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**Genetic Mixed Stock Analysis of Upper Cook Inlet
Sockeye Salmon Harvest, 2014**

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Two composite random samples of 400 fish were constructed representing 89.4% of the Northern District set gillnet harvest. The Eastern Subdistrict stratum (247-70, 80, and 90) represented periods from June 30 to August 18 and the General Subdistrict stratum (247-10, 20, 30, 41, 42, and 43) represented harvests from June 26 to August 21 (Table 2; Appendices A1, B1, E1, and E2).

LABORATORY ANALYSIS

Genotyping

A total of 3,200 fish were genotyped (Appendix A1).

Laboratory Failure Rates and Quality Control

The failure rate was 2.7% and discrepancy rate was 0.4% (data not shown). Assuming equal error rates in the original and the QC analyses, estimated error rate in the samples is half of the discrepancy rate (0.2%).

STATISTICAL ANALYSIS

Baseline Evaluation for Genetic Mixed Stock Analysis

Correct allocations for all reporting group tests exceeded 95% (data not shown).

Data Retrieval and Quality Control

Data retrieval and QC results for the baseline collections are reported in Barclay and Habicht (2012). Based upon the 80% scorable marker rule, 68 individuals were removed from the collections before stock composition estimates were calculated. No duplicate individuals were identified in the analysis.

Stock Composition Estimates

Estimates by Fishery

Central District drift gillnet

A total of 800 sockeye salmon harvested in the Central District drift gillnet fishery were genotyped (Table 2; Appendix A1). Samples were combined to form 2 spatial strata to represent fishing periods where the fishery was not completely restricted to the Kenai and Kasilof corridors (excluding corridor-only periods; June 19–August 14) and 1 stratum representing corridor-only fishing periods (July 9–31).

In the excluding corridor-only periods stratum, *Kenai* (69.8%), *West* (11.8%), and *Kasilof* (9.1%) contributed to the majority of the harvest (Appendix C1). The combined contribution of *JCL*, *KTNE*, *Fish*, *SusYen*, and *Crescent* made up the remainder of the harvest (9.3%).

In the corridor-only periods stratum, *Kenai* (72.1%), *Kasilof* (13.4%), and *SusYen* (10.6%) made up the majority of the harvest (Appendix C2). The combined contribution of *KTNE*, *JCL*, *West*, *Fish*, and *Crescent* made up the remainder of the harvest (3.9%).

Western Subdistrict set gillnet

A total of 400 sockeye salmon harvested in the Western Subdistrict were genotyped to form a single stratum representing fishing periods from June 11 to August 14 (Table 2; Appendix A1). The Western Subdistrict harvest was dominated by contributions from *Crescent* (81.3%),

the Western Subdistrict set gillnet fishery and 5.2% occurred within the Kalgin Island set gillnet fishery (Appendices C1, C2, D1–D3, E1, and E2; Figure 7). The Central District drift, Upper Subdistrict set, and Northern District set gillnet fisheries harvested the remaining 0.9% of *Crescent* fish.

West

West fish amounted to about 7.7% (164,220 fish) of the sampled UCI commercial sockeye salmon harvest in 2014 (Table 3). *West* fish constituted greater than 5.0% of a mixture in 4 of the 8 strata analyzed. Of the total *West* harvest in sampled strata, 74.7% occurred within the Central District drift gillnet fishery (excluding corridor-only periods), 14.5% occurred within the Kalgin Island set gillnet fishery, and 5.5% occurred within the General Subdistrict set gillnet fishery (Appendices C1, C2, D1–D3, E1, and E2; Figure 7). The Central District drift (corridor-only periods), Western Subdistrict set, Upper Subdistrict set, and Eastern Subdistrict set gillnet fisheries harvested the remaining 5.3% of *West* fish.

JCL

JCL fish amounted to about 2.6% (56,109 fish) of the sampled UCI commercial sockeye salmon harvest in 2014 (Table 3). *JCL* fish constituted greater than 5.0% of a mixture in 2 of the 8 strata analyzed. Of the total *JCL* harvest in sampled strata, 79.5% occurred within the Central District drift gillnet fishery (excluding corridor-only periods) and 9.1% occurred within the Central District drift gillnet fishery (corridor-only periods; Appendices C1, C2, D1–D3, E1, and E2; Figure 7). The Western Subdistrict set, Kalgin Island set, Upper Subdistrict set, and Northern District set gillnet fisheries harvested the remaining 11.4% of *JCL* fish.

SusYen

SusYen fish amounted to about 3.2% (67,659 fish) of the sampled UCI commercial sockeye salmon harvest in 2014 (Table 3). *SusYen* fish constituted greater than 5.0% of a mixture in 3 of the 8 strata analyzed. Of the total *SusYen* harvest in sampled strata, 68.8% occurred within the Central District drift gillnet fishery (corridor-only periods), 16.8% occurred within the Central District drift gillnet fishery (excluding corridor-only periods), and 7.3% occurred within the General Subdistrict set gillnet fishery (Appendices C1, C2, D1–D3, E1, and E2; Figure 7). The Western Subdistrict set, Kalgin Island set, Upper Subdistrict set, and Eastern Subdistrict set gillnet fisheries harvested the remaining 7.1% of *SusYen* fish.

Fish

Fish Creek fish amounted to about 0.6% (12,424 fish) of the sampled UCI commercial sockeye salmon harvest in 2014 (Table 3). *Fish* Creek fish constituted greater than 5.0% of a mixture in 1 of the 8 strata analyzed. Of the total *Fish* harvest in sampled strata, 80.3% occurred within the Central District drift gillnet fishery (excluding corridor-only periods), 9.9% occurred within the Eastern Subdistrict set gillnet fishery, and 7.3% occurred within the General Subdistrict set gillnet fishery (Appendices C1, C2, D1–D3, E1, and E2; Figure 7). The Central District drift (corridor-only periods), Western Subdistrict set, Kalgin Island set, and Upper Subdistrict set gillnet fisheries harvested the remaining 2.6% of *Fish* Creek fish.

KTNE

KTNE fish amounted to about 2.5% (53,306 fish) of the sampled UCI commercial sockeye salmon harvest in 2014 (Table 3). *KTNE* fish constituted greater than 5.0% of a mixture in 2 of

the 8 strata analyzed. Of the total *KTNE* harvest in sampled strata, 58.3% occurred within the Central District drift gillnet fishery (excluding corridor-only periods), 21.0% occurred within the Central District drift gillnet fishery (corridor-only periods), and 10.9% occurred within the Eastern Subdistrict set gillnet fishery (Appendices C1, C2, D1–D3, E1, and E2; Figure 7). The Western Subdistrict set, Kalgin Island set, Upper Subdistrict set, and General Subdistrict set gillnet fisheries harvested the remaining 9.8% of *KTNE* fish.

Kenai

Kenai fish amounted to about 66.4% (1,406,865 fish) of the sampled UCI commercial sockeye salmon harvest in 2014 (Table 3). *Kenai* fish constituted greater than 5.0% of a mixture in 6 of the 8 strata analyzed. Of the total *Kenai* harvest in sampled strata, 51.7% occurred within the Central District drift gillnet fishery (excluding corridor-only periods), 22.6% occurred within the Central District drift gillnet fishery (corridor-only periods), 16.2% occurred within the Kasilof Section (Upper Subdistrict) set gillnet fishery, and 8.7% occurred within the Kenai/East Foreland sections (Upper Subdistrict) set gillnet fishery (Appendices C1, C2, D1–D3, E1, and E2; Figure 7). The Western Subdistrict set, Kalgin Island set, and Northern District set gillnet fisheries harvested the remaining 0.8% of *Kenai* fish.

Kasilof

Kasilof fish amounted to about 15.4% (327,136 fish) of the sampled UCI commercial sockeye salmon harvest in 2014 (Table 3). *Kasilof* fish constituted greater than 5.0% of a mixture in 5 of the 8 strata analyzed. Of the total *Kasilof* harvest in sampled strata, 47.0% occurred within the Kasilof section (Upper Subdistrict) set gillnet fishery, 29.1% occurred within the Central District drift gillnet fishery (excluding corridor-only periods), and 18.0% occurred within the Central District drift gillnet fishery (corridor-only periods; Appendices C1, C2, D1–D3, E1, and E2; Figure 7). The Western Subdistrict set, Kalgin Island set, Kenai/East Foreland sections (Upper Subdistrict), and Northern District set gillnet fisheries harvested the remaining 5.9% of *Kasilof* fish.

Total Stock-Specific Harvest of Sampled Strata

Results from all spatiotemporal strata were combined to estimate total UCI commercial fishery stock composition and stock-specific harvest summaries for sampled areas and time periods (Table 3). Although these estimates represent the majority of the sockeye salmon harvest, they do not include harvests from some early and late periods or fishing areas outside of the sampling plan (Kasilof River Special Harvest Area and Chinitna Bay Subdistrict; Appendix B1). Total harvests from unsampled fishing periods and areas are provided in Table 3 beneath the stock-specific harvest estimates.

Central District drift gillnet

The total Central District drift gillnet (excluding corridor-only periods) sockeye salmon harvest from fishing periods sampled was 1,042,642 fish, representing over 99.9% of the total drift fishery (excluding corridor-only periods) harvest for 2014 (Table 4). Of this sockeye salmon harvest, 90.7% (945,512 fish) was attributed to *Kenai* (69.8%), *West* (11.8%), and *Kasilof* (9.1%), and the remaining harvest (97,130 fish) was attributed to *Crescent*, *JCL*, *SusYen*, *Fish*, and *KTNE* reporting groups.