fish work flow

# acquire FMWT data

run a modification of the DWR/CDFW script by R Hartman and J White

**FMWT\_index\_web2.R**

lines 1:80

output

* FMWT\_raw.rds in fish\_data 2,924,500 x 30 fmwt catch data for all fish spp

notes: striped bass still separated into age-0, age-1, age-2, etc.

# tidy FMWT data

sums all striped bass data (adds counts for age-0, age-1, age-2, etc.);   
pivots to spp x year;  
make data analysis-ready

**fmwt.R**

lines 1:78

output

* fmwt.csv in fish\_data 56 x 98 56 years & 97 fish spp
* fmwt.rds in fish\_data 56 x 98 56 years & 97 fish spp

# format drought – environmental data

reads and modifies data file of environmental data;  
saves as both .csv and .rds files

**f\_env.R**

lines 1: 23

output

* fenv.csv in fish\_data 56 x 13 56 years & 12 environmental metrics
* fenv.rds in fish\_data 56 x 13 56 years & 12 environmental metrics

# format fish trait data

reads and modifies data file of fish trait data  
saves as both .csv and .rds files

**f\_traits.R**

lines 1:30

output

* ftrait.csv in fish\_data 19 x 9 19 spp & 9 traits
* ftrait.rds in fish\_data 19 x 9 19 spp & 9 traits

# execute 4th Corner & RLQ analyses

executes all the analyses included in Dray’s tutorial

notes:

* *consider re-running with only one of* year type, drought year, inflow*…*
* *plotting look at* ggvegan

**4thRLQ3.R**

output (examples)

Timeline

Description automatically generated

Weird figure showing distribution of years and species based on…what?

Chart

Description automatically generated

Diagram, engineering drawing

Description automatically generated

Possibly helpful indication of how environmental variables and fish traits are or aren’t linear. It’d be great if the axes were labeled. Environmental variables seems to have been normalized in some fashion, but how were the trait data handled? (Coefficients from the RLQ analysis?)Diagram, schematic

Description automatically generated

afcL

RLQ plot with afcL (correspondence analysis from the spp table), acpR (multivariate analysis (PCA of sorts) with quantitative variables and factors), and acqQ analyses.

Diagram, engineering drawing

Description automatically generated

summary(rlq.fish)

RLQ analysis

Class: rlq dudi  
Call: rlq(dudiR = acpR.fish, dudiL = afcL.fish, dudiQ = acpQ.fish, scannf = F)  
Total inertia: 0.6701

Eigenvalues:  
 Ax1 Ax2 Ax3 Ax4 Ax5   
0.466611 0.187098 0.009727 0.004902 0.001327

Projected inertia (%):  
 Ax1 Ax2 Ax3 Ax4 Ax5   
69.6338 27.9212 1.4516 0.7315 0.1980

Cumulative projected inertia (%):  
 Ax1 Ax1:2 Ax1:3 Ax1:4 Ax1:5   
69.63 97.55 99.01 99.74 99.94   
(Only 5 dimensions (out of 11) are shown)

Eigenvalues decomposition:  
 eig covar sdR sdQ corr  
1 0.4666108 0.6830892 2.3902603 1.409853 0.2027021  
2 0.1870976 0.4325478 0.9792636 1.571886 0.2810047

Inertia & coinertia R (acpR.fish):  
 inertia max ratio  
1 5.713345 6.068397 0.9414915  
12 6.672302 7.318369 0.9117198

Inertia & coinertia Q (acpQ.fish):  
 inertia max ratio  
1 1.987687 5.028905 0.3952524  
12 4.458511 7.565176 0.5893466

Correlation L (afcL.fish):  
 corr max ratio  
1 0.2027021 0.4492079 0.4512433  
2 0.2810047 0.4115195 0.6828466

Correlation is low for both axes and I’d expect the first axis to be higher.

Chart

Description automatically generated

Table

Description automatically generated

Chart, histogram

Description automatically generated

Chart, line chart

Description automatically generated

Chart, bar chart

Description automatically generated

Table

Description automatically generated with medium confidence