

Appendix 3

Area 06 - Douglas Gardner CU Chum Salmon

Coastland

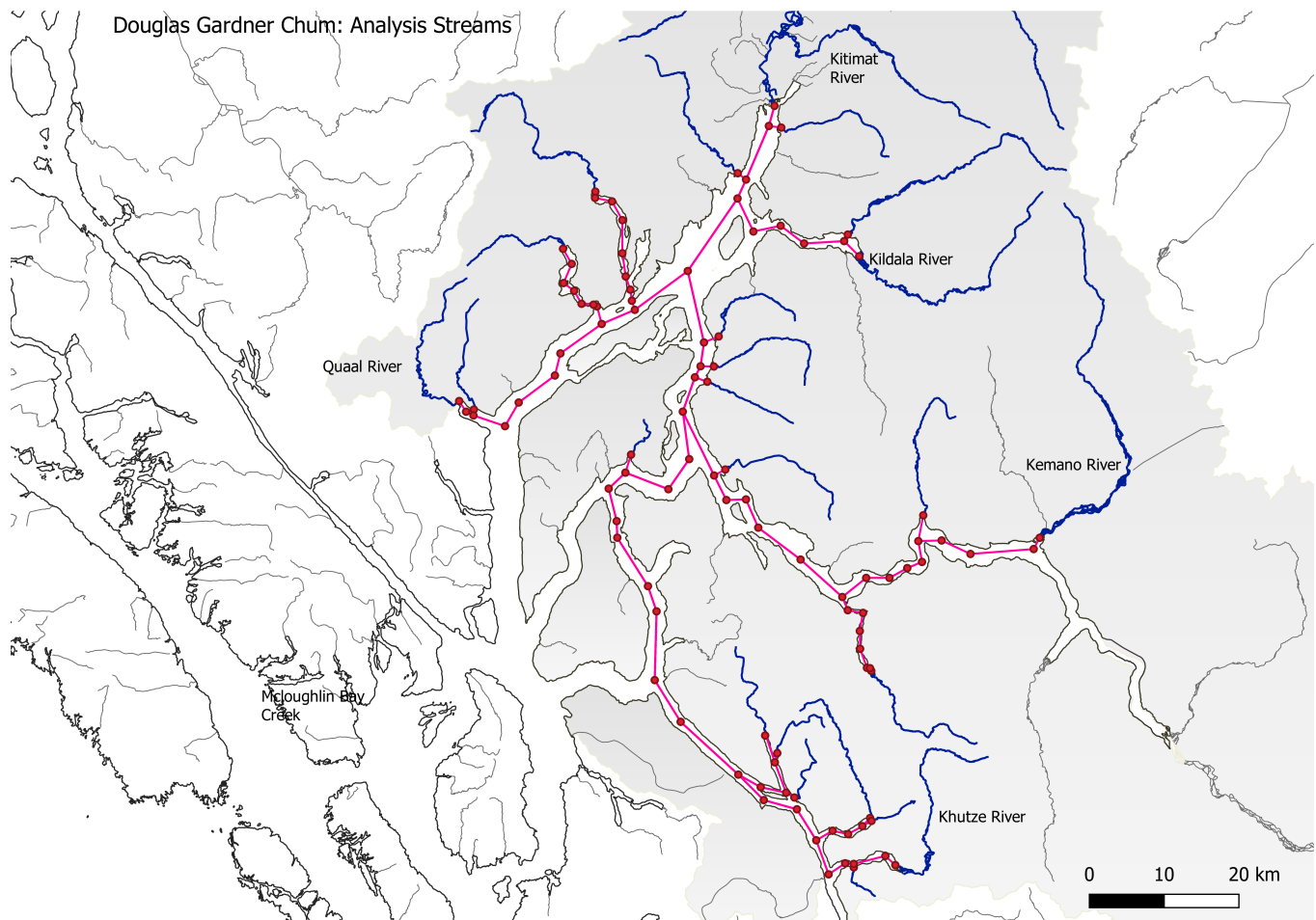
2022-12-05

Contents

Study area	2
Douglas Gardner CU	2
Summary statistics	3
Bubbleplot of escapement by enhancement rank	3
Plot of total releases to area	4
Escapement by enhancement rank per system	5
Moving average and LOESS fit on enhancement ranking of log escapements	6
Escapement to streams by enhancement rank	7
Releases by release site for chum in the Douglas Gardner CU	9
Recruits per spawner by system	10
Log recruits per spawner by system	11
Boxplot of log RPS by system	12
Table of Douglas Gardner CU by distance from enhancement	13
Correlation analyses	14
Cross correlation plots	14
Dendrogram clusters analysis	15
Tanglegrams	16
Pre- and post-1980 correlation analyses	20
Statistical models	26
Table of log RPS candidate models and AIC selection	26
Table of log escapement candidate models and AIC selection	27
Effects plot of log RPS against releases to area	28
Effects plot of log RPS against year	29
Effects plot of log Escapement against distance from enhancement	30
Effects plot of log Escapement against year	31

Study area

Douglas Gardner CU



Summary statistics

Bubbleplot of escapement by enhancement rank

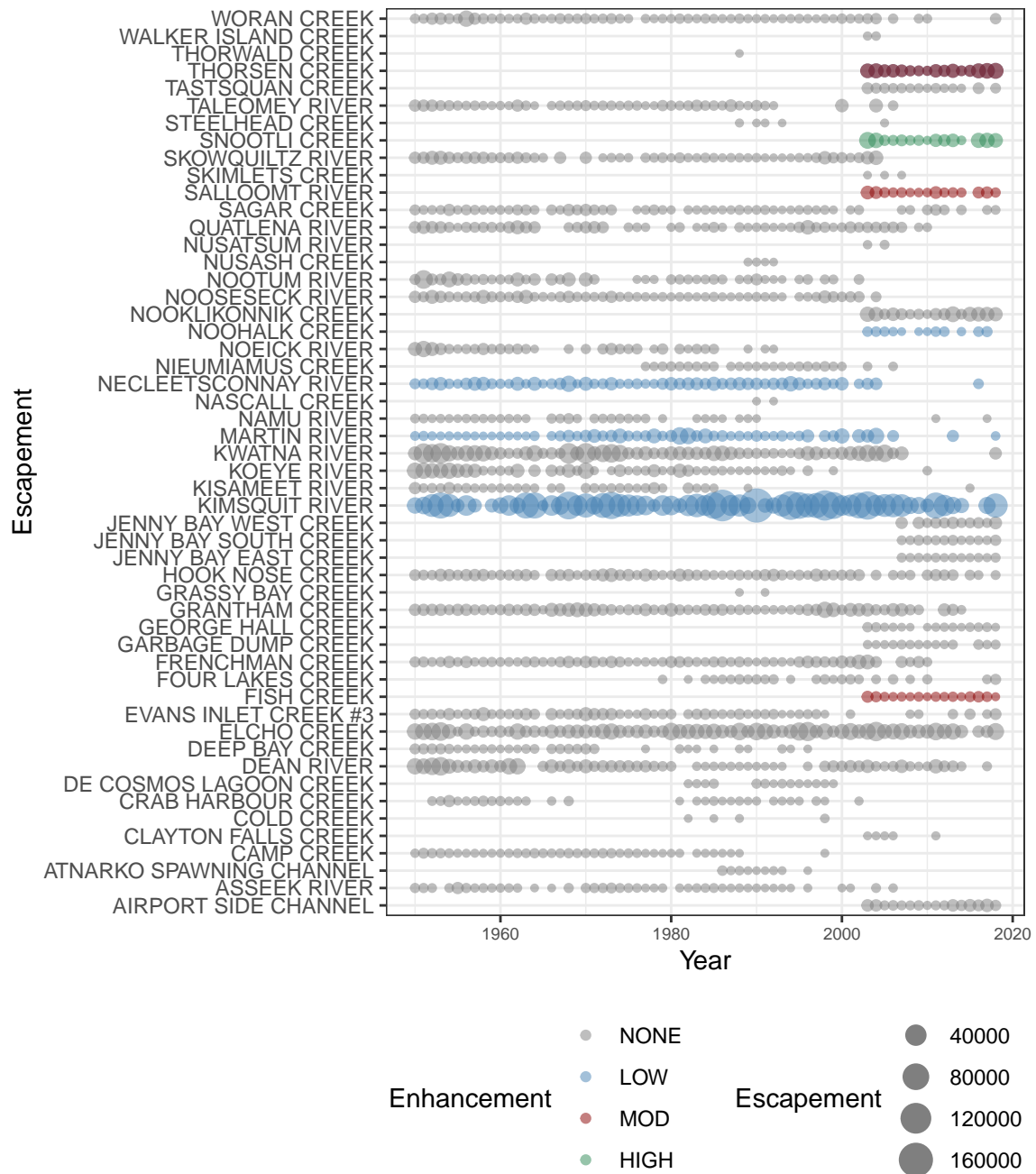


Figure 1: Escapement to area streams by enhancement rank.

Plot of total releases to area

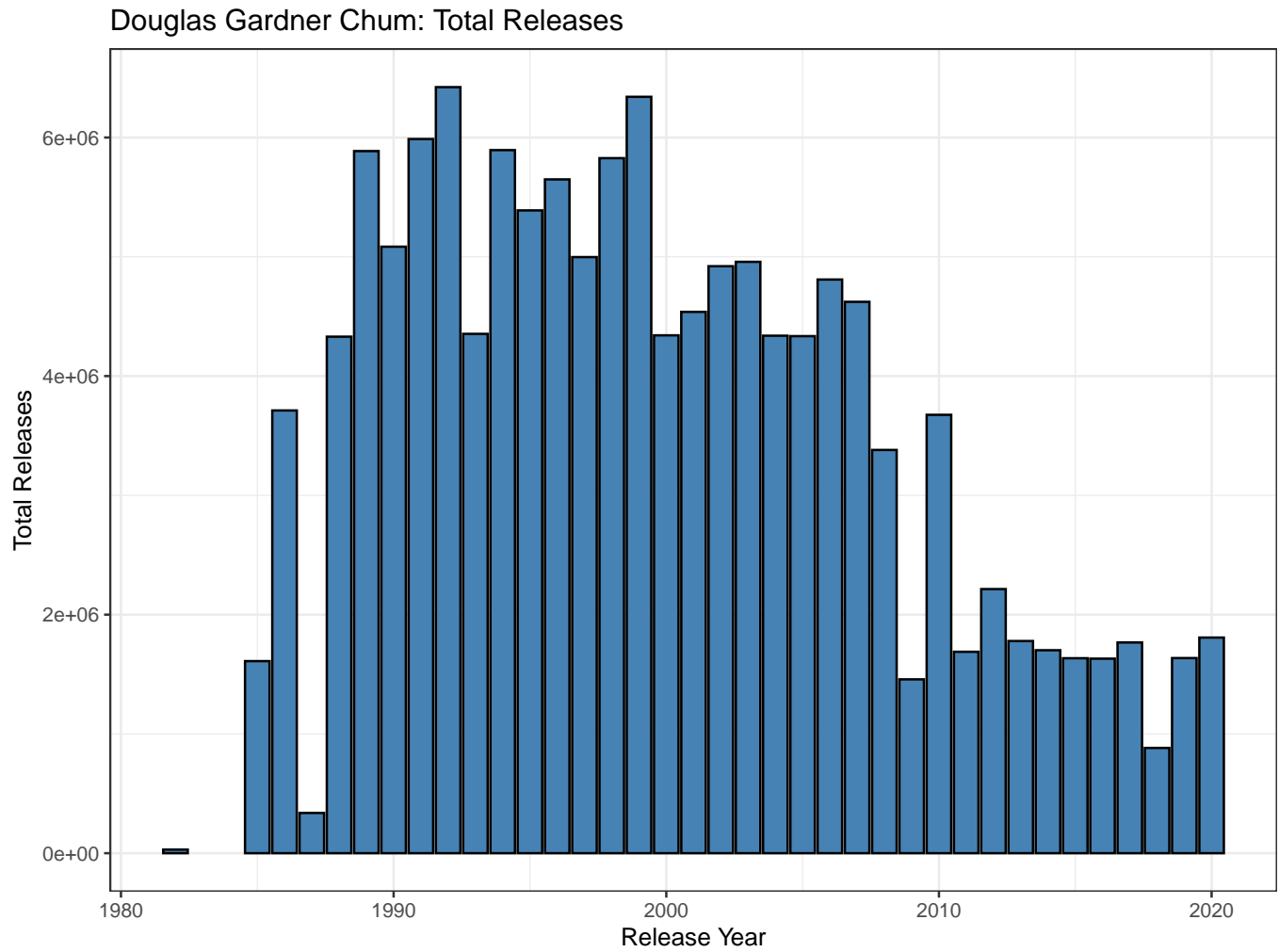


Figure 2: Total releases in the Douglas Gardner CU.

Escapement by enhancement rank per system



Figure 3: Various plots for escapement and transformations.

Moving average and LOESS fit on enhancement ranking of log escapements

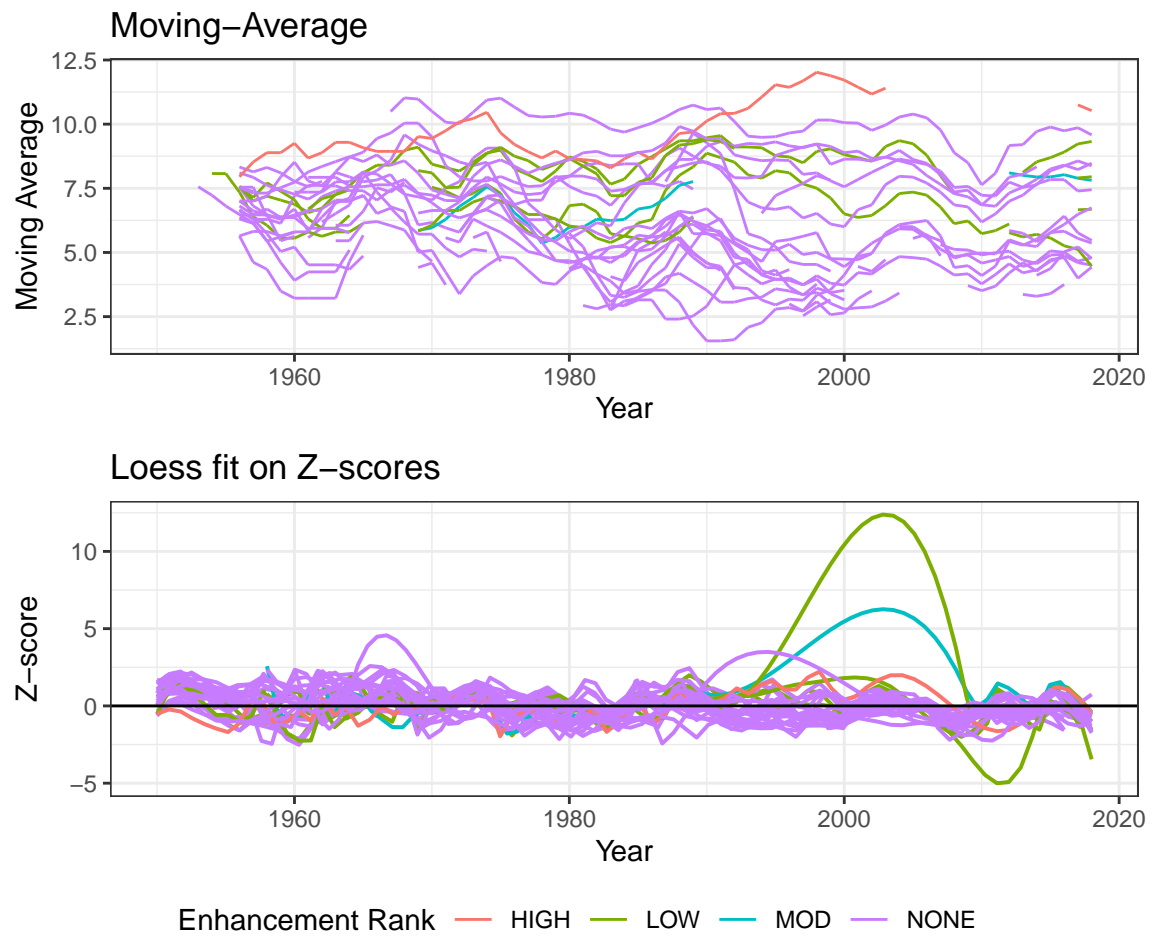


Figure 4: Moving average and LOESS fits on logged escapement by enhancement ranking.

Escapement to streams by enhancement rank

Area 6 Escapement (filtered streams)

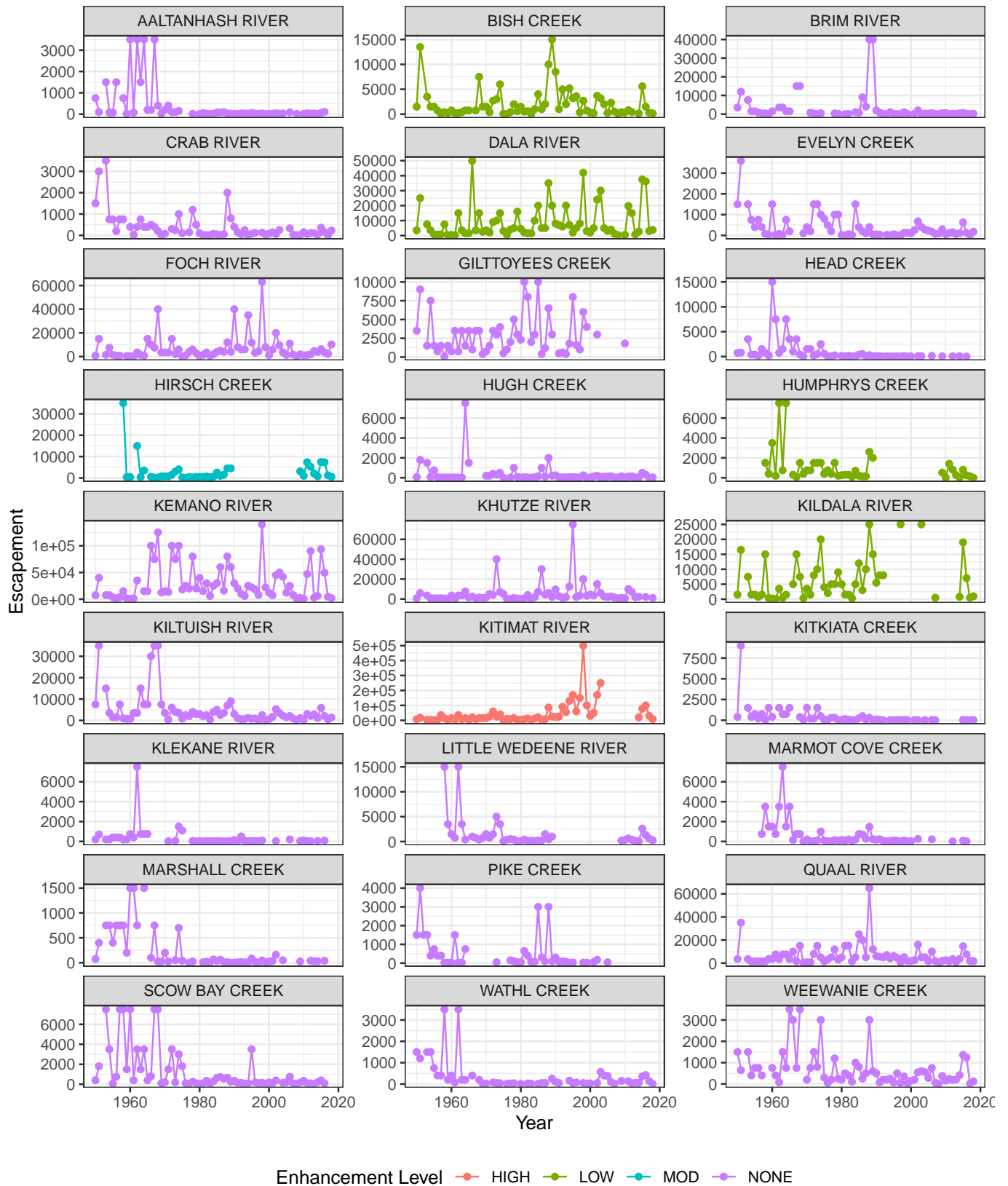


Figure 5: Facet plot of escapements by enhancement level

Releases by release site for chum in the Douglas Gardner CU

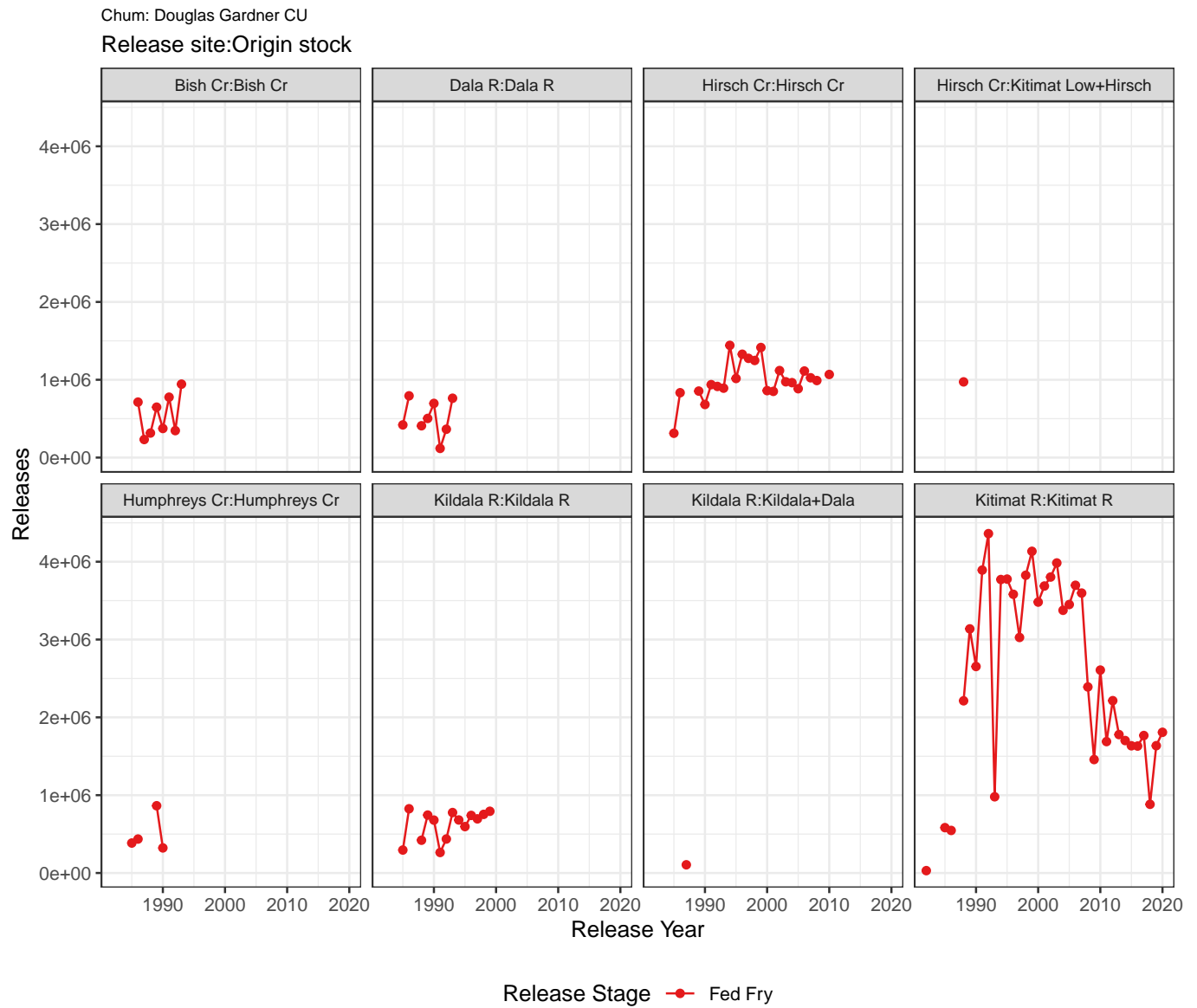


Figure 6: Releases by release site for chum in the Douglas Gardner CU.

Recruits per spawner by system

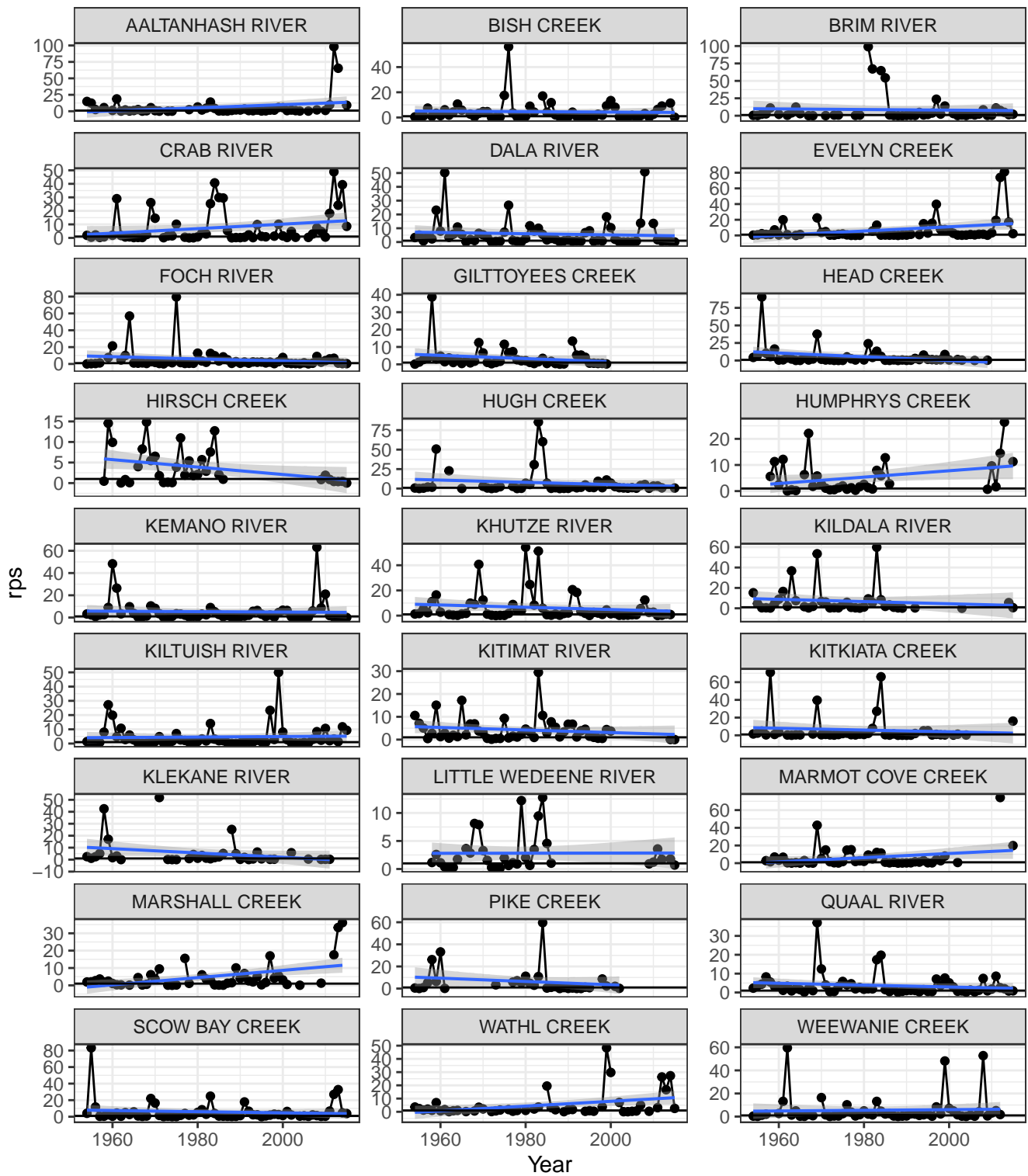


Figure 7: Douglas-Gardner chum: recruits per spawner by system.

Log recruits per spawner by system

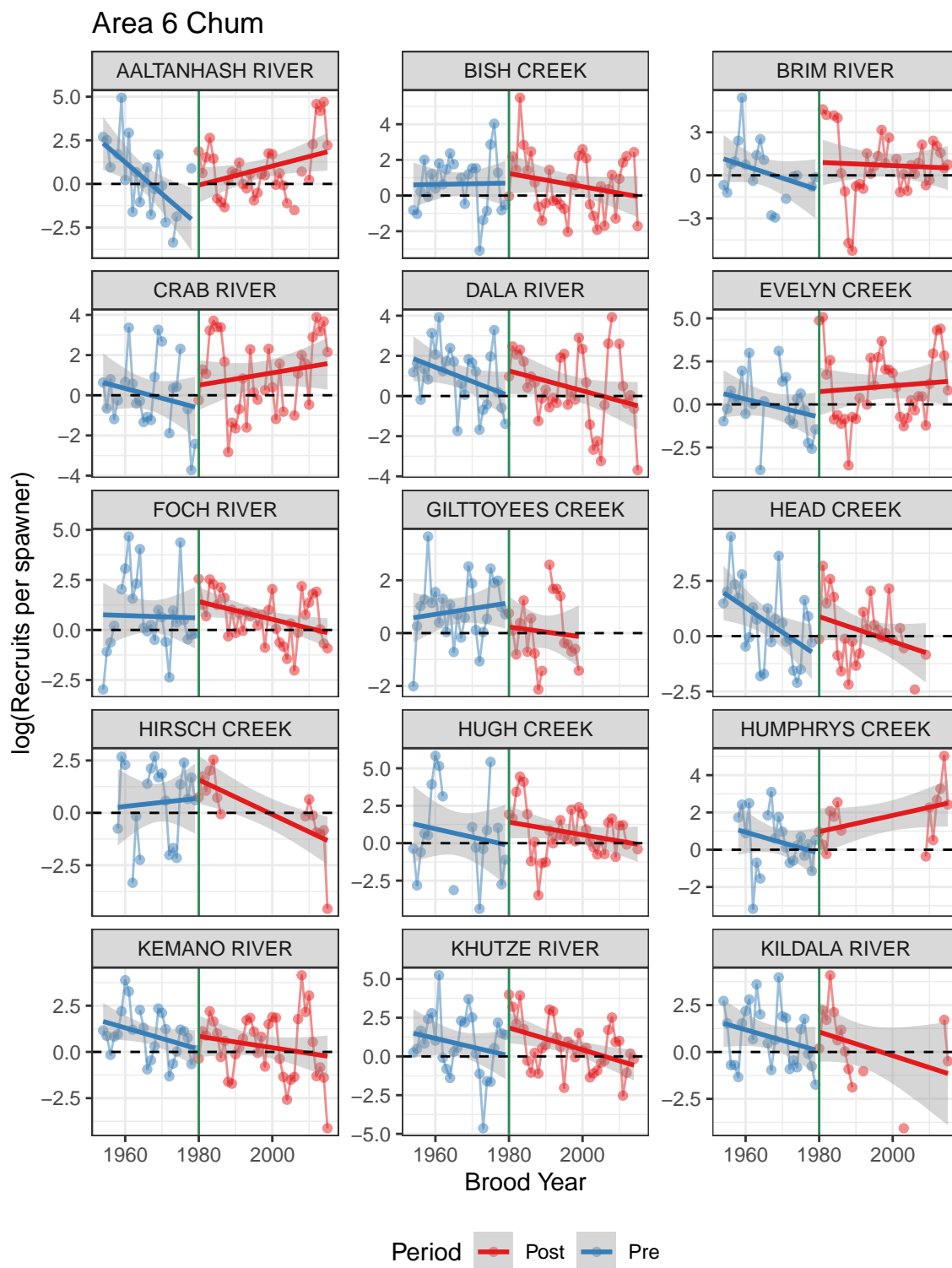


Figure 8: Douglas-Gardner chum: log recruits per spawner by system.

Boxplot of log RPS by system

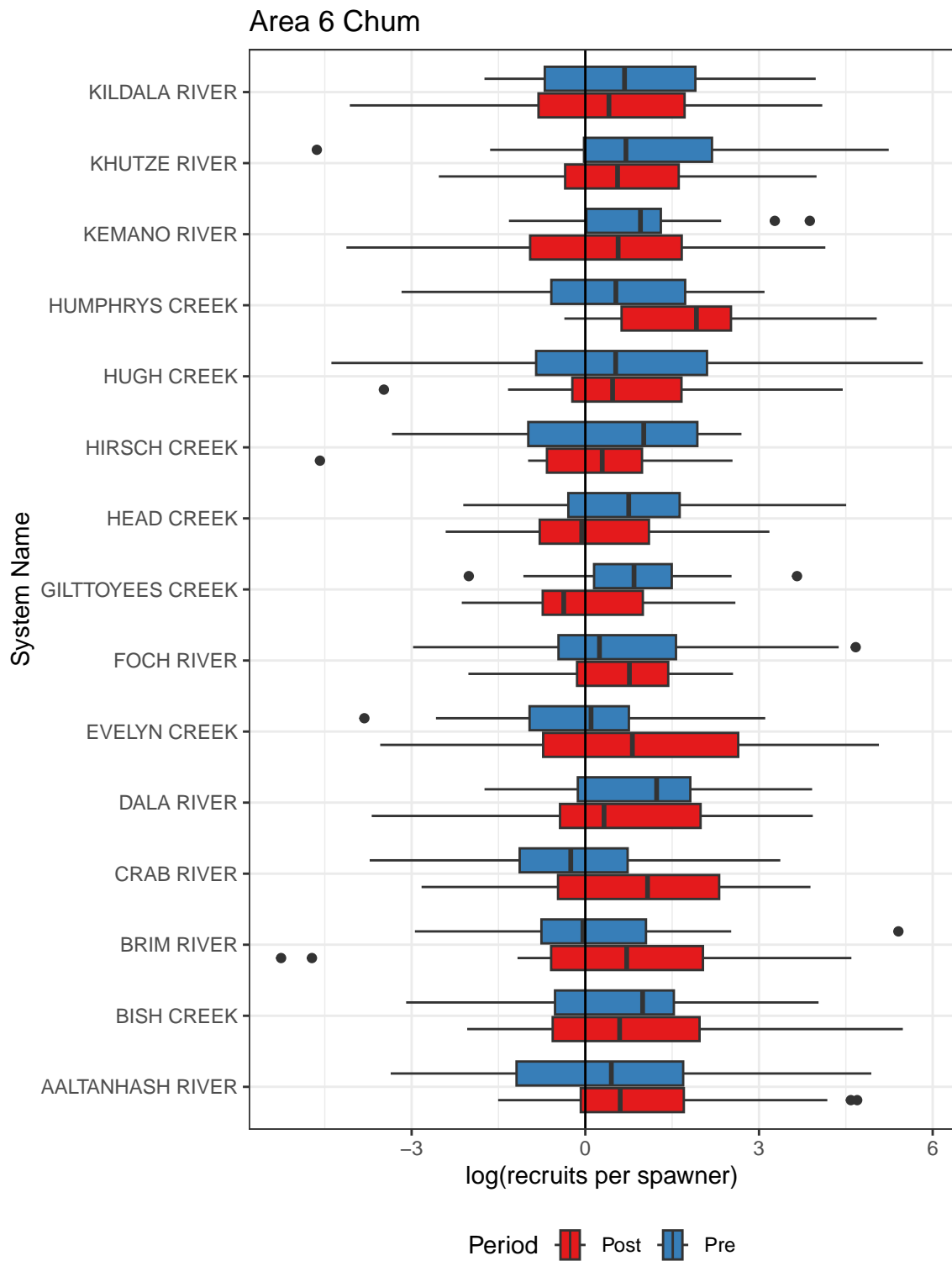


Figure 9: Douglas-Gardner chum: boxplot of log recruits per spawner by system.

Table of Douglas Gardner CU by distance from enhancement

Stream	Dist. from enhancement
BISH CREEK	11.998
WATHL CREEK	4.470
DALA RIVER	32.303
KILDALA RIVER	34.146
KEMANO RIVER	111.829
BRIM RIVER	97.710
HUGH CREEK	37.112
PIKE CREEK	41.635
WEEWANIE CREEK	39.982
GILTTOYEES CREEK	52.216
FOCH RIVER	52.191
QUAAL RIVER	65.544
KITKIATA CREEK	63.528
KILTUISH RIVER	91.658
CRAB RIVER	55.985
EVELYN CREEK	64.768
MARSHALL CREEK	133.004
KLEKANE RIVER	124.855
SCOW BAY CREEK	122.091
MARMOT COVE CREEK	117.746
AALTANHASH RIVER	132.200
KHUTZE RIVER	138.697
HEAD CREEK	132.104

Correlation analyses

Cross correlation plots

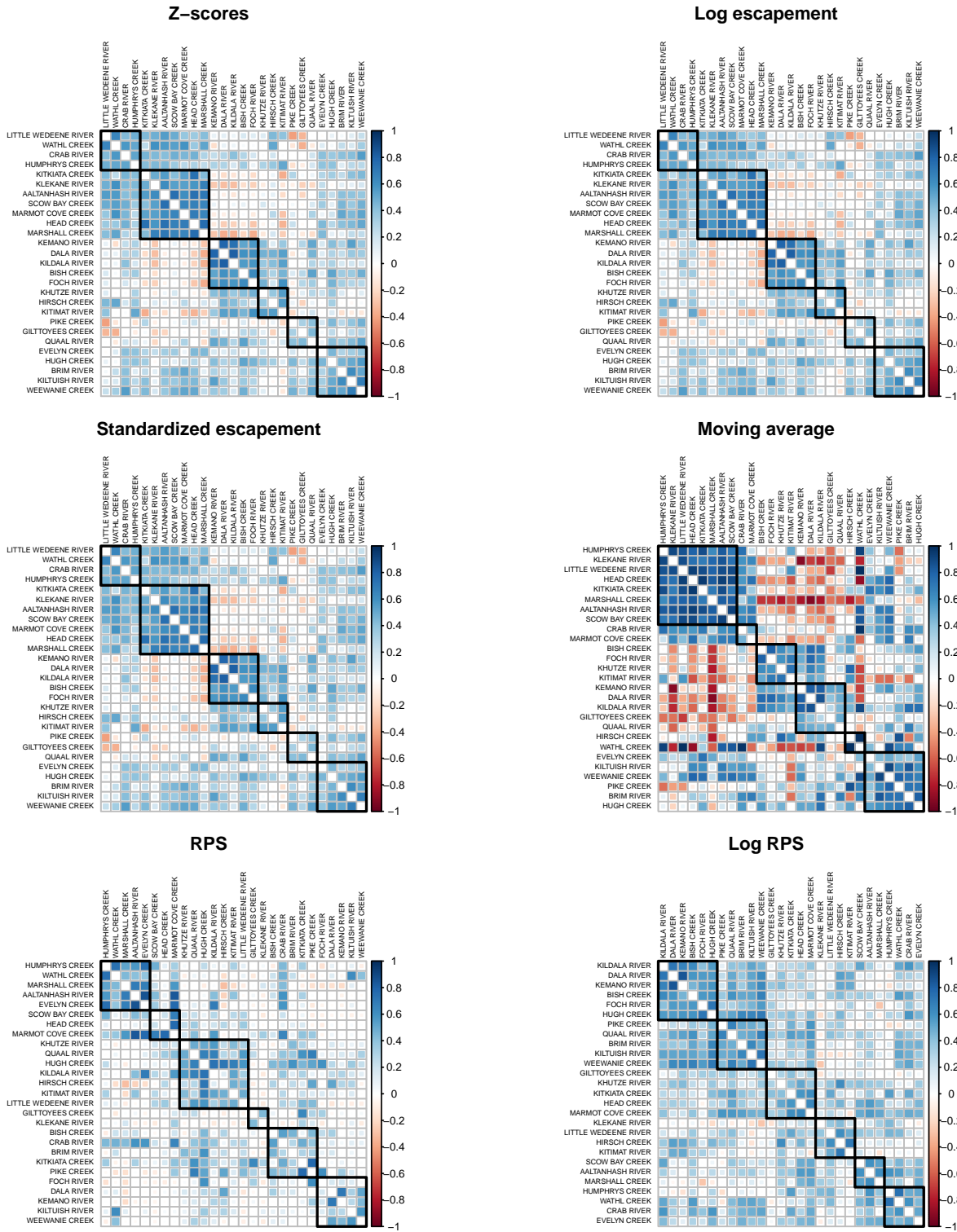


Figure 10: Cross correlation plots to compare metrics.

Dendrogram clusters analysis

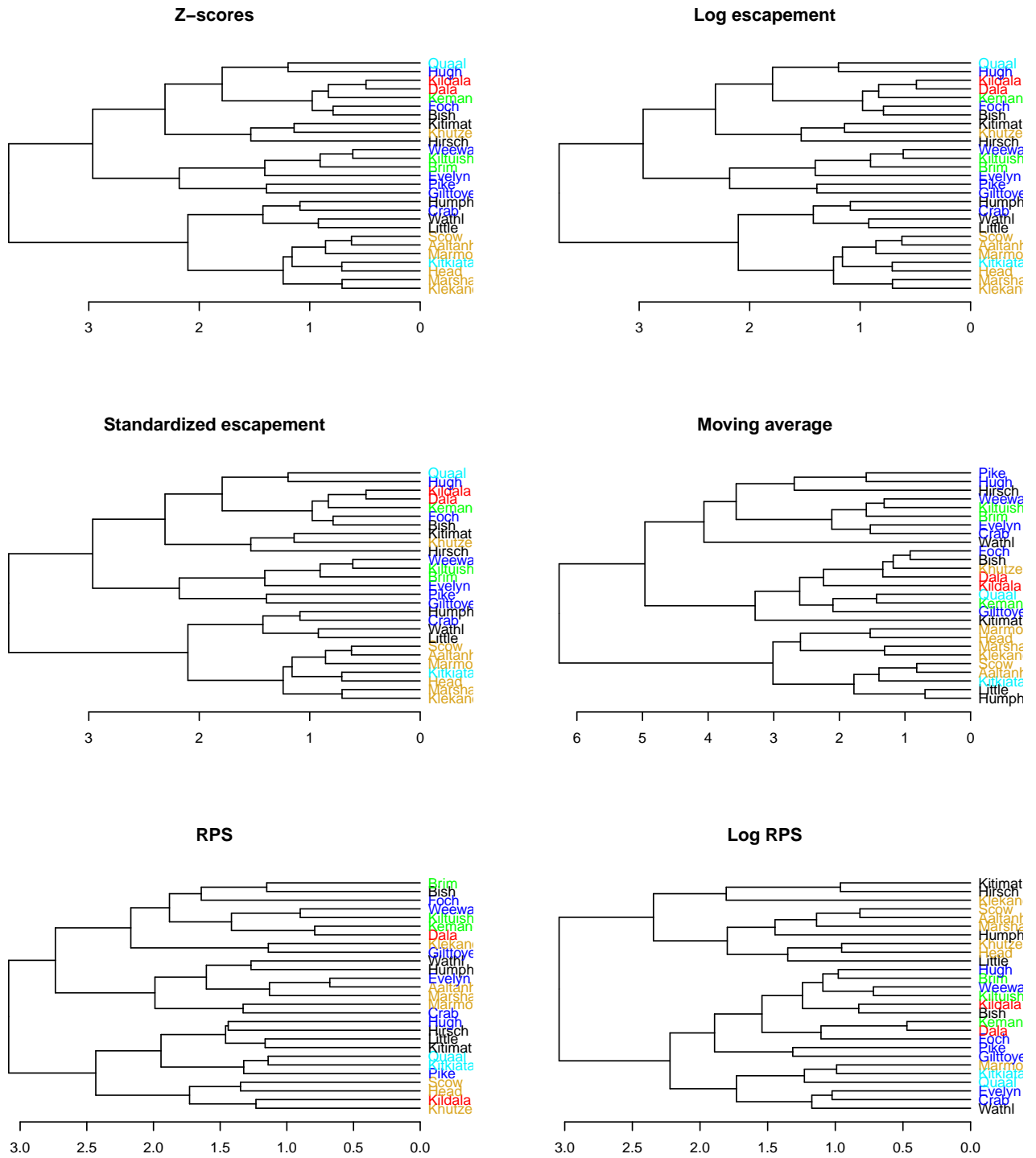


Figure 11: Dendrogram cluster analysis to compare uses of different metrics. Colours plotted by subinlet; Dala = red; Douglas = blue; Kemano = green; Khutze = yellow; Kitimat arm = black; Quaal = turquoise

Tanglegrams

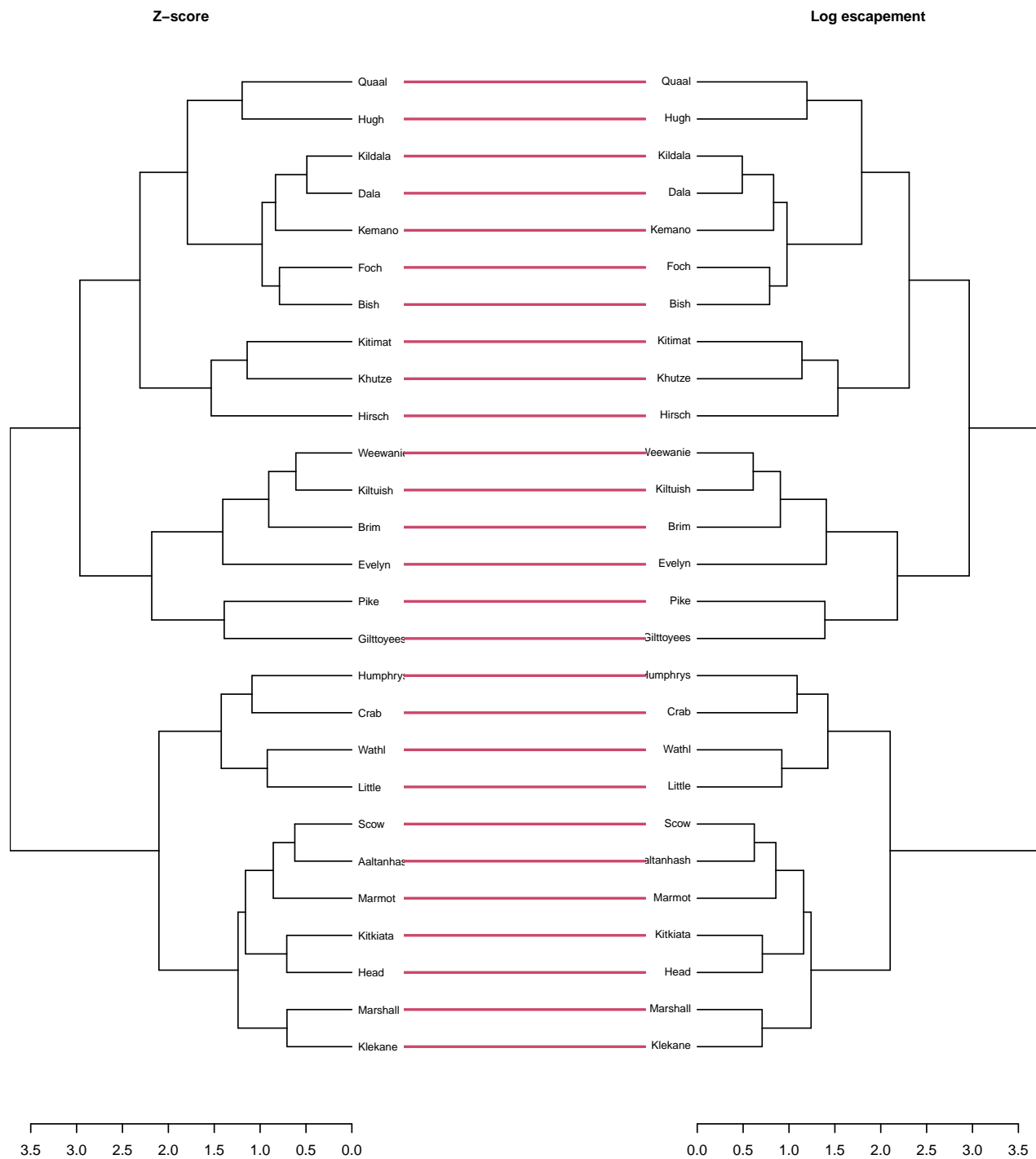


Figure 12: Tanglegram of z-score vs. logged escapements

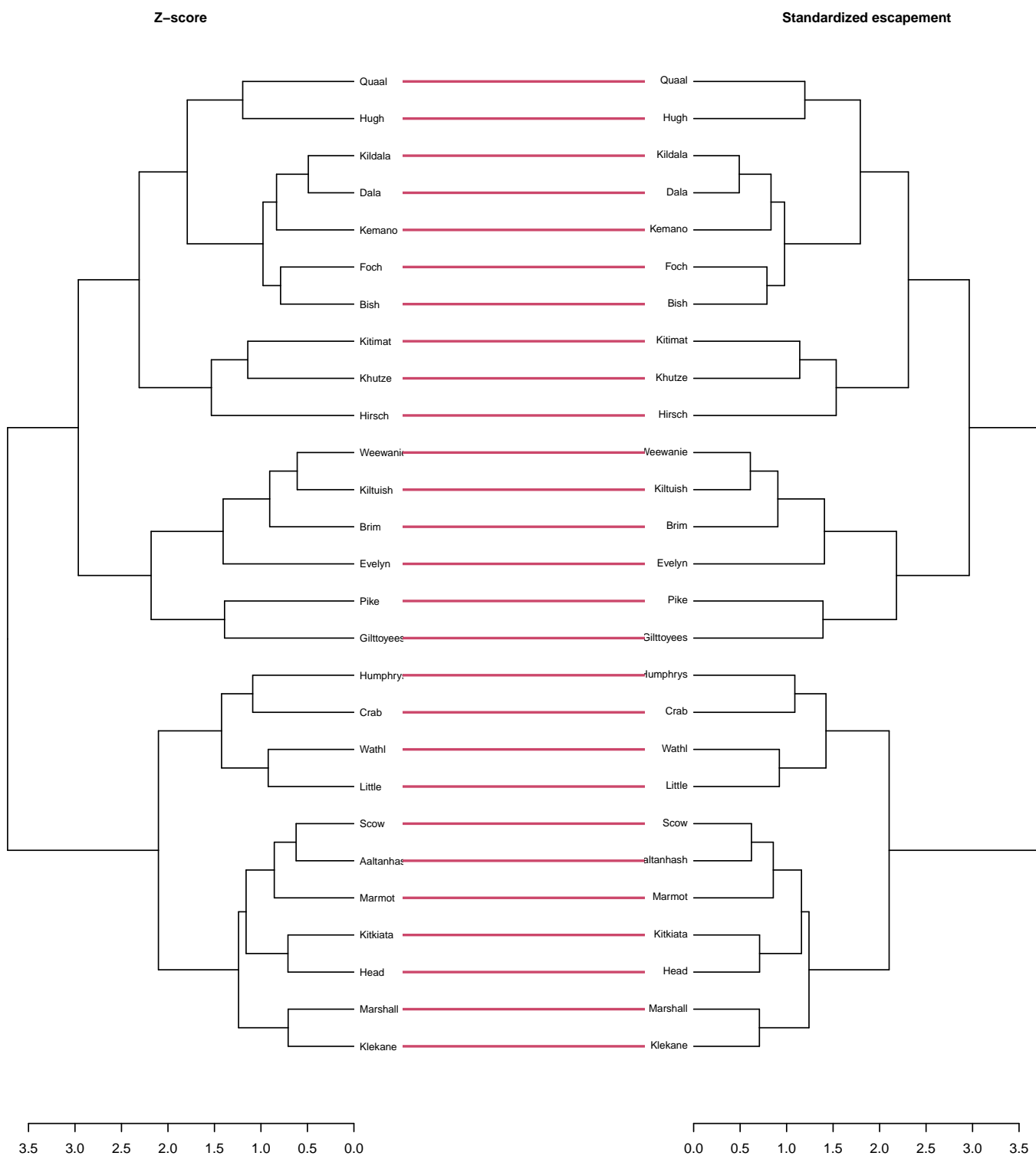


Figure 13: Tanglegram of z-score vs. standardized escapements

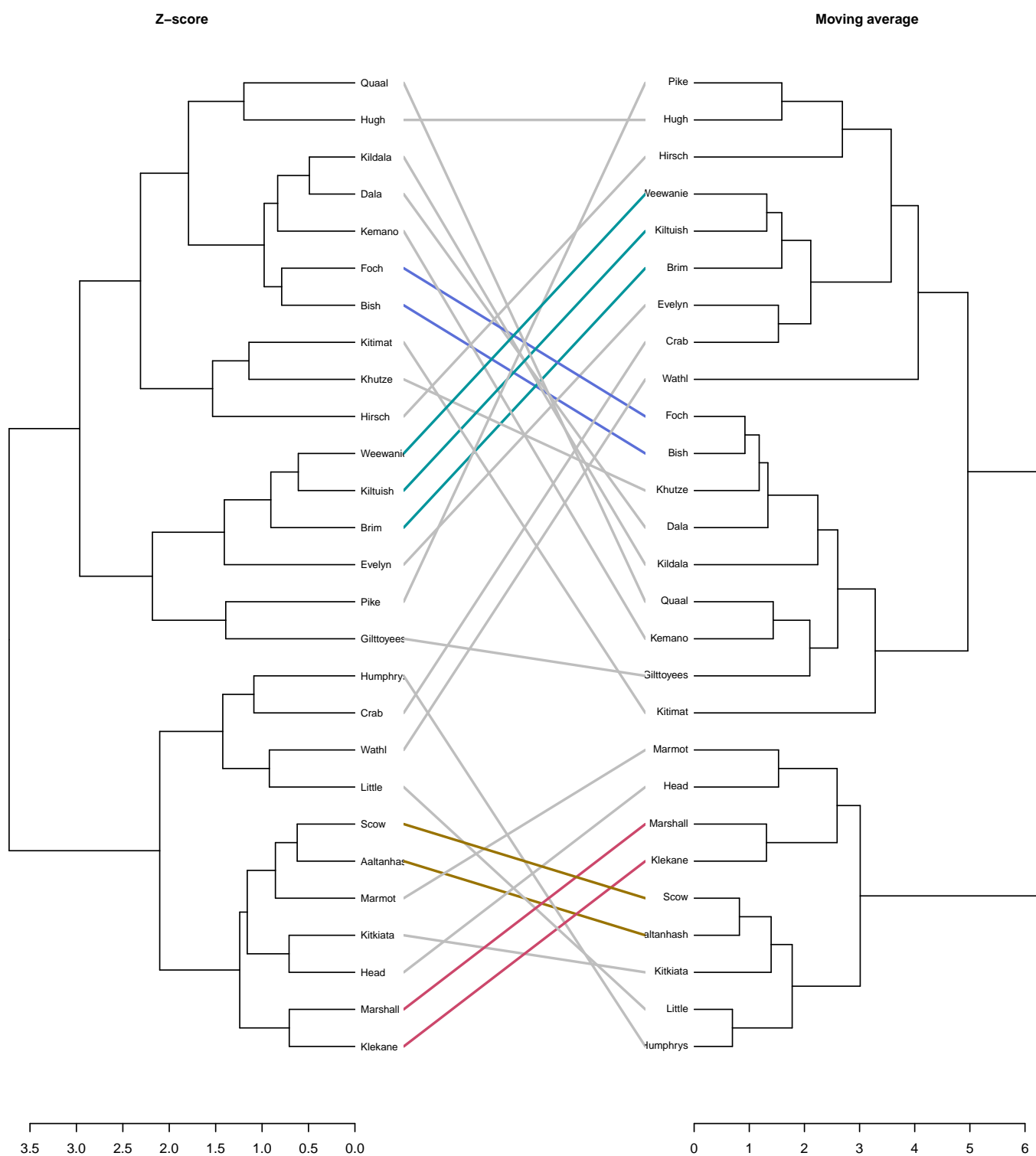


Figure 14: Tanglegram of z-score vs. moving average

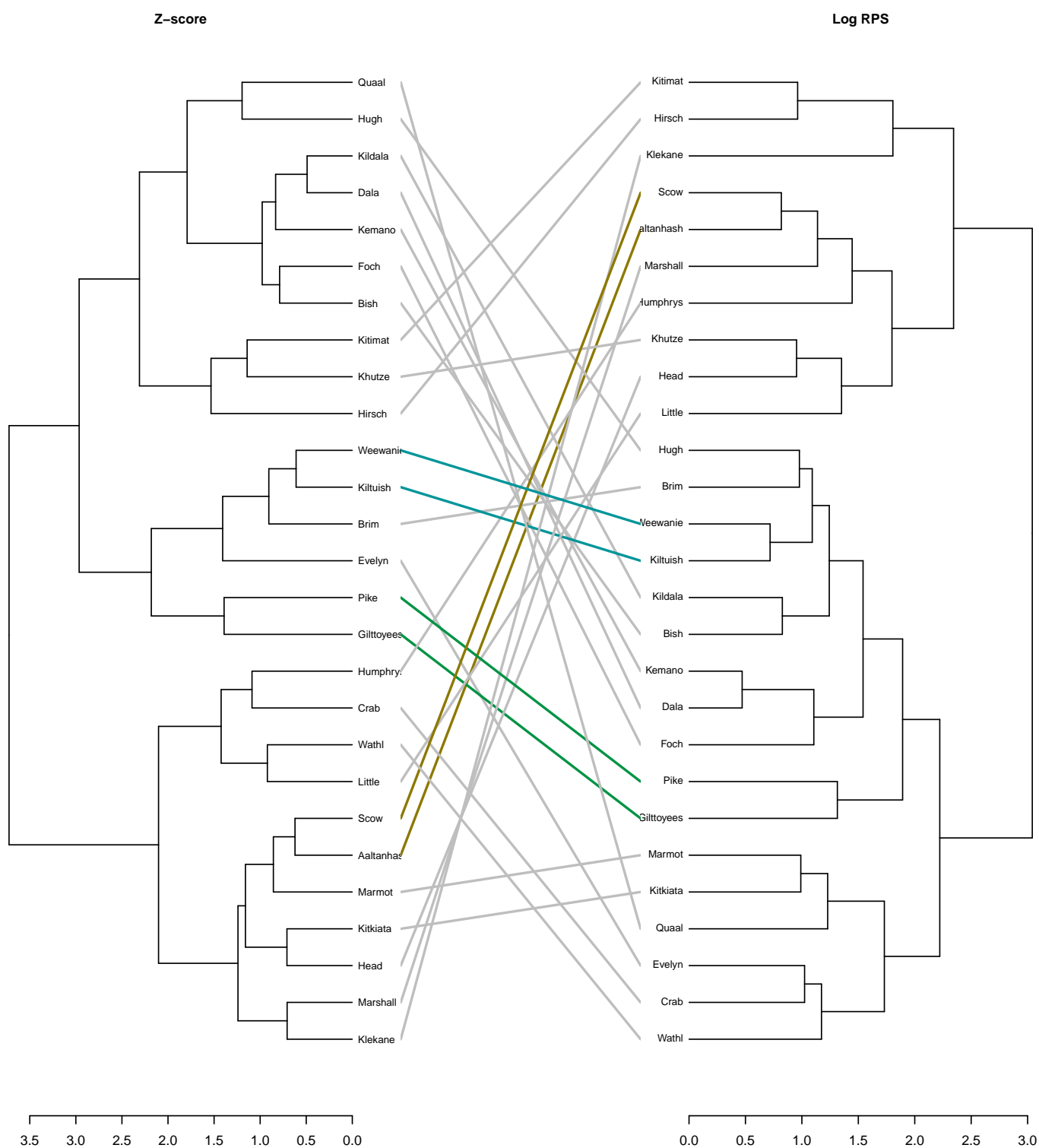


Figure 15: Tanglegram of z-score vs. Log RPS

Pre- and post-1980 correlation analyses

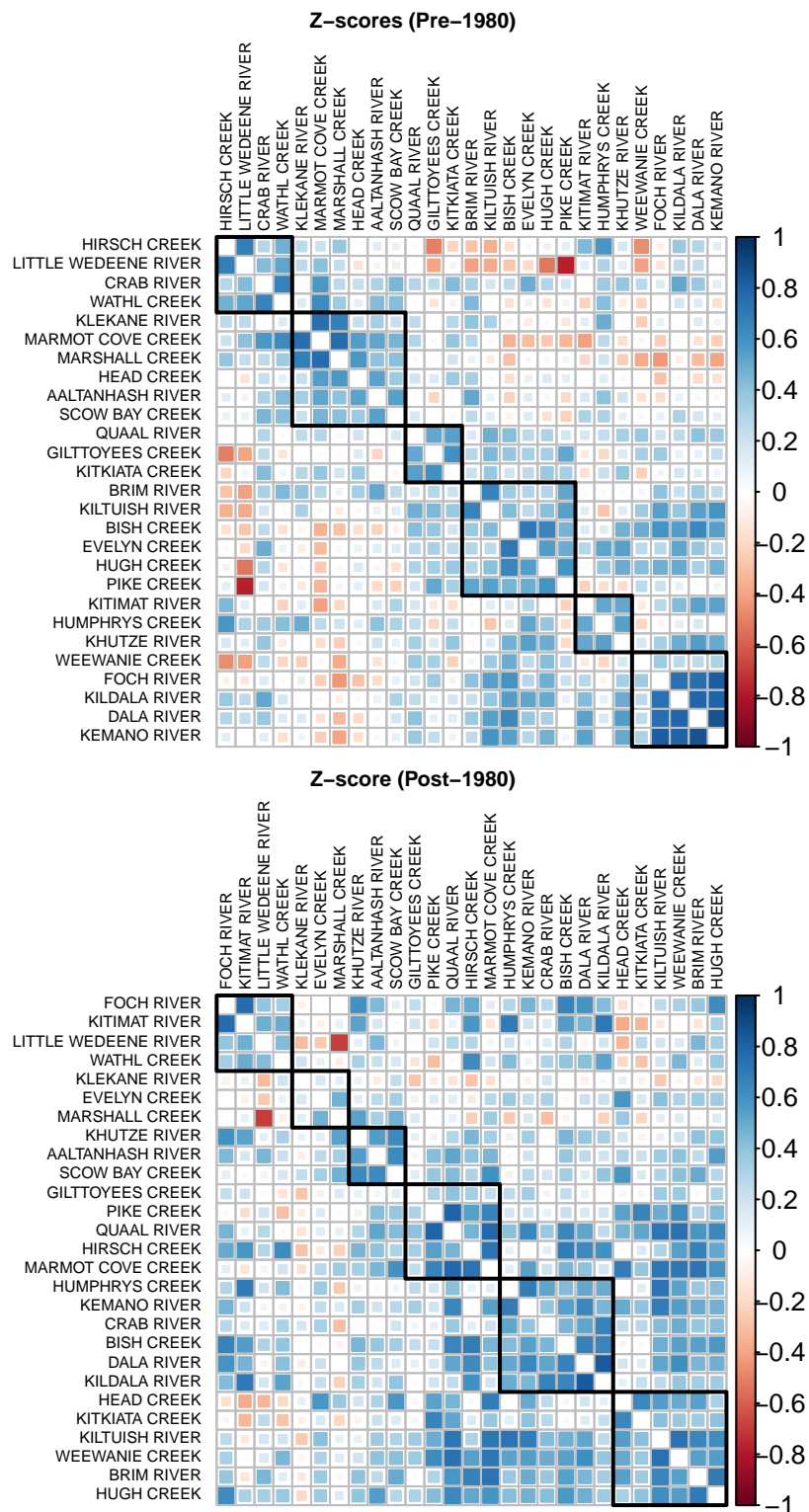


Figure 16: Cross correlation plots of z-scores to compare pre- and post-enhancement.

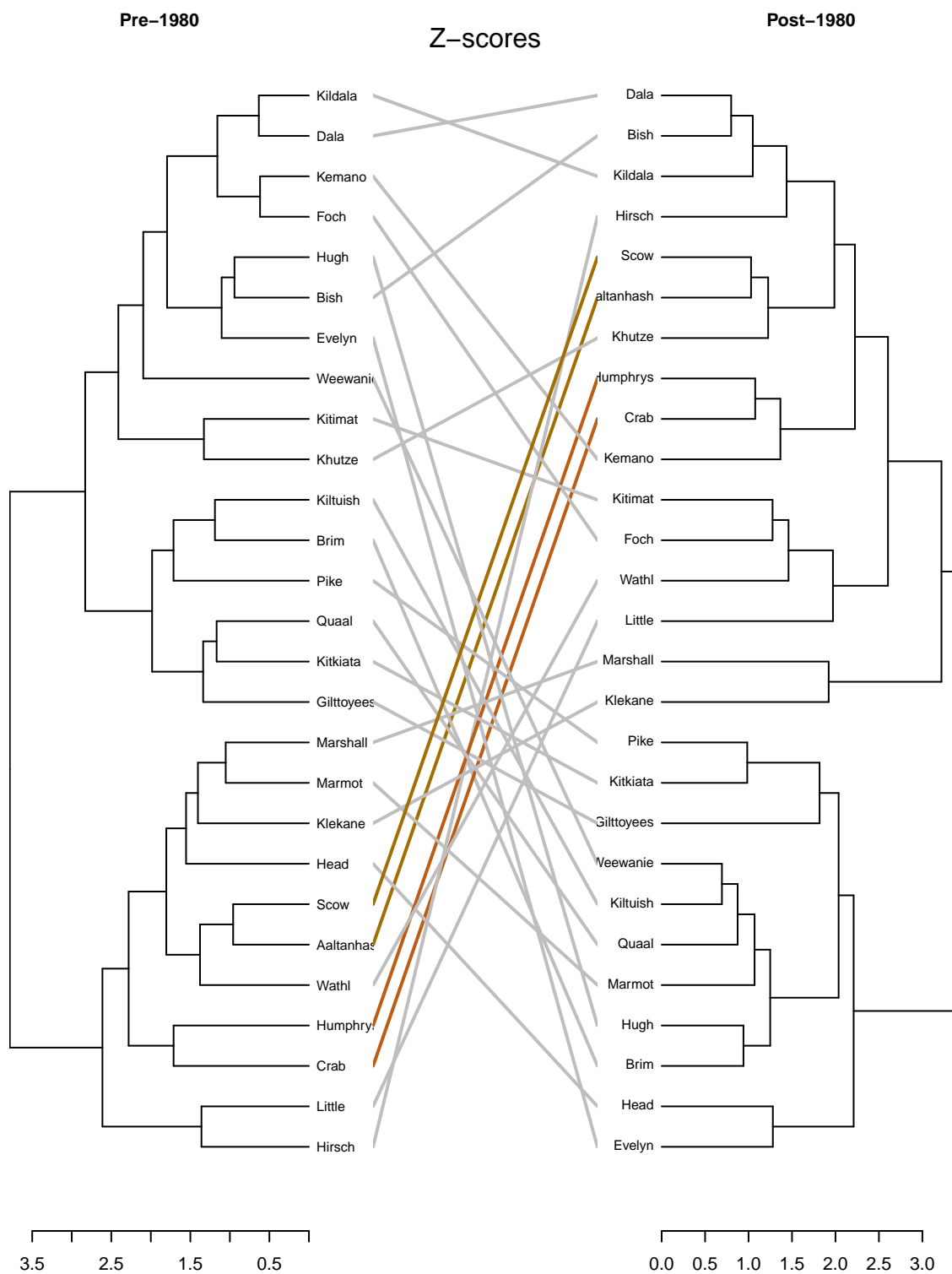


Figure 17: Tanglegram comparing z-scores pre- and post-enhancement (1980)

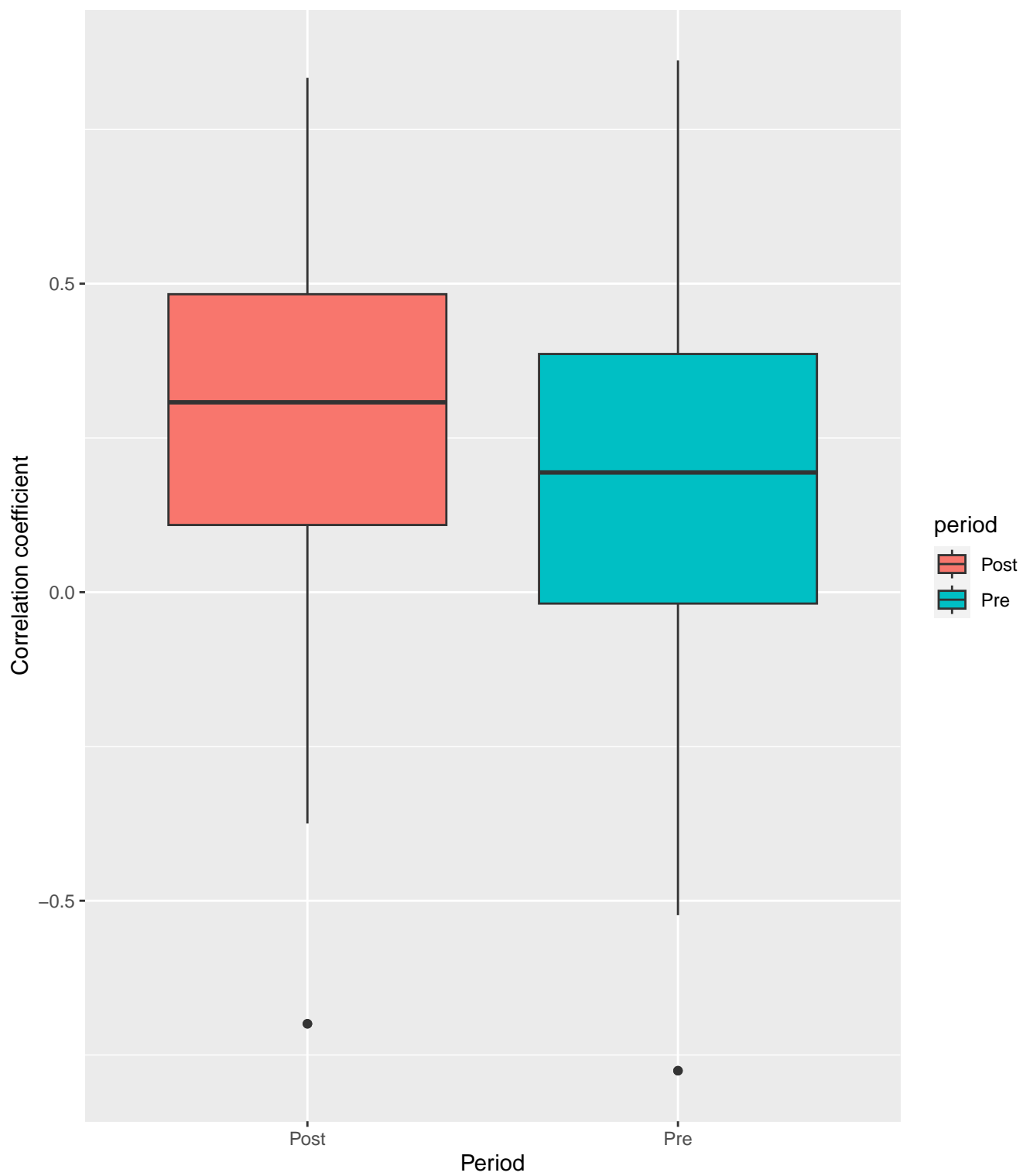


Figure 18: Boxplot comparing Z-score pre- and post-1980.

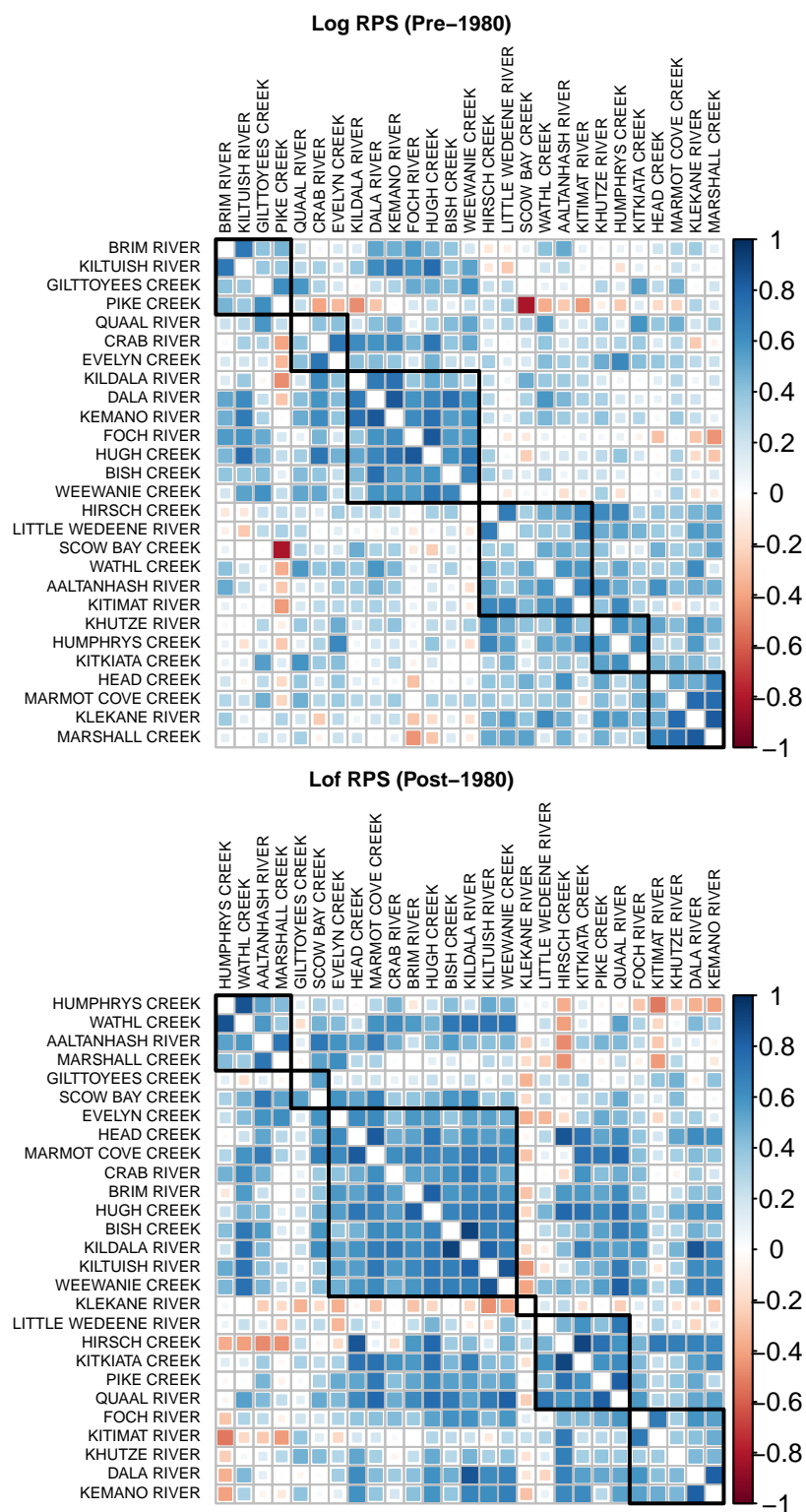


Figure 19: Cross correlation plots of Log RPS to compare pre- and post-enhancement.

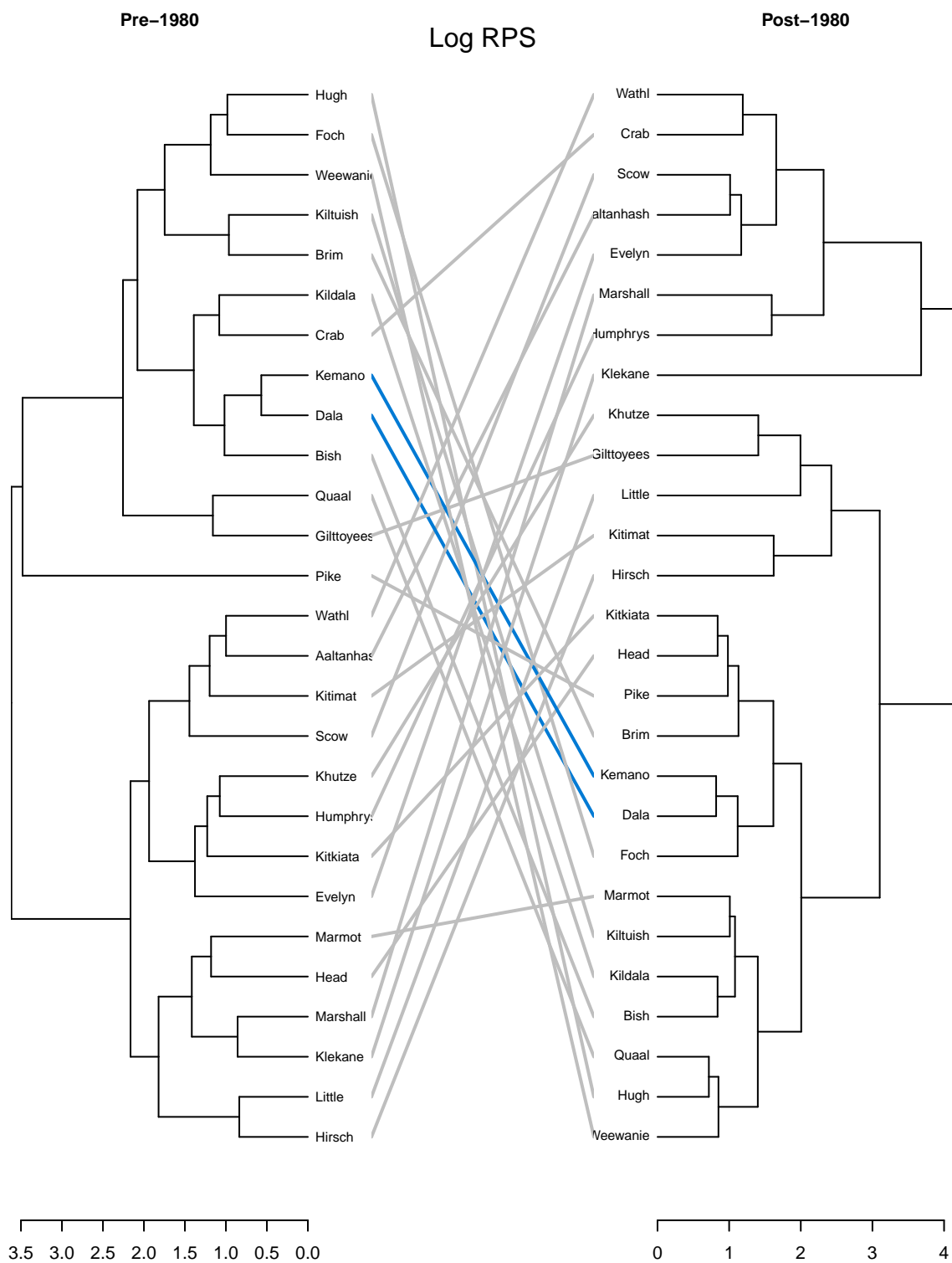


Figure 20: Tanglegram comparing Log RPS pre- and post-enhancement (1980)

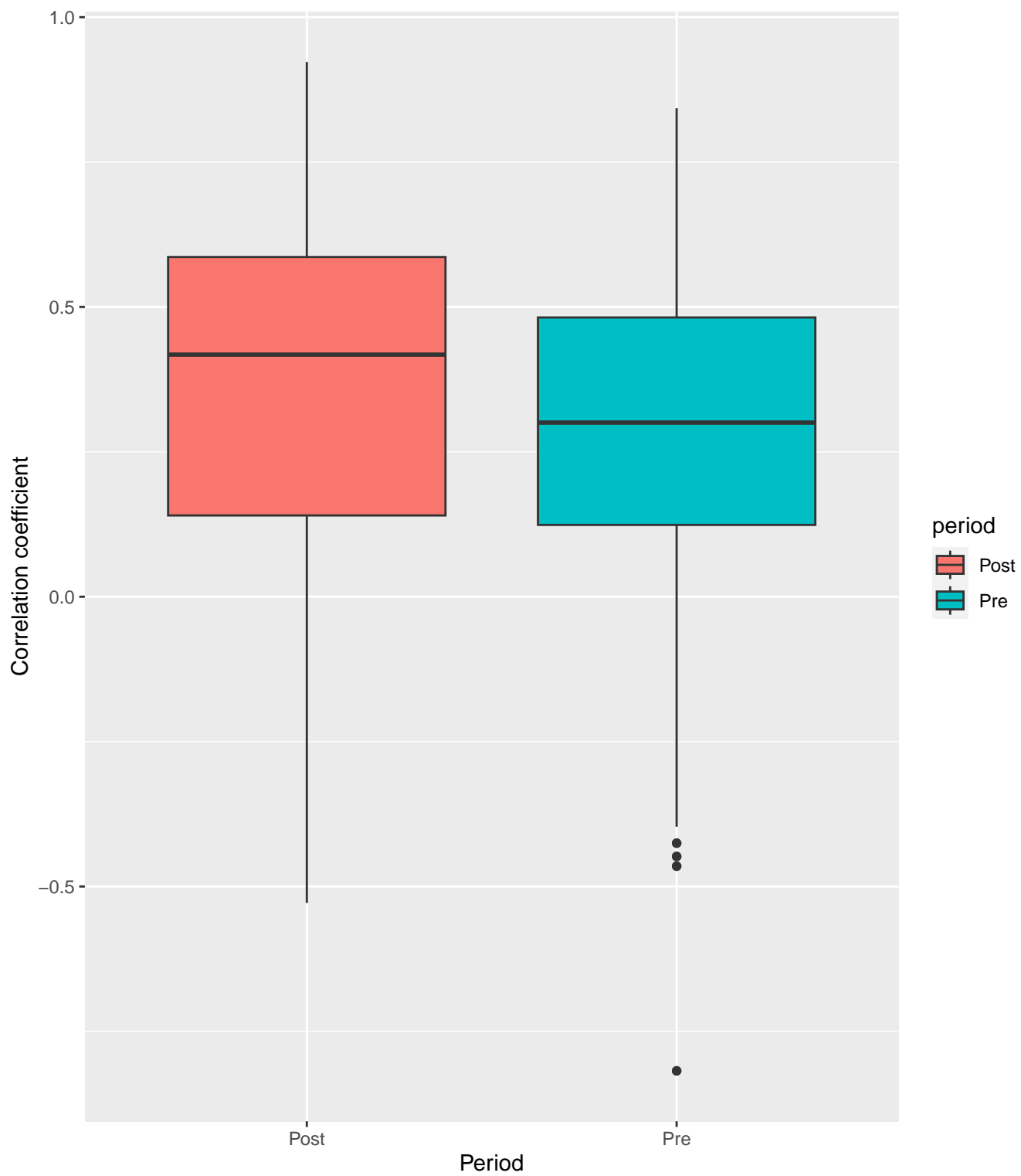


Figure 21: Boxplot comparing log RPS pre- and post-1980.

Statistical models

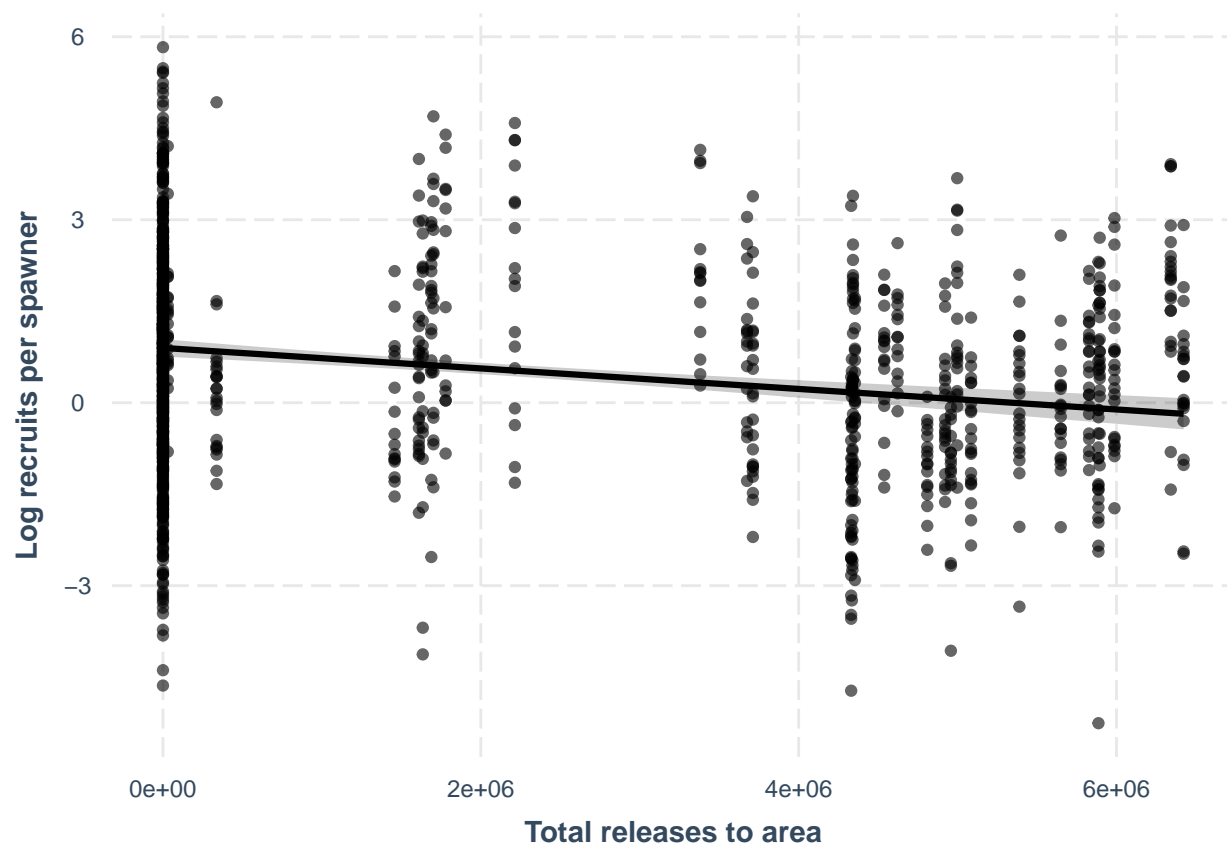
Table of log RPS candidate models and AIC selection

Response	Candidate model	link	df	AIC
log RPS	Log RPS ~ totrel + year	ry	5	4640.250
log RPS	Log RPS ~ dist + totrel	dr	4	4649.087
log RPS	Log RPS ~ dist	d	3	4674.840
log RPS	Log RPS ~ dist + year	dy	4	4675.224
log RPS	Log RPS ~ releases	r	3	5213.524
log RPS	Log RPS ~ year	y	3	5237.491

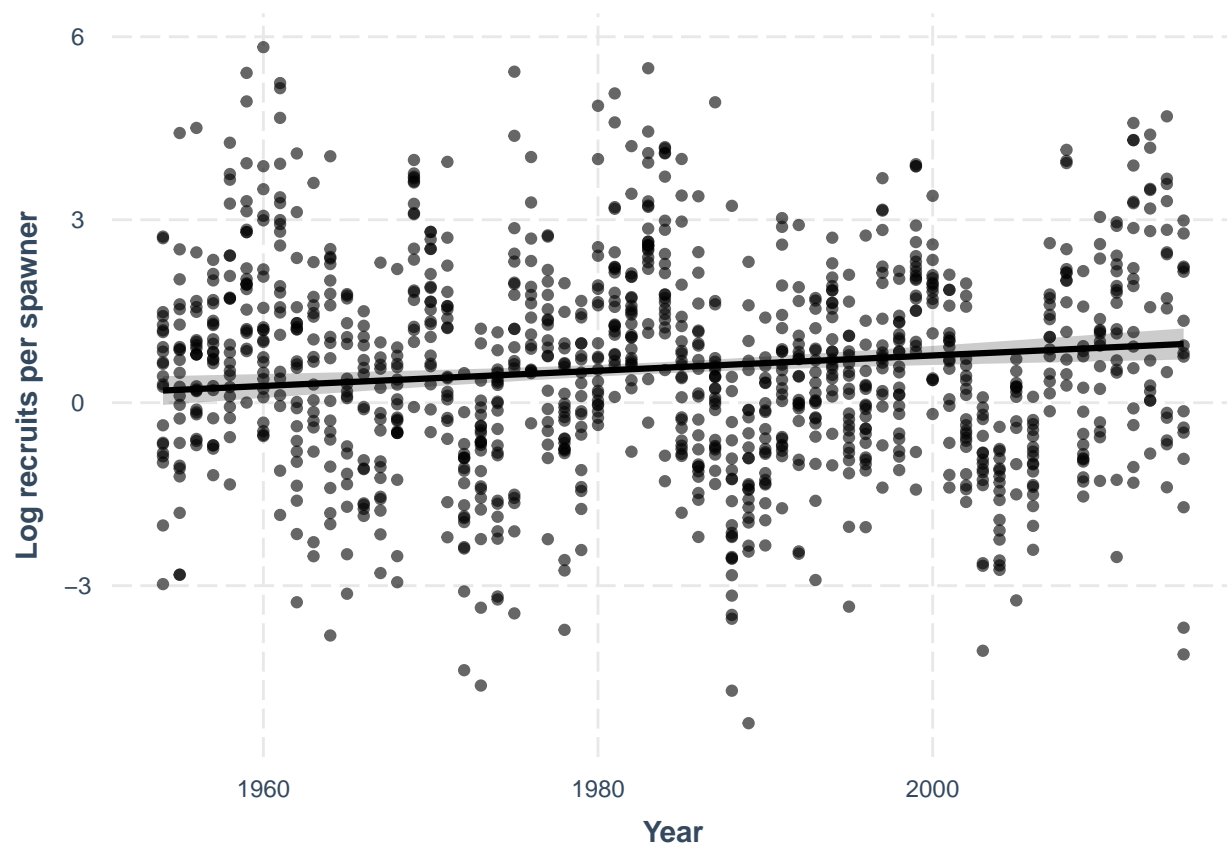
Table of log escapement candidate models and AIC selection

Response	Candidate model	link	df	AIC
log escapement	Log esc ~ releases	e.r	4	5455.093
log escapement	Log esc ~ dist + totrel	e.dr	5	5457.085
log escapement	Log esc ~ dist + year	e.dy	4	5468.276
log RPS	Log RPS ~ dist + totrel + year	dry	3	5478.798
log escapement	Log esc ~ dist	e.d	3	6220.673
log escapement	Log esc ~ year	e.y	3	6236.895

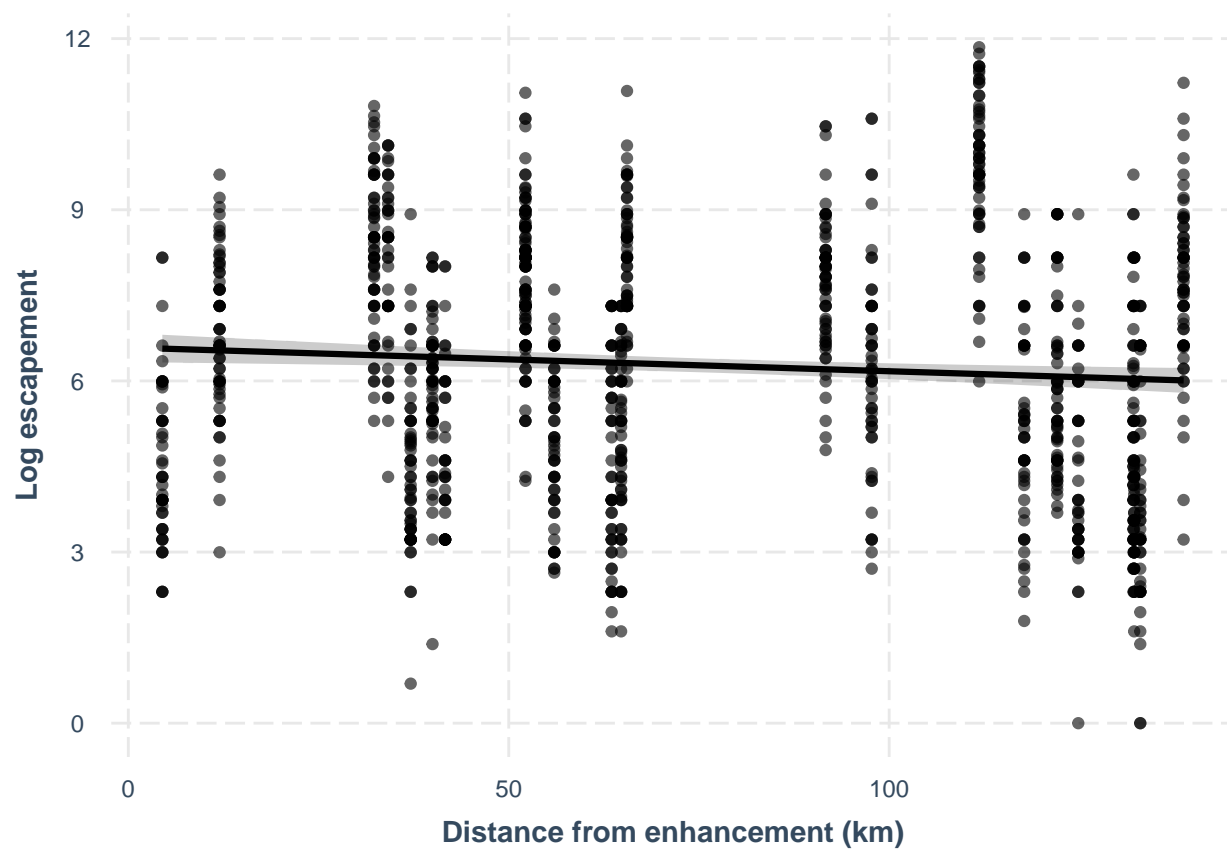
Effects plot of log RPS against releases to area



Effects plot of log RPS against year



Effects plot of log Escapement against distance from enhancement



Effects plot of log Escapement against year

