

Factors Influencing the Distribution of Coastal Cutthroat Trout in a Cascade Mountain Stream

by

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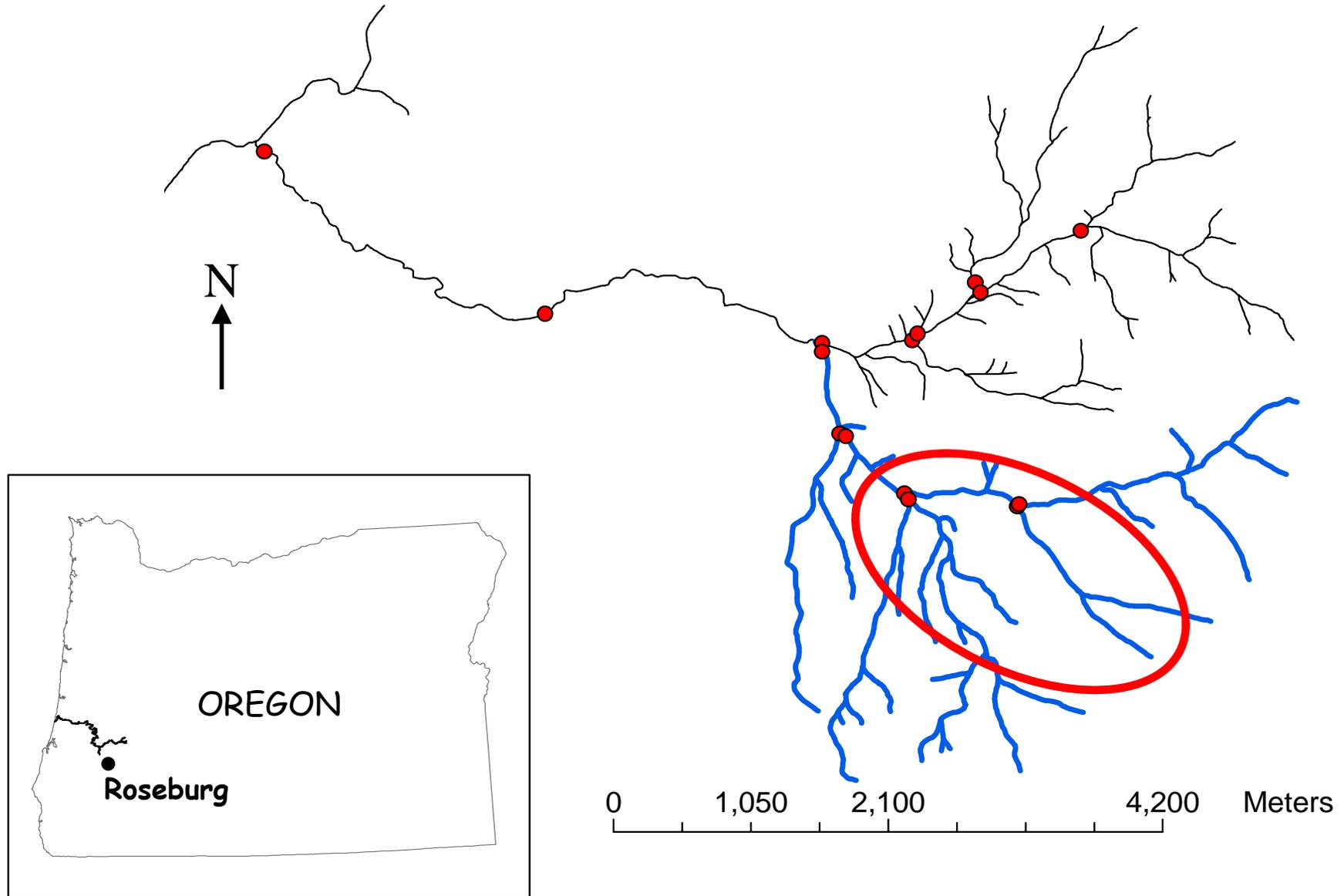
Study Background

- Small streams represent majority of stream length in forested areas
- Dynamic, heterogeneous environments
- Need to identify habitat

Study Background

- Spatial scale of variation in fish abundance is uncertain requires multi-scale approach (unit, micro=common)
- Look at temporal stability of spatial patterns (Gresswell et al. 2005 In press)
- Bottom-up vs. top-down approach

Located in the Umpqua River Basin



Research Questions

1) Do relative abundance patterns of coastal cutthroat trout persist across seasons?

2) How do habitat variables influence relative abundance patterns?

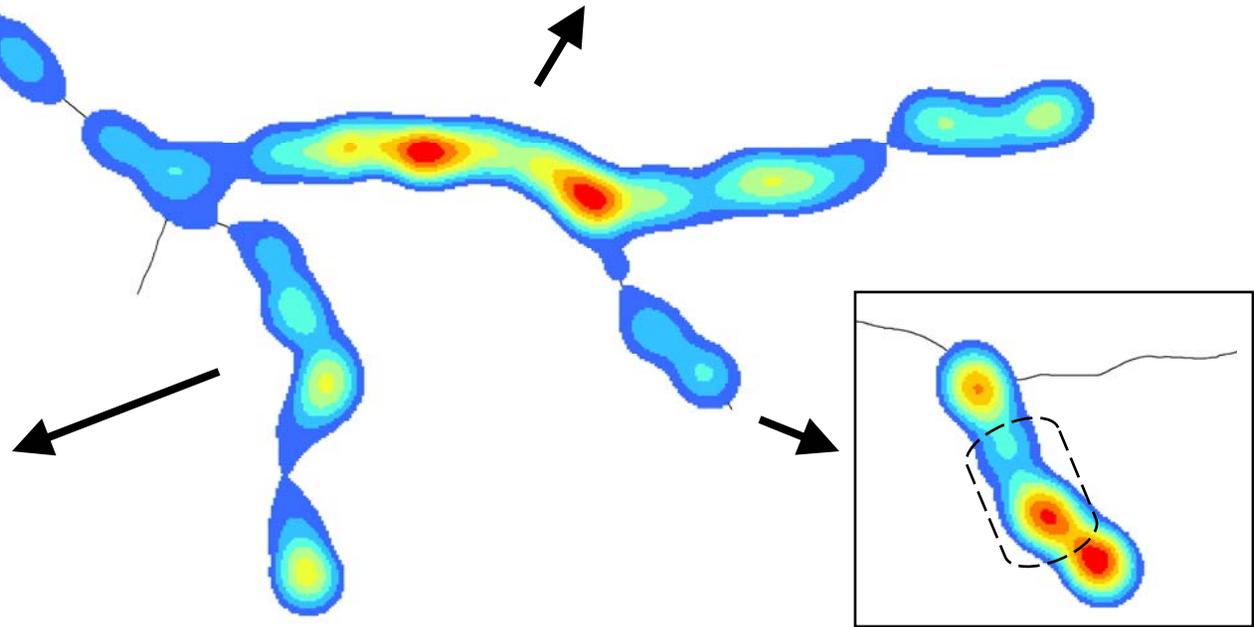
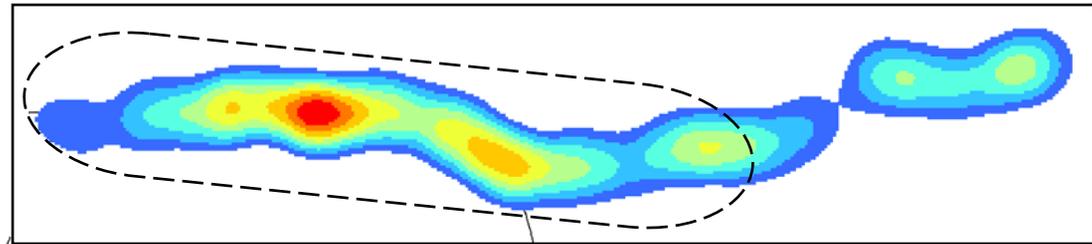
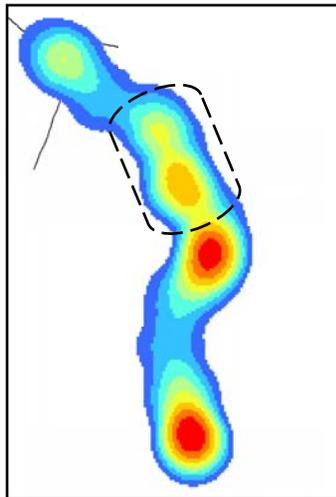
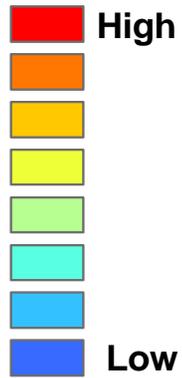
3) What are the effects of seasonal stream discharge on movement and activity levels of coastal cutthroat trout?

Study Design

- Electrofishing census of watershed
- Identification of study sections
- Stationary and mobile half-duplex PIT-tag technology (13 month, bimonthly)
- Seasonal habitat surveys

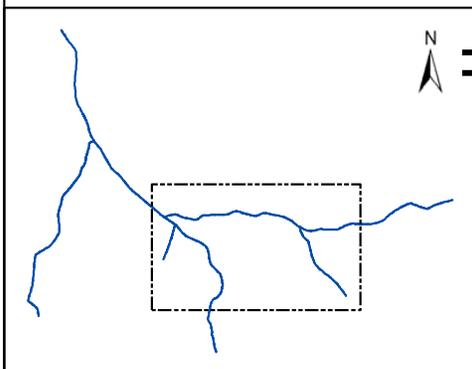
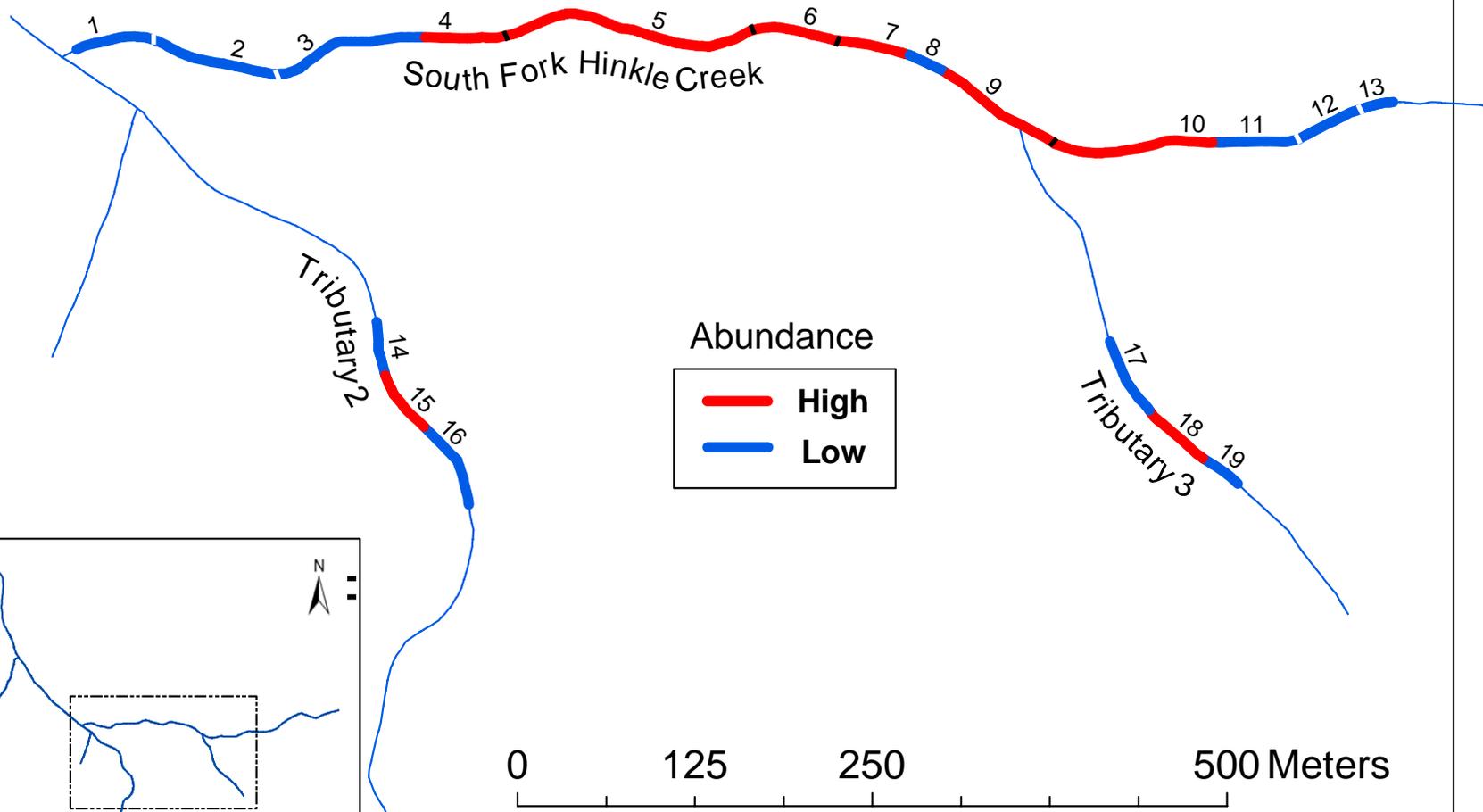
Summer 2003 Electrofishing

South Fork Hinkle Creek

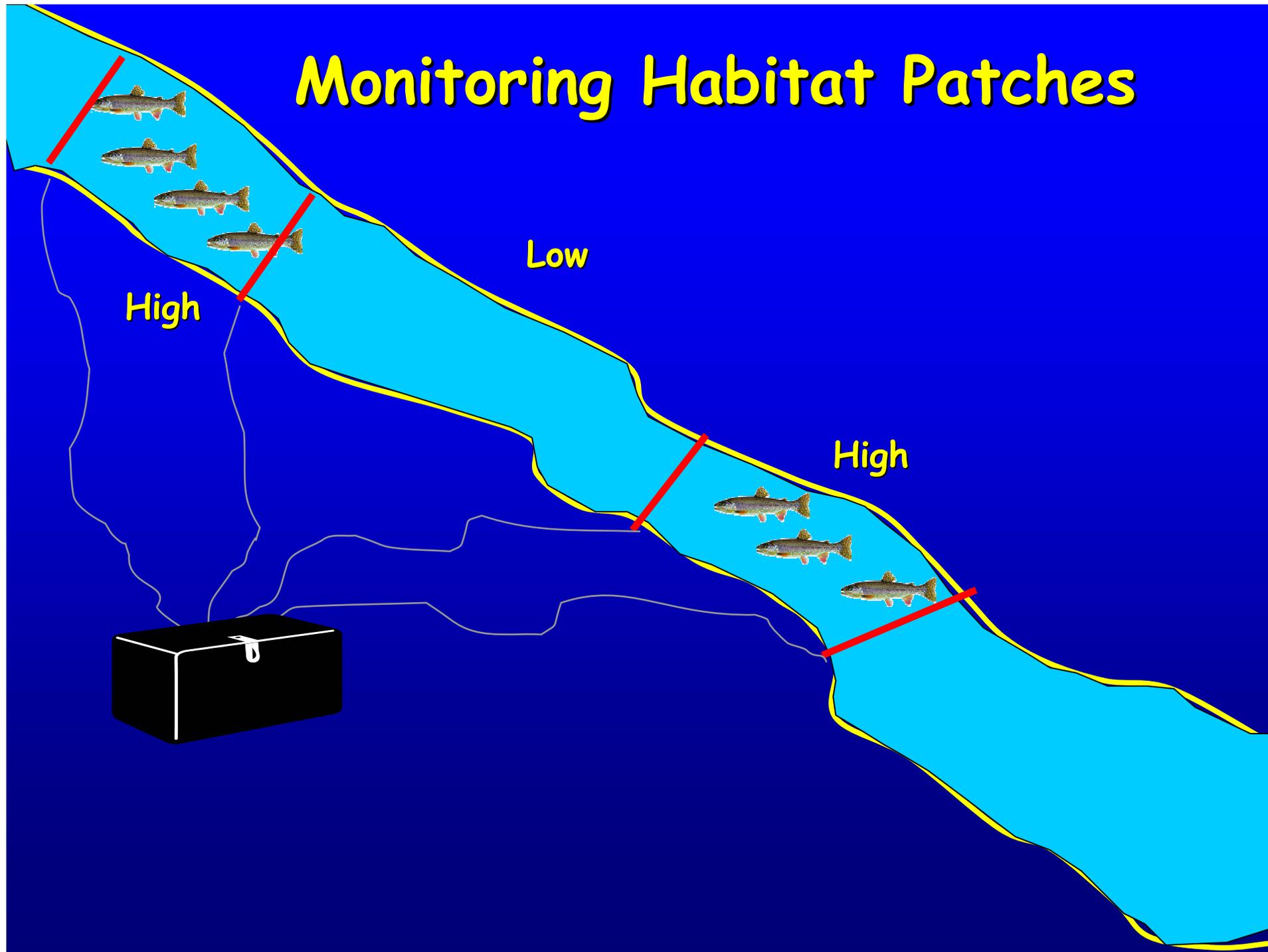


Monitored Habitat Patches

Range 30- 300 m



Monitoring Habitat Patches



Fish Tagging

Number Tagged= 320 (study section)

Fork Length= 122 mm (100-190 mm)

Tag:Body Weight= 3% (<1-7%)



Stationary Antenna Results

- **Recording data 91% of the time**
(average of all antennas 10/13/03 to 10/15/04)
- **Antenna Efficiency= 90%**
(measured w/test tag, not related to stage height)
- **Mean Maximum Read Range= 25 cm**
(single-sided, not related to wattage or stage height)
- **Detection Efficiency= 88%**
(percent fish detected by mobile and stationary antennas)

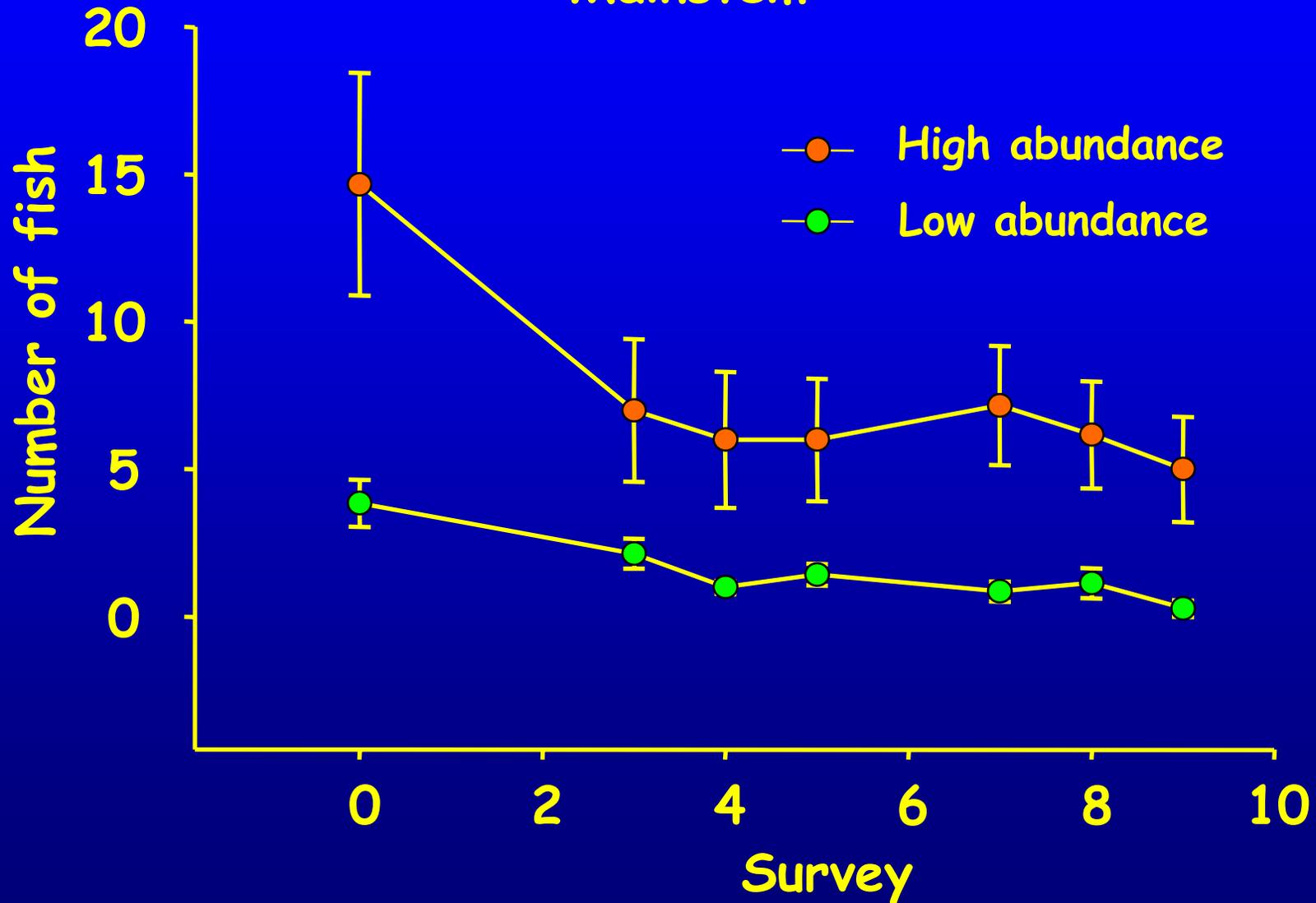
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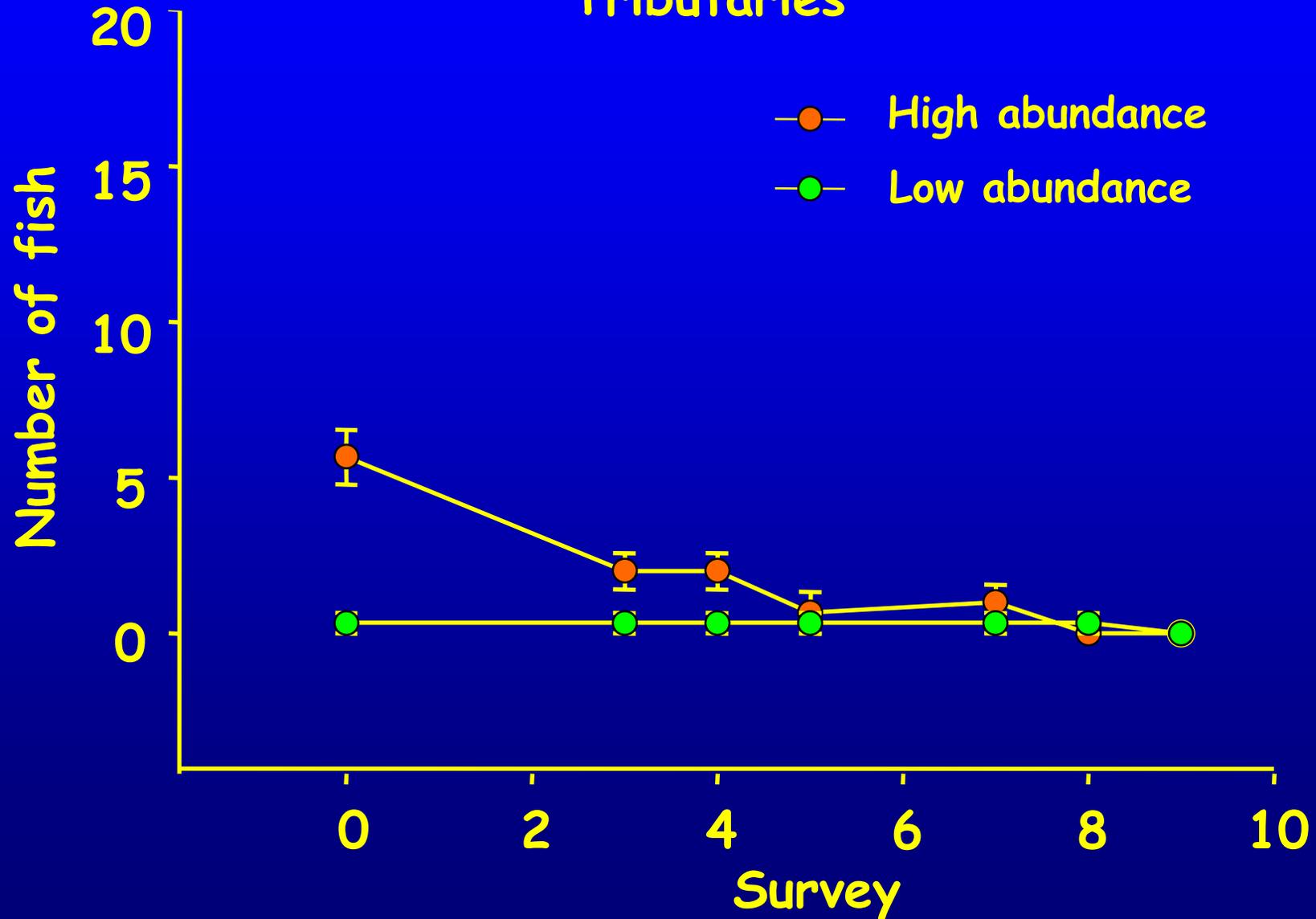
Seasonal Persistence

Mainstem



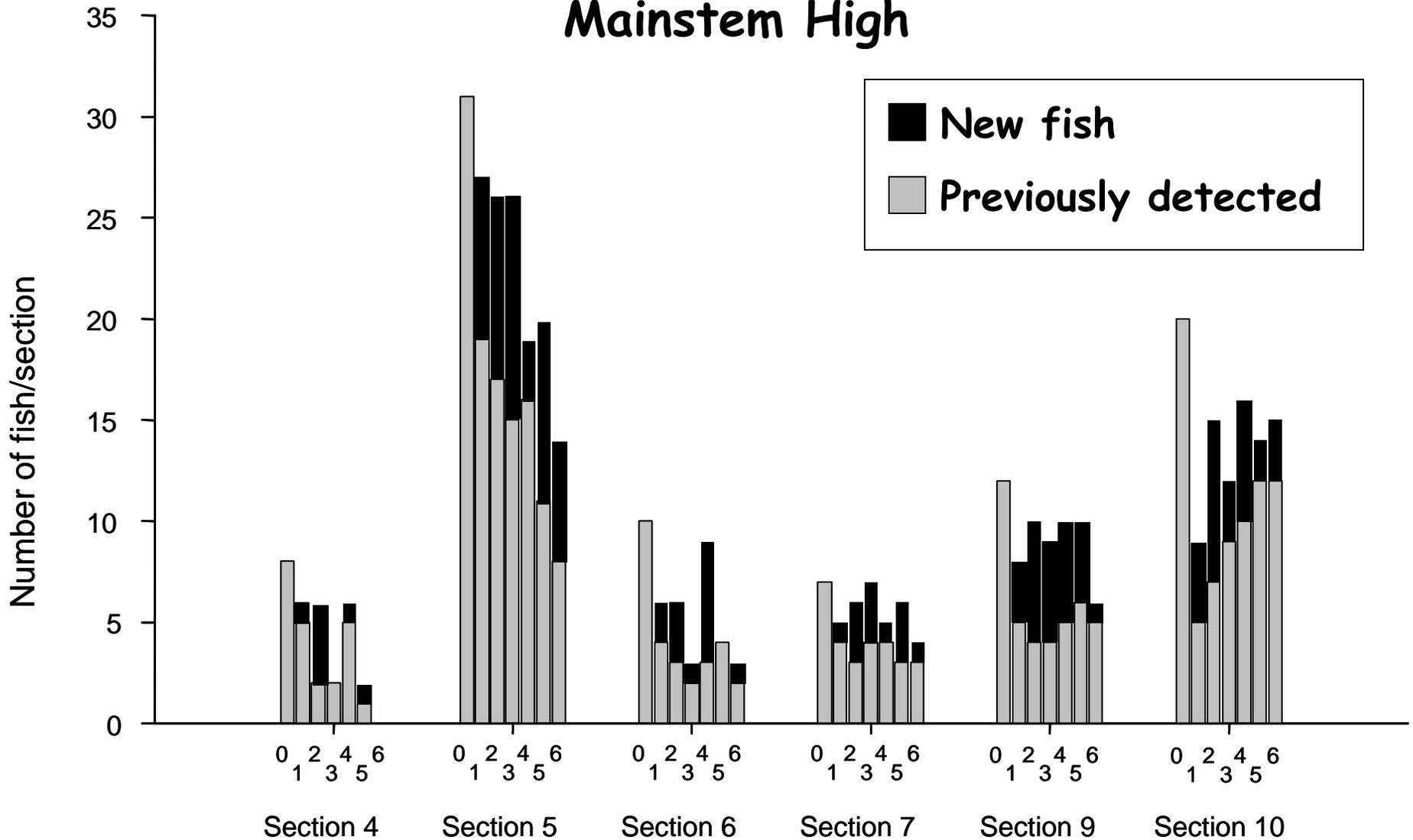
Seasonal Persistence

Tributaries



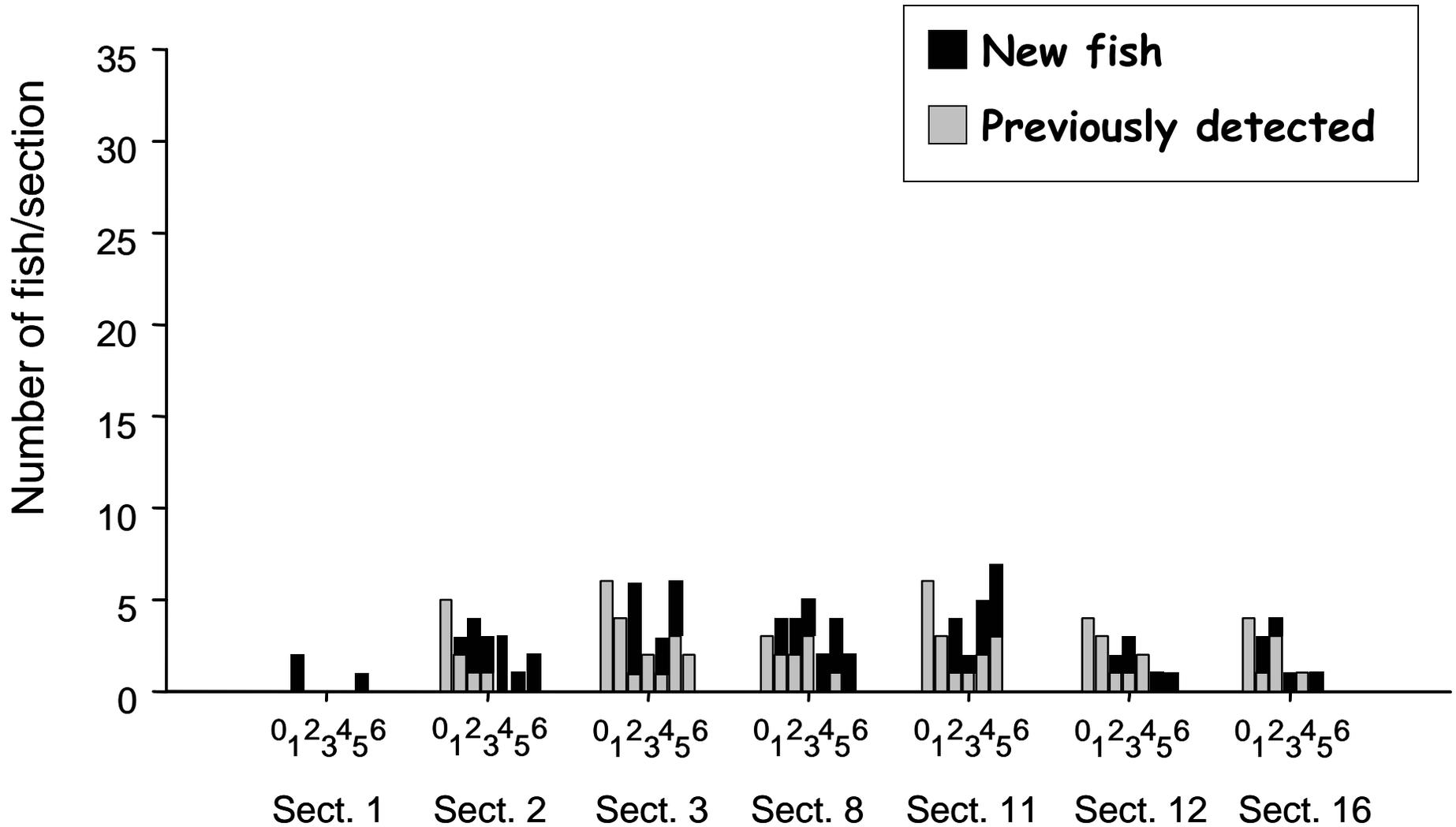
Individual Dynamics

Mainstem High



Individual Dynamics

Mainstem Low



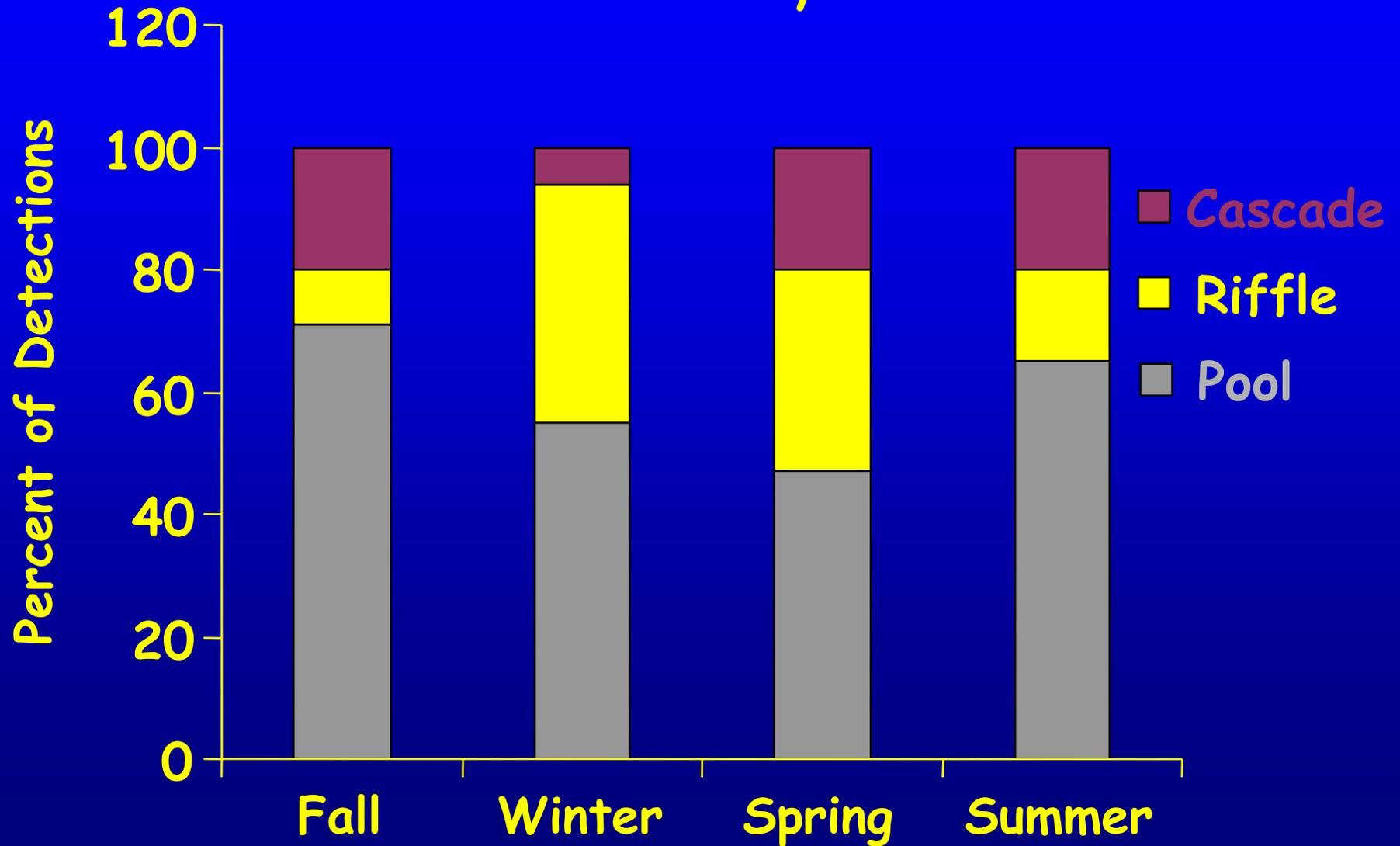
Research Questions

2) How do habitat variables influence relative abundance patterns?



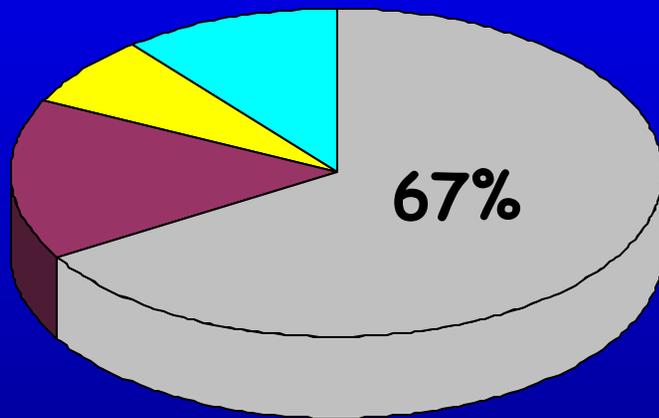
Seasonal Habitat Use

Mobile Surveys

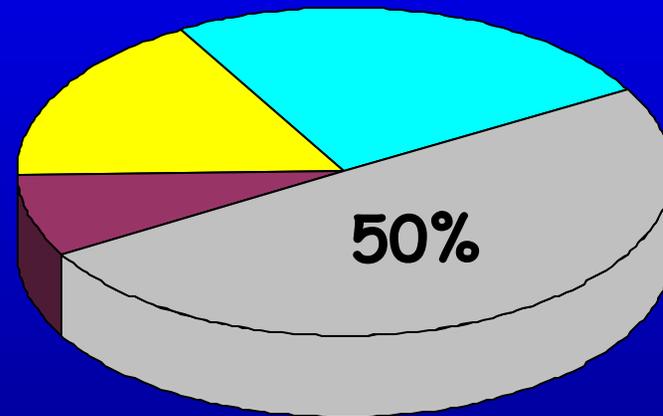


Pool Formation

Mainstem

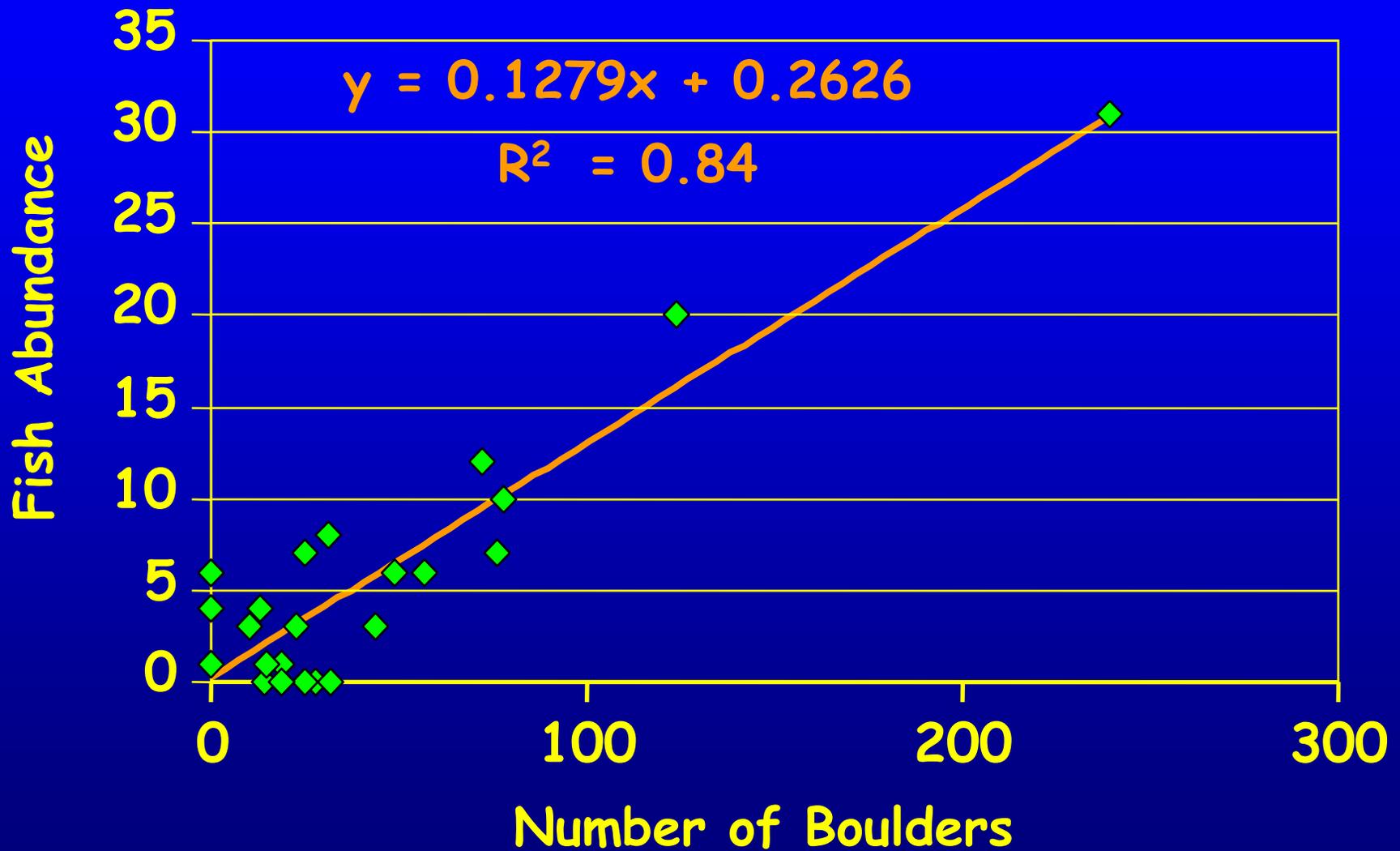


Tributaries



■ Boulder ■ Bedrock ■ LWD ■ Root

Significance of Boulders



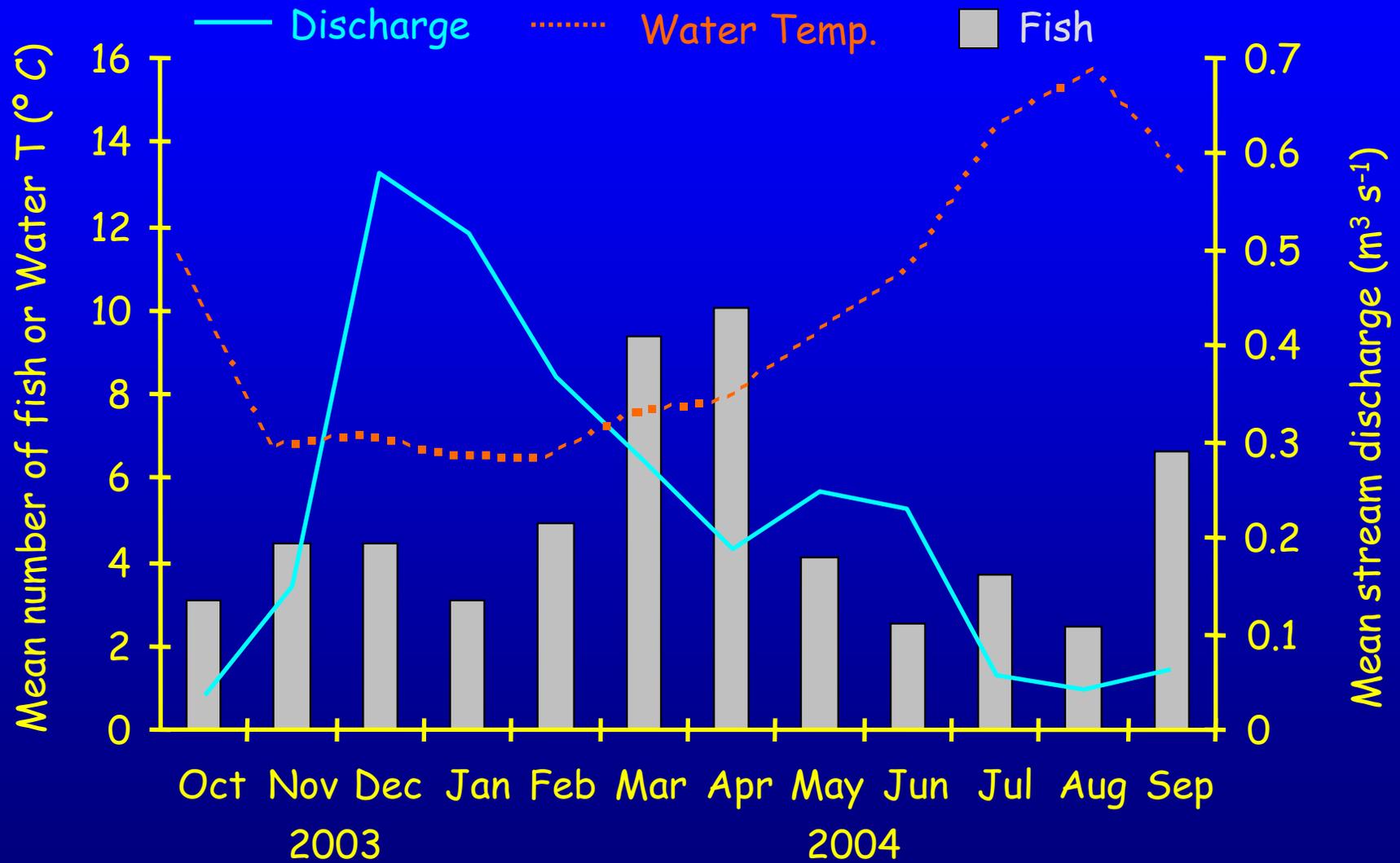
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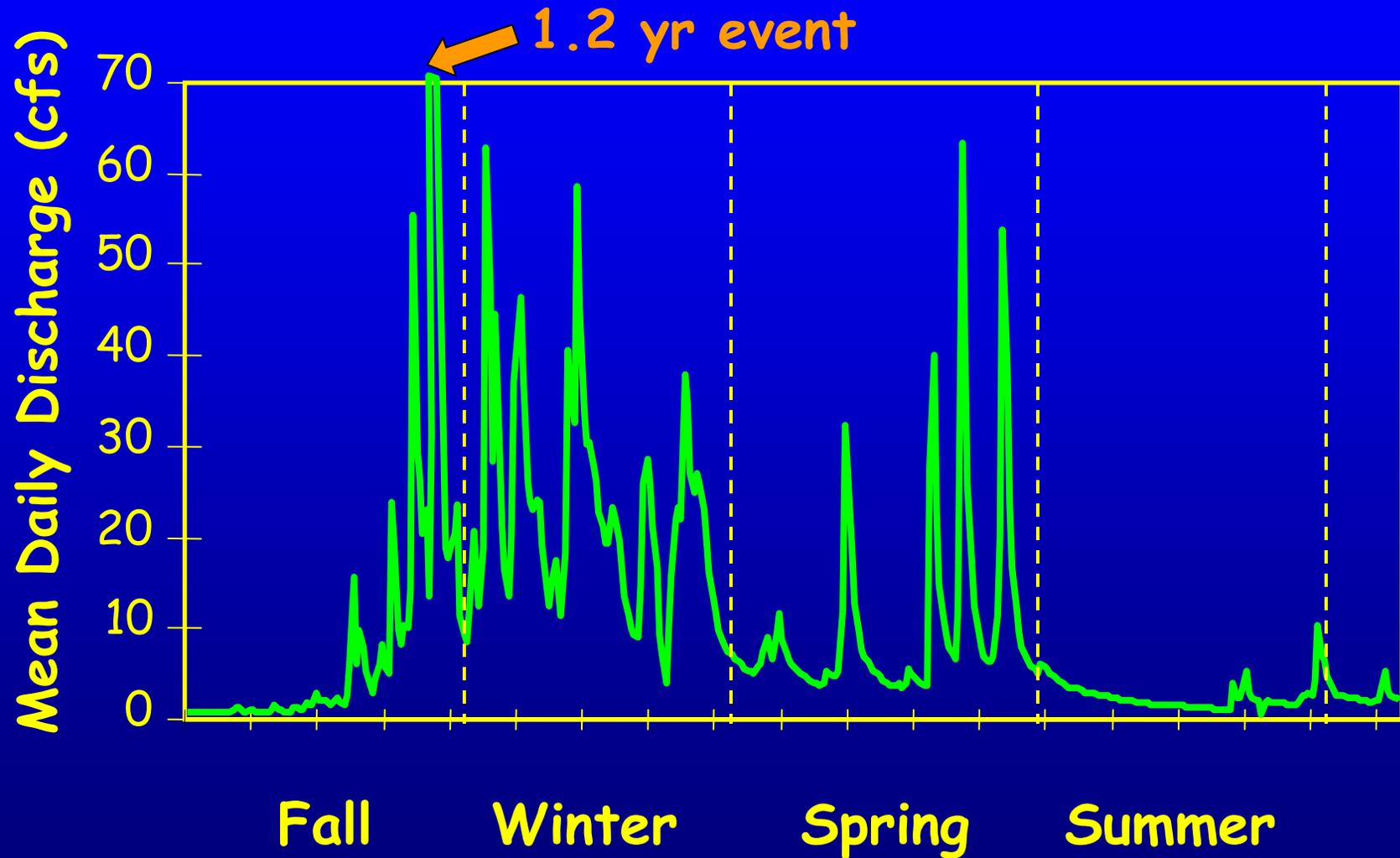


Dave Leer 2003

Seasonal Overview

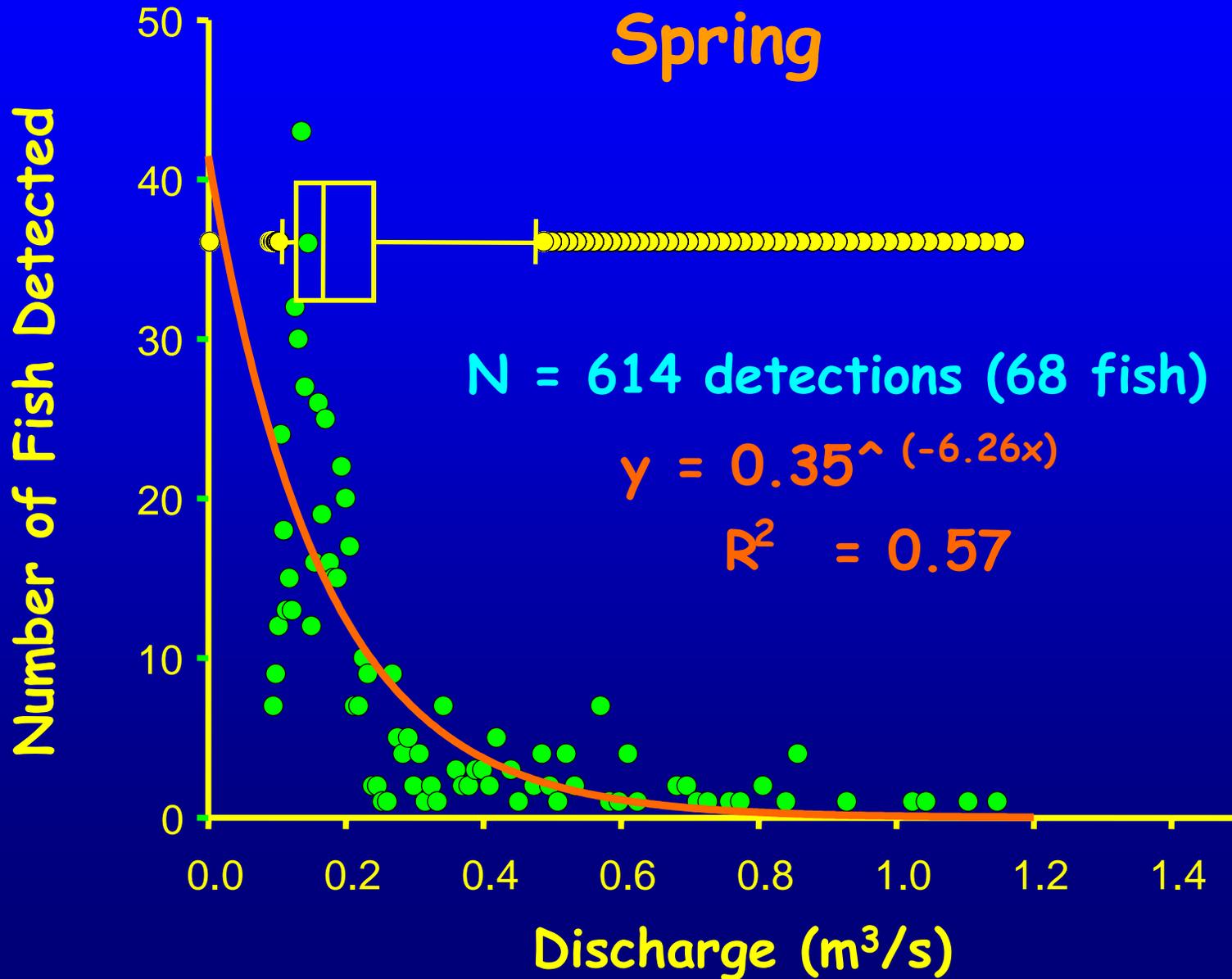


Seasonal Stream Discharge



Movement Discharge Relationship

Spring



Summary

- Fish abundance more stable in MS than Tribs
- High/low relative abundance patterns persisted in MS, but individuals dynamic
- Fish abundance depends on habitat complexity and temporal stability
- Movement in proportion to stream discharge, resilient to discharge extremes

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Watershed Research Cooperative



ROSEBURG
FOREST PRODUCTS

Questions ?



Bank Full Event

N= 59 fish

