# Appendix 2

### Area 08 Chum Salmon

### Coastland

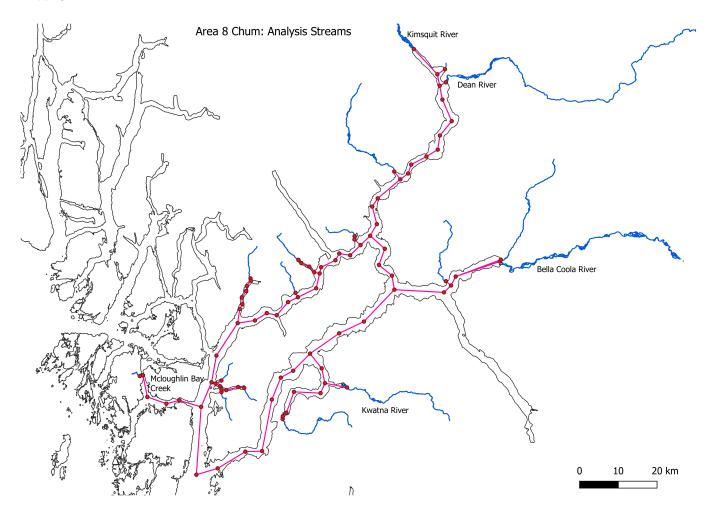
#### 2022-12-04

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# Study area

# Area 8



## **Summary statistics**

#### Bubbleplot of escapement by enhancement rank

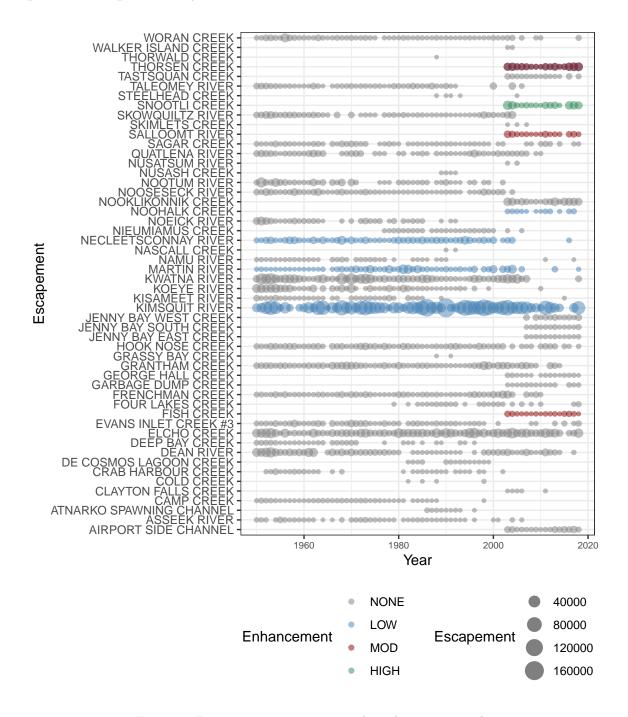


Figure 1: Escapement to area streams by enhancement rank.

#### Plot of total releases to area

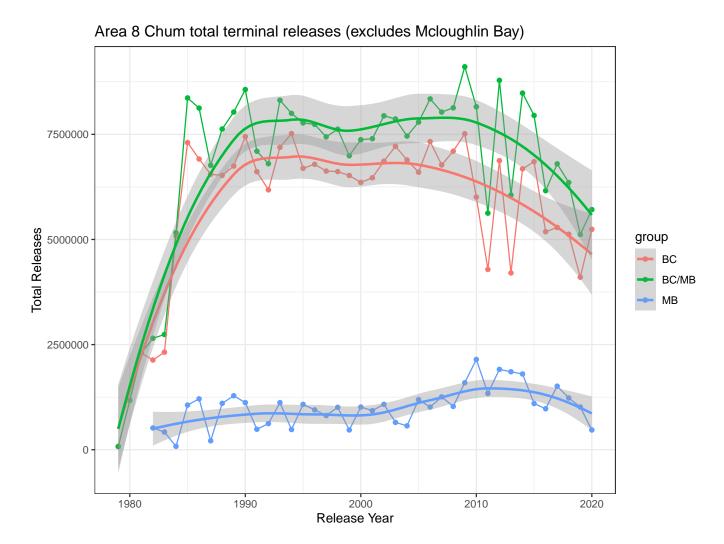


Figure 2: Total releases for Area 8 (not including McLoughlin Bay)

#### Escapement by enhancement rank per system

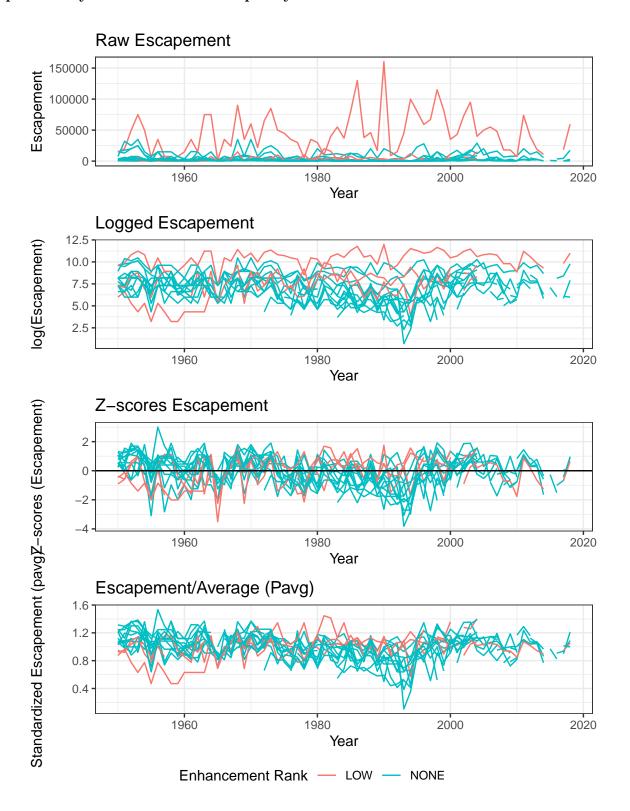


Figure 3: Various plots for escapement and transformations.

#### Moving average and LOESSS fit on enhancement ranking of log escapements

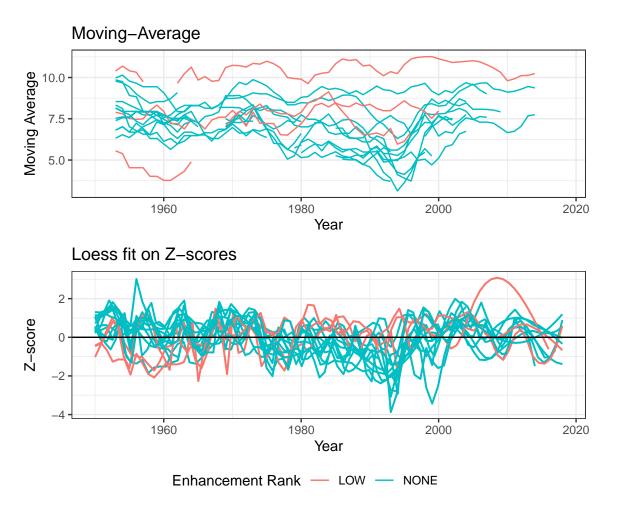


Figure 4: Moving average and LOESS fits on logged escapement by enhancement ranking.

#### Escapement to streams by enhancement rank

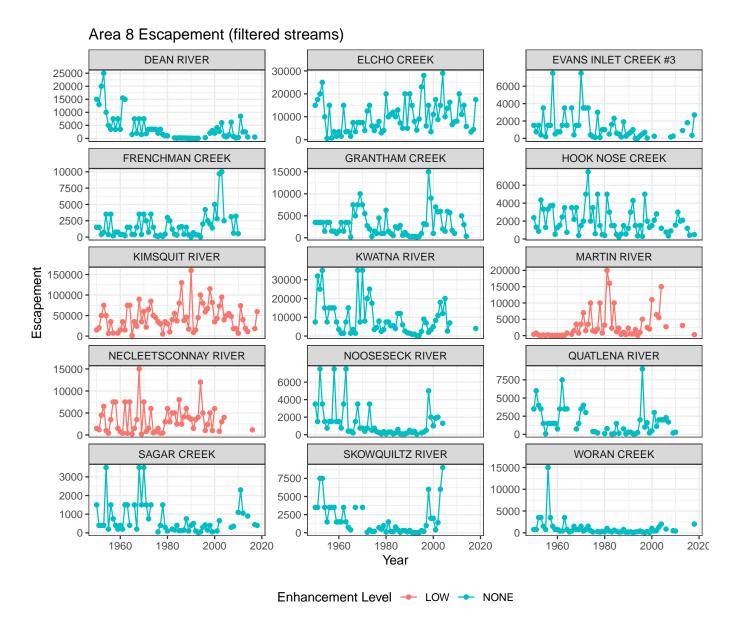


Figure 5: Facet plot of escapements by enhancement level

#### Facet plot of all releases in Area 8

Release site:Origin stock Bella Coola Est:Necleetsconnay R ella Coola R Low:Bella Coola R Lov ella Coola R Low:Necleetsconnay Bella Coola R:Bella Coola R Low 2e+06 1e+06 0e+00 ish Cr+Airport Ch:Fish Cr+Airport C Bentinck Arm N:Necleetsconnay R Fish Cr:Fish Cr Fish Cr:Fish Cr+Airport Ch 2e+06 1e+06 0e+00 Hagensborg SI:Bella Coola R Low Hagensborg SI:Thorsen Cr/CCST Kimsquit R:Kimsquit R Kwakusdis Est:Kwakusdis R 2e+06 1e+06 0e+00 Martin R:Martin R McLoughlin Bay Cr:Howyette R cLoughlin Bay Cr:McLoughlin Bay ( McLoughlin Bay Cr:Neekas R 2e+06 1e+06 0e+00 McLoughlin Bay: Howyette R McLoughlin Bay:McLoughlin Bay Cr McLoughlin Bay:Neekas R ecleetsconnay Est:Necleetsconnay 2e+06 1e+06 0e+00 lecleetsconnay R:Necleetsconnay I Noohalk Cr:Noohalk Cr Saloompt R:Saloompt R Snootli Cr:Snootli Cr 2e+06 1e+06 0e+00 horsen Cr/CCST:Necleetsconnay F Snootli Cr:Thorsen Cr/CCST Thorsen Cr/CCST:Thorsen Cr/CCST rsen+Noohalk Cr:Thorsen+Noohall 2e+06 1e+06 0e+00 1990 2000 2010 20201980 1990 2000 2010 20201980 1990 2000 2010 20201980 1990 2000 2010 2020 1980 Release Year

Chum: BELLA COOLA RIVER-LATE BELLA COOLA-DEAN RIVERS SPILLER-FITZ HUGH-BURKE

Figure 6: Facet plot of all releases in Area 8

Release Stage - Fed Fry - Seapen - Unfed

#### Recruits per spawner by system

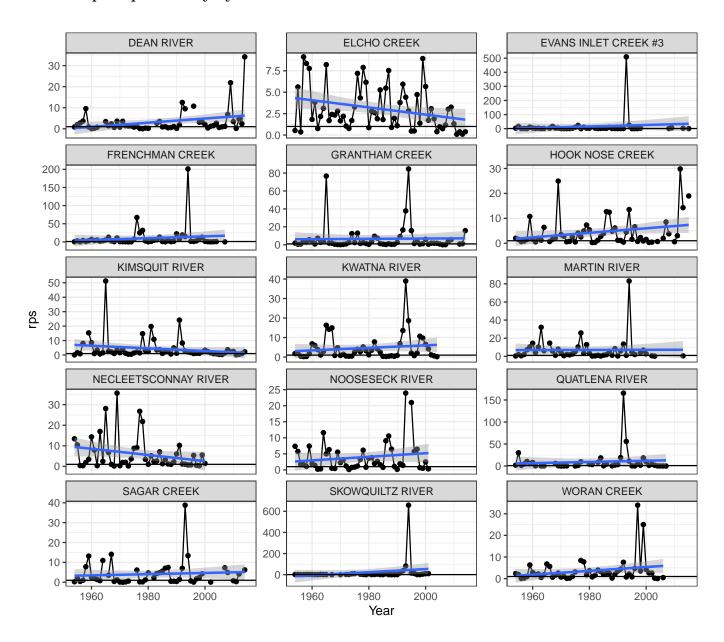


Figure 7: Recruits per spawner by system

#### Log recruits per spawner by system

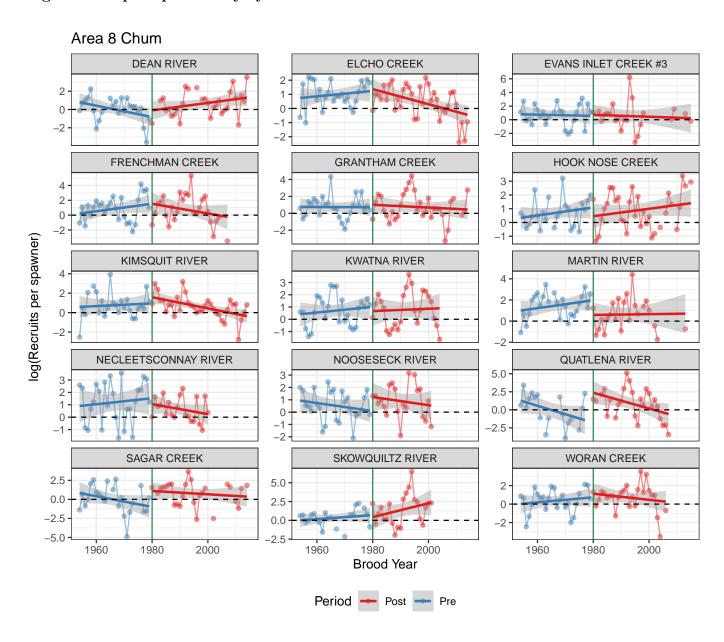


Figure 8: Log recruits per spawner by system

# Boxplot of log RPS by system

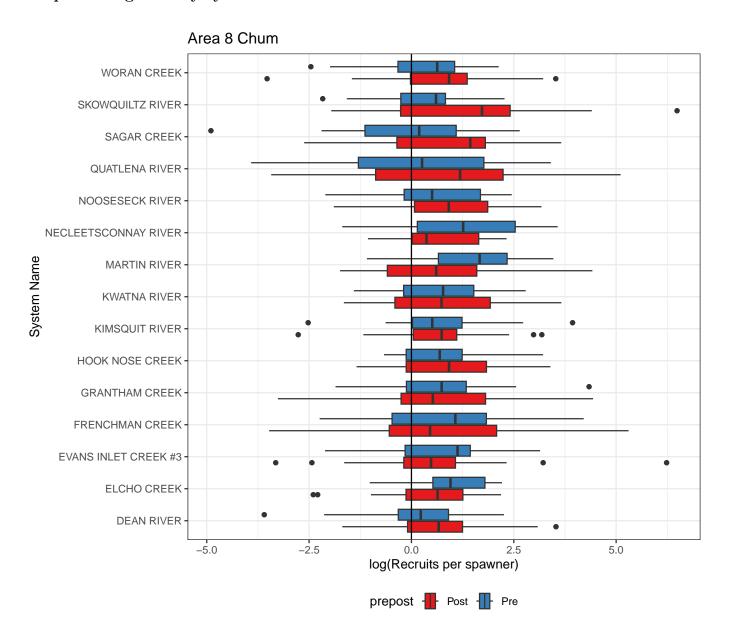


Figure 9: Boxplot of log recruits per spawner by system

#### Correlation analyses

#### Cross correlation plots

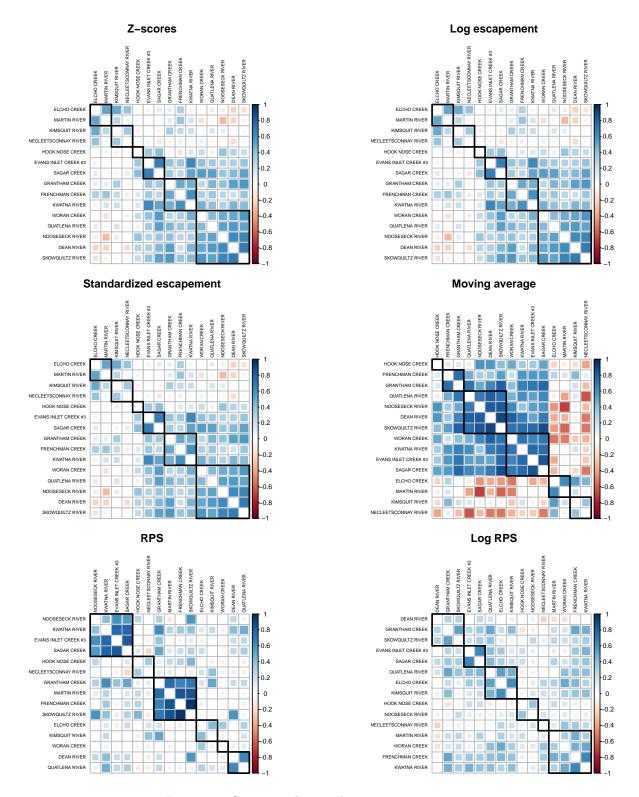


Figure 10: Cross correlation plots to compare metrics.

#### Dendrogram clusters analysis

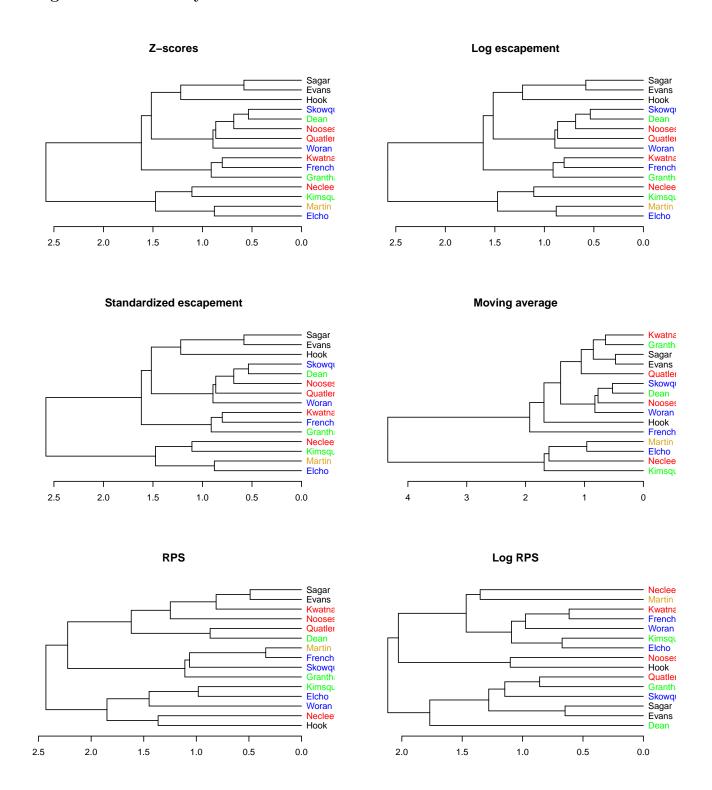


Figure 11: Dendrogram cluster analysis to compare uses of different metrics. Colours represent different subinlets; Bella Coola = red; Dean = blue; Kimsquit = green; Martin = yellow; Sagar = black

# Tanglegrams

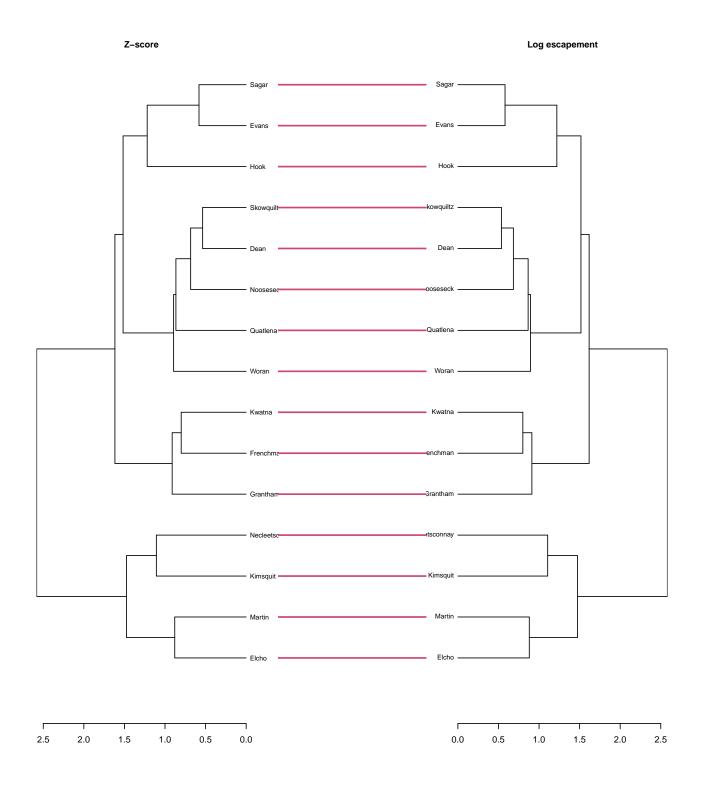


Figure 12: Tanglegram of z-score vs. logged escapements

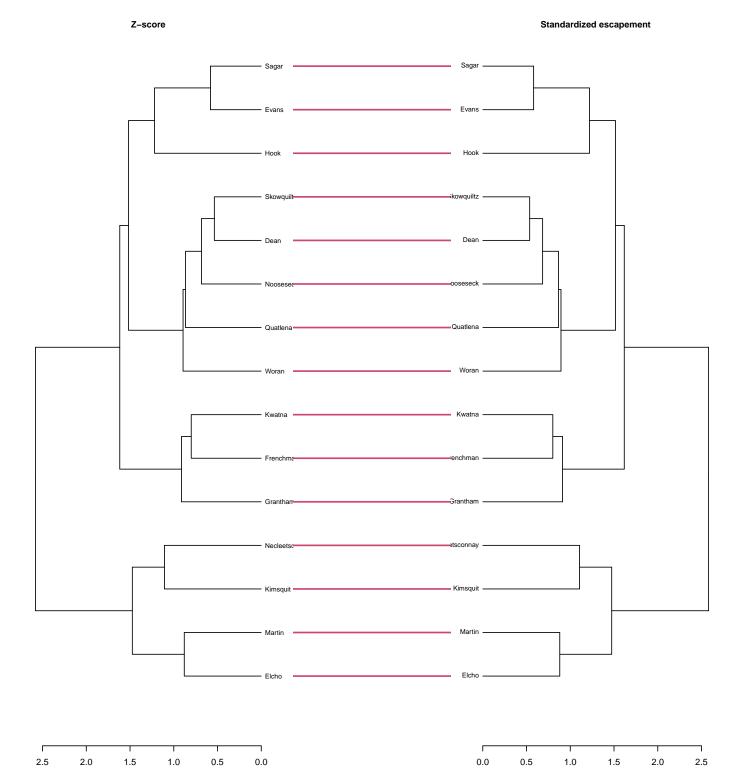


Figure 13: Tanglegram of z-score vs. standardized escapements

Moving average Sagar Evans Hook Skowquilt Evans Quatlena Noosesed Dean Quatlena Hook Necleetso Elcho Kimsquit -Elcho

Z-score

2.5

2.0

1.5

1.0

0.5

0.0

Figure 14: Tanglegram of z-score vs. moving average

2

3

0

Z-score Log RPS

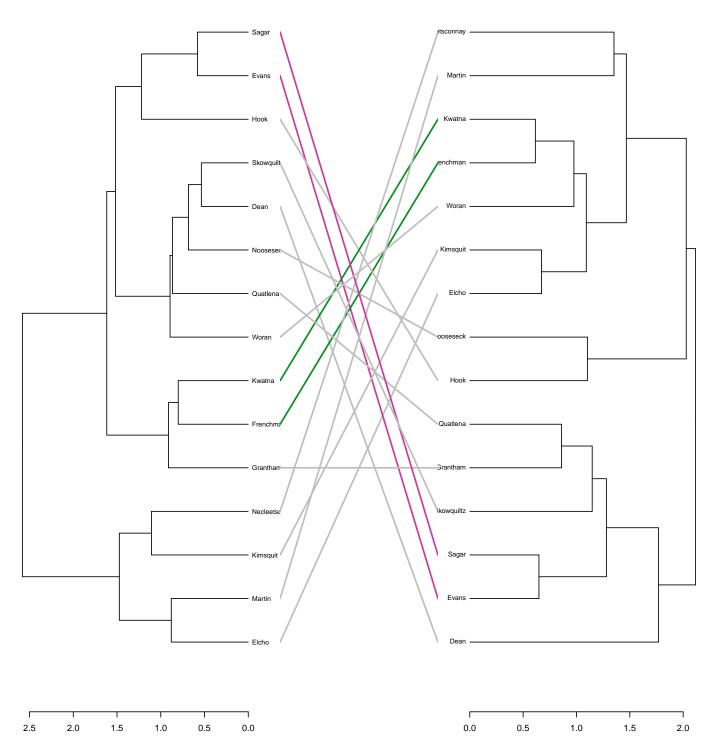


Figure 15: Tanglegram of z-score vs.  $\log$  RPS

#### Pre- and post-1980 correlation analyses

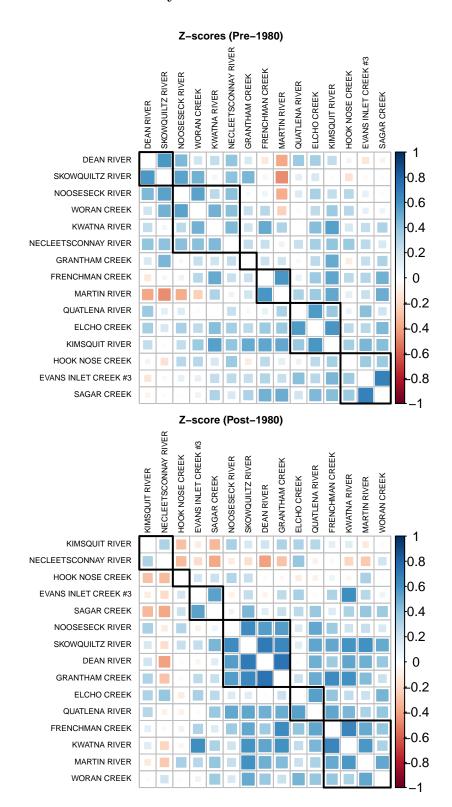


Figure 16: Cross correlation plots of z-scores to compare pre- and post-enhancement.

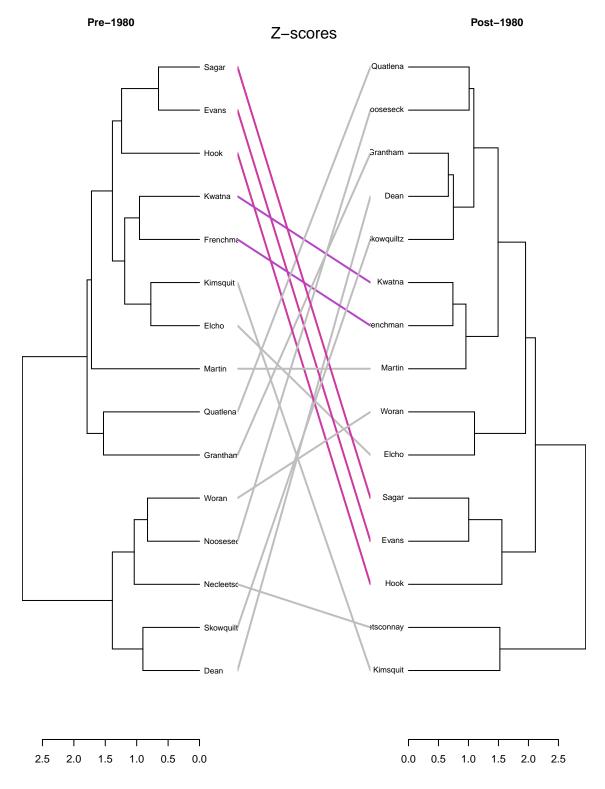


Figure 17: Tanglegram comparing z-scores pre- and post-enhancement (1980)

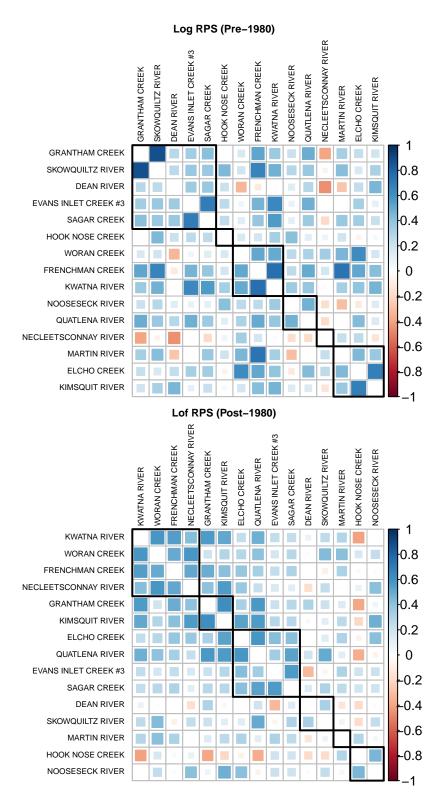


Figure 18: Cross correlation plots of Log RPS to compare pre- and post-enhancement.

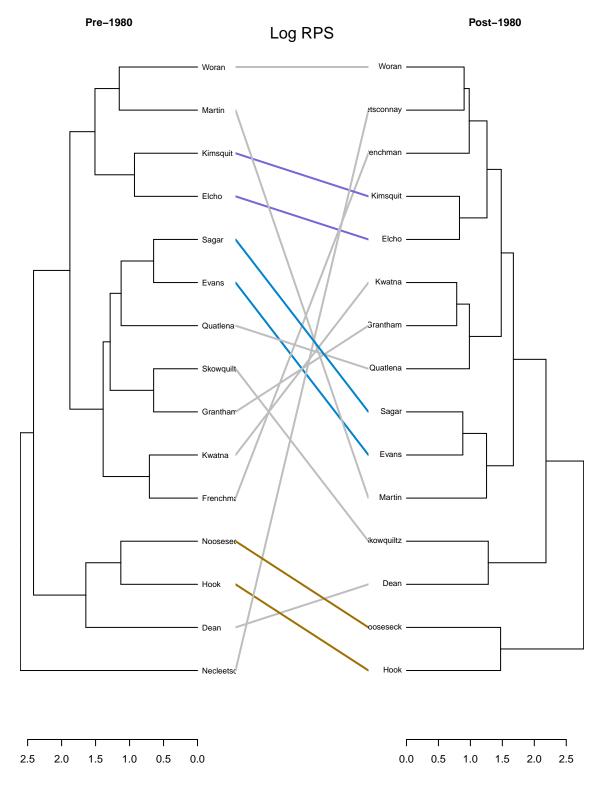


Figure 19: Tanglegram comparing Log RPS pre- and post-enhancement (1980)

# Statistical models

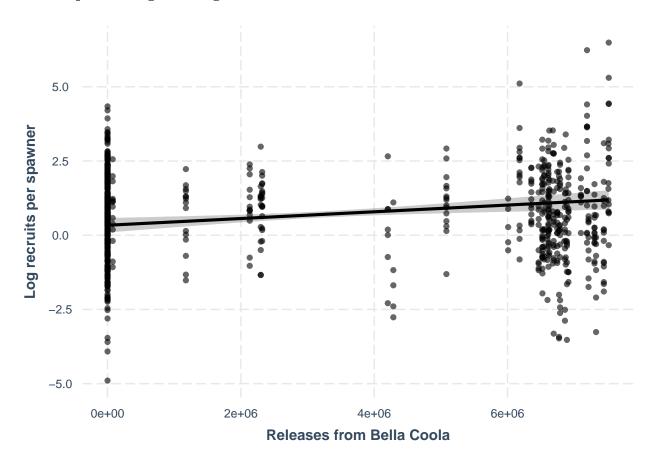
# Table of log RPS candidate models and AIC selection

Candidate model	df	AIC
Log RPS ~ Wt. dist. Bella Coola + Wt. dist. McLoughlin + Rel.McLoughlin + Rel.Bella Coola + Year	7	2776.004
Log RPS ~ dist from Bella Coola + dist from McLoughlin	4	2783.424
Log RPS ~ Wt. dist. from Bella Coola + Wt. dist. from McLoughlin	4	2783.424
Log RPS ~ dist from Bella Coola + dist from McLoughlin + Year	5	2785.416
Log RPS ~ Wt. dist. from Bella Coola + Wt. dist. from McLoughlin + Year	5	2785.416
Log RPS ~ dist from Bella Coola + dist from McLoughlin + Year + Subinlet	9	2790.437
$Log RPS \sim Wt. dist. from Bella Coola + Wt. dist. from McLoughlin + Year + Subinlet$	9	2790.437

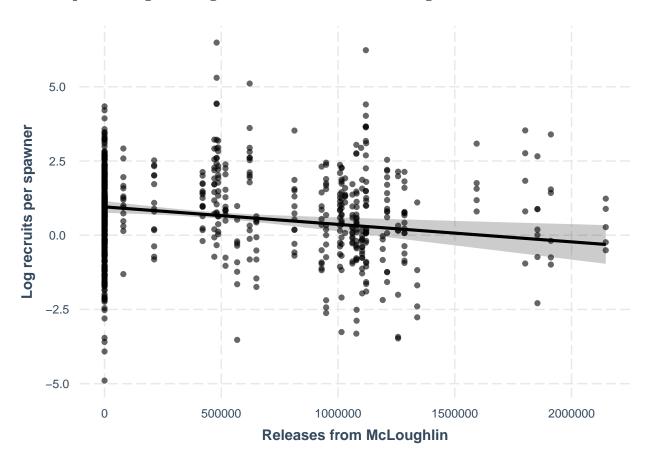
# Table of log escapement candidate models and AIC selection

Candidate model	df	AIC
Log escapement ~ dist from Bella Coola + dist from McLoughlin + Year + Subinlet	9	3019.123
Log escapement ~ Wt. dist. from Bella Coola + Wt. dist. from McLoughlin + Year + Subinlet	9	3019.123
$\label{log-colline} Log\ escapement \sim Wt. dist. Bella Coola + Wt. dist. McLoughlin + Rel. Bella Coola + Rel. McLoughlin + Year$	7	3045.062
Log escapement ~ Wt. dist. from Bella Coola + Wt. dist. from McLoughlin	4	3059.479
Log escapement ~ dist from Bella Coola + dist from McLoughlin	4	3059.479
Log escapement ~ dist from Bella Coola + dist from McLoughlin + Year	5	3060.954
$\label{eq:log-cond} \mbox{Log escapement} \sim \mbox{Wt. dist. from McLoughlin} + \mbox{Year}$	5	3060.954

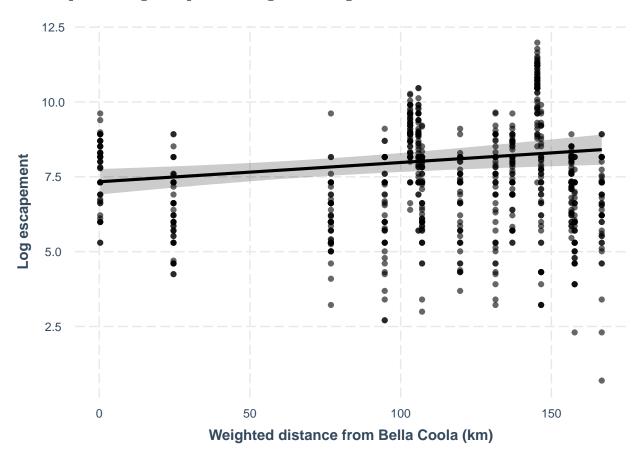
# Effects plot of log RPS against releases from Bella Coola



# Effects plot of log RPS against releases from McLoughlin



### Effects plot of log escapements against weighted distance from Bella Coola



### Effects plot of log escapements against weighted distance from McLoughlin

