Fishery Manuscript Series No. 17-04

Genetic Stock Identification of Upper Cook Inlet Coho Salmon Harvest, 2013–2015

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December 2017

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and 40.5%), and *Knik* (22.7% and 25.1%) were similar between the 2 temporal strata (July 1–22 and July 23–30). *Southwest CI* contributed 2.0% to the first stratum and 1.3% to the second stratum, and the combined contribution of *Turnagain/Northeast CI, Kenai/Kasilof,* and *Southeast CI* was less than 1.3% in both strata.

Results from all SOTF temporal strata for each year were combined to estimate total stock-specific CPUE (Tables 8, 9, and 16; Figure 13). The total CPUE for coho salmon in 2013 was 495 fish, of which 96% (477) was attributed to northern Cook Inlet reporting groups *Northwest CI/Yentna* (50%), *Susitna* (35%), and *Knik* (11%), and the remaining catch was attributed to *Turnagain/Northeast CI, Southwest CI, Kenai/Kasilof,* and *Southeast CI.* The total CPUE for coho salmon in 2014 was 655, of which 95% (626) was attributed to northern Cook Inlet reporting groups *Northwest CI/Yentna* (36%), *Susitna* (35%), and *Knik* (24%), and the remaining catch was attributed to *Turnagain/Northeast CI, Southwest CI, Kenai/Kasilof,* and *Southeast CI.* The total CPUE for coho salmon in 2015 was 277, of which 97% (267) was attributed to northern Cook Inlet reporting groups *Northwest CI/Yentna* (35%), *Susitna* (38%), and *Knik* (24%), and the remaining catch was attributed to *Turnagain/Northeast CI, Southwest CI, Kenai/Kasilof,* and *Southeast CI.*

Central District drift gillnet

From 2013 to 2015, a total of 2,000 (2013), 1,975 (2014), and 2,360 (2015) coho salmon harvested in the Central District drift gillnet fishery were genotyped (Table 2). Samples were combined to form 5 temporal strata in both 2013 and 2014 and 3 temporal strata in 2015, to represent fishing periods where the fishery was not completely restricted to the Kenai and Kasilof corridors (excluding corridor-only). In 2015, samples were combined to form an additional stratum representing corridor-only fishing periods.

In the first 4 fishing periods of 2013 (June 27–August 5), the contribution of *Southwest CI* (range: 0.0–0.3%), *Northwest CI/Yentna* (range: 43.6–55.4%), *Susitna* (range: 29.2–34.4%), and *Knik* (range: 14.2–18.5%) remained relatively constant (Appendix D1; Figure 16). Then, in the fifth fishing period (August 8–22), the contribution of *Southwest CI* increased to 7.3%, *Northwest CI/Yentna* increased to 83.5%, *Susitna* decreased to 2.7%, and *Knik* decreased to 6.4%. The contributions of *Turnagain/Northeast, Kenai/Kasilof,* and *Southeast CI* were less than 1% in all strata except for the July 24–30 period, where *Kenai/Kasilof* contributed 2.1%, and the August 1–5 period, where *Turnagain/Northeast CI* contributed 2.7% and Kenai/Kasilof contributed 1.2%; however, all but the 2 *Kenai/Kasilof* stock composition estimates had credibility intervals including zero.

In the first 4 fishing periods of 2014 (June 26–August 7), the contribution *Northwest CI/Yentna* (range: 21.7–31.4%) varied slightly, *Susitna* (range: 21.1–42.5%) and *Knik* (range: 16.3–34.2%) generally decreased, *Turnagain/Northeast* (range: 0.1–18.0%) increased, and *Kenai/Kasilof* remained below 1% for the first 3 fishing periods before increasing to 9.3% in the fourth period (Appendix D2; Figure 16). The fifth fishing period was dominated by the *Northwest CI/Yentna* reporting group, which had a contribution of 96.9%; all other reporting groups except *Susitna* (1.9%) had contributions of less than 1%. Contributions from the *Southwest CI* and *Southeast CI* reporting groups never exceeded 1% in all 5 periods. All stock composition estimates below 2% had lower credibility intervals below 0.1%.

From early to late fishing periods in 2015 (excluding corridor-only; June 29–August 24), the contribution of *Northwest CI/Yentna* (range: 34.2–53.4%) increased, *Susitna* (range: 18.3–33%)

and *Knik* (range: 12.2–29.1%) decreased, and *Turnagain/Northeast CI* (range: 0.3–7.0%), *Kenai/Kasilof* (range: 0.0–7.1%), and *Southeast CI* (range: 0.0–1.9%) generally increased (Appendix D3; Figure 16). The contribution of *Southwest CI* was less than 1% in all strata.

In the 2015 corridor-only stratum (July 11–August 5), the *Northwest CI/Yentna* (39.6%), *Susitna* (24.3%), and *Knik* (26.9%) reporting groups made up the majority of the harvest, with smaller contributions from the *Turnagain/Northeast* (6.5%) and *Kenai/Kasilof* (2.6%) reporting groups (Appendix D4; Figure 17). The *Southwest CI* and *Southeast CI* reporting groups contributed less than 1%, and had credibility intervals including zero.

Northern District set gillnet

From 2013 to 2015, a total of 1,600 (2013), 1,537 (2014), and 1961 (2015) coho salmon harvested in the Northern District set gillnet fishery were genotyped (Table 2). Samples were combined to form temporal strata representing the entire Northern District for four 8-day periods for each of the 3 years (Table 3; Appendix A2). A portion of the samples used to represent Northern District temporal strata were subsampled and recombined to create spatial strata representing the Eastern Subdistrict, General Subdistrict (south), and General Subdistrict (north) in 2013, 2014, and 2015 (Table 2; Appendix A1).

The stock composition estimates for the Northern District temporal strata revealed similar patterns among years, with *Northwest CI/Yentna*, *Susitna*, *Knik*, and *Turnagain/Northeast CI* reporting groups contributing to the majority of the harvest (Appendix E1–E3; Figure 18). In general, the stock compositions over the 4 strata decreased for the *Northwest CI/Yentna*, *Susitna*, and *Knik* reporting groups, and increased for *Turnagain/Northeast CI* reporting group in each year. Additionally, the *Kenai/Kasilof* reporting group never contributed greater than 1% to the harvest, except in the fourth time stratum in each year, and *Southwest CI* and *Southeast CI* reporting groups always contributed less than 1% in any stratum.

The first stratum (third week of July) was dominated by nearly equal contributions from *Northwest CI/Yentna* (46.0%) and *Susitna* (51.0%) in 2013, *Northwest CI/Yentna* (29.0%), *Susitna* (34.1%), and *Knik* (34.3%) in 2014, and *Northwest CI/Yentna* (39.1%), *Susitna* (25.6%), and *Knik* (33.1%) in 2015. The stock composition estimates for the second stratum (fourth week of July) in all 3 years were very similar, where contributions ranged from 30.5% to 38.5% for *Northwest CI/Yentna*, 11.5% to 18.7% for *Susitna*, 37.0% to 41.3% for *Knik*, and 8.6% to 12.5% for *Turnagain/Northeast CI* reporting groups; the remaining reporting groups contributed less than 1%. The third stratum (first week of August) had no discernible pattern over the 3 years; contributions ranged from 27.6% to 49.0% for *Northwest CI/Yentna*, 17.2% to 27.4% for *Susitna*, 22.0% to 36.3% for *Knik*, and 8.9% to 18.3% for *Turnagain/Northeast CI* reporting groups. The remaining reporting groups contributed less than 1%. In the fourth stratum (second week of August), *Turnagain/Northeast CI* (range: 43.8–65.7%) was the largest contributor to the harvest followed by *Northwest CI/Yentna* (range: 17.1–27.8%) in all 3 years. The *Knik* (range: 7.9–23.1%) and *Susitna* (range: 2.6–10.3%) reporting groups were the next largest contributors the fourth stratum; however, in 2014 and 2015, *Susitna* contributed less than 3.3% to the harvest and had credibility intervals that included zero. The fourth stratum was the only harvest period in all 3 years, where the *Kenai/Kasilof* reporting group (range: 1.7–5.3%) contributed over 1% to the harvest.

In the analysis of Northern District samples by spatial strata (areas), each stratum was dominated by the same reporting group or groups in all 3 years (Appendix F1–F3; Figure 19). In the