Spatial Analysis Figures

Area 08 Chum Salmon

Coastland

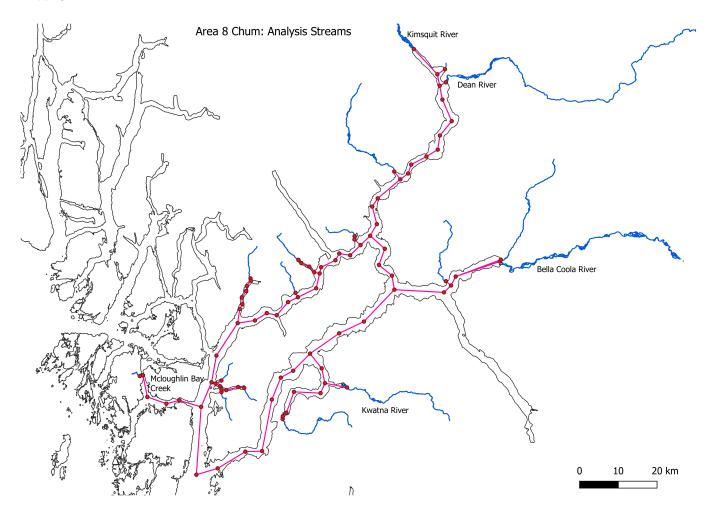
2022-11-30

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Study area

Area 8



Summary statistics

Bubbleplot of escapement by enhancement rank

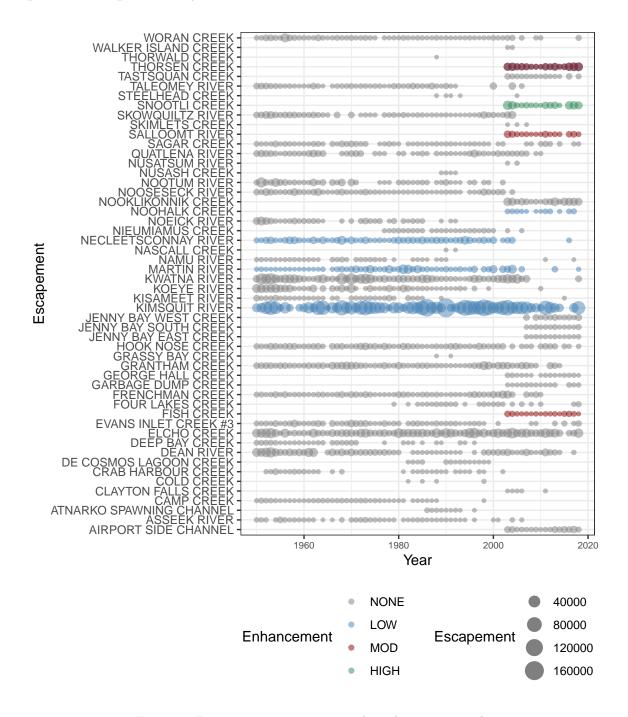


Figure 1: Escapement to area streams by enhancement rank.

Plot of total releases to area

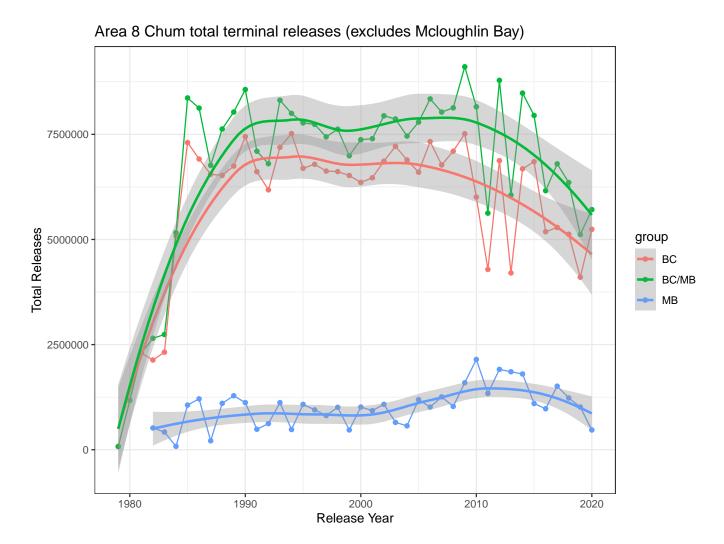


Figure 2: Total releases for Area 8 (not including McLoughlin Bay)

Escapement by enhancement rank per system

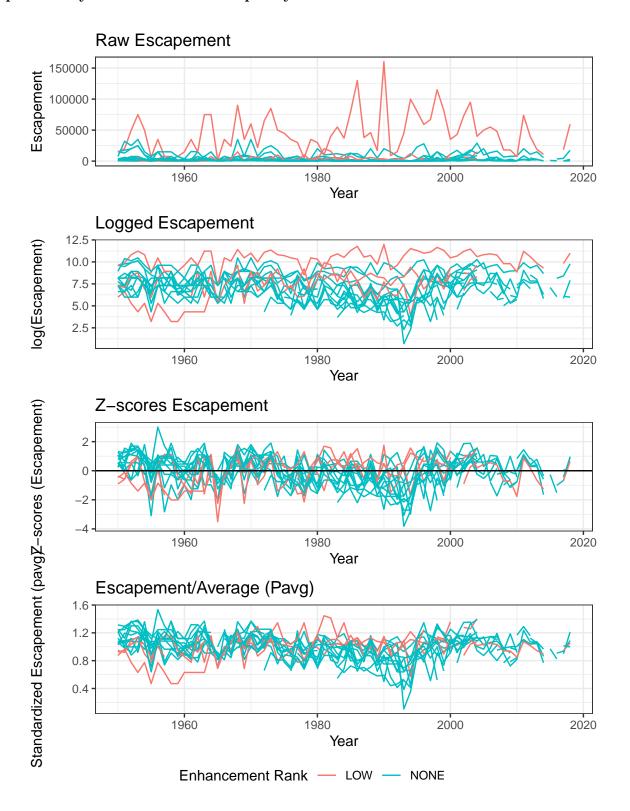


Figure 3: Various plots for escapement and transformations.

Moving average and LOESSS fit on enhancement ranking of log escapements

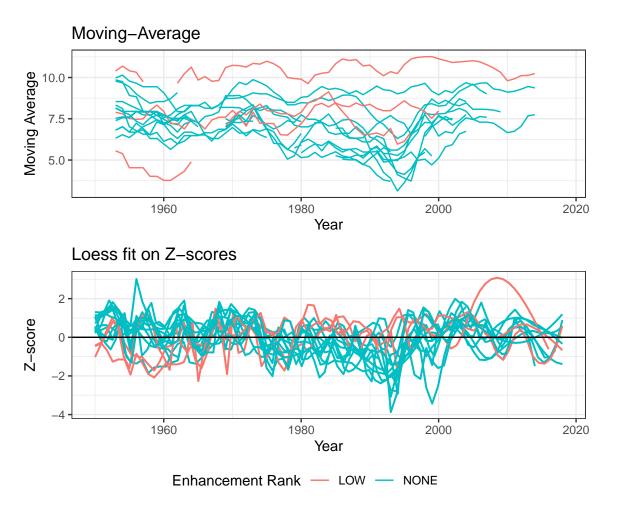


Figure 4: Moving average and LOESS fits on logged escapement by enhancement ranking.

Escapement to streams by enhancement rank

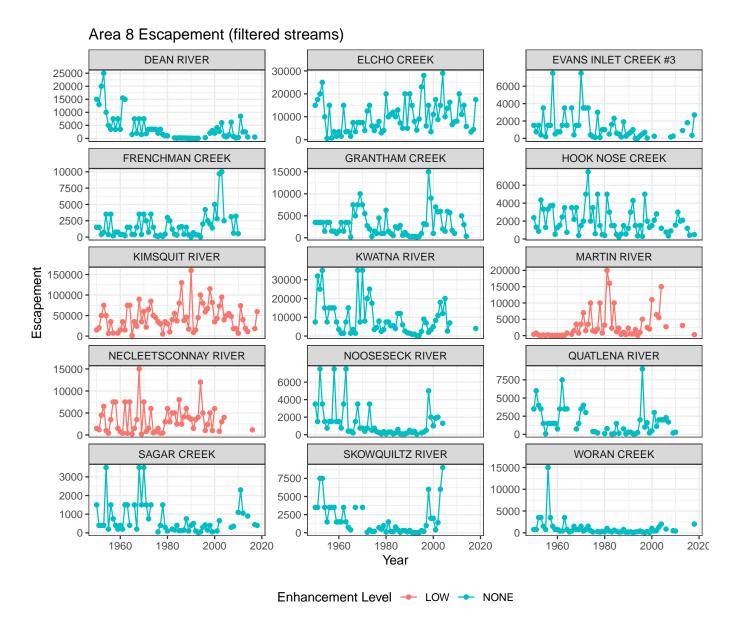


Figure 5: Facet plot of escapements by enhancement level

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

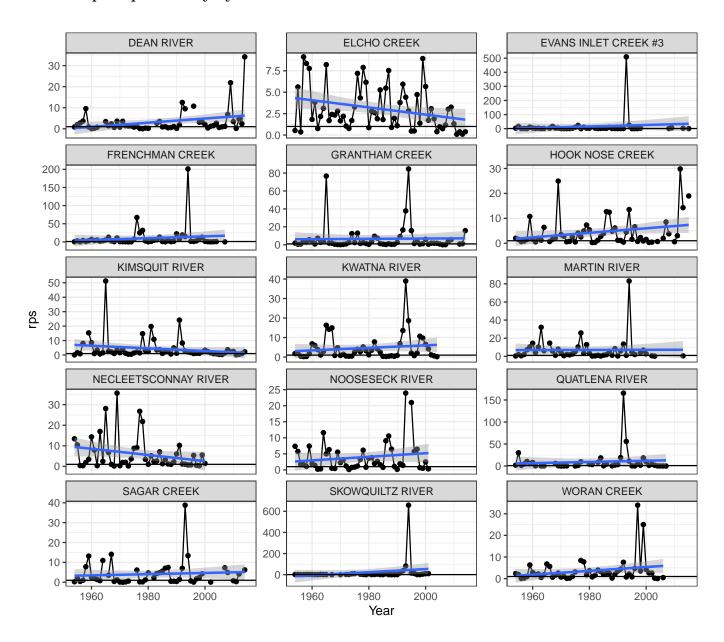


Figure 7: Recruits per spawner by system

Log recruits per spawner by system

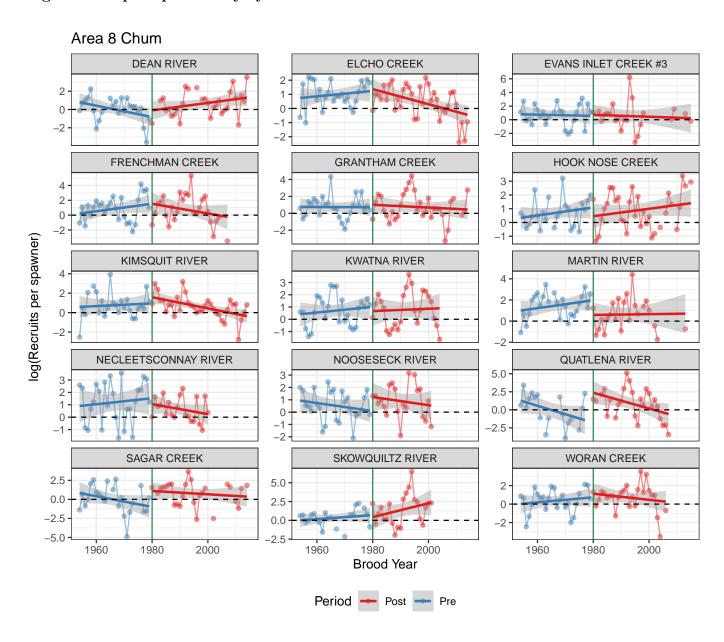


Figure 8: Log recruits per spawner by system

Boxplot of log RPS by system

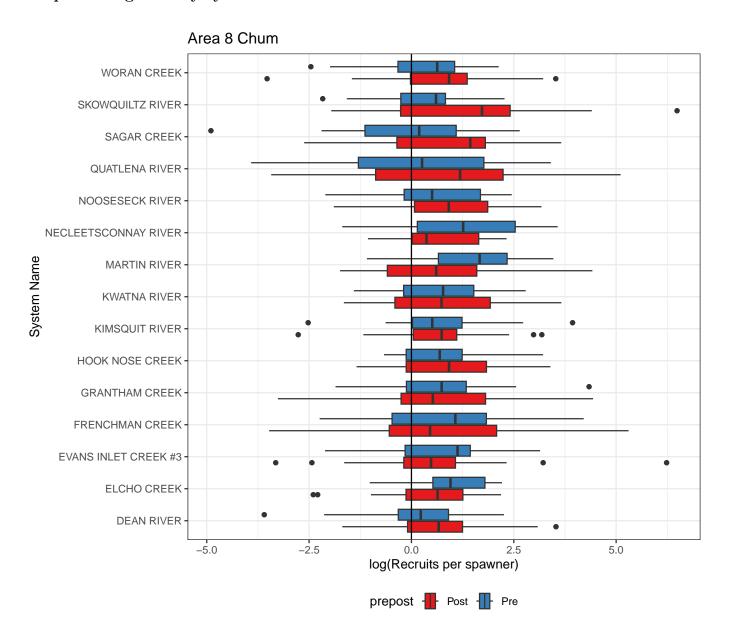


Figure 9: Boxplot of log recruits per spawner by system

Correlation analyses

Cross correlation plots

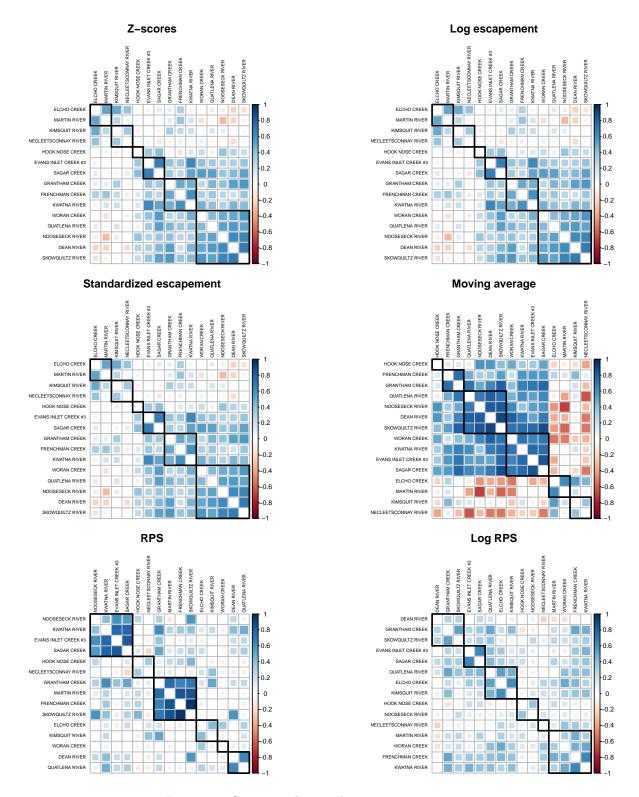


Figure 10: Cross correlation plots to compare metrics.

Dendrogram clusters analysis

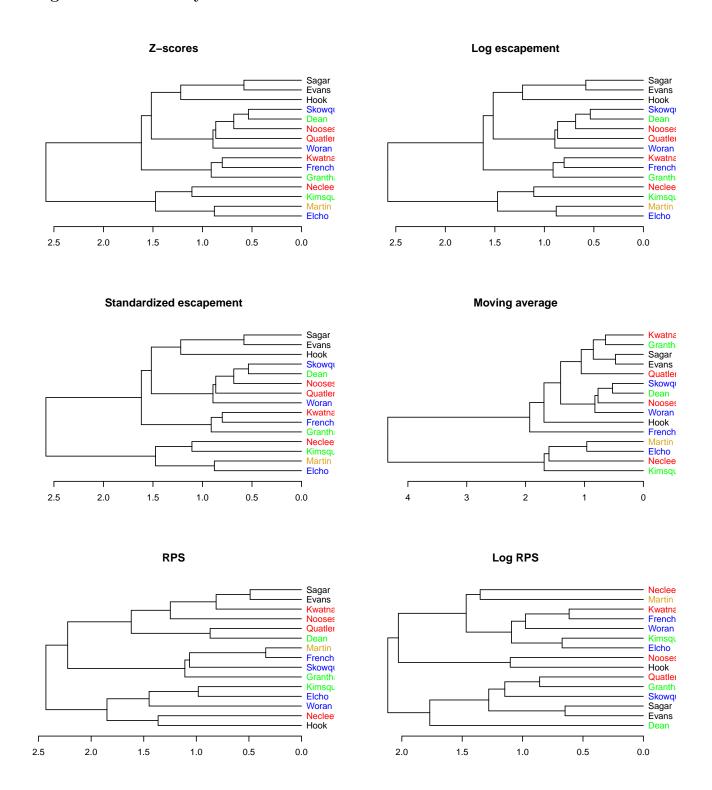


Figure 11: Dendrogram cluster analysis to compare uses of different metrics. Colours represent different subinlets; Bella Coola = red; Dean = blue; Kimsquit = green; Martin = yellow; Sagar = black

Tanglegrams

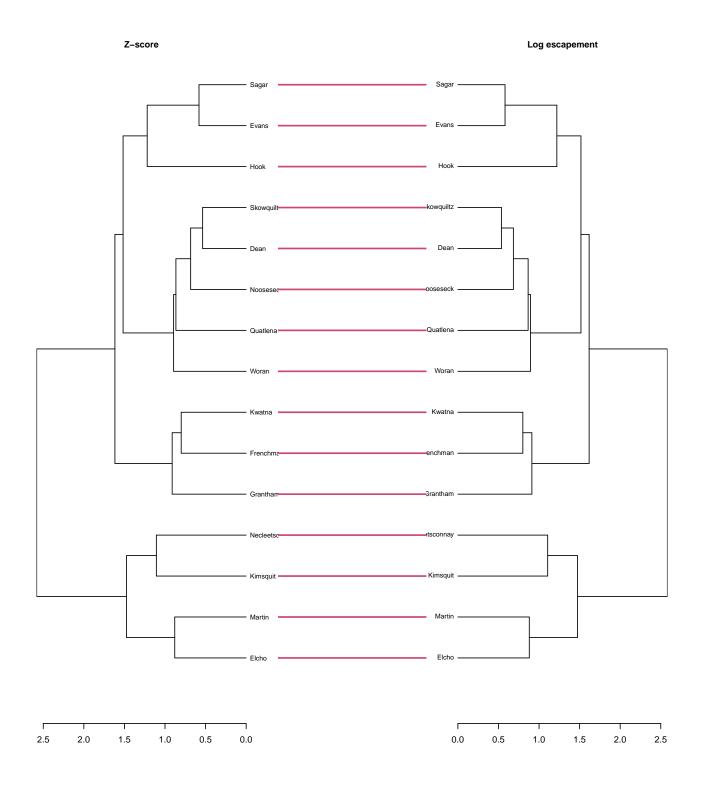


Figure 12: Tanglegram of z-score vs. logged escapements

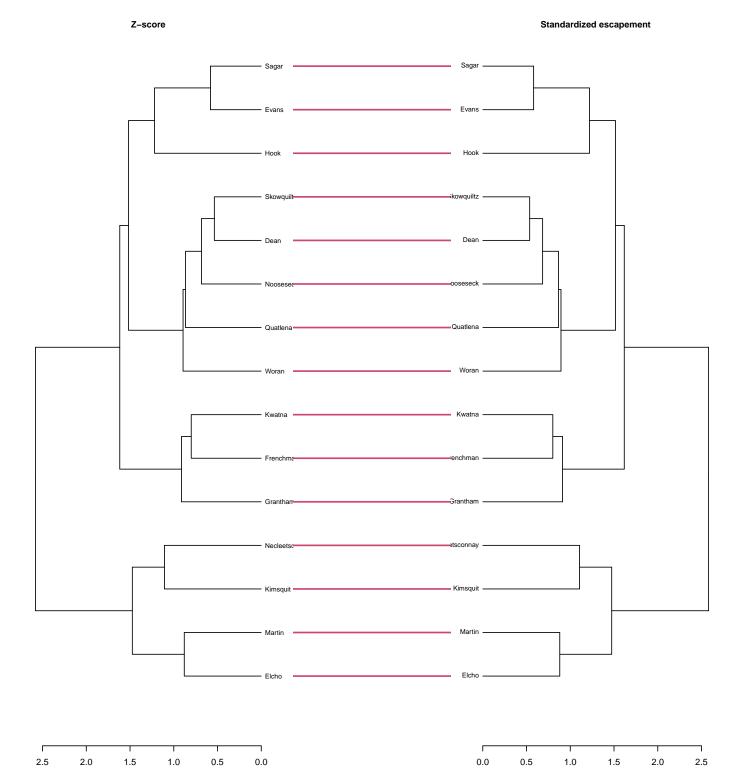


Figure 13: Tanglegram of z-score vs. standardized escapements

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

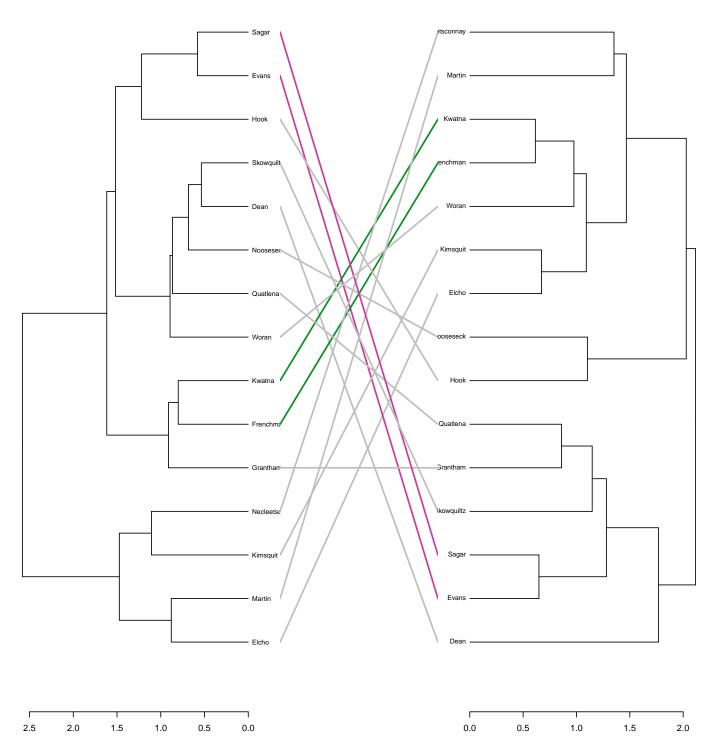


Figure 15: Tanglegram of z-score vs. \log RPS

Statistical models

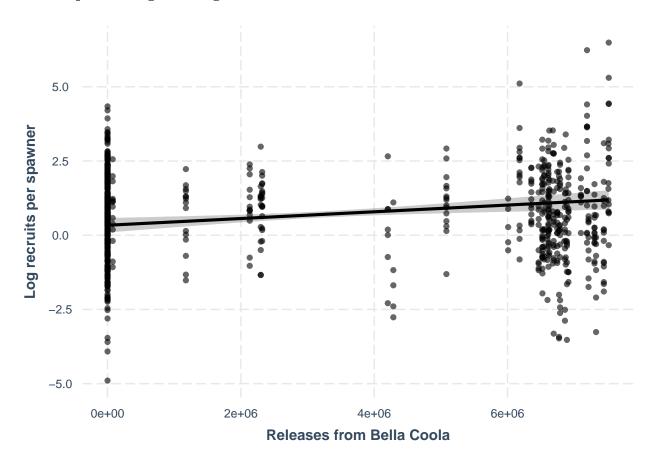
Table of log RPS candidate models and AIC selection

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

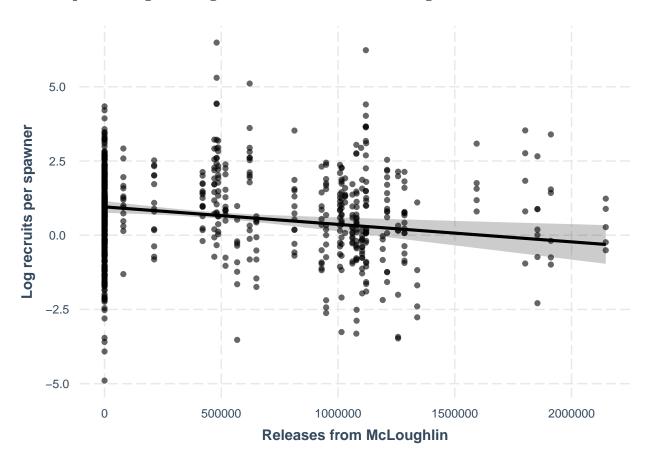
Table of log escapement candidate models and AIC selection

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

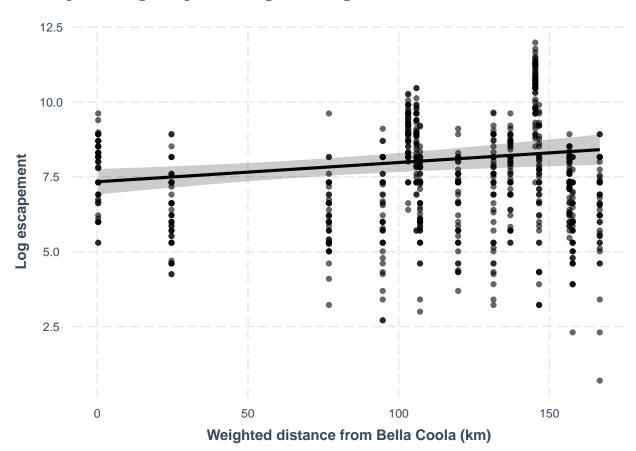
Effects plot of log RPS against releases from Bella Coola



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

