

Washington State Transportation Commission  
Ellensburg, WA  
September 23, 2014

# **Collaborative Research for Safety, Environment, and Mobility**

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## Potential Partnerships meeting at CWU January 2007

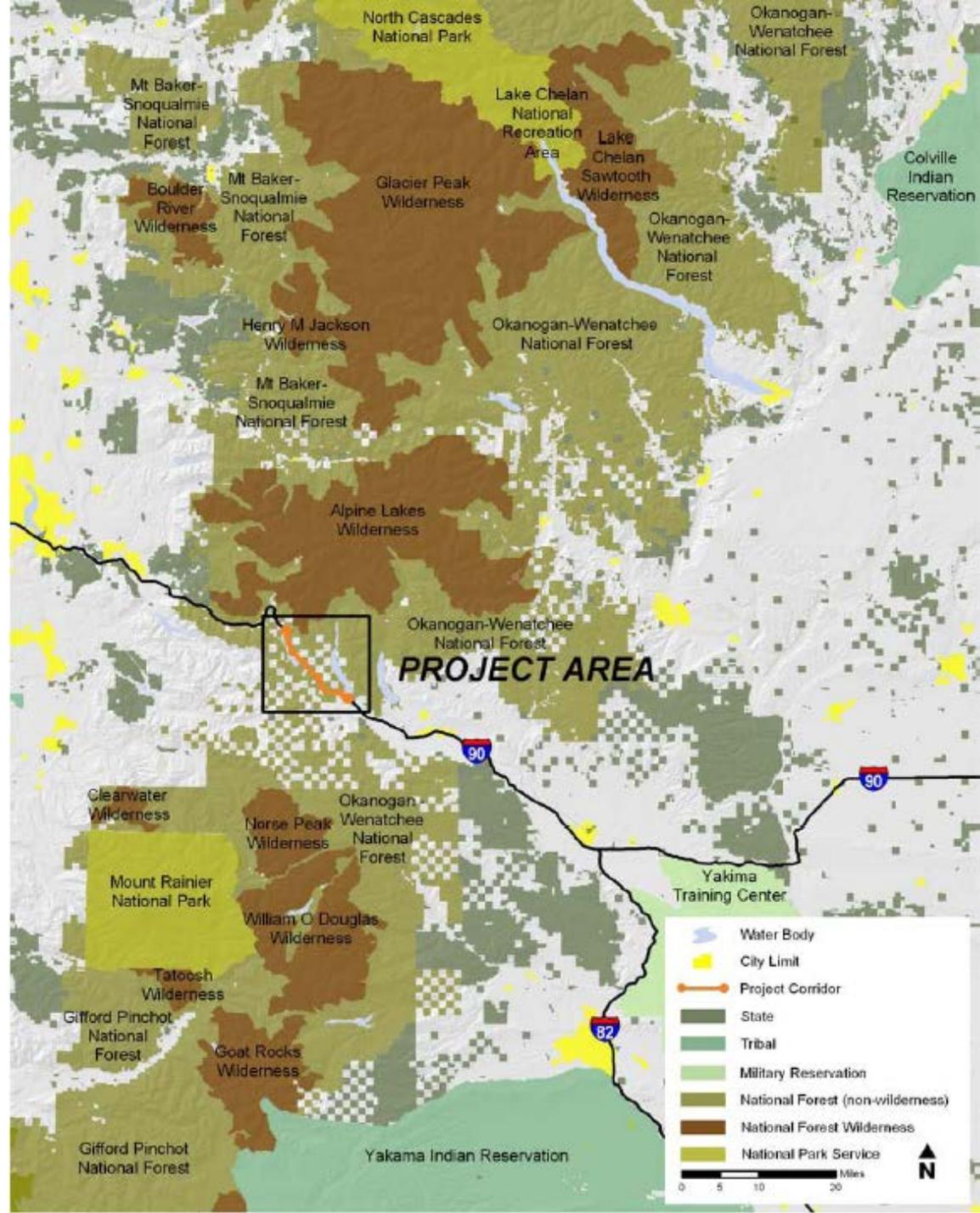
1. Brian White and Jason Smith – WSDOT
2. Biologists, Geographers, Geologists, Engineering Tech and Construction Management
3. Business, Political Science, Anthropology





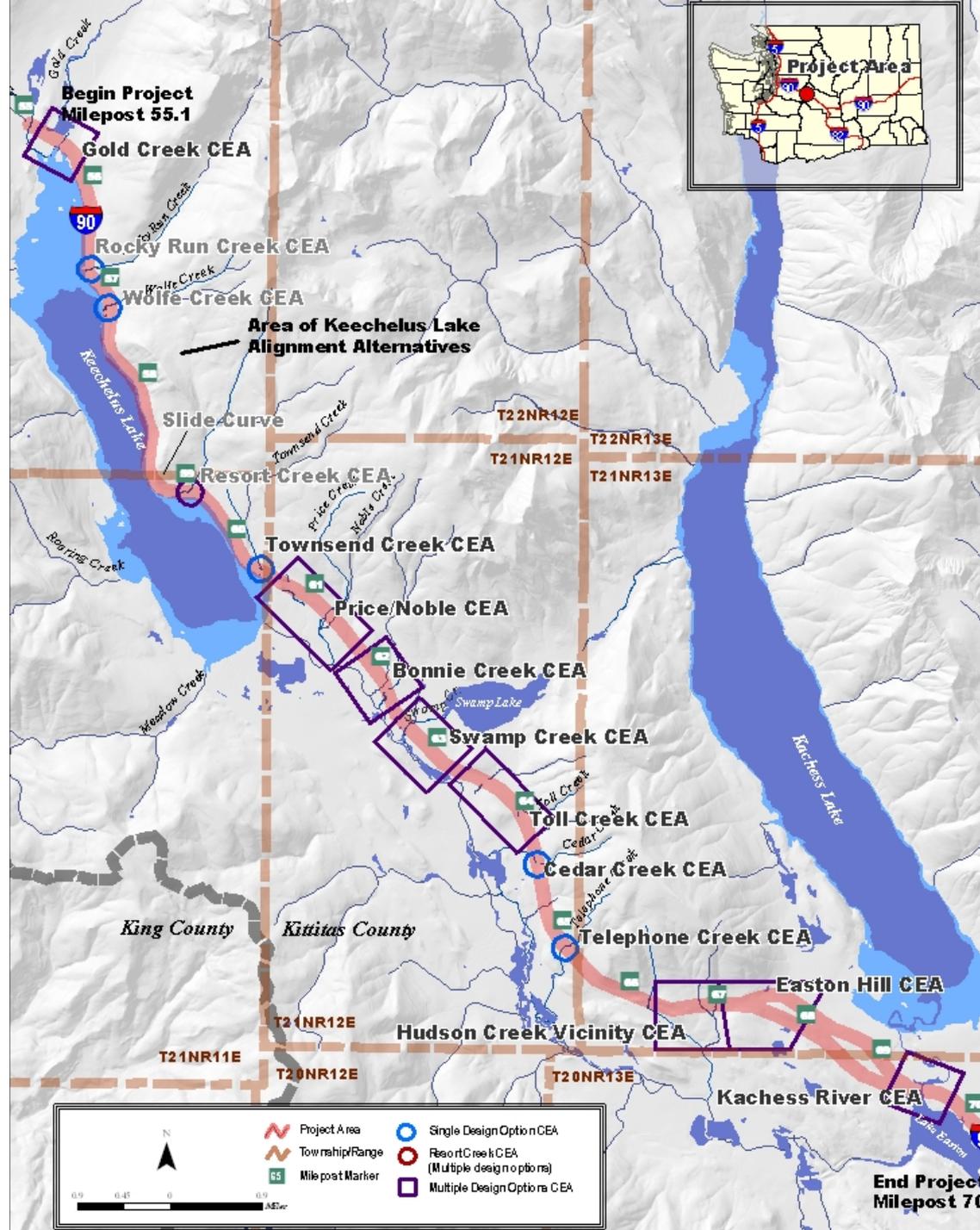
## Ecological Connectivity

1. Hydrology – Water
2. Biology – habitat, fish, wildlife



# Considering Connectivity Structures

- Set Site specific Objectives
- Reconnect adjacent habitats
- Plan for future habitat conditions
- Multiple sized crossing structures:
  - Small <5 feet wide
  - Medium up to 12x100 feet
  - Large over 12x100 feet
- Provide habitat within the structure
- Plan for fencing





# Wildlife Connectivity

- Pre-construction monitoring
- Post-construction monitoring
- High mobility – WTI, WSDOT
- Low mobility – CWU
  - Fish
  - Amphibians and Reptiles
  - Small Mammals

# High Mobility Species



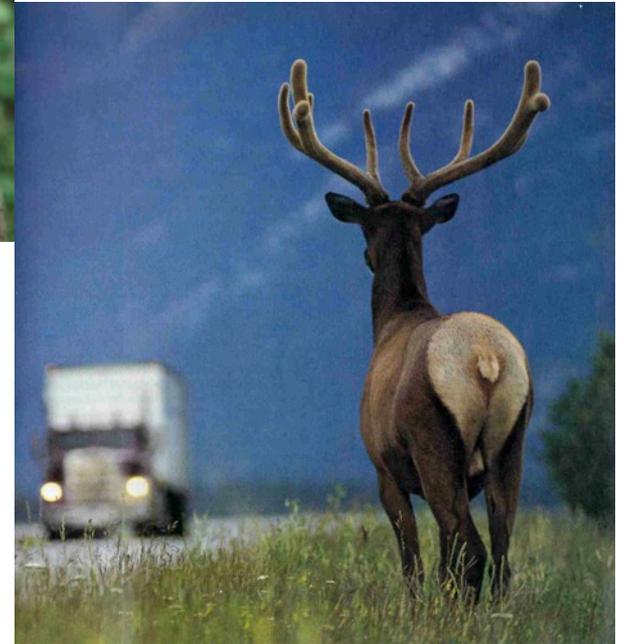
Environment



Mobility



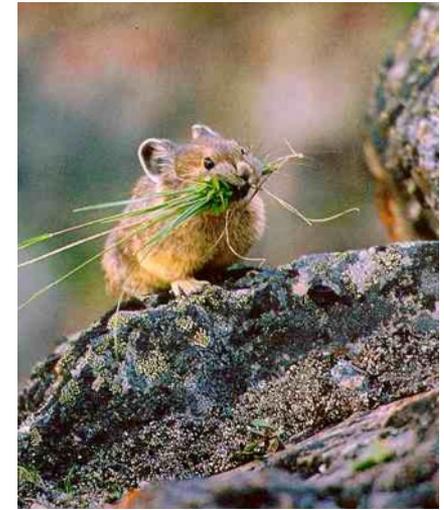
Safety



# Wildlife Connectivity

- Pre-construction monitoring
- Post-construction monitoring
- High mobility – WTI, WSDOT
- Low mobility – CWU
  - Fish
  - Amphibians and Reptiles
  - Small Mammals

# Low Mobility Species



Environment



Mobility

Safety

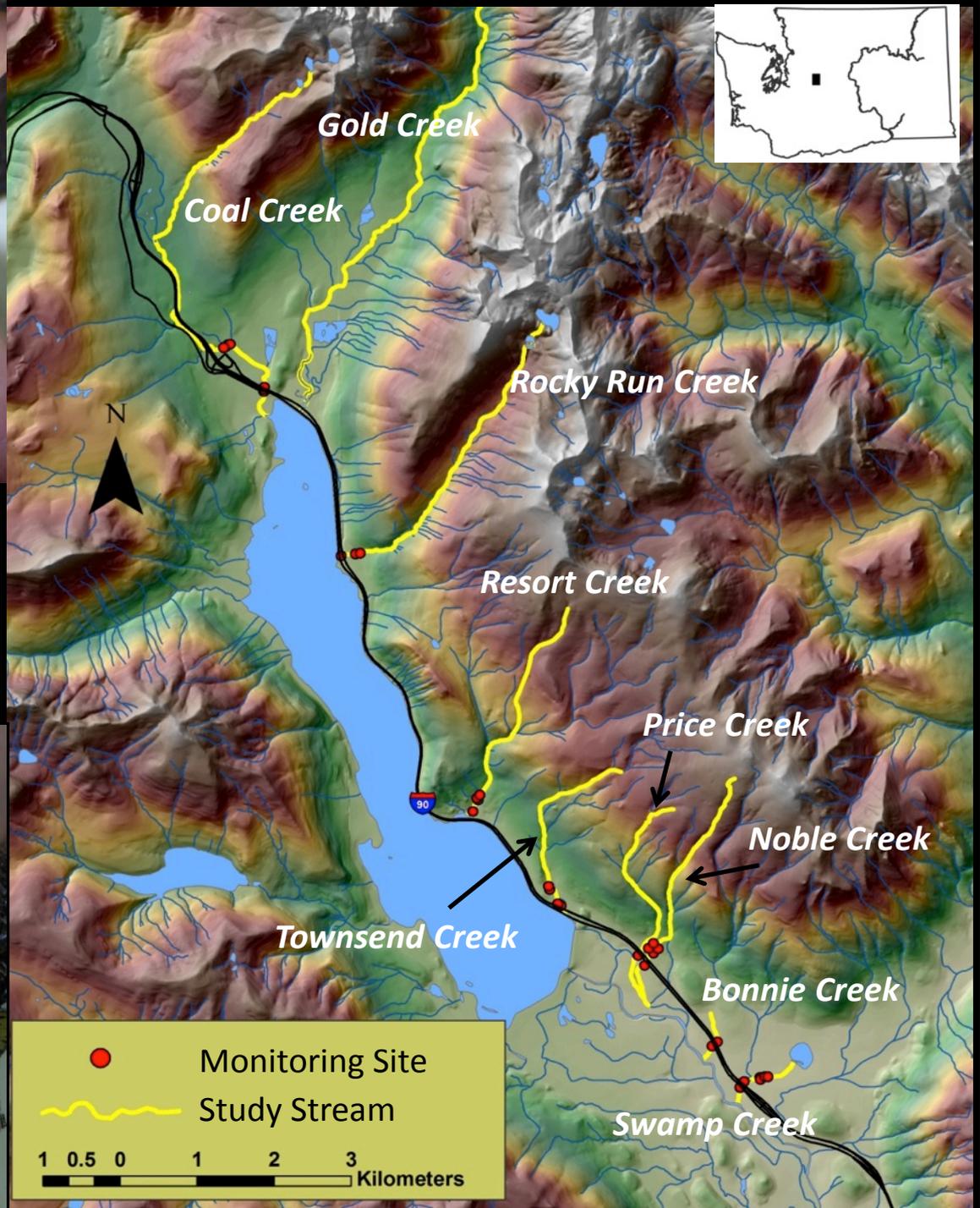


Bull Trout  
(*Salvelinus confluentus*)



Fish Team  
Dr. Paul James

Cutthroat Trout  
(*Oncorhynchus clarki*)





Coal Creek Bull Trout  
2011, 2012, 2014



Rocky Run Creek Bull Trout 2013



**Early success!**



Resort Creek Bull Trout 2013

# Amphibian Team

Dr. Steve Wager

## Survey Methods

- Visual encounter surveys
- Rubble rousing in streams and banks
- Funnel trapping
- PIT tag monitoring
- Toe clipping



# Radiotracking

## Pacific Giant Salamanders and Western Toads



# Small Mammals

Dr. Kristina Ernest

- Mice, voles, shrews, chipmunks, flying squirrels, moles, pikas
- Lots of mammals – high trap success; high diversity and numbers very close to I-90 suggest promising connectivity



Photo: R. Villacres

# American Pika (*Ochotona princeps*) Monitoring



# Pikas have begun to use new riprap/fill at

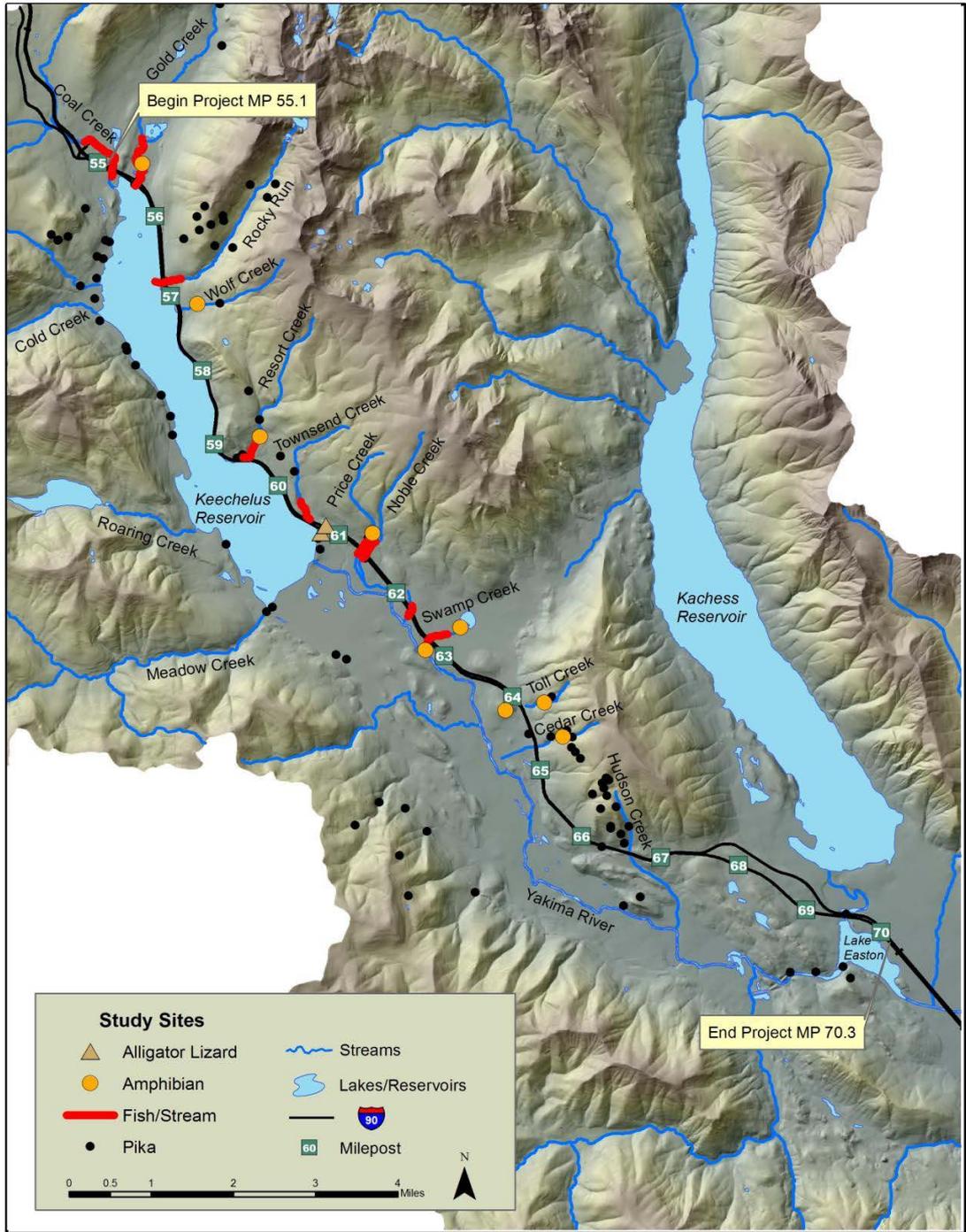
**More early success!**

# Gold Creek



Photos and field observations courtesy Mark Norman and Josh Zylstra

# Low Mobility Wildlife Monitoring Sites 2008 -2010



# CWU Mission

The mission of Central Washington University is to **prepare students** for enlightened, responsible, and productive lives; to **produce research, scholarship**, and creative expression in the public interest; and to **serve as a resource to the region and the state** through effective stewardship of university resources.

# I-90: Preparing Students

## (2008 - present)

- Small Mammal Team – Dr. Kristina Ernest
  - 7 graduate students; 7 undergraduates
  - 3 Masters theses completed or in progress
- Fish Team – Dr. Paul James
  - 3 graduate students; 9 undergraduates
  - 3 Masters theses completed or in progress
- Amphibian Team – Dr. Steven Wagner
  - 4 graduate students; 10 undergraduates
  - 3 Masters theses completed or in progress

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**Thanks!**

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**Questions?**

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