Manuscript Title

Timing of reproduction underlies fitness trade-offs for a salmonid fish

Authors

Jeffrey R. Baldock[1], Robert Al-Chokhachy[2], Matthew R. Campbell[3], & Annika Walters[4]

Author Affiliations

[1]Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology and Program in Ecology, University of Wyoming, Laramie, WY. [2]Northern Rocky Mountain Science Center, U.S. Geological Survey, Bozeman, MT. [3]Eagle Fish Genetics Laboratory, Idaho Department of Fish and Game, Eagle, ID. [4]U.S. Geological Survey, Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology and Program in Ecology, University of Wyoming, Laramie, WY.

Corresponding Author

Jeffrey R. Baldock, jbaldock@uwyo.edu, PH: 530-518-8204

Description

The following documentation details data supporting the analysis for the manuscript specified above. This study was funded by the Wyoming Game and Fish Department and the Jackson Hole One Fly Foundation. These data are a product and are property of the Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie, Wyoming. Data was collected by Jeff Baldock et al. between May 2019 and September 2021. Below is a description of each data set and the variables included therein.

Obj1a_SupxSpawnTiming.csv: data used in the analysis for objective 1a, investigating the effect of spawning timing on the probability and extent of redd superimposition.

Variable Name	Description
reddID	unique redd identifier
stream	stream name
date	date of redd construction
prs	maximum proportion of redd surface area disturbed by superimposition of another redd
size	redd size in square meters
clusterID	unique redd cluster identifier if superimposed
clust	binary variable denoting whether a redd was a part of a larger redd cluster (1) or not (0)
doy	day of year
supbin	binary variable denoting whether a redd was disturbed by superimposition of another redd (1) or not (0)
meddate	median date of redd construction (specific to each stream and year)
reldoy	relative day of year of redd construction (doy – meddate)
dum	dummy variable for color (stream x year)
yearid	dummy variable for year (for JAGS)
streamid	dummy variable for stream (for JAGS)

Obj1b_ReproSuccessxSup.csv: data used in the analysis for objective 1b, investigating the effect of proportional superimposition on reproductive success.

Variable Name	Description
stream	stream name
capcode	unique redd cap identifier
mominfer	inferred maternal parent identifier
momdate	maternal parent weir sampling date
momlen	maternal parent total length (mm)
cohort	total number of offspring assigned to maternal parent using genetic parentage analysis
totfry	total number of YOY caught in each specific redd cap
cohfre	proportion of YOY caught in each redd cap that assigned to a particular maternal parent
redd	unique redd identifier
redddate	date of redd construction
prs	maximum proportion of redd surface area disturbed by superimposition of another redd
size	redd size in square meters
strres	stream residency, days between maternal parent weir entry and date of redd construction
cohortdum	cohort + 1, to allow for 0's in log transformation
year	year
dum	dummy variable for color (stream x year)
yearid	dummy variable for year (for JAGS)
streamid	dummy variable for stream (for JAGS)
logcohortdum	log(cohortdum)

Obj1c_ReproSuccessxSpawnTiming.csv: data used in the simulation analysis for objective 1c, investigating the effect of spawn timing on simulated reproductive success.

Variable Name	Description
reddID	unique redd identifier
stream	stream name
year	year
date	date of redd construction
prs	maximum proportion of redd surface area disturbed by superimposition of another redd
size	redd size in square meters
clusterID	unique redd cluster identifier if superimposed
clust	binary variable denoting whether a redd was a part of a larger redd cluster (1) or not (0)
doy	day of year of redd construction
meddate	median date of redd construction (specific to each stream and year)
reldoy	relative day of year of redd construction (doy – meddate)
dum	dummy variable for color (stream x year)
zprs	centered and scaled prs based on redds included within the analysis for Objective 1b

Obj2a_DegreeDaysxSpawnTiming.csv: data used to produce Figure 5a, growing degree-days until spring for each day of the summer spawning period.

Variable Name	Description
stream	stream name
location	location of temperature sensor
date	date
meanT	mean daily stream temperature in degrees Celsius
gdd	growing degrees days between date of temperature record and juvenile sampling the following spring
doyrel	day of year relative to median spawning date specific to each stream and year

Obj2b_BodySizexSpawnTiming.csv: data used in the analysis for objective 2b, evaluating the effect of spawn timing on offspring body size   .

Variable Name	Description
JuLengthTotal	total length (mm) of juvenile fish
MaDOYrel	day of year of maternal parent weir entry relative to median spawning date for each stream and year
JuDateSampled	date of juvenile fish sampling
MaDateSampled	date of maternal parent weir entry
dum	dummy variable for color (stream x year)
yearid	dummy variable for year (for JAGS)
streamid	dummy variable for stream (for JAGS)

Obj2c_CohortSizexSpawnTiming.csv: data used in the analysis for objective 2c, evaluating the effect of spawn timing on offspring cohort size   .

Variable Name	Description
MaFieldID	unique identifier for maternal parent
MaDOYrel	day of year of maternal parent weir entry relative to median spawning date for each stream and year
stream	stream
spawnyr	year of spawning
dum	dummy variable for color (stream x year)
yearid	dummy variable for year (for JAGS)
streamid	dummy variable for stream (for JAGS)
cohort	number of offspring assigned to each unique maternal parent using genetic parentage analysis