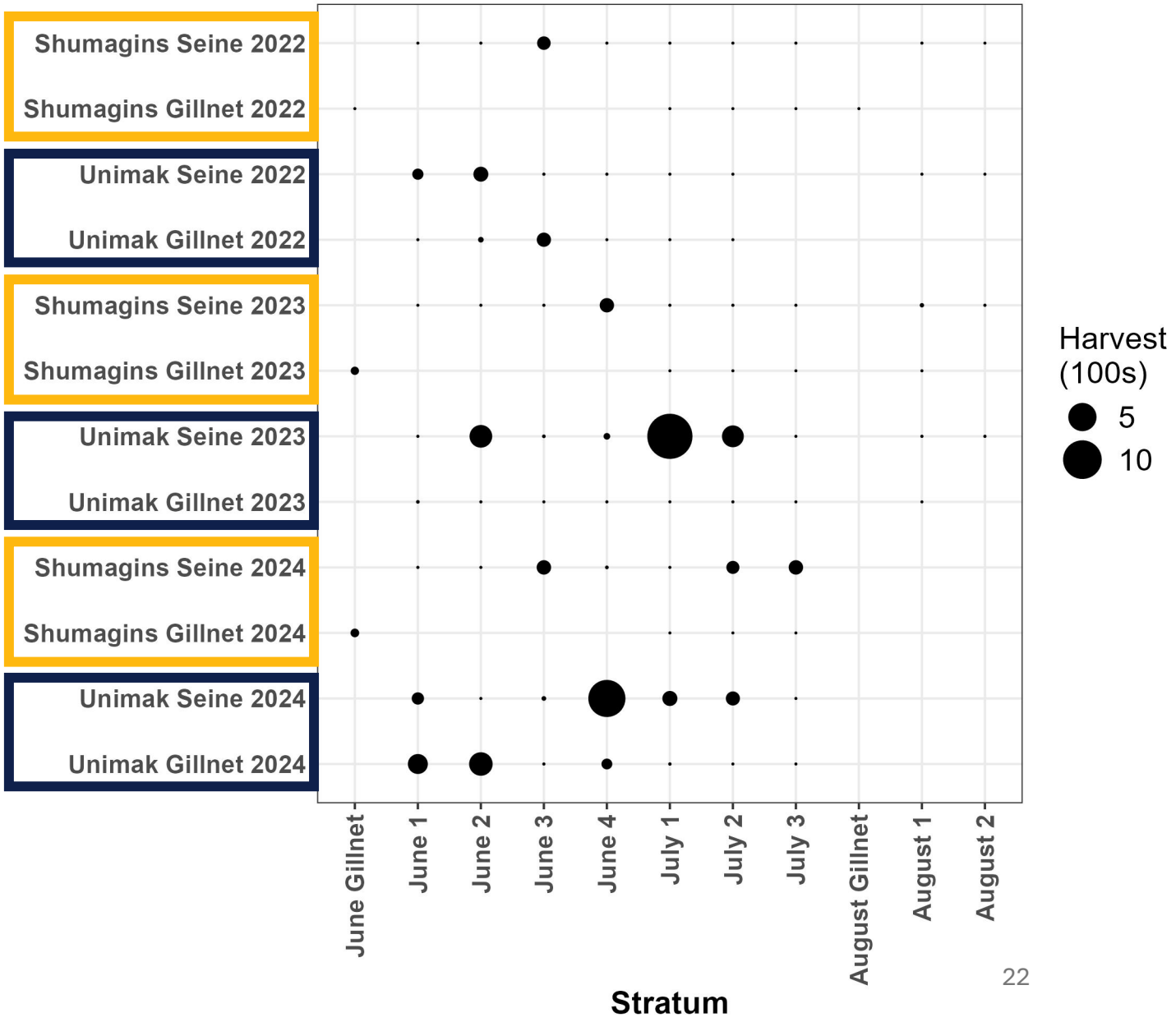
2022-2024



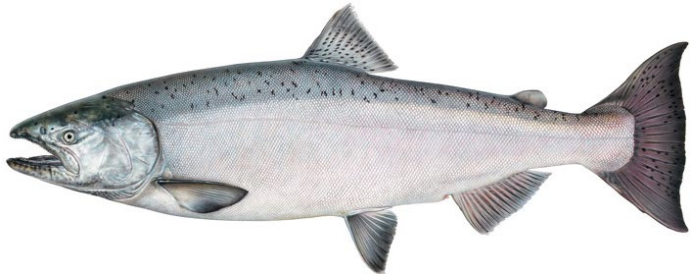


Upper Yukon Harvests 2022-2024





Chinook Salmon Genetic Stock Identification



Summary of Strata Definitions - Chinook

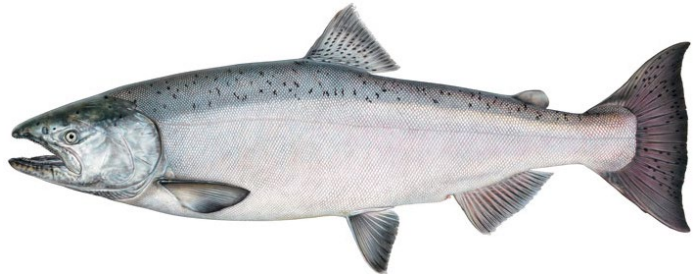
- 9 strata
  - 2024:
    - Shumagins Seine post-June
    - Unimak Seine post-June
    - Gillnet post-June

    } 2024 South Peninsula
  - 2025:
    - Shumagins Seine June
    - Unimak Seine June

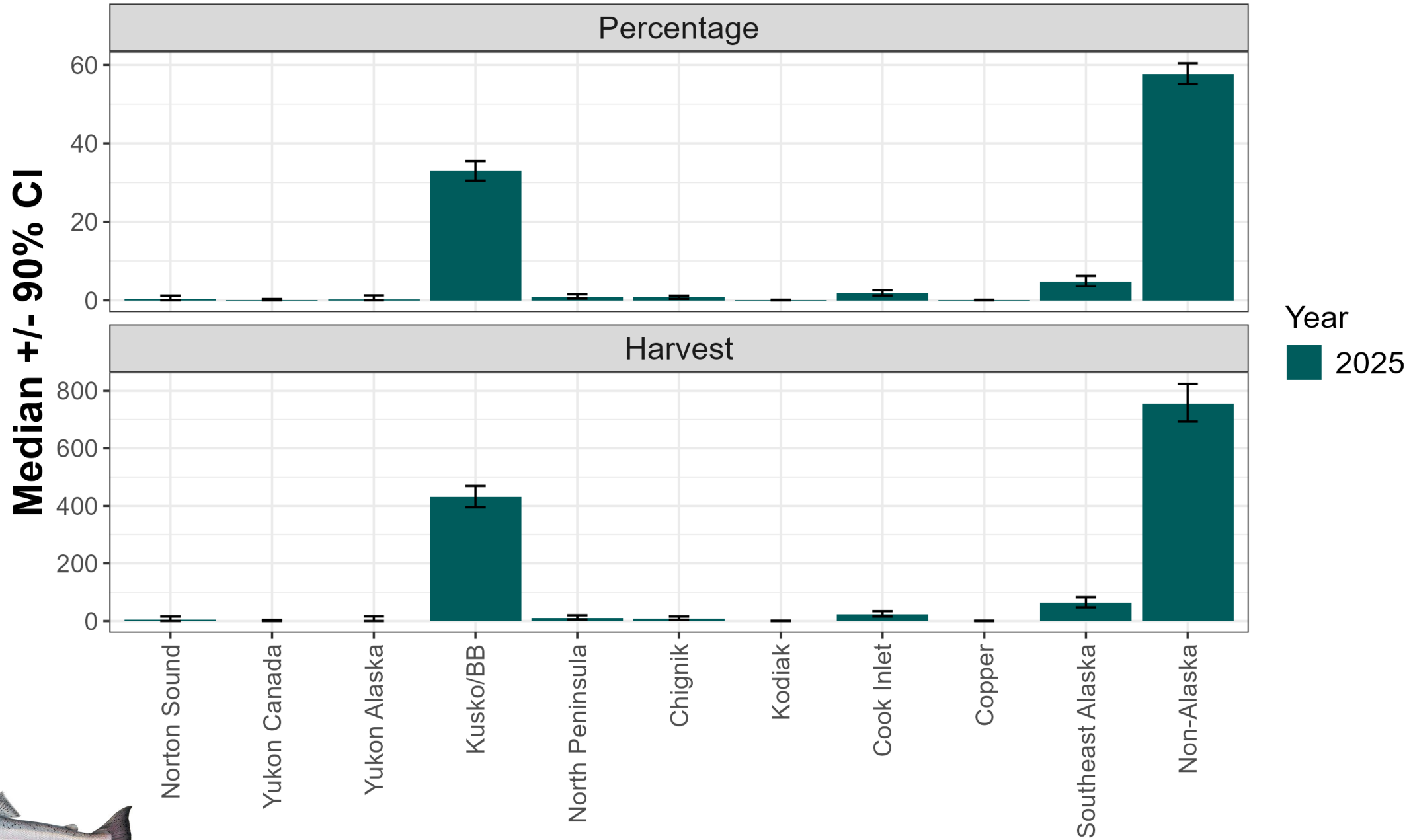
    } 2025 June
    - Shumagins Seine post-June
    - Unimak Seine post-June

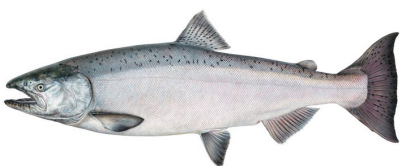
    } 2025 Post-June
    - Gillnet
    - Chignik Seine

    } 2025 South Peninsula

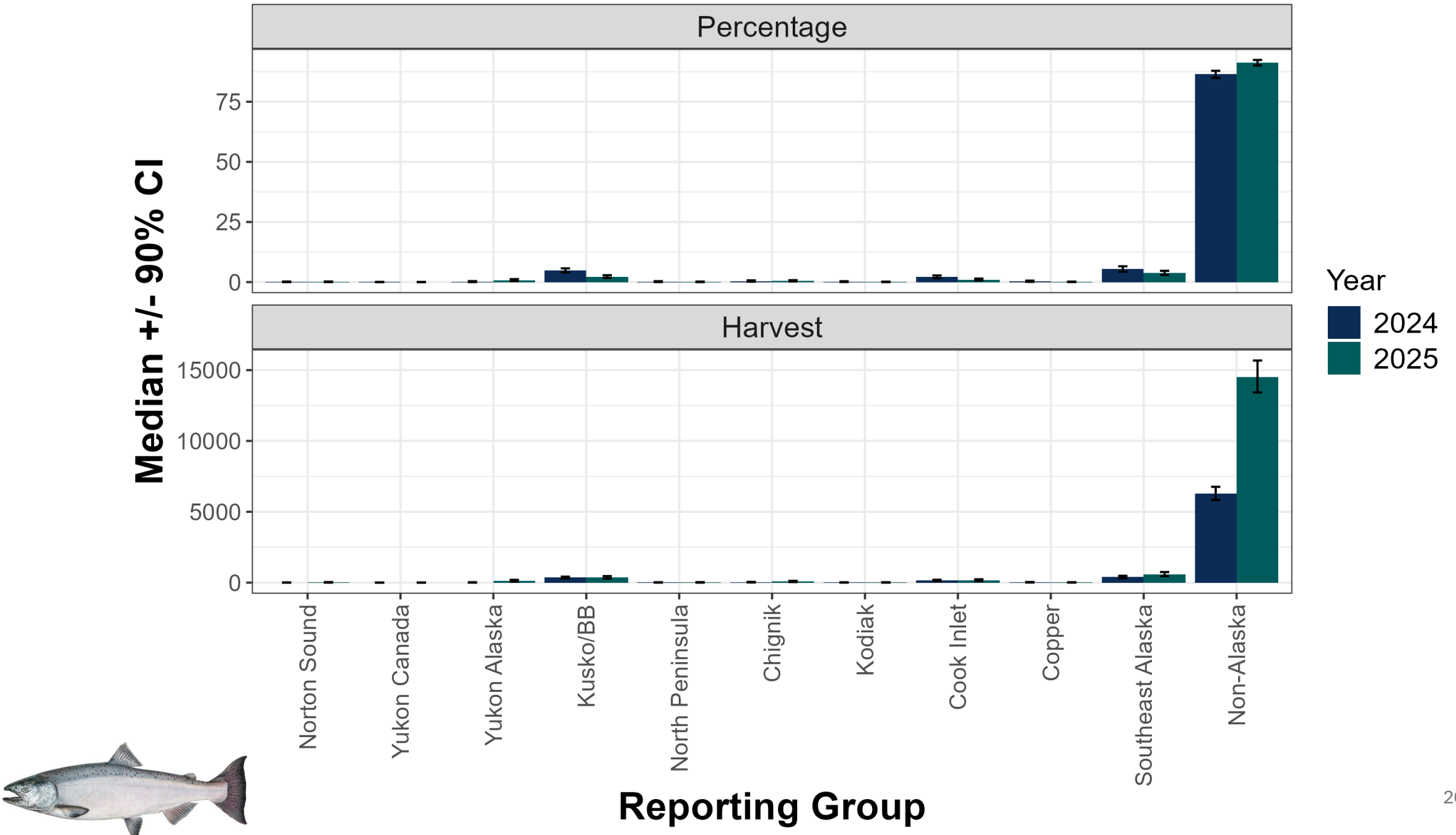


South Alaska Peninsula - June Fishery 2025

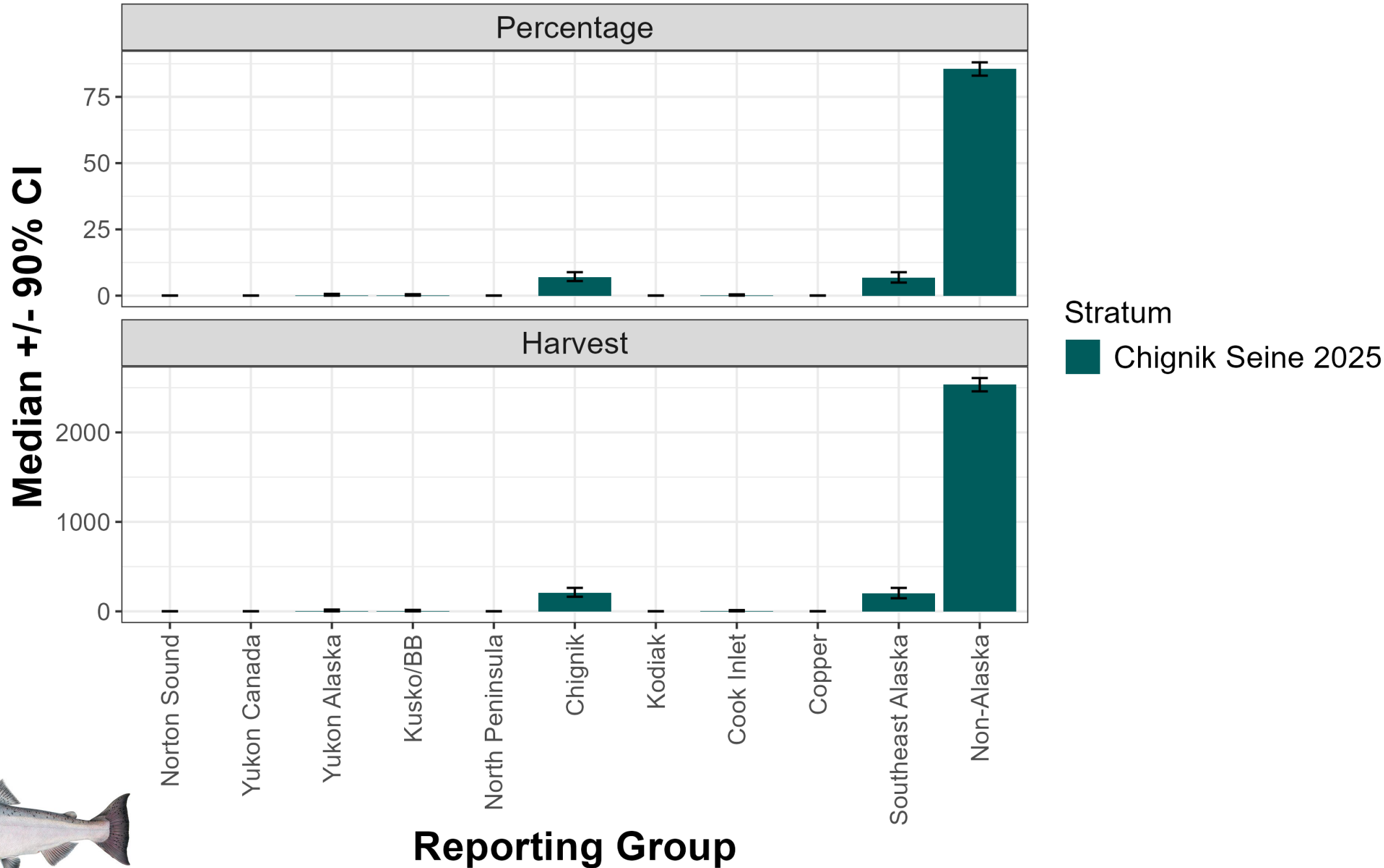


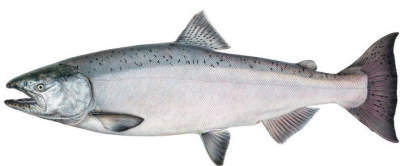


South Alaska Peninsula - Post-June Fishery 2024 & 2025



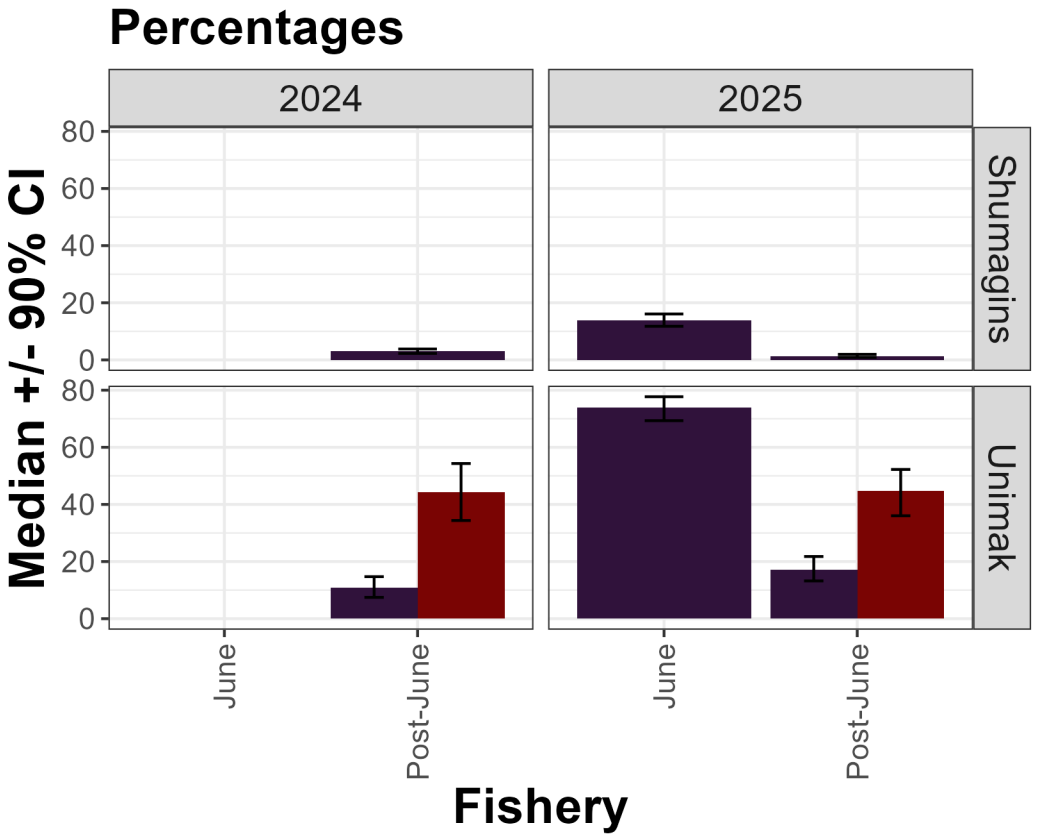
Chignik Seine - 2025

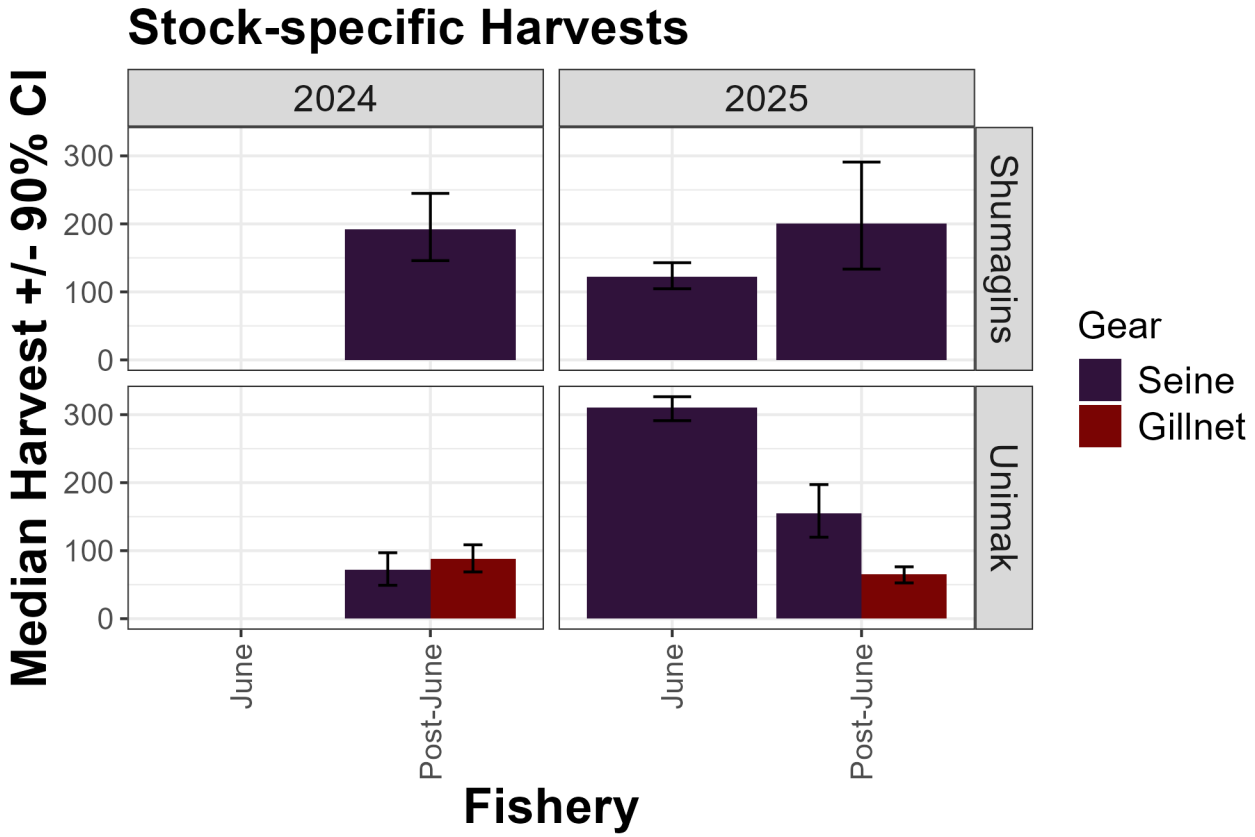


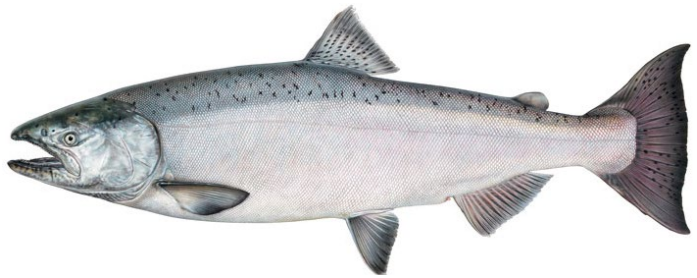


Kuskokwim/Bristol Bay Percentages and Harvests

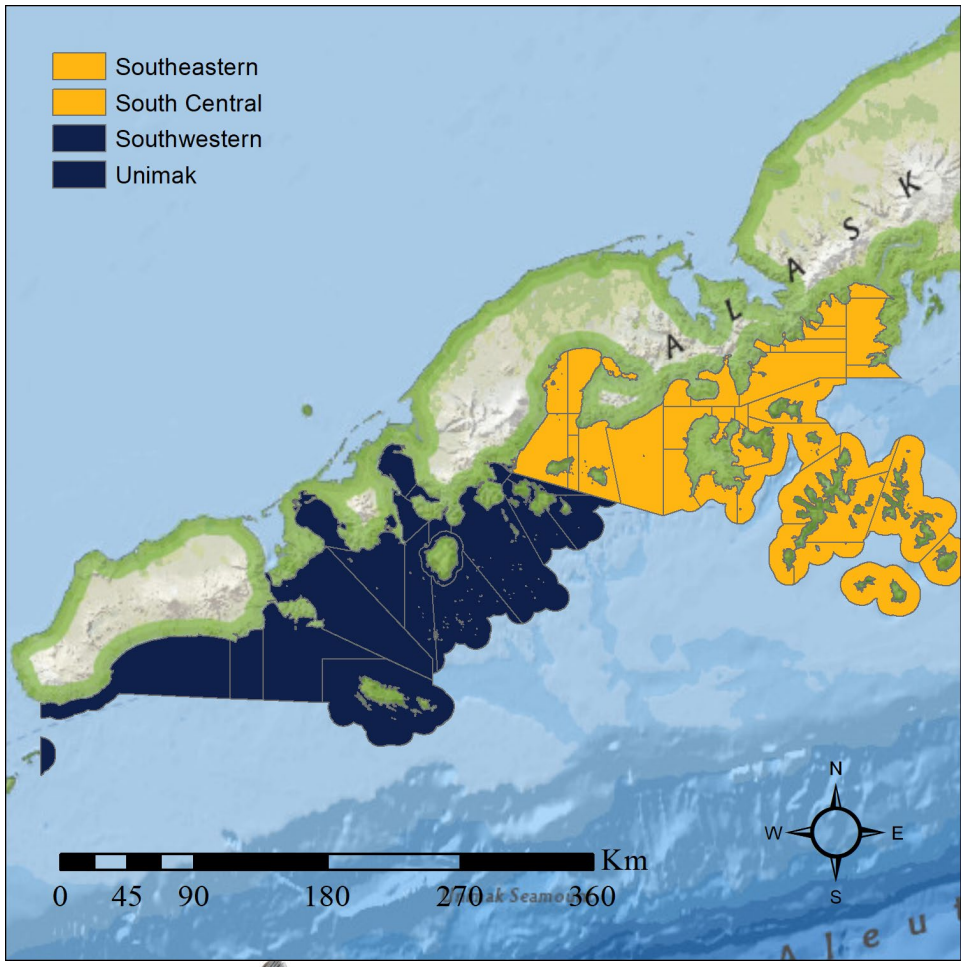
2024 & 2025

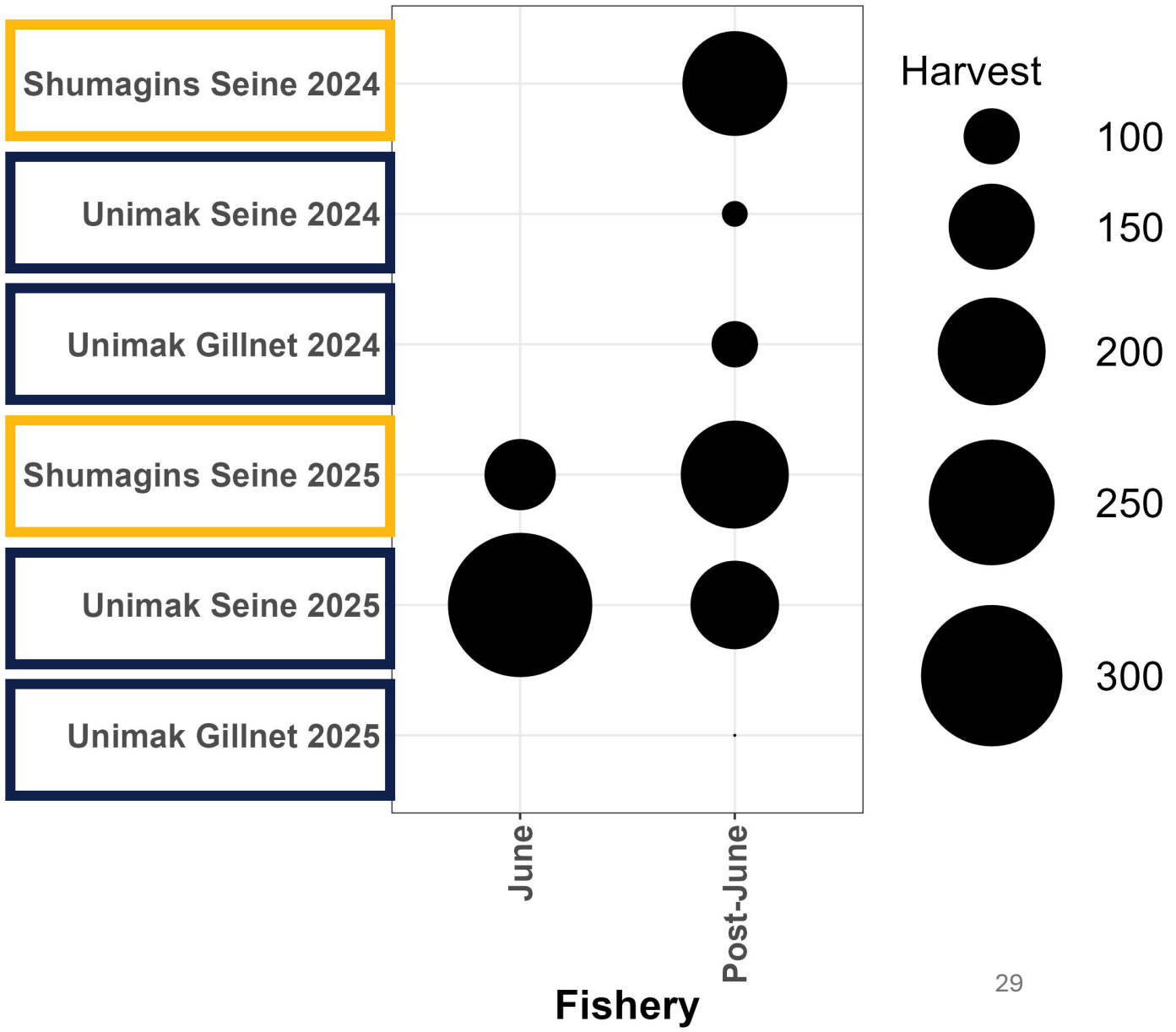






Kuskokwim/Bristol Bay Harvests 2024 & 2025





Guide to Other Results in Chum Report FDS25-63

- The baseline and definition of reporting groups are described in Table 3 and Appendix A.
- The operational plan and final analysis design can be found in Tables 4–7 and 9–11.
- Daily summaries of harvest and samples collected and selected for analysis can be found in Appendix B, with annual fishery summaries in Table 8.
- Annual fishery-level (June, post-June, South Alaska Peninsula) estimates of stock composition and stock-specific harvests can be found in Tables 16–24 and Figures 6–8, individual strata estimates in Appendix D and Figures 9–12, and stratified estimates in Appendix E.
- A summary of harvests of chum salmon from Asia and CWAK can be found in Table 25 and Figure 19.
- Summary of June and post-June stock compositions in 2022–2024 in comparison with the WASSIP years (2007–2009) can be found in Table 29 and Figure 23.
- Reporting group-specific estimates of stock composition and stock-specific harvest for all 84 strata across time periods, gear types, areas, and years can be found in Appendix G.

Summary and Next Steps

- Chum
  - 29,767 samples analyzed in 84 individual strata grouped into 53 stratified estimates
  - 1 out of every 84 harvested fish analyzed
  - Coastal Western Alaska: highest observation in early June, more vulnerable to gillnet but more harvested in seine fleet and in Unimak and Southwestern districts

- Chinook
  - 5,507 samples analyzed in 9 individual strata grouped into 4 stratified estimates
  - 1 out of every 5 harvested fish analyzed
  - Kuskokwim/Bristol Bay: >10% in 6 strata representing low harvests (~ 1,200 fish)
  - Chignik: <10% in Chignik stratum (7%; ~200 fish)

- Future years of sampling and analysis
  - Chum: sampling and stock composition through 2027
  - Chinook: sampling and stock composition through 2027

Acknowledgements

- Previously recognized samplers and processors
- Coauthors: Jodi Estrada, Michelle Wattum, Marybeth Loewen, Birch Foster
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- Reviewers: Andy Barclay, Sara Gilk-Baumer, Bill Templin, Andrew Munro, Zach Liller, Bobby Hsu
- State of Alaska funds

Questions?

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