Fish Passage 2017 – Corvallis, Oregon

Date: 9:00AM to 5:00pm on Sunday, June 18th, 2017

TIME TO EVENT ANALYSIS FOR FISH PASSAGE STUDIES

Objectives:

- Provide an overview of theory and application of time-to-event analysis methods for biologists.
- Introduce the concept of censoring and competing risks, and how these apply to common behavioral and physiological processes
- Develop familiarity with both parametric and Cox regression approaches, as well as understanding on how and when to apply them.

Instructors & Course Developers:
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Agenda

9:00-9:15 Introductions

- Backgrounds and expertise
- Concept of movement-based approaches to understanding fish passage

9:15-10:15 Introduction: The timing of events

- Coin toss experiment
- Simulating data in R
- Introduction to censoring and its challenges
- Kaplan-Meier curve and the life table

10:15A-10:30 15 Minute Break

10:30-12:00 The underlying functions

- The hazard and survival function…example of the Weibull distribution
- Probability density function and cumulative density function (pdf and cdf)
- The scale parameter and the hazard function…putting it all together.
- Simulating two distributions and modeling with survreg ()

12:00-13:00 Lunch!

13:00-14:00 Semi-parametric and parametric approaches

- Cox regression
- Accelerated Failure Time model

14:00-14:15 15 Minute Break

14:15-15:45 Beginning Fish Passage: A sea lamprey choice experiment—a foundation for understanding fishway attraction

- Testing assumptions of the Cox model
- Time-varying covariates under the Cox model (counting process and data structure)

15:45-17:00 To go further

- Introduction to competing risks: Time to Pass vs. Time to Fail.
- Repeated events and clustered observations
- Wrap-up and final questions

17:00 Adjourn