

Energy and the Role of Shallow Tidal Freshwater Habitats for Juvenile Chinook Salmon



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Background

- Shallow water habitats in the tidal freshwater portion of the LCRE are thought to be important
- Empirical evidence has been sparse
- Energetic implications have received little attention...

Project Goal and Objectives

Goal:

- Identify energetic implications of residence in tidal freshwater habitats in the LCRE

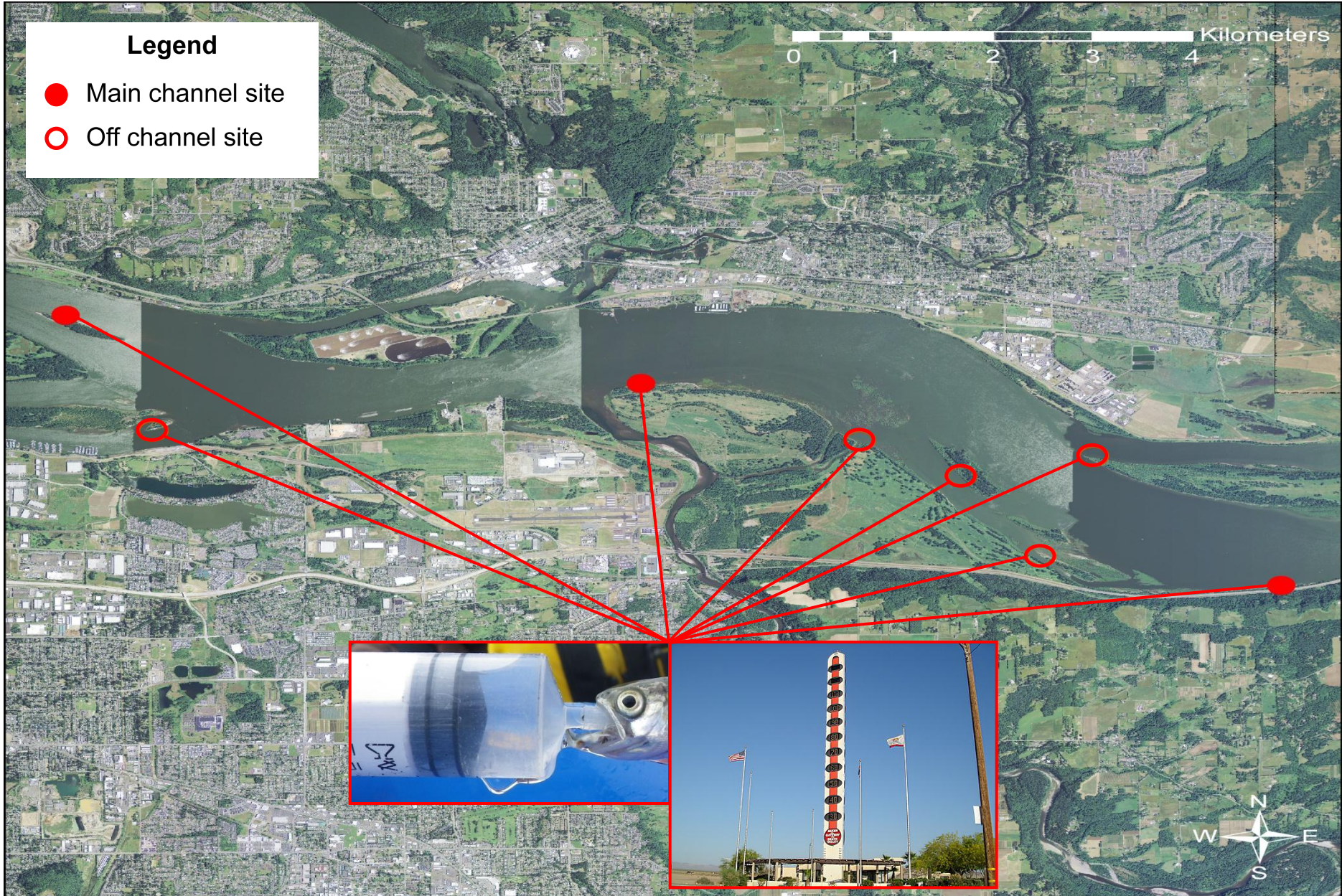
Objectives:

- Growth
- Conversion

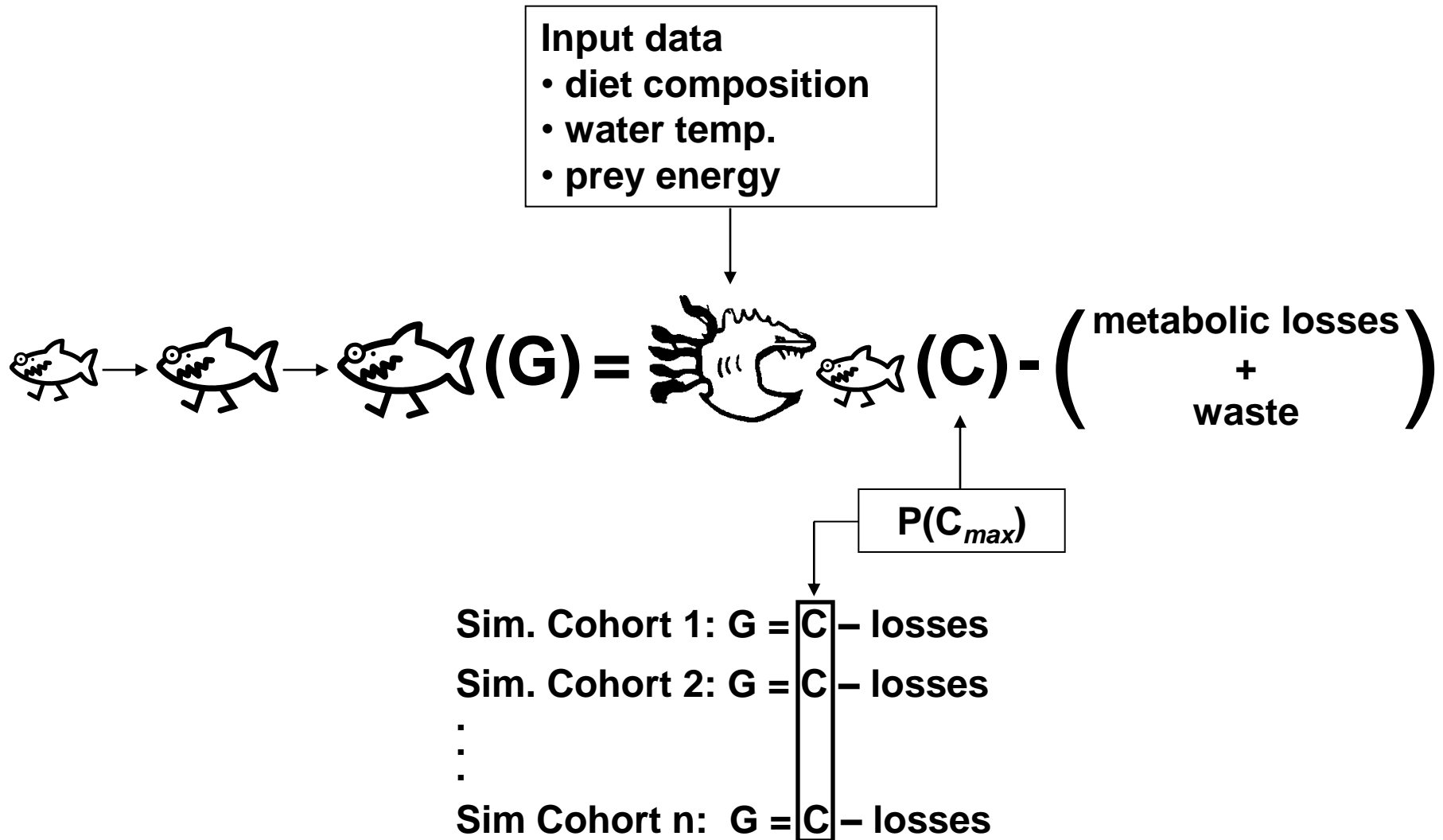
Sampling Design

Legend

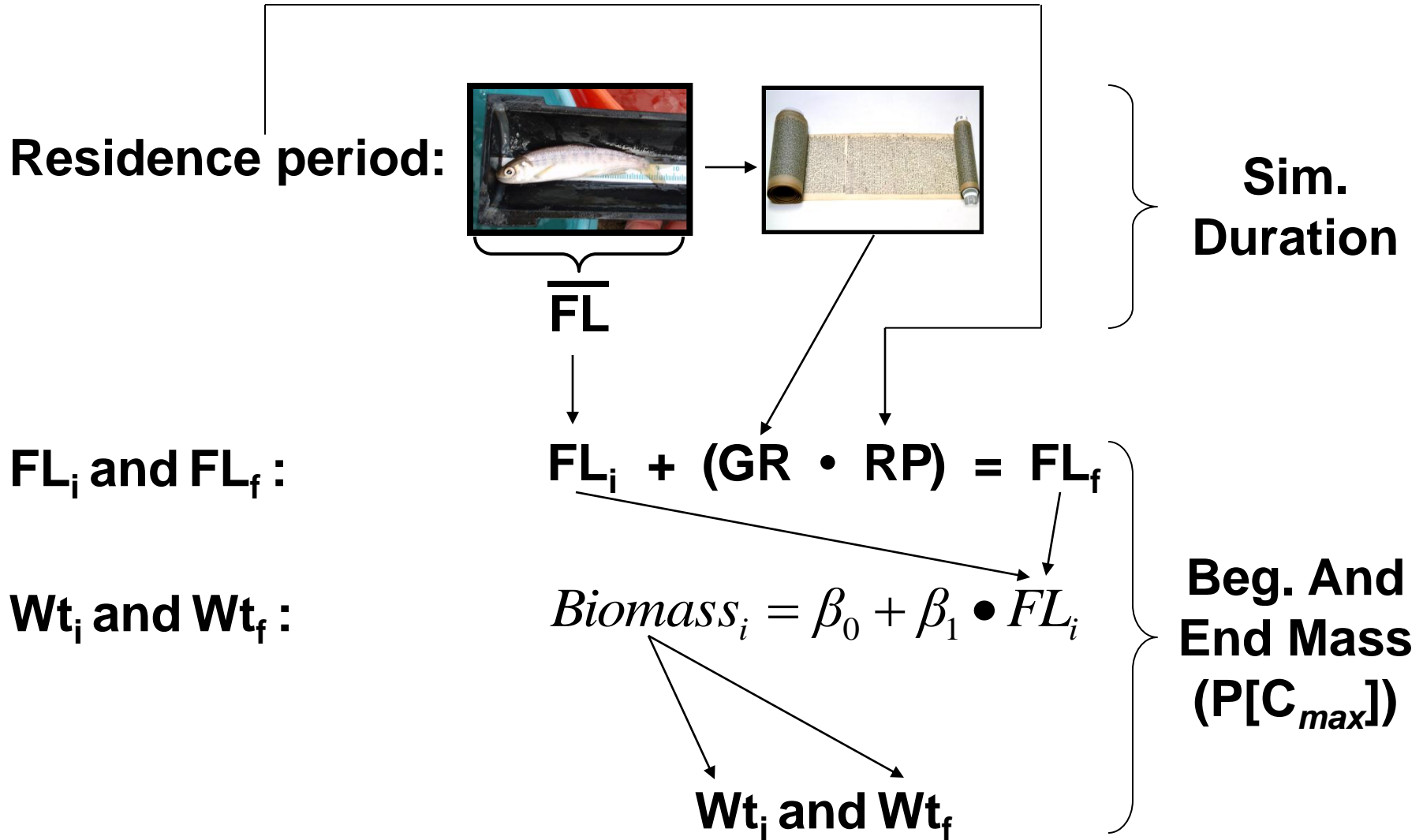
- Main channel site
- Off channel site



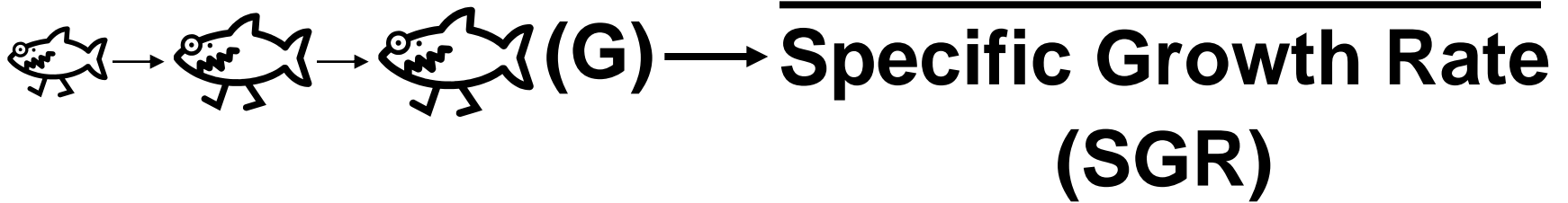
Approach: bioenergetics



Approach: simulation cohorts

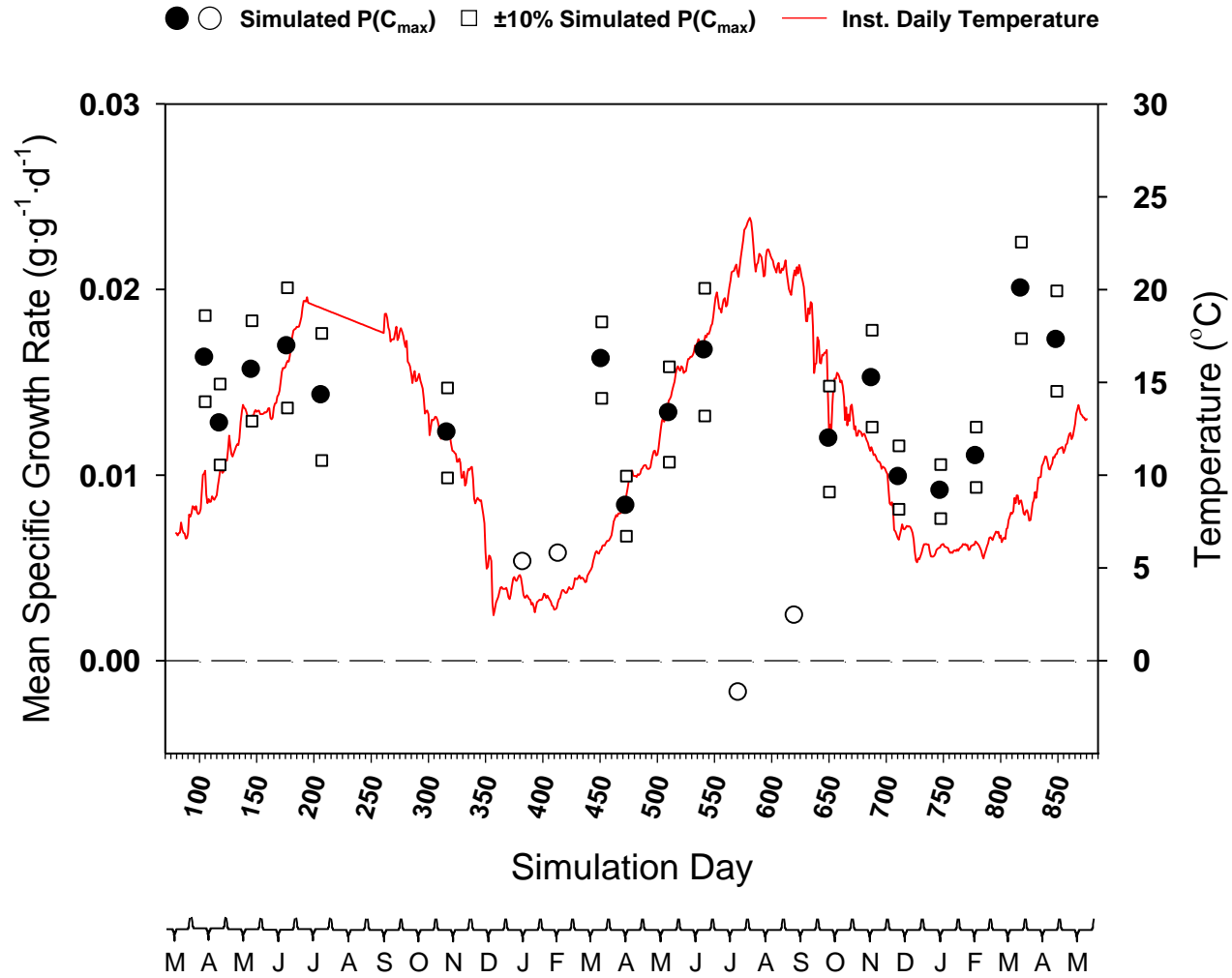


Metrics

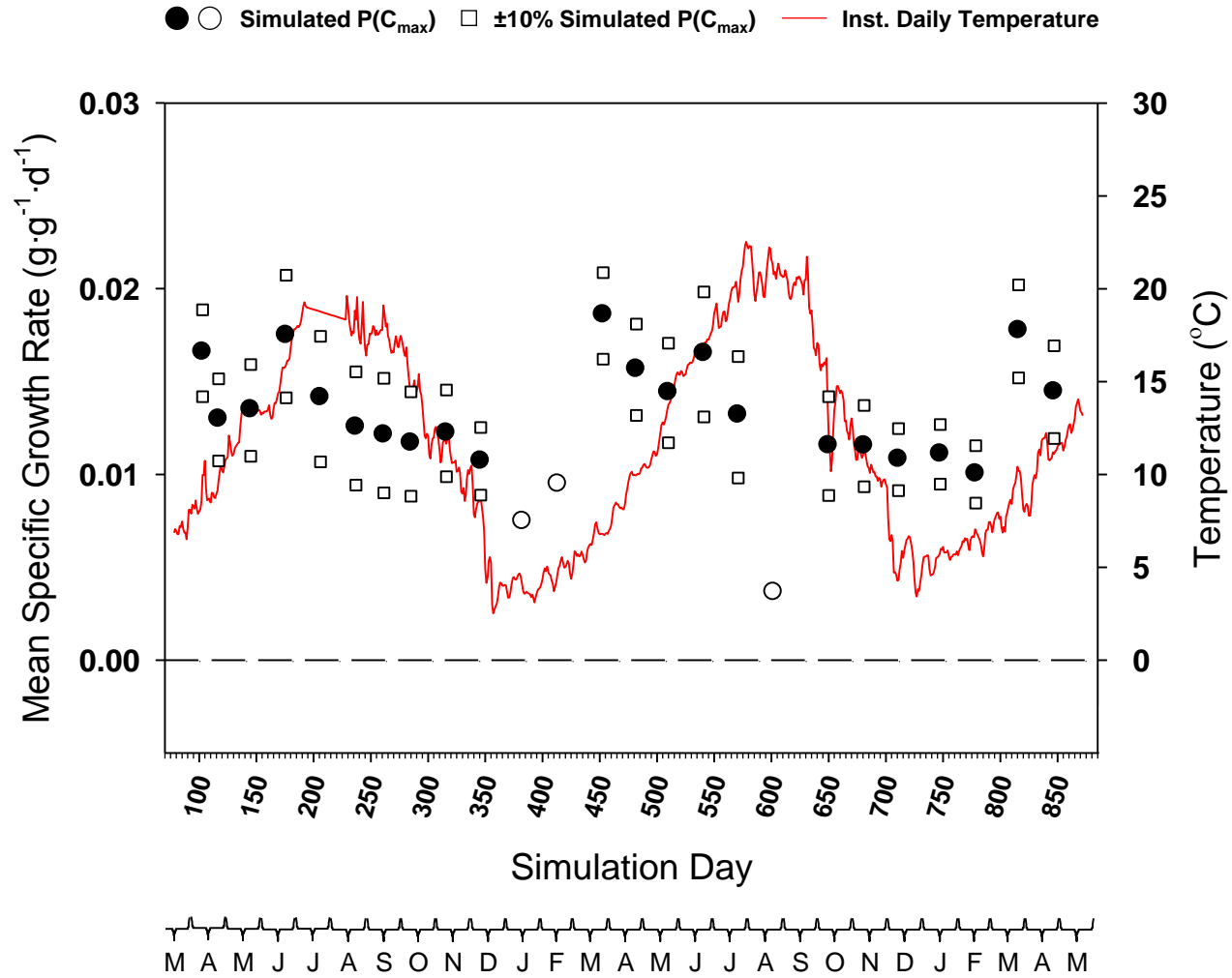


$$\frac{\text{Fish} - \text{Fish} (\Delta B)}{\text{Fish} + \text{Fish} (C_{\text{total}})} \cdot 100 = \text{Gross Conversion Efficiency (GCE)}$$

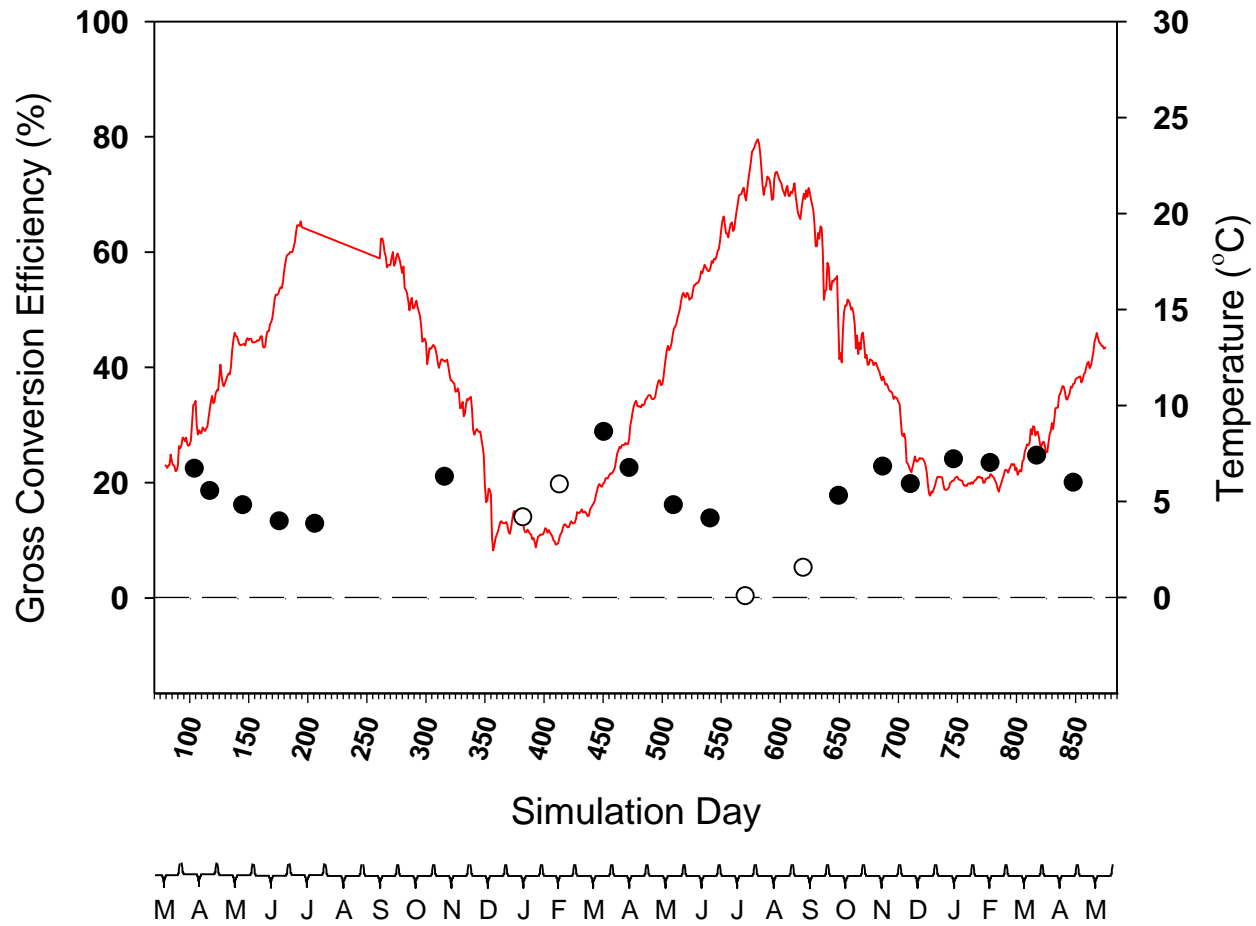
Results (SGR – main channel)



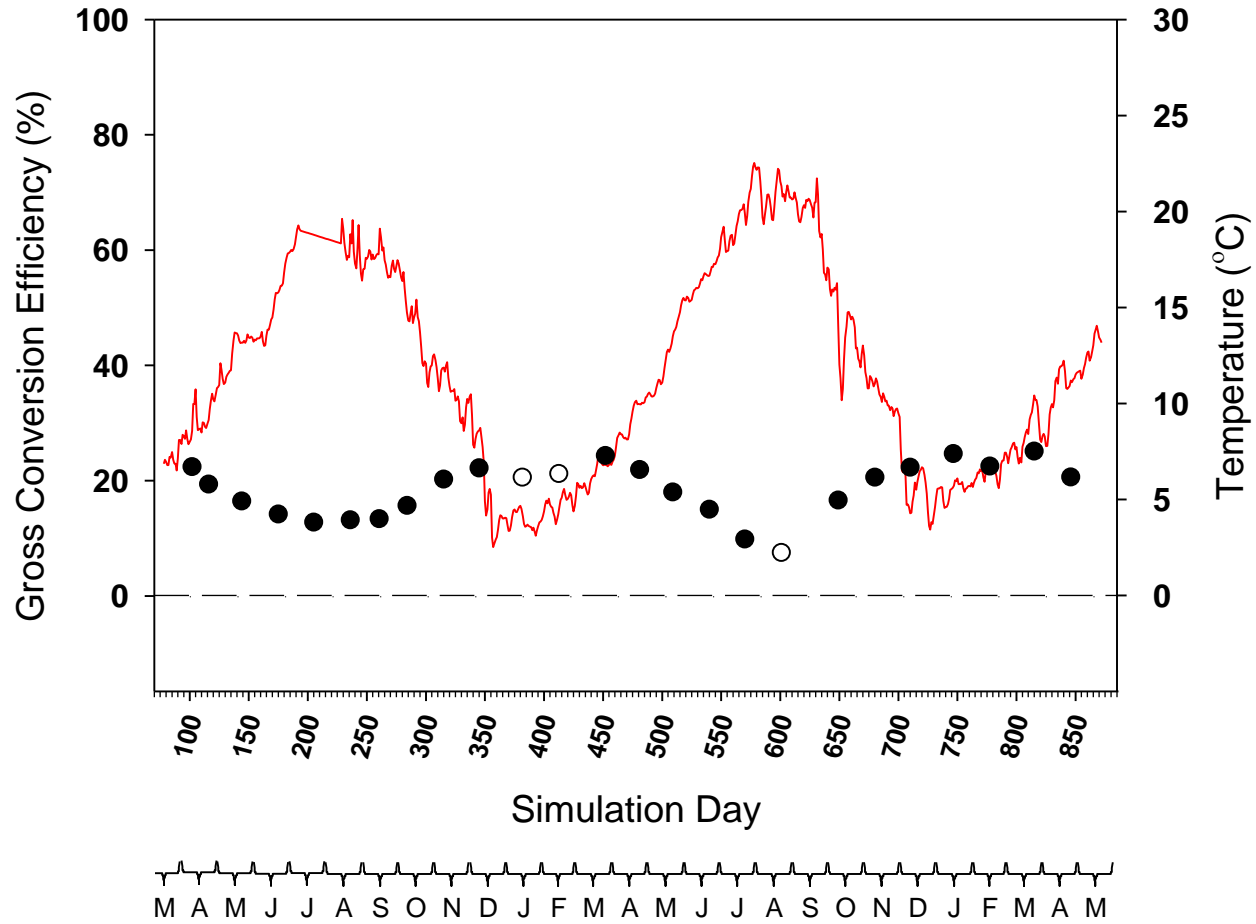
Results (SGR – off channel)



Results (GCE – main channel)



Results (GCE – off channel)



Conclusions

- Positive growth
- Favorable efficiency
- Temperature effect
- Variability among strata

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Housekeeping

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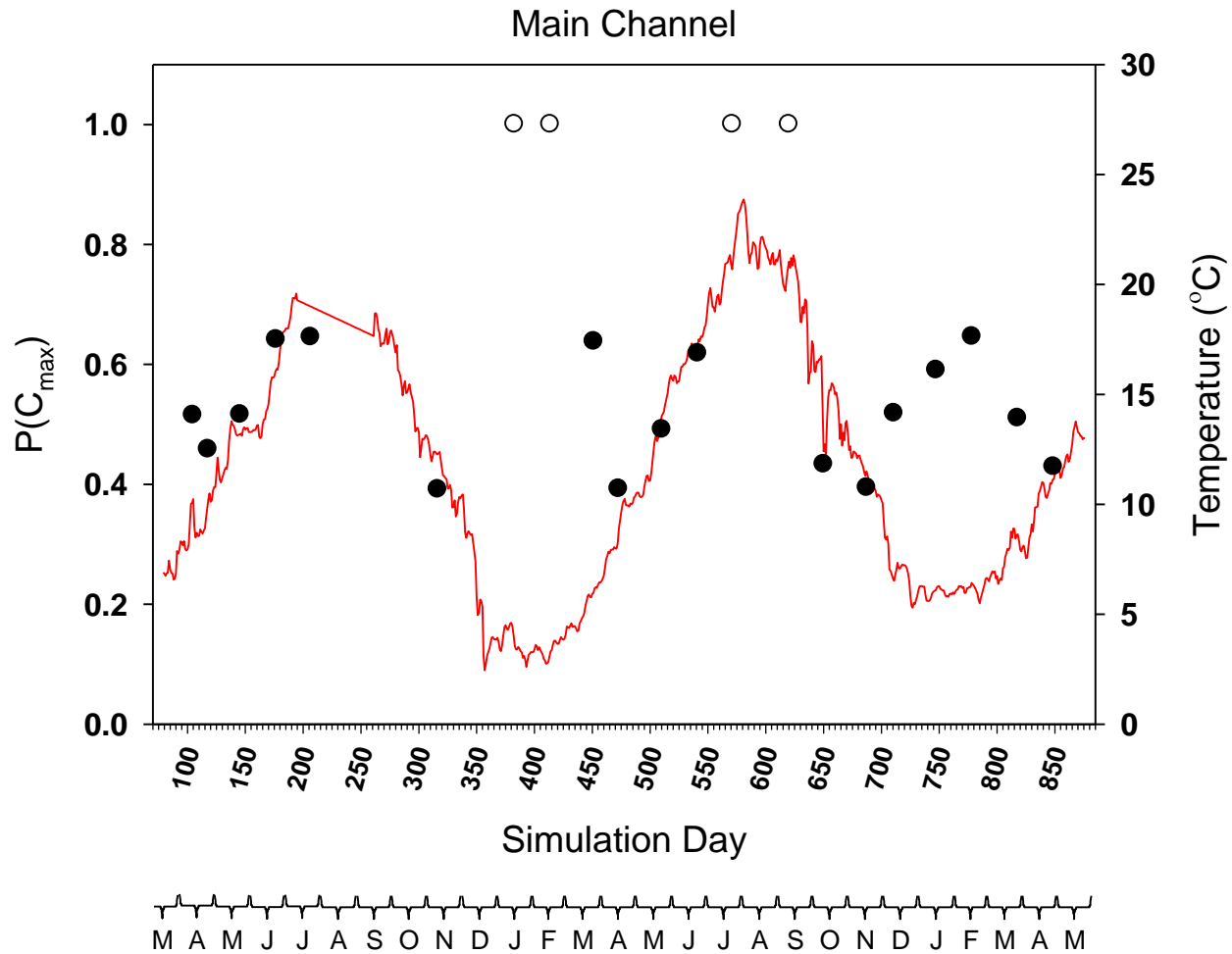
- **Further information:**

Johnson, G.E., N.K. Sather, A.J. Storch, D.J. Teel, J.R. Skalski, E.M. Dawley, A.J. Bryson, G.R. Ploskey, C. Mallette, T.A. Jones, A.B. Borde, S.A. Zimmerman, E.S. Van Dyke, D.R. Kuligowski, and K.L. Sobocinski. *Ecology of Juvenile Salmon in Shallow Tidal Freshwater Habitats of the Lower Columbia River, 2007 – 2010*. PNNL-20083, Pacific Northwest National Laboratory, Richland, Washington.

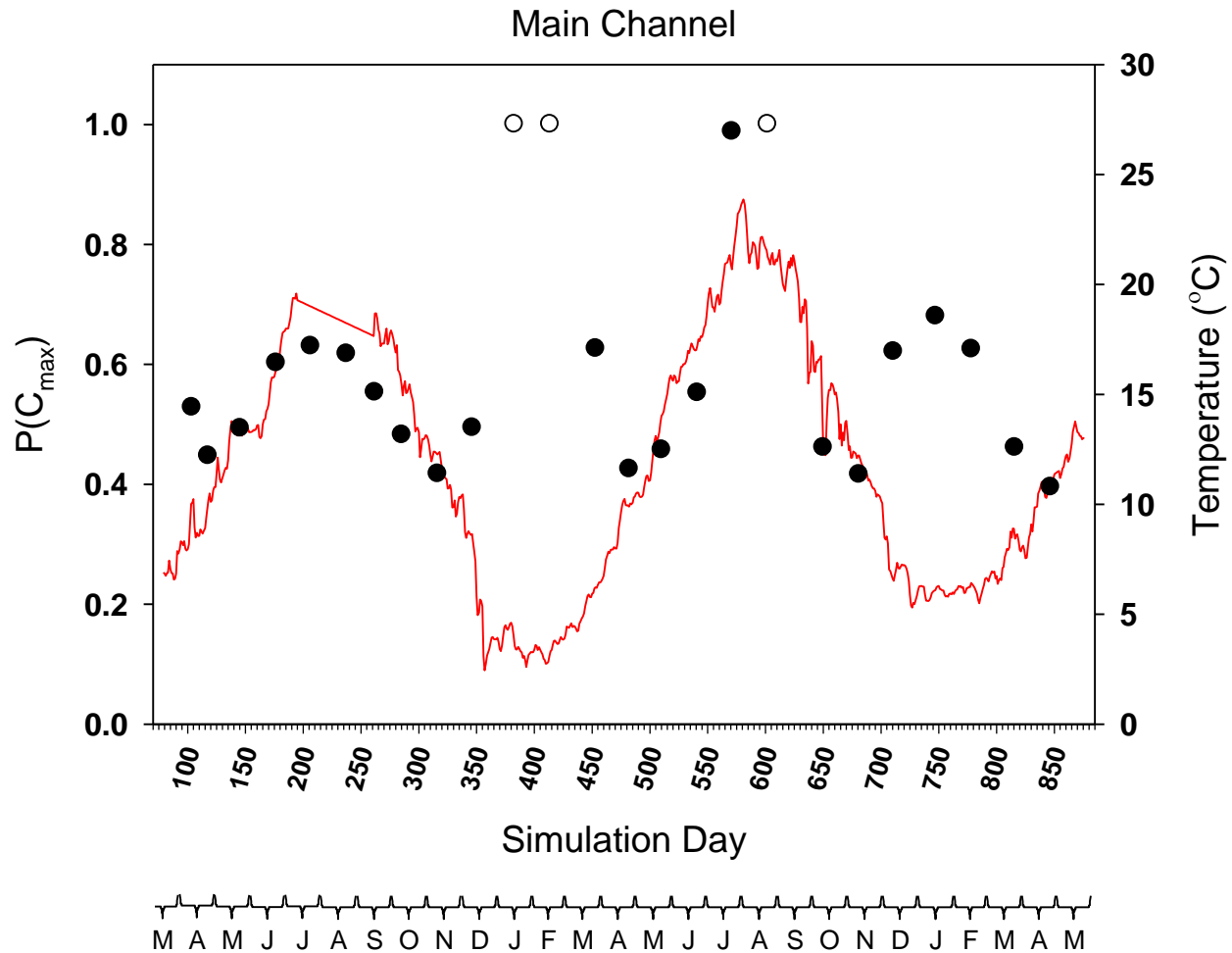
Questions



Results (daily ration)



Results (daily ration)



Presentation Outline

- Background
- Goal and objectives
- Sampling Design
- Approach
- Results
- Conclusions