**Metadata for:**

**Pacific Cod metabolism and swimming performance are similar across temperatures following prolonged thermal acclimation**

Hillary L. Thalmann1,\*, Benjamin Laurel2, Mary Beth Rew Hicks2, Emily Slesinger2, and Jessica A. Miller1

1Oregon State University Department of Fisheries, Wildlife, and Conservation Sciences;

Coastal Oregon Marine Experiment Station; Hatfield Marine Science Center, 2030 SE Marine Science Dr., Newport, OR 97365

2NOAA Alaska Fisheries Science Center, Hatfield Marine Science Center, 2030 SE Marine Science Dr., Newport, OR 97365

\*Corresponding author: [hillary.thalmann@oregonstate.edu](mailto:hillary.thalmann@oregonstate.edu)

**Key Words:**

Pacific Cod; Metabolism; Swimming Efficiency; Thermal Acclimation; Standard Metabolic Rate

**ORCIDs:**

HLT: 0000-0002-2112-5131; BL: [0000-0001-7150-0879](https://nam04.safelinks.protection.outlook.com/?url=http%3A%2F%2Forcid.org%2F0000-0001-7150-0879&data=05%7C02%7Chillary.thalmann%40oregonstate.edu%7C42f7a6b818ed4155b07408dc107286b1%7Cce6d05e13c5e4d6287a84c4a2713c113%7C0%7C0%7C638403331273121809%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=OXXpJW%2BEk3FwJs1OPP%2B22%2FH4cqTC8%2BhxvPGiAhLfEVc%3D&reserved=0); MBRH: 0009-0007-7756-9245;

ES: 0000-0001-8491-6101; JAM: 0000-0002-6491-4085

The following R script file and data file contain all analyses and plots presented in Thalmann et al. Pacific Cod metabolism and swimming performance are similar across temperatures following prolonged thermal acclimation.

>Script File: Thalmann\_et\_al\_ThermalMetabolicVariation\_Rscript.R

>Data File: Thalmann\_et\_al\_PacificCodThermalMetabolicVariation\_Data.csv

>Rows represent individual fish IDs, repeated for each unique oxygen consumption measurement from a swimming trial

>Columns:

>FishID: unique primary key identifier for an individual fish

>Temp\_Trmt: Temperature treatment associated with each individual fish

>Expt: Unique experiment (1 or 2) associated with each individual fish

>TankID\_Expt: Tank ID associated with each individual fish

>SwimSpeed: Swimming speed (in body lengths per second) associated with each oxygen consumption reading during a swim trial. Fish were generally run at each swimming speed for three iterations throughout a trial.

>MO2: Oxygen consumption rate (in mg O2 per kg per h) associated with each measurement period in a trial. MO2 values were calculated from raw respirometry data using Eqn. 1.

>SMR: Standard metabolic rate (in mg O2 per kg per h), calculated as the y-intercept of the linear model log(MO2) = B0 + B1(swim speed) during the swim trial, representing theoretical oxygen uptake at zero speed. SMR values were excluded from further analysis if the R2adj. from the model was < 0.4.

>SMR\_AdjRsq: R2adj. value from the linear model log(MO2) = B0 + B1(swim speed), used to exclude SMR values from models with poor fit.

>RMR: Routine metabolic rate (in mg O2 per kg per h), calcuated as the 20% quantile for all MO2 measurements during the overnight period prior to the swim tunnel trial.

>MMR: Maximum metabolic rate (in mg O2 per kg per h),calculated as the mean of the three highest MO2 measurements during the swim trial.

>Ucrit: Critical Swimming Speed (in mm per sec), representing the point in a swim trial at which a fish can no longer swim against the current, calculated from Eqn. 2

>FAS: Factorial Aerobic Scope (in mg O2 per kg per h), calculated as the ratio of the difference between MMR and RMR for an individual (MMR/RMR)

>AAS: Absolute Aerobic Scope (in mg O2 per kg per h), calculated as the net difference between MMR and RMR for an individual (MMR - RMR)

>SL\_mm: Standard length of a fish in mm

>WholeFishWWT\_g: Whole body wet weight of a fish in g

>Gonads: Presence or absence of gonads in an individual (yes/no)

>GonadsWWTg: Wet weight of gonads, if present, in g

>ParasiteWWT: Wet weight of parasites, if present, in g. Only available for Expt. 2

>HSI: Hepatosomatic Index, calculated as [liver wet weight (g)] / [whole body wet weight (g)] \* 100

>LiverLipids: mg of lipid per gram of liver tissue. Only available for Expt. 1.

>MuscleLipids: mg of lipid per gram of muscle tissue. Only available for Expt. 1.

>Growth: Absolute growth rate (in mm per day), calculated as the difference in standard length at the time of the swim trial and standard length approximately 4 to 7 months prior (Expt. 1), or 3 to 6 months prior (Expt. 2), divided by the number of days elapsing between the two measurements.

>MeanTemp\_3Months: Temperature (in degrees C) of rearing tank, averaged over the final three months of the rearing period.

>ActualTemp\_DayofTrial: Temperature (in degrees C) of swim tunnel on day of trial

>MeanSalinity\_3Months: Salinity of rearing tank, averaged over the final three months of the rearing period.

>Salinity\_DayofTrial: Salinity of swim tunnel on day of trial

>DaylightHours: Number of hours of daylight for the rearing environment on the day the fish was acclimated to the swim tunnel. All fish were reared under a natural photoperiod for Kodiak Island, AK.

>DaysSinceFeeding: Number of days between last feeding and the day of the swim trial (ranges between 2 to 5 days)

>Acclimation: Number of days the fish was acclimated to rearing temperatures prior to swim trial