**Supplement S1**

Preservation of zooplankton in high concentration ethanol can make samples brittle and difficult to manipulate (Steedman 1976). To address this, samples can be rehydrated in water. However, both the preservation and rehydration can affect sample weights (Wetzel et al. 2005). Therefore, a laboratory experiment was performed to determine the effect of 95% ethanol preservation and subsequent rehydration on sample weights. Furthermore, we developed a correction factor that could be applied to 95% ethanol-preserved samples to convert them back to fresh weight equivalents.

A sample of thirty juvenile sockeye salmon was collected as part of the Hakai Institute Juvenile Salmon Program under DFO license number 'XR 63 2019' and complied with UBC's Animal Care Committee policies (Protocol A19-0025). Fish were frozen in the field in cryogenic dry-shippers for transportation back to the laboratory where they were stored in -80°C freezers until dissection. Upon dissection, contents were removed from the stomachs and were weighed fresh (FW) to the nearest 0.1 mg prior to being transferred to 50 mL falcon tubes containing 95% ethanol for eight weeks. Stomachs were then removed from the alcohol and blotted to remove excess ethanol. At this stage, samples are too brittle from the ethanol preservation to conduct detailed taxonomic analyses and the gradual evaporation of the ethanol makes it near impossible to get an accurate weight. Therefore, samples were rehydrated in water to facilitate these steps. In this experiment, stomach contents were submerged in a 50 ml falcon tube containing fresh water for 30 minutes. Contents were then poured through a 64 µm sieve to remove water, blotted and weighed a final time (WW). The conversion factor ($k$) was subsequently calculated as the FW divided by the WW.

The preservation of stomach contents in 95% ethanol resulted in weight loss in all samples. After the 8-week period, rehydrated ethanol-preserved stomach contents weighed on average 65% of the fresh weight (Figure S1), resulting in a $k$-value of 1.54. Diets were dominated almost exclusively by crustaceous zooplankton in our study. However, it is worth noting that the outlier in Figure S1 was from a single stomach sample dominated by chaetognaths, a gelatinous bodied zooplankton group (dry weight ~ 9.3% of wet weight vs copepods dry weight 16.1% of wet weight; Kiørboe 2013). The preserved weight of this sample was only 38% of the original fresh weight. Therefore, the type of organisms contained within the stomach should be considered when applying the conversion factors presented here.

This experiment confirms that samples lose weight during ethanol preservation. Studies involving diet analyses on preserved samples should therefore consider using similar conversion factors when reporting on sample weights to account for weight loss.

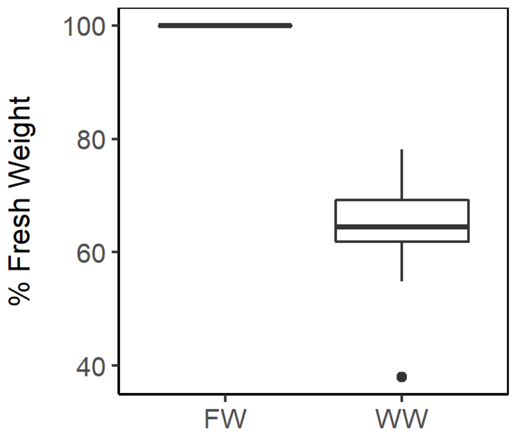


Figure S1.1. Weights of juvenile sockeye salmon (Oncorhynchus nerka) stomach content samples after preservation in 95% ethanol and a 30 minute rehydration period (WW) relative to the original stomach content fresh weight (FW).

**Literature Cited**


Kiørboe T (2013) Zooplankton body composition. Limnol Oceanogr 58:1843–1850 https://doi.org/10.4319/lo.2013.58.5.1843

Steedman HF (1976) Miscellaneous preservation techniques. In: Steedman HF (ed) Zooplankton Fixation and Preservation. UNESCO Press, p 350

Wetzel MA, Leuchs H, Koop JHE (2005) Preservation effects on wet weight, dry weight, and ash-free dry weight biomass estimates of four common estuarine macro-invertebrates: No difference between ethanol and formalin. Helgol Mar Res 59:206–213

**Supplement S2**

**Tables S2**

Table S2.1. Stock composition of the juvenile sockeye salmon migration through the Discovery Islands and Johnstone Strait in 2015 and 2016 from all field program samples submitted for genetic stock identification that received > 70 % probability of assignment.

| Stock | 2015 | | 2016 | |
|---|---|---|---|---|
| | n | % | n | % |
| BAKER_LAKE | 1 | 0.1 | 0 | - |
| BIRKENHEAD | 32 | 3.6 | 3 | 0.4 |
| BLACKWATER | 8 | 0.9 | 0 | - |
| BLUE_LEAD_CK | 5 | 0.6 | 13 | 1.6 |
| BOWRON | 4 | 0.5 | 0 | - |
| CHILKO | 319 | 36.2 | 132 | 16.5 |
| CHILKO-NORTH | 4 | 0.5 | 15 | 1.9 |
| CHILKO_SOUTH | 10 | 1.1 | 0 | - |
| CHILLIW_LAKE | 1 | 0.1 | 0 | - |
| DOLLYVARDEN_CR | 0 | - | 1 | 0.1 |
| EAGLE_L | 0 | - | 6 | 0.7 |
| FENNELL | 0 | - | 4 | 0.5 |
| GATES_CR | 25 | 2.8 | 1 | 0.1 |
| GLUSKIE | 2 | 0.2 | 0 | - |
| HORSEFLY | 3 | 0.3 | 28 | 3.5 |
| KUZKWA_CR | 2 | 0.2 | 1 | 0.1 |
| KYNOCK | 1 | 0.1 | 0 | - |
| L_ADAMS | 75 | 8.5 | 107 | 13.4 |
| L_SHUSWAP | 5 | 0.6 | 190 | 23.7 |
| LITTLE | 2 | 0.2 | 10 | 1.2 |
| MCKINLEY | 0 | - | 9 | 1.1 |
| MIDDLE | 15 | 1.7 | - | 0 |
| MIDDLESHUSWAP | 0 | - | 82 | 10.2 |
| MITCHELL | 62 | 7.0 | 23 | 2.9 |
| NADINA | 0 | - | 12 | 1.5 |
| NAHATLATCH | 2 | 0.2 | 1 | 0.1 |
| NARROWS | 4 | 0.5 | 0 | - |
| NIMPKISH | 15 | 1.7 | 14 | 1.7 |
| PAULA | 10 | 1.1 | 0 | - |
| PHILLIPS | 4 | 0.5 | 0 | - |
| PINCHI_CR | 20 | 2.3 | 0 | - |
| PITT | 42 | 4.8 | 0 | - |
| PORTAGE_CR | 4 | 0.5 | 0 | - |
| PORTER_CR | 2 | 0.2 | 0 | - |
| QUESNEL_DECEPT | 6 | 0.7 | 0 | - |
| QUESNEL_HORSEF | 31 | 3.5 | 38 | 4.7 |
| QUESNEL_MITCHE | 31 | 3.5 | 8 | 1.0 |
| ROARING | 0 | - | 2 | 0.2 |
| SAKINAW | 2 | 0.2 | 1 | 0.1 |
| SCOTCH | 30 | 3.4 | 59 | 7.4 |
| SEYMOUR | 30 | 3.4 | 21 | 2.6 |
| STELLAKO | 13 | 1.5 | 12 | 1.5 |

| | | | | |
|---|---|---|---|---|
| TACHIE | 10 | 1.1 | 4 | 0.5 |
| THOMPSON_N | 10 | 1.1 | 0 | - |
| U_HORSEFLY | 12 | 1.4 | 0 | - |
| WASKO_CR | 4 | 0.5 | 0 | - |
| WEAVER | 12 | 1.4 | 0 | - |
| WOSS_LAKE | 12 | 1.4 | 4 | 0.5 |

Table S2.2 Genetic stock counts (n) of sockeye stocks that had greater than 10 samples in both years and regions (DI = Discovery Islands, JS = Johnstone Strait) and their median Julian date of capture.

| | | 2015 | | 2016 | |
|---|---|---|---|---|---|
| Region | Genetic Stock | n | Median | n | Median |
| DI | CHILKO | 185 | 148 | 61 | 145 |
| JS | CHILKO | 134 | 152 | 71 | 154 |
| DI | L_ADAMS | 38 | 164.5 | 57 | 148 |
| JS | L_ADAMS | 37 | 166 | 50 | 158.5 |
| DI | SCOTCH | 12 | 156 | 37 | 153 |
| JS | SCOTCH | 18 | 166.5 | 22 | 161.5 |

Table S2.3 Relative contributions of specific taxa to differences in diet clusters A1, A2, B1, B2, and B3 The relative contribution of each taxa to the first cluster is shown in 'av1' with contributions to the second cluster shown in 'av2'. Cumsum indicates the cumulative sum of differences between clusters attributed to each taxa (up to 0.7 or 70% difference).

| Clusters | Taxa | av1 | av2 | cumsum |
|---|---|---|---|---|
| A1 vs A2 | Euphausiid | 0.05 | 0.67 | 0.3 |
| | Calanus | 0.43 | 0.08 | 0.48 |
| | Metridia | 0.35 | 0.01 | 0.64 |
| | Hyperiidae | 0.02 | 0.13 | 0.7 |
| A1 vs B1 | Oikopleura | 0.03 | 0.71 | 0.32 |
| | Calanus | 0.43 | 0.04 | 0.5 |
| | Metridia | 0.35 | 0.11 | 0.64 |
| | Calanoid | 0.12 | 0.08 | 0.69 |
| A1 vs B2 | Calanus | 0.43 | 0 | 0.17 |
| | Metridia | 0.35 | 0 | 0.31 |
| | Barnacle | 0.08 | 0.34 | 0.45 |
| | Podonidae | 0 | 0.31 | 0.57 |
| | Zooplankton eggs | 0 | 0.23 | 0.66 |
| A1 vs B3 | Calanus | 0.43 | 0.05 | 0.16 |
| | Barnacle | 0.01 | 0.38 | 0.3 |
| | Metridia | 0.35 | 0.15 | 0.42 |
| | Gastropoda | 0 | 0.21 | 0.5 |
| | Epilabidocera | 0.03 | 0.16 | 0.56 |
| | Asteroida | 0 | 0.12 | 0.61 |
| | Oikopleura | 0.03 | 0.1 | 0.65 |
| | Calanoid | 0.12 | 0.05 | 0.69 |
| A2 vs B1 | Oikopleura | 0.02 | 0.7 | 0.31 |
| | Euphausiid | 0.67 | 0.01 | 0.61 |
| | Hyperiidae | 0.13 | 0.03 | 0.67 |
| A2 vs B2 | Euphausiid | 0.67 | 0.03 | 0.28 |
| | Barnacle | 0 | 0.34 | 0.44 |
| | Podonidae | 0 | 0.31 | 0.57 |
| | Zooplankton eggs | 0 | 0.23 | 0.67 |
| A2 vs B3 | Euphausiid | 0.67 | 0.01 | 0.25 |
| | Barnacle | 0 | 0.38 | 0.39 |
| | Gastropoda | 0 | 0.21 | 0.47 |
| | Epilabidocera | 0 | 0.16 | 0.53 |
| | Metridia | 0.01 | 0.15 | 0.58 |
| | Hyperiidae | 0.13 | 0.01 | 0.63 |
| | Asteroida | 0 | 0.12 | 0.67 |
| B1 vs B2 | Oikopleura | 0.71 | 0.1 | 0.28 |
| | Podonidae | 0.01 | 0.3 | 0.42 |
| | Barnacle | 0.05 | 0.34 | 0.56 |
| | Zooplankton eggs | 0 | 0.23 | 0.67 |

| Clusters | Taxa | av1 | av2 | cumsum |
|---|---|---|---|---|
| B1 vs B3 | Oikopleura | 0.71 | 0.1 | 0.26 |
| | Barnacle | 0.05 | 0.38 | 0.4 |
| | Gastropoda | 0.02 | 0.21 | 0.49 |
| | Metridia | 0.11 | 0.15 | 0.56 |
| | Epilabidocera | 0.02 | 0.16 | 0.63 |
| | Asteroida | 0 | 0.12 | 0.68 |
| B2 vs B3 | Podonidae | 0.31 | 0.02 | 0.13 |
| | Zooplankton eggs | 0.23 | 0 | 0.23 |
| | Barnacle | 0.34 | 0.38 | 0.34 |
| | Gastropoda | 0 | 0.21 | 0.43 |
| | Epilabidocera | 0 | 0.16 | 0.5 |
| | Metridia | 0 | 0.15 | 0.57 |
| | Oikopleura | 0.1 | 0.1 | 0.62 |
| | Asteroida | 0 | 0.12 | 0.68 |

Table S2.4 Size ranges (mm), energetic content (J/g wet weight [WW]) of the main taxonomic groups observed in juvenile sockeye salmon diets, and the total energetic content of each of the diet types identified through cluster analysis based on the proportions of diet items. Energy values are from literature sources summarized by (Boldt & Haldorson 2002).

| | | | Diet Type | | | | |
|---|---|---|---|---|---|---|---|
| Taxa | Size Range (mm) | J/g WW | A1 | A2 | B1 | B2 | B3 |
| Calanoid copepods | 0.8-7.0 | 3810.70 | 0.89 | 0.05 | 0.16 | 0.01 | 0.29 |
| Decapods | 1.0-6.8 | 3790.40 | 0.01 | 0.00 | 0.01 | 0.06 | 0.04 |
| Euphausiids | 1.0-22.7 | 3454.80 | 0.02 | 0.71 | 0.00 | 0.01 | 0.00 |
| Larvaceans | 1.4-10.3 | 3287.80 | 0.01 | 0.00 | 0.77 | 0.07 | 0.05 |
| Amphipods | 0.8-8.0 | 2906.00 | 0.01 | 0.24 | 0.02 | 0.01 | 0.01 |
| Cladocerans | 0.4-1.0 | 2513.50 | 0.00 | 0.00 | 0.01 | 0.30 | 0.00 |
| Barnacle larvae | 0.2-2.3 | 2045.30 | 0.00 | 0.00 | 0.01 | 0.29 | 0.35 |
| Other | NA | 3115.50 | 0.04 | 0.01 | 0.01 | 0.25 | 0.26 |
| Total food J/g WW | | | 3752.77 | 3339.94 | 3341.16 | 2681.47 | 2967.07 |

## Figures S2

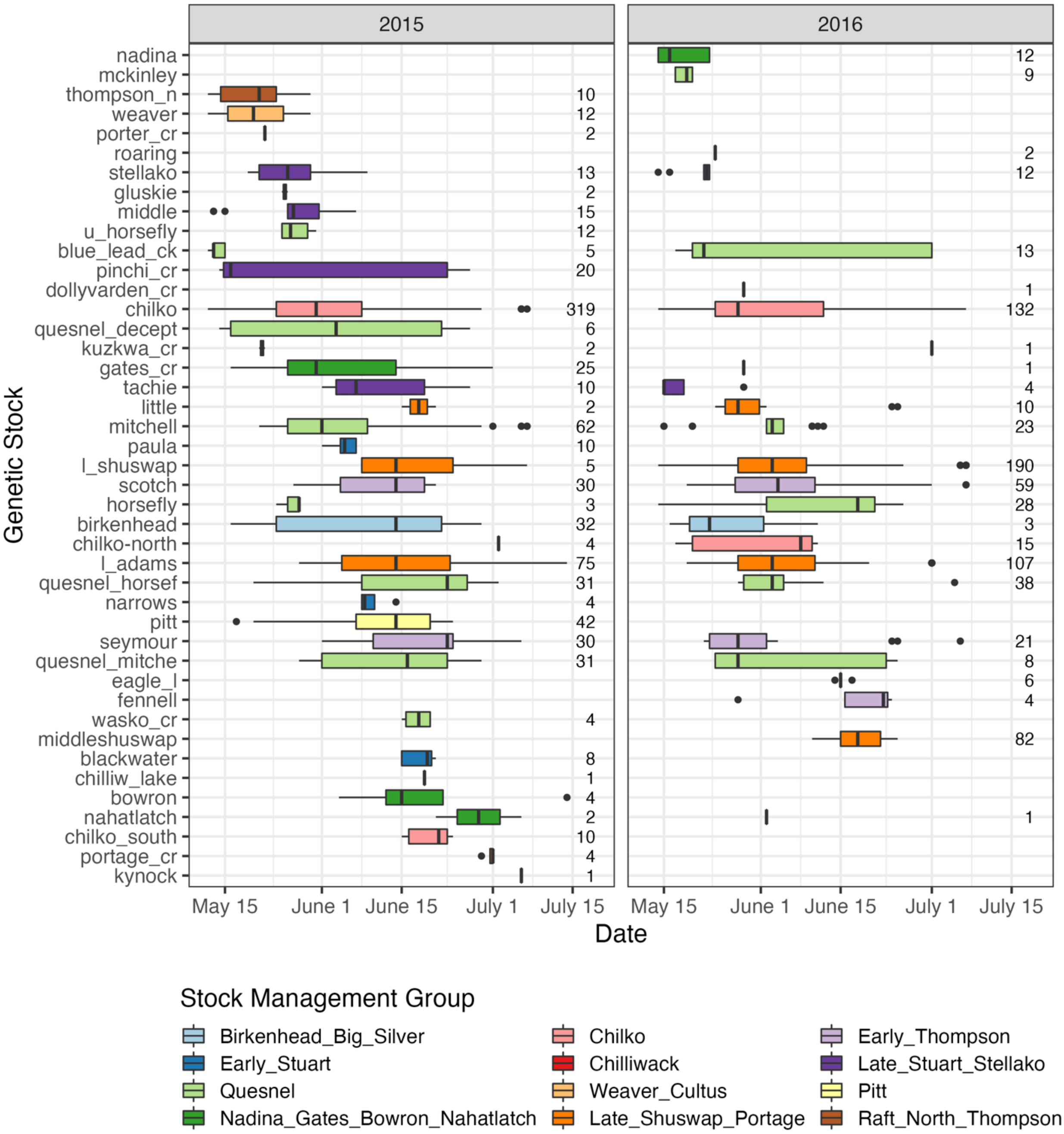


Figure S2.1. Migration timing of all individual Fraser River stocks with greater than 70% probability stock assignment captured in the Discovery Islands and Johnstone Strait in 2015 or 2016 coloured and aggregated in the legend by Fraser River stock management group. Boxplots show the median and interquartile range of the data, with horizontal lines reaching to the 95% percentiles, black dots are outliers, and sample sizes are indicated on the right side of each panel.

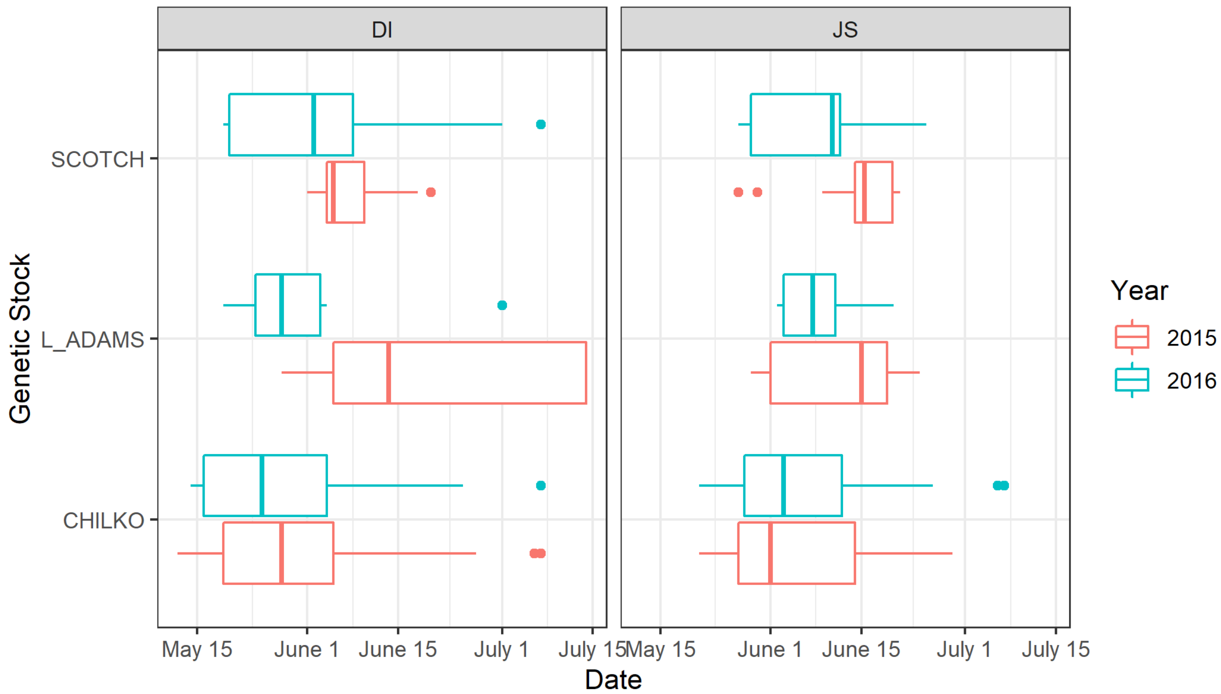


Figure S2.2. Within stock differences in migration timing between 2015 and 2016 and regions (DI = Discovery Islands, JS = Johnstone Strait). Stocks shown are those with > 10 samples per season in both years and both regions and greater than 70% stock assignment probability.