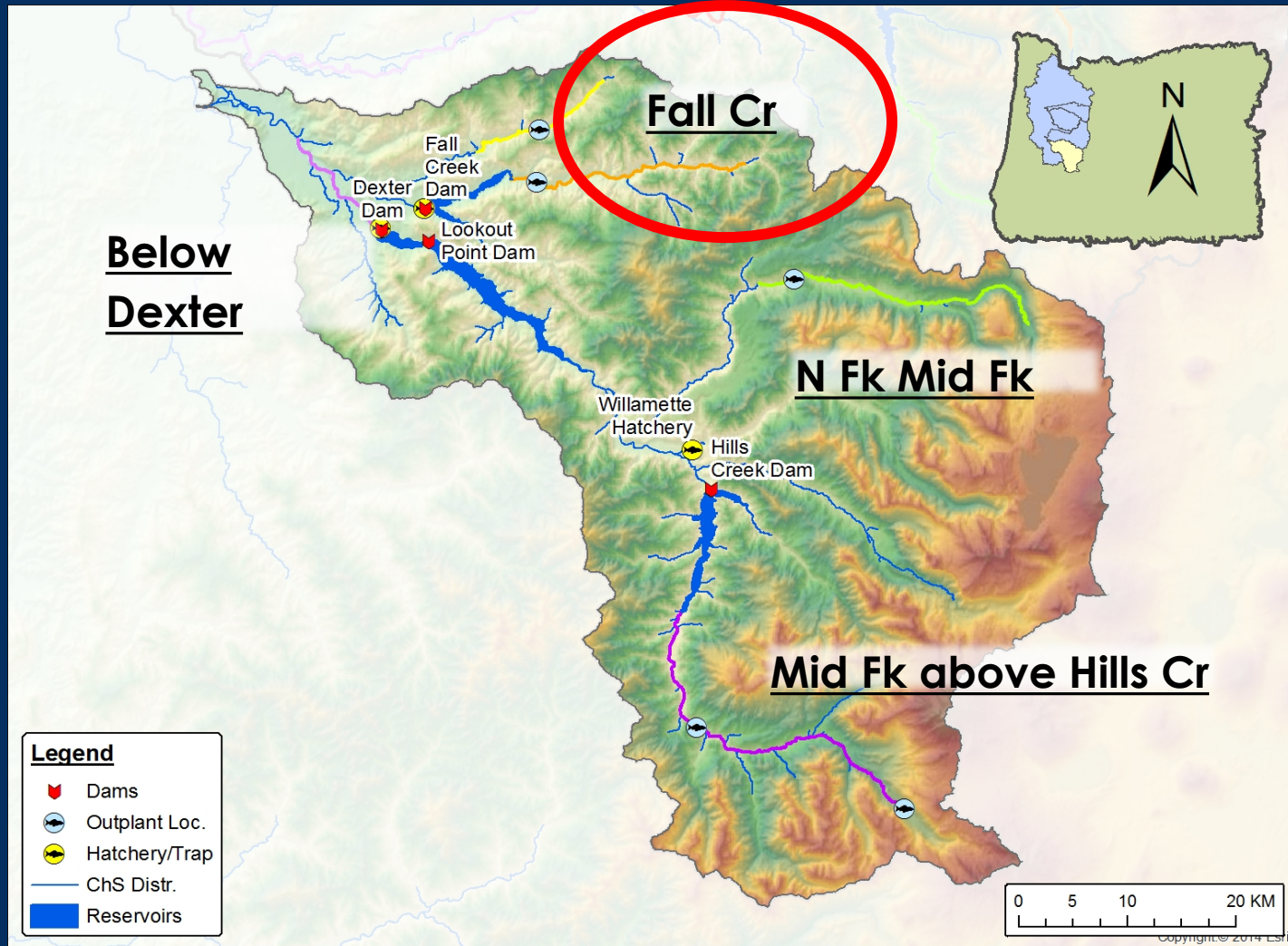


PRESPAWNING MORTALITY OF FALL CREEK WILLAMETTE CHINOOK SALMON: EVALUATION OF THE EFFECTS OF A NEW TRAP AT THE ADULT FISH COLLECTION FACILITY

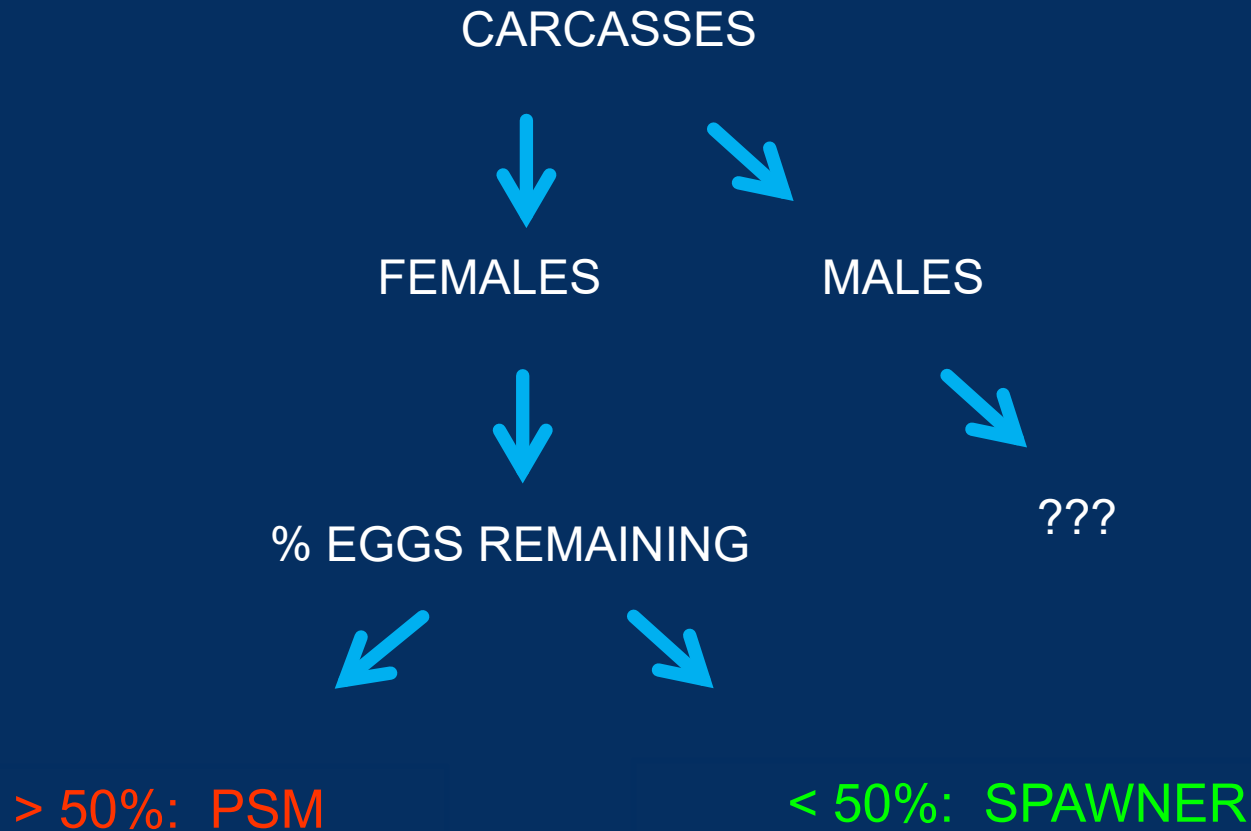
James Peterson, Justin Sanders, Luke Whitman, Michael Kent,
Carl Schreck, Katherine Carey, Claire Couch



Trap, Transport and Outplanting MF Willamette



Problem: Prespawning Mortality (PSM)



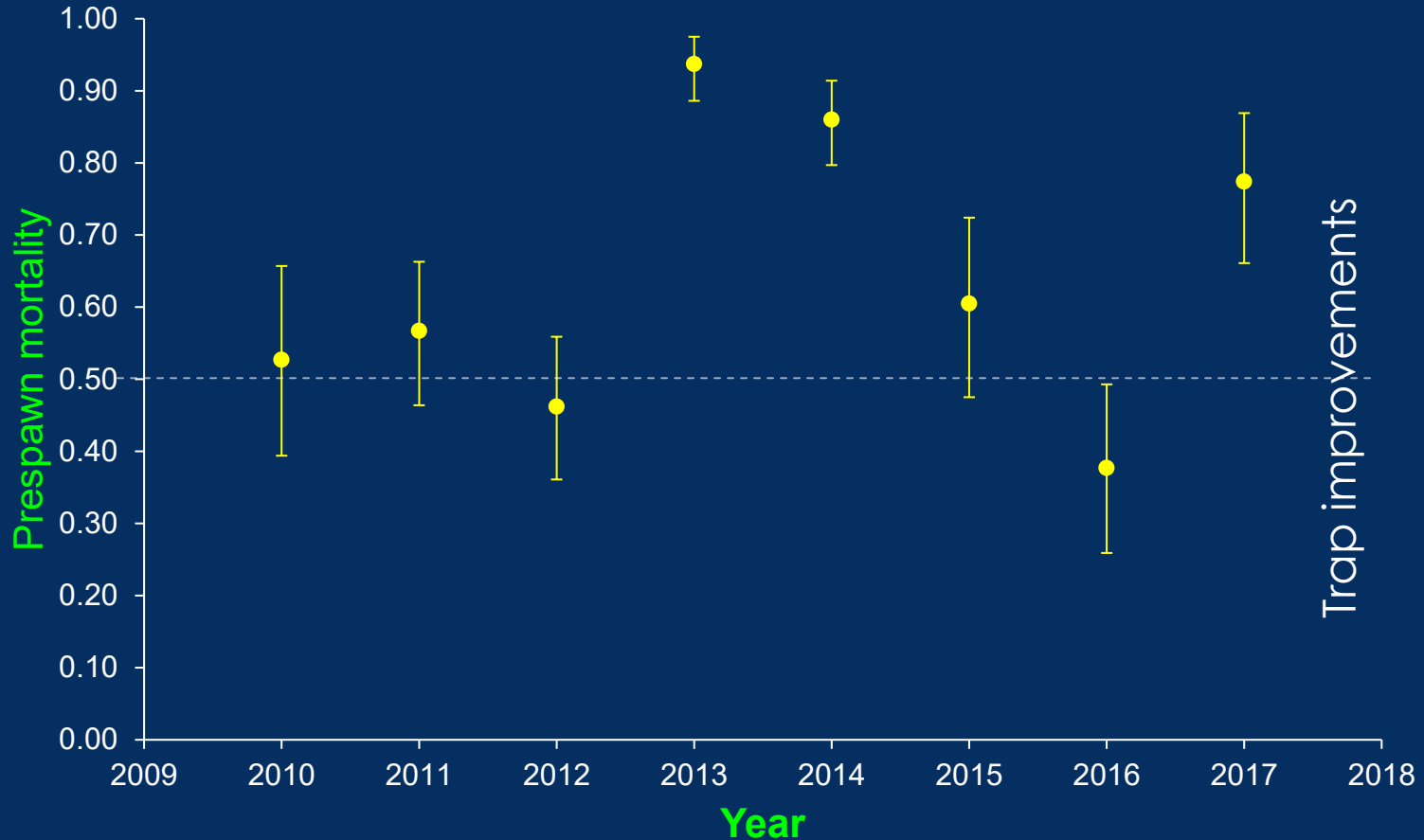
0-20%: LOW;

20-50%: MODERATE;

>50%: HIGH

Estimated Prespawning Mortality Fall Creek Pre-Improvement

“Apparent PSM”



Preliminary results subjected to revision

Objectives

Estimate PSM 2020 outplants

Identify locations and conditions affect PSM

Quantify the changes in PSM after improvements

Identify factors influencing PSM



Carcass and Redd Surveys

ODFW Survey Protocols

8 reaches, 3-4 per day

Aug 10- Oct 8

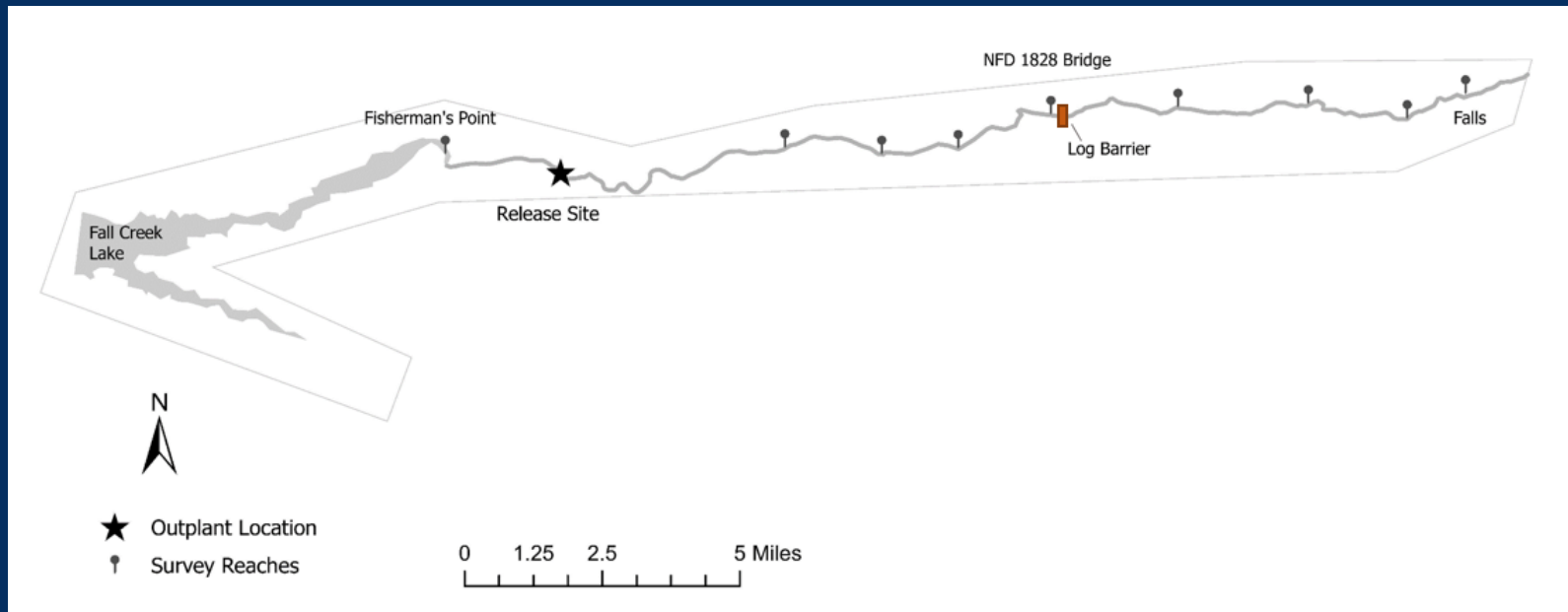
Holiday Farm Fire

Sep 9 - 28

Carcass collection

Field necropsies

Redd counts



Statistical Analyses

PSM estimated: integrated model

Exploratory analyses (PSM)

Monthly temperatures below FCD
Monthly temperatures above FCR
Mean, min, max
Correlation/regression

Exploratory analyses (passage timing)

Temperatures and discharge below
Metrics

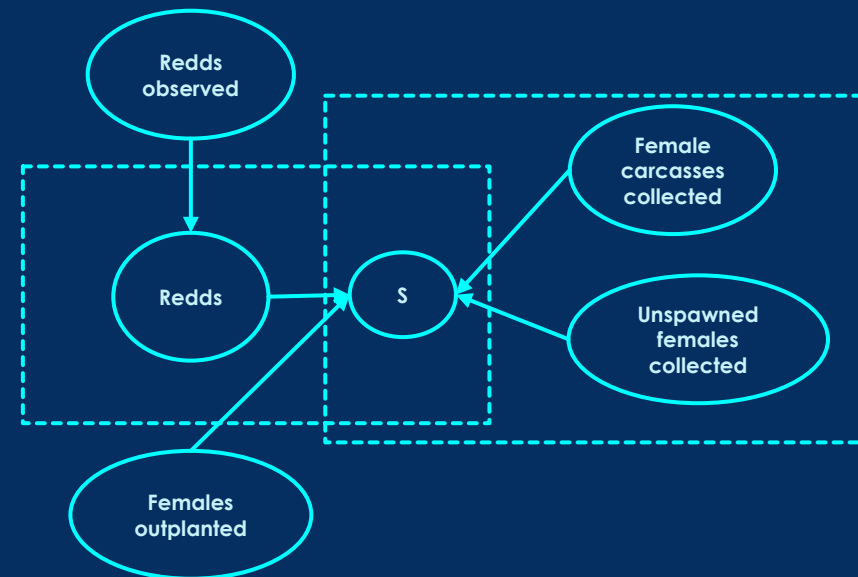
Transport day

1-3 day lag

Between transport days

Mixed logistic regression

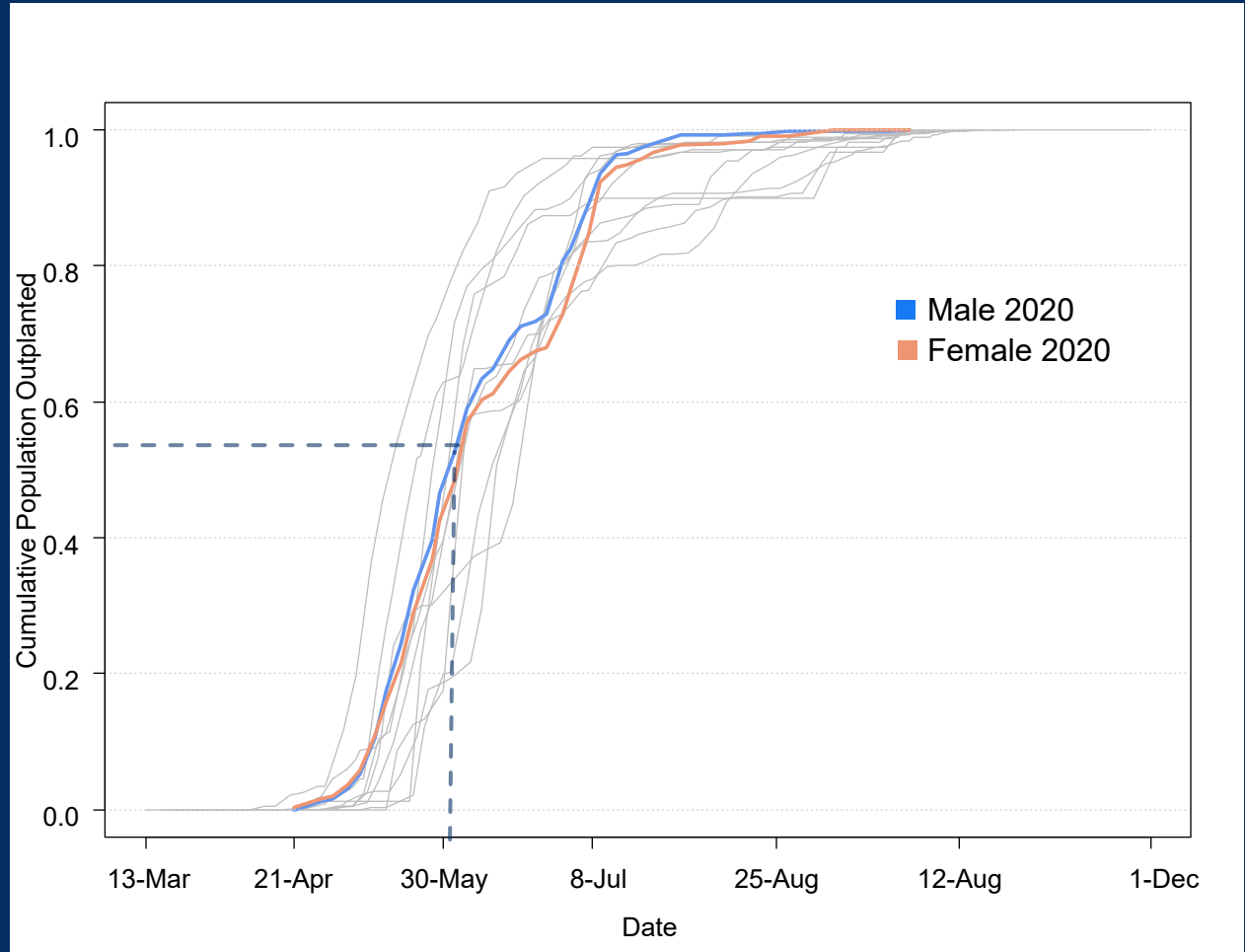
Integrated model



Results: Run timing

834 outplants
37% female
63% male

Peak counts
Oct 7
16 redds

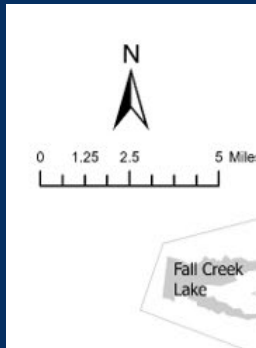


Preliminary results subjected to revision

Results: Carcass recovery

62 carcasses
55% females
45%

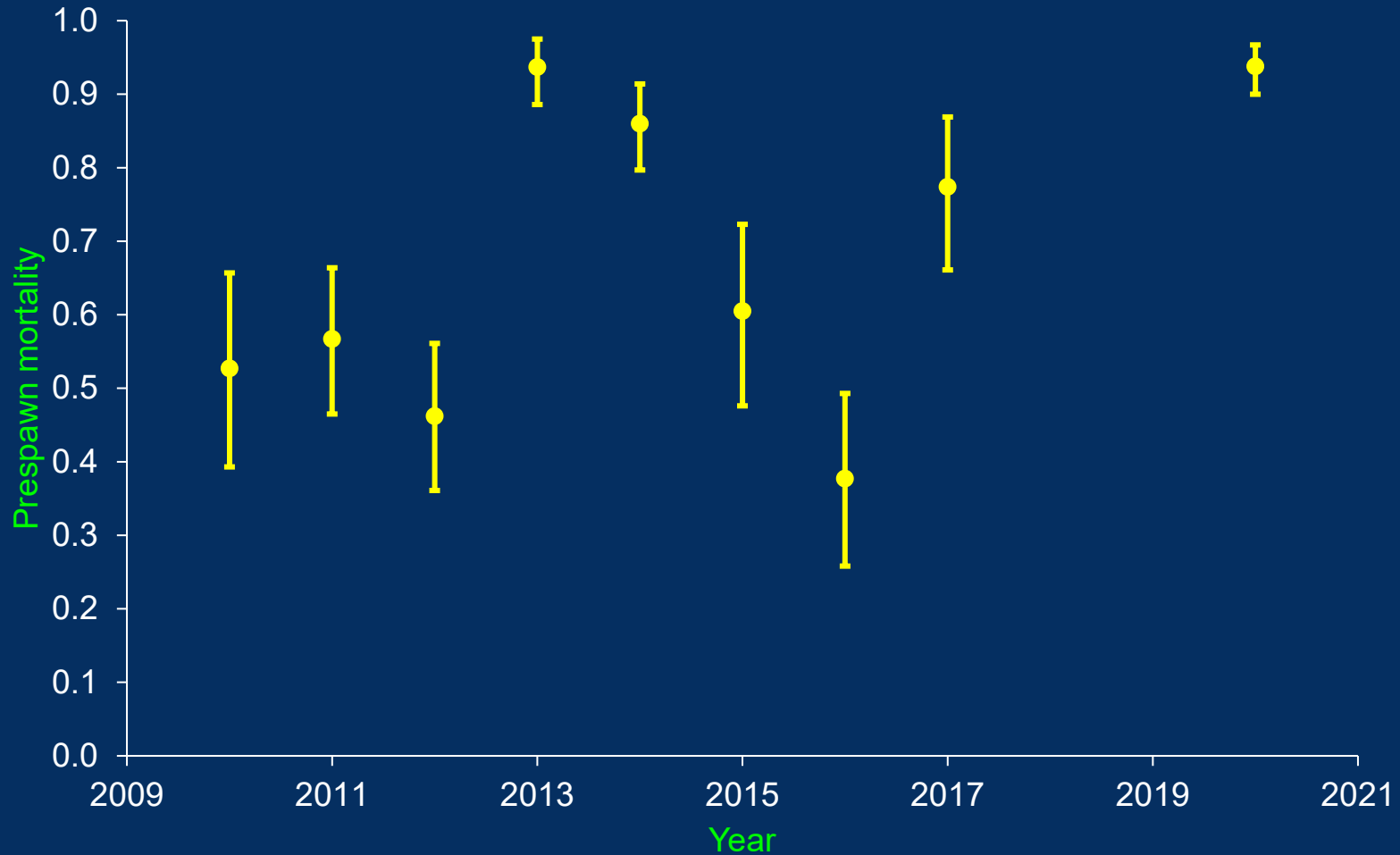
5% eggs



Preliminary results subjected to revision

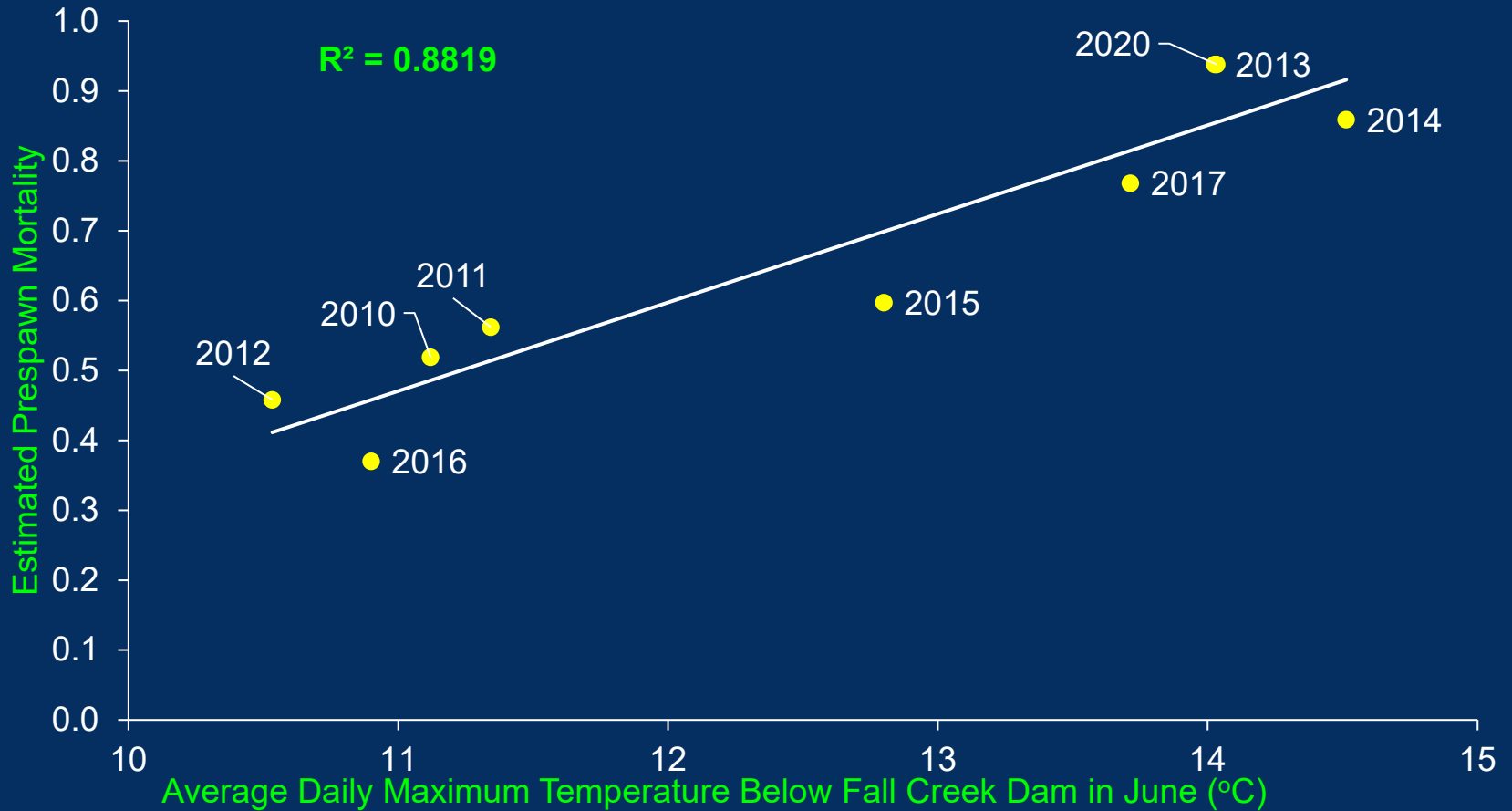
Results: Prespawn mortality

“Apparent PSM”



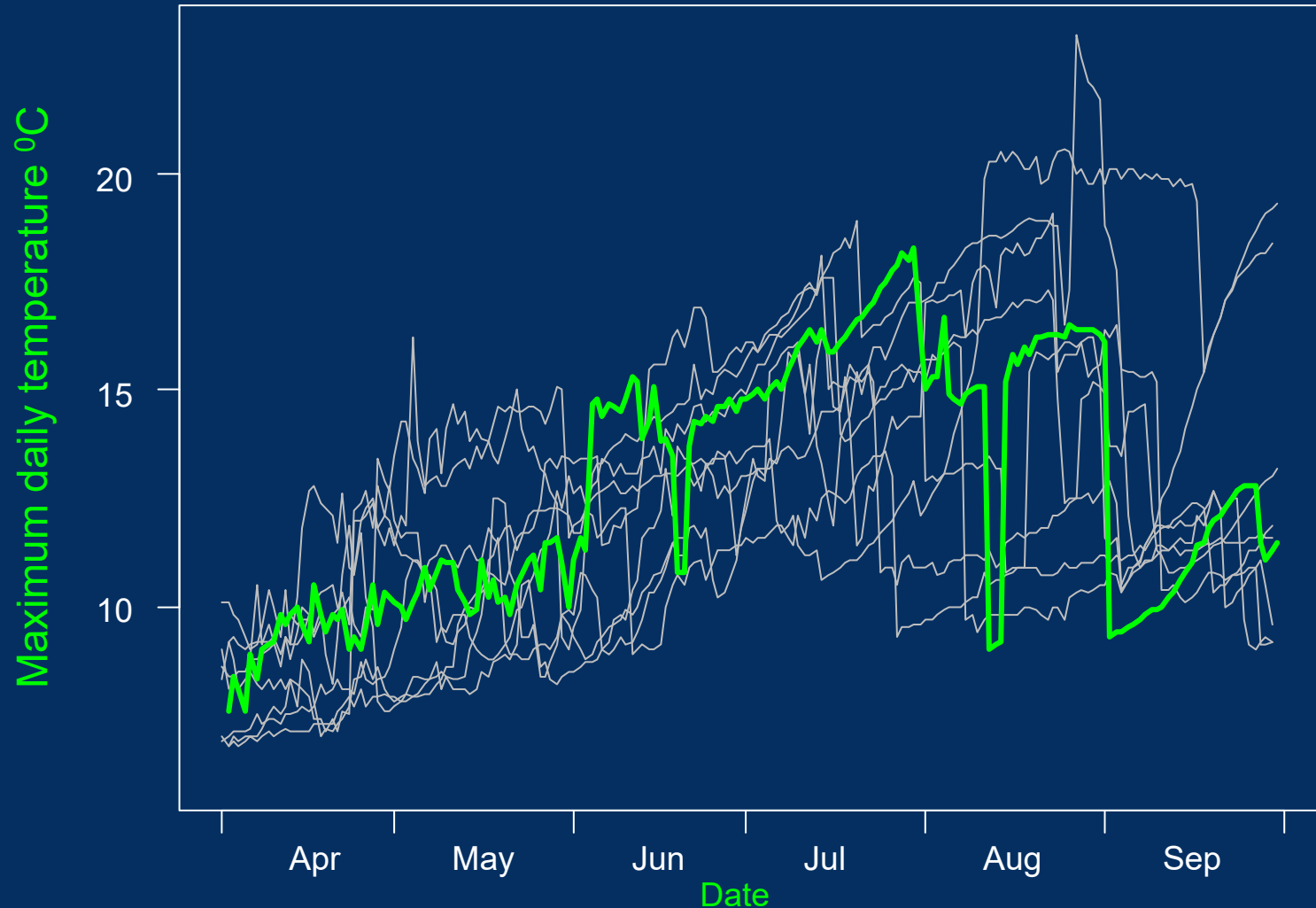
Preliminary results subjected to revision

Results: Prespawn mortality



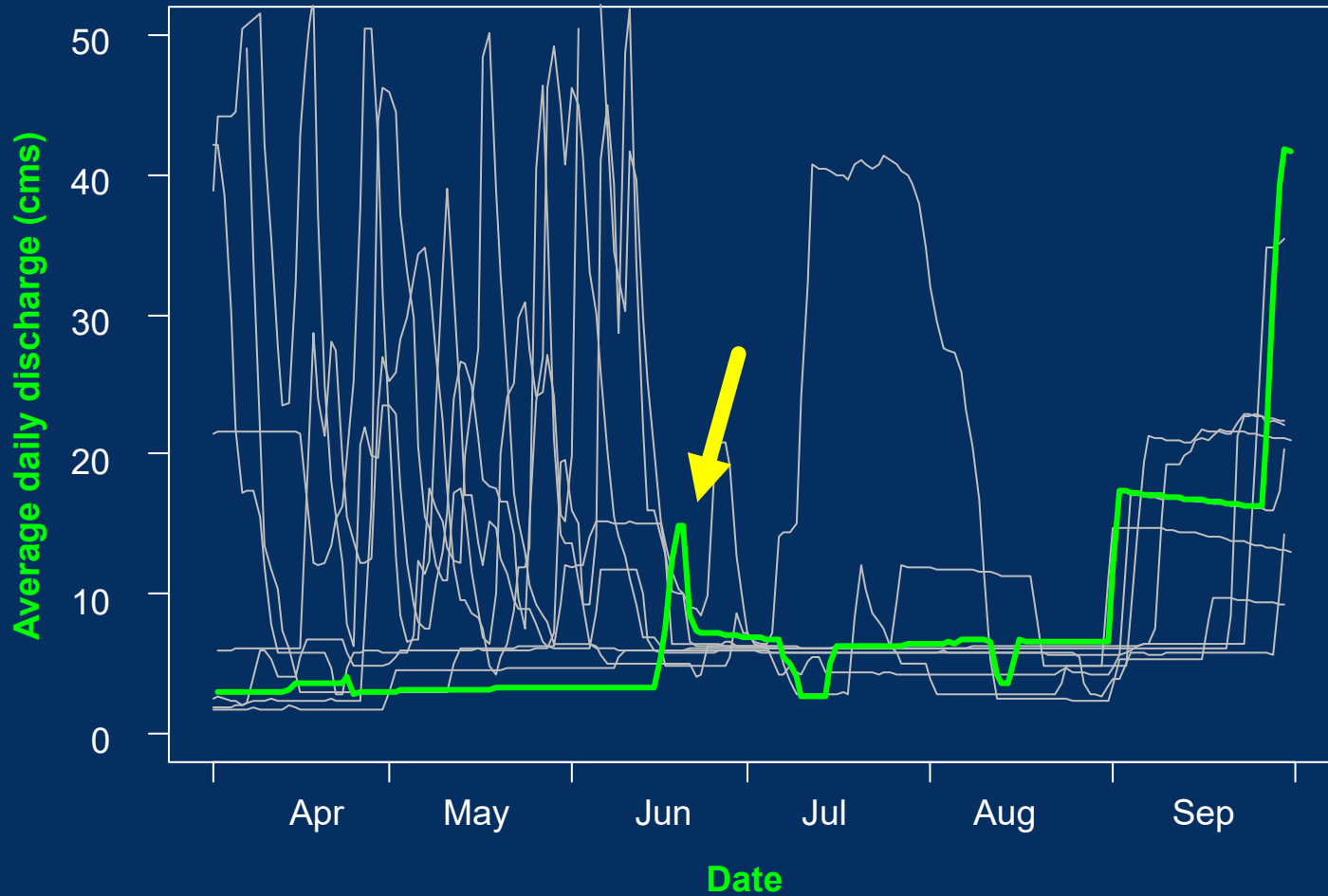
Preliminary results subjected to revision

Maximum daily temperature 2010-2020



Preliminary results subjected to revision

Average daily discharge 2010-2020

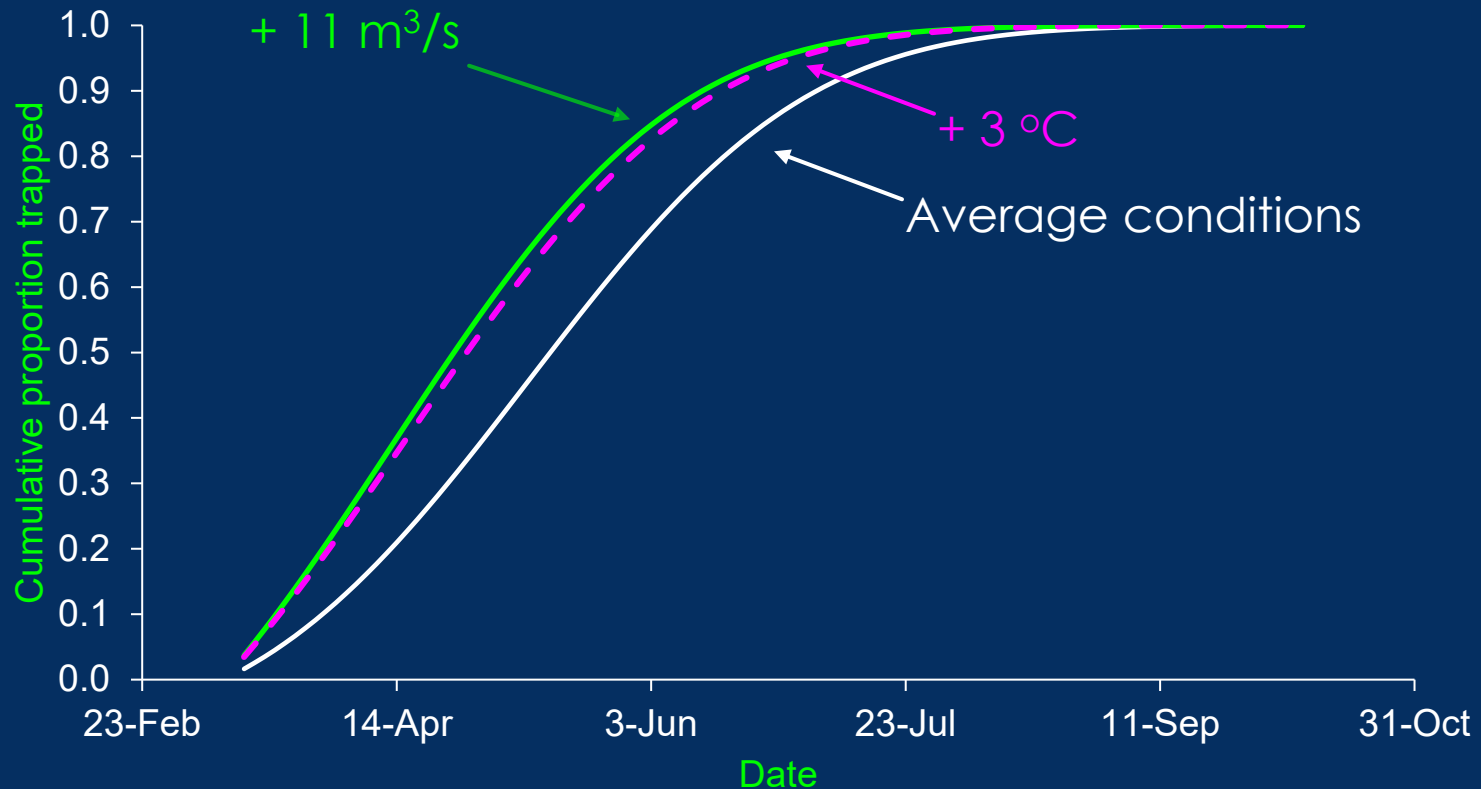


Preliminary results subjected to revision

Estimated cumulative proportion trapped and passed

Model of proportion of adults trapped and transported

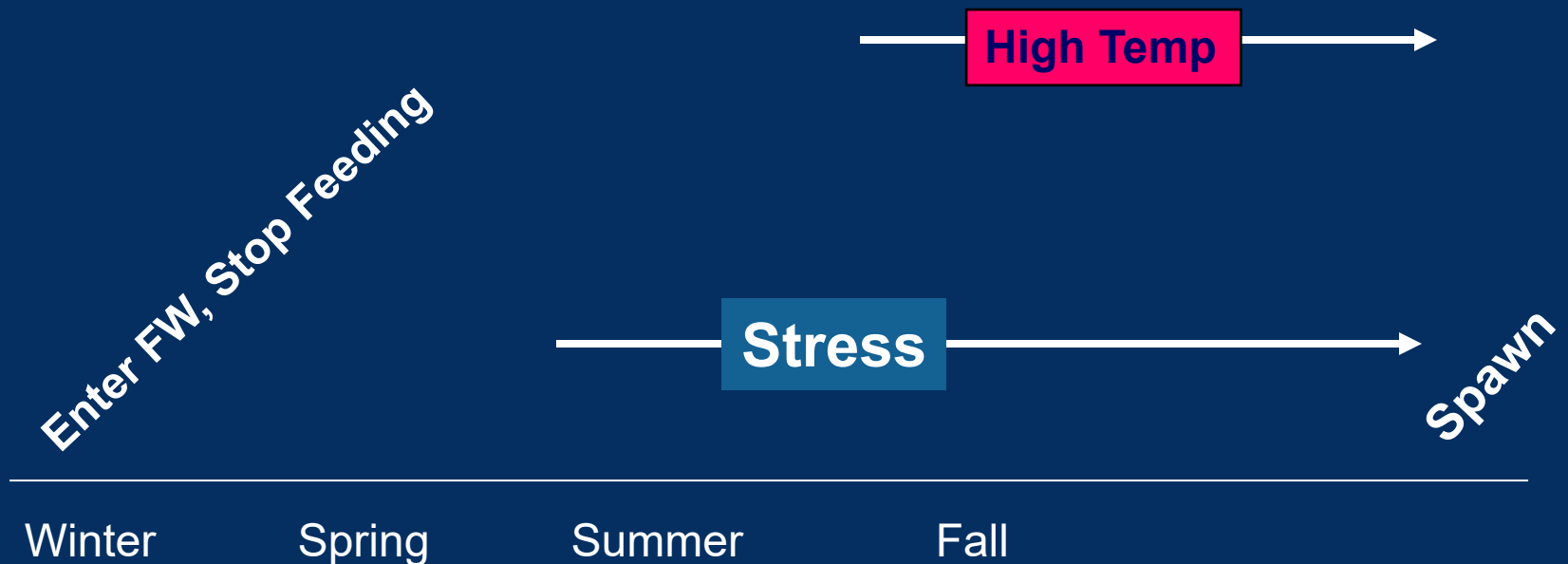
$\text{Pr}(\text{trapped}) \sim f(\text{DOY} + \text{Min. Q between} + \text{Mean T during...})$



Preliminary results subjected to revision

Why do salmon die early?

SEQUENCE OF EVENTS IN ADULT SPRING CHINOOK



EFFECTS OF STRESS + CUSHING'S SYNDROME

Cushing's + Stress = Immunsupp (+ Disease) = Death



High Temp



Stress

Spawn

Enter FW, Stop Feeding

Winter

Spring

Summer

Fall



SUMMARY & DISCUSSION

Role of stress

human factors

environmental factors

Temperature effects

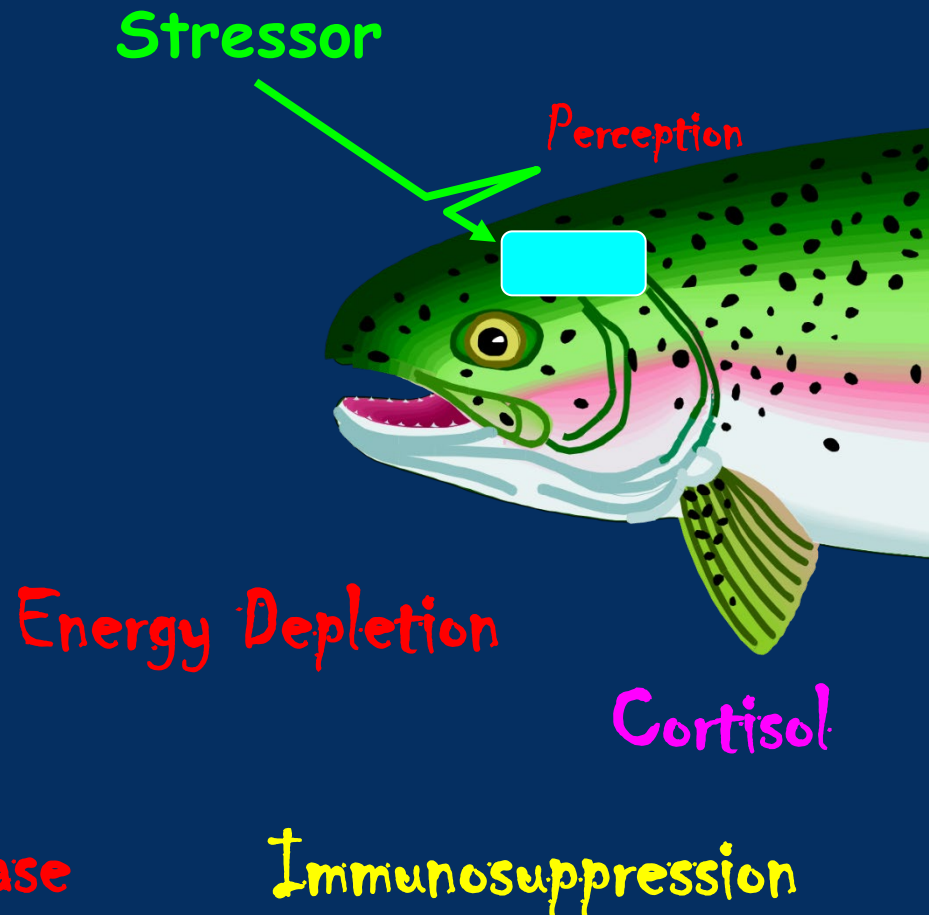
pathogen development

energy depletion

others?

Other factors

pathogen transmission



NEXT STEPS

Individual history- PIT tags

Search for strays

Quantify human disturbance

Pathogens transmission

eDNA anesthetic water

pre- & post-transport water

ACKNOWLEDGEMENTS

Funding: USACE

ODFW

Research

Managers

USACE

Oregon State University

OSP

Oregon Cooperative Fish and
Wildlife Research Unit

