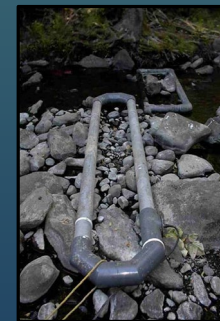
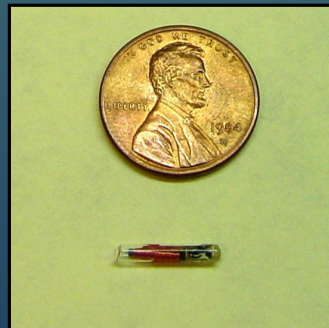


# Early days instream: A retrospective visit to the challenges and evolution of the Rattlesnake Creek PIT-tag detection site

Ian G. Jezorek<sup>1</sup>, Earl F. Prentice<sup>2</sup>, Patrick J. Connolly<sup>1</sup>

<sup>1</sup>U.S. Geological Survey, Western Fisheries Research Center,  
Columbia River Research Laboratory, Cook, WA

<sup>2</sup> National Marine Fisheries Service, Manchester Field Station,  
Manchester, WA



2024 PIT Tag Workshop, Stevenson, WA

# Acknowledgements

## Funding:

Bonneville Power Administration

NOAA Fisheries

## Cooperators:

Destron-Fearing (Biomark)

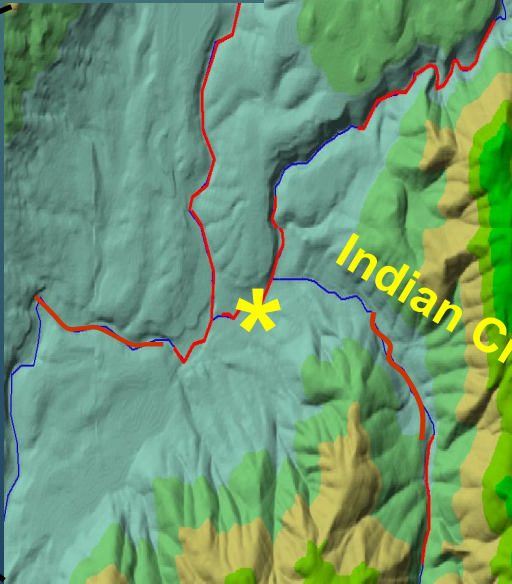
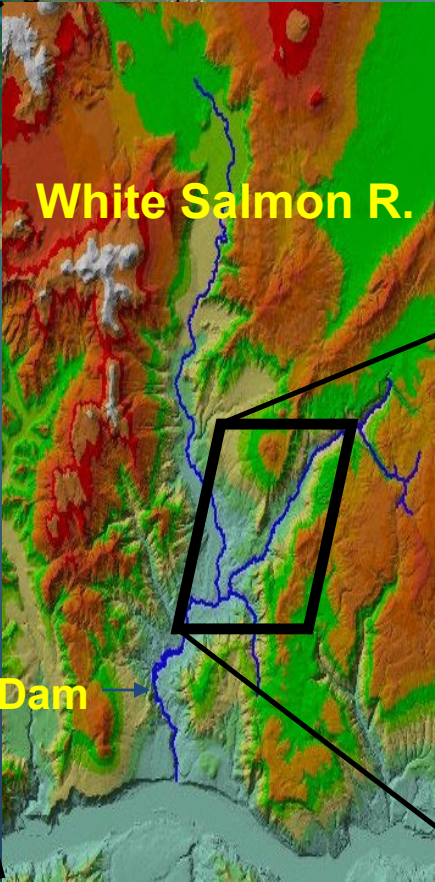
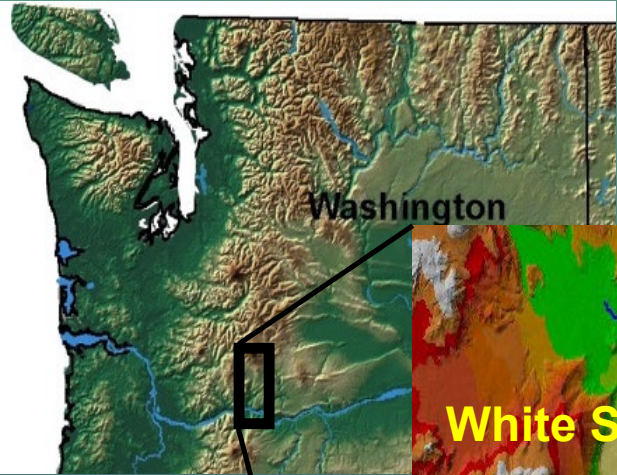
PSMFC / PTAGIS Staff

Steve Stampfli

**USGS Field Staff**

# Detector Site

## RCX



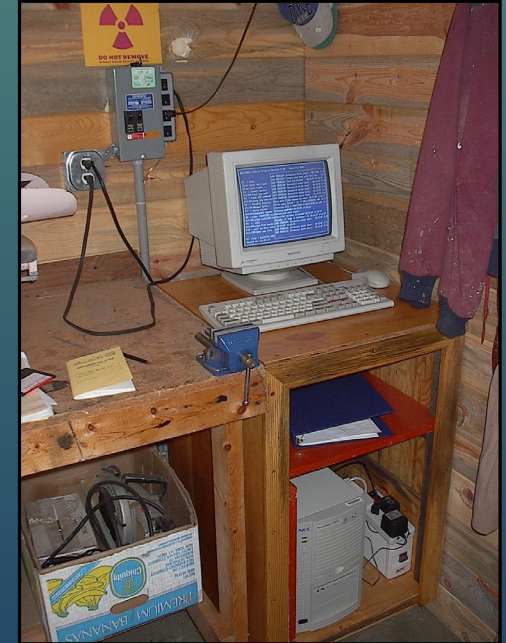
Condit Dam





# August 2001

## Two 1001A Transceivers, one antenna each, detection of 12-mm full duplex tags





# Two original antennas 10 foot



Pass - thru



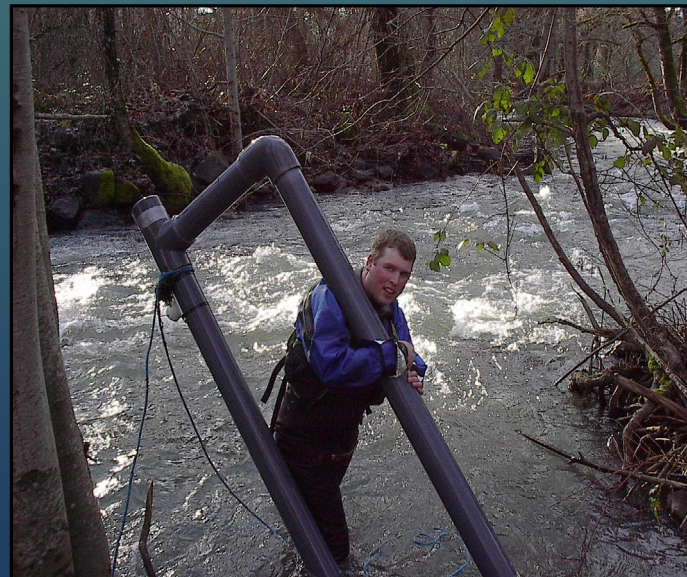
Pass - by



# Primitive anchoring









# Pivoting antenna

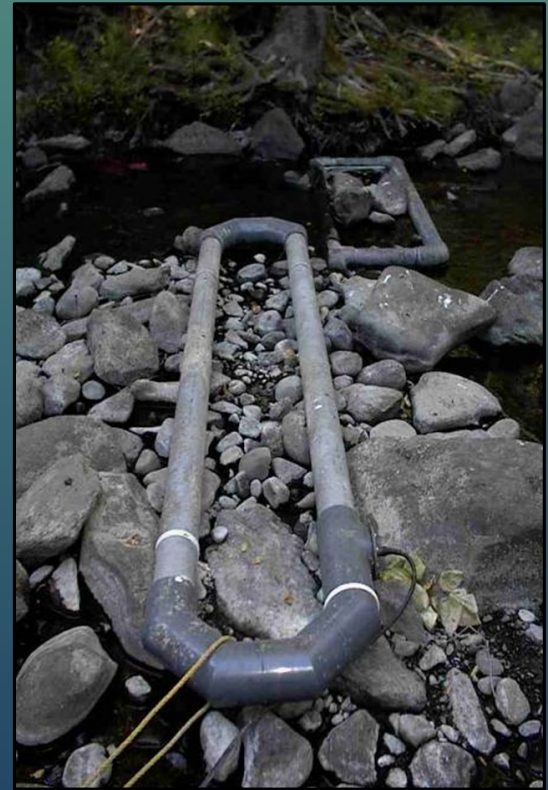


Also suffered blowout



May 2003

# Multiplexing Transceiver (MUX) Four antennas, eventually six



Software from MultiMon to MiniMon

# Challenges: High flow, antenna loss





# Challenges: Anchoring and cables



Bolt too small



Rock too small



# Challenges: Noise

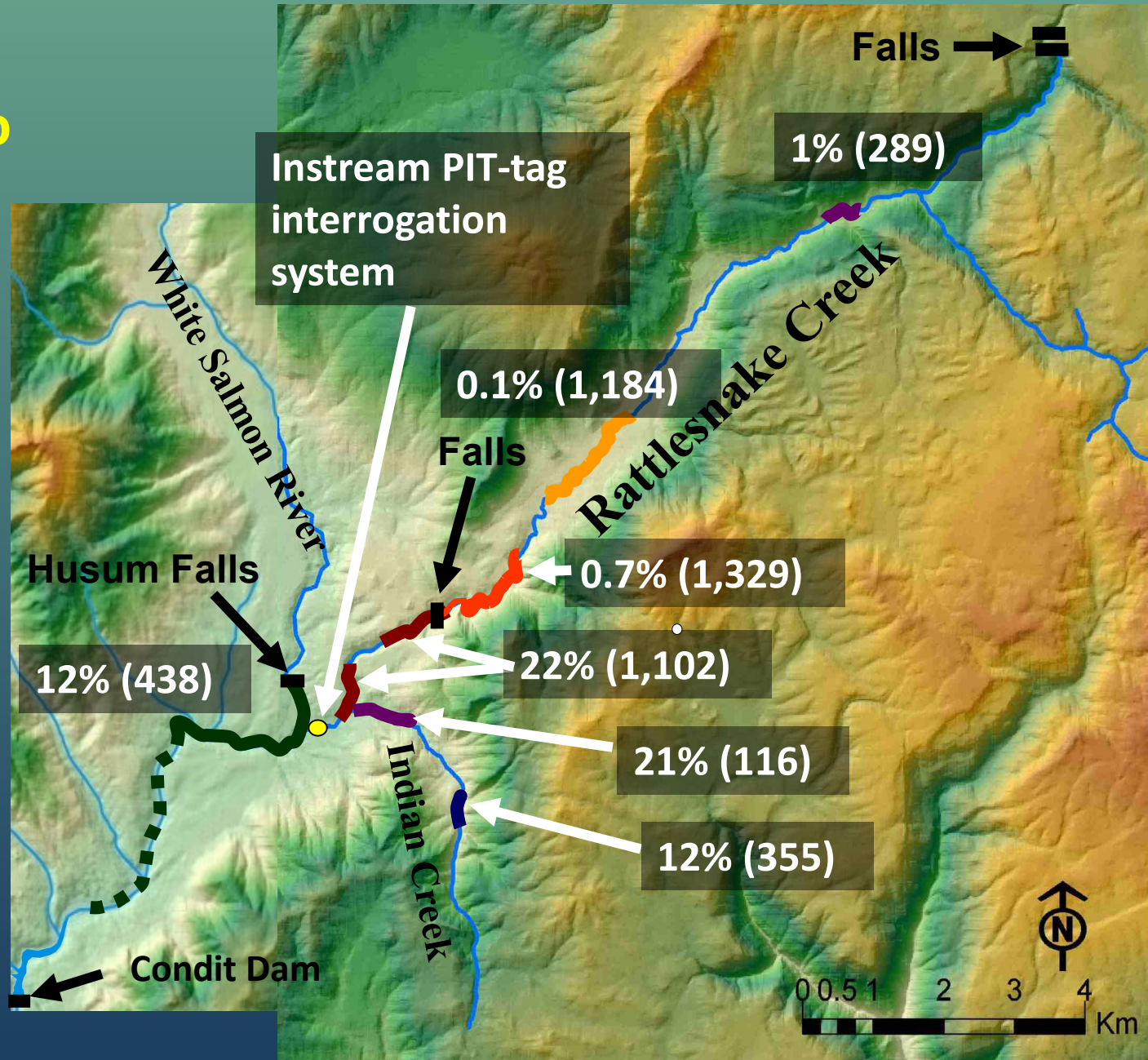
## Power



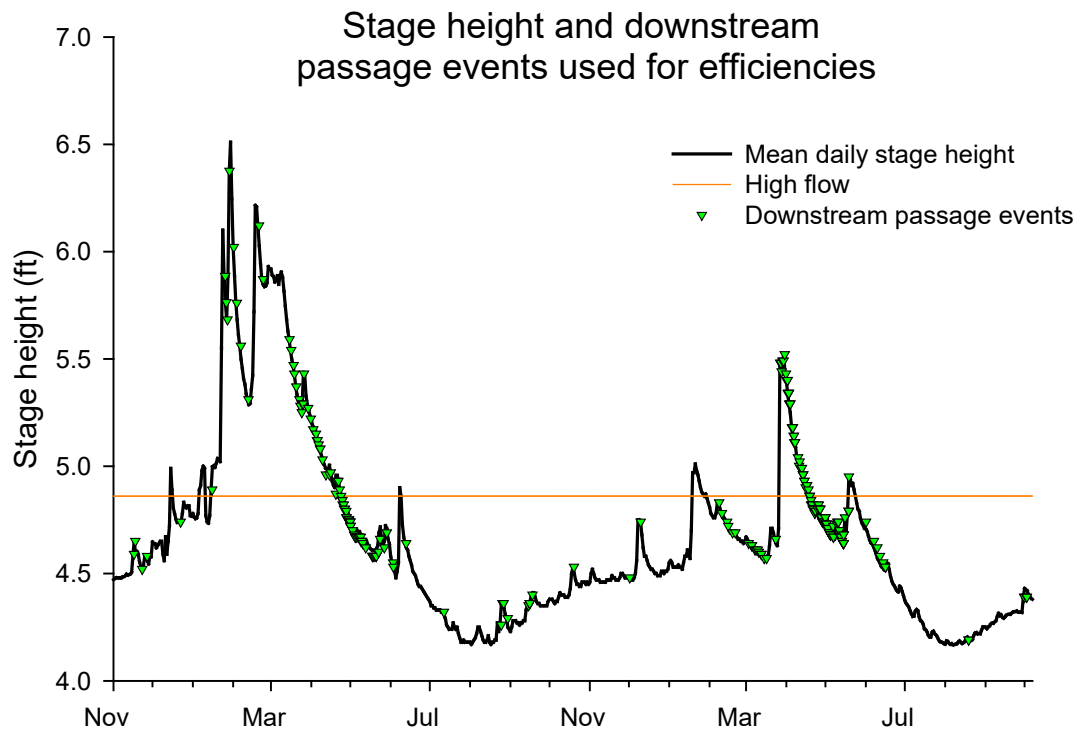


# Connectivity to the White Salmon watershed

How do fish use the system?



Operated  
RCX through  
May 2007





# Changes and improvements:

Software changes; MiniMon, I5, M5

PTAGIS – much more user friendly and accessible

Transceiver – Multiplexing Transceiver System (MTS)

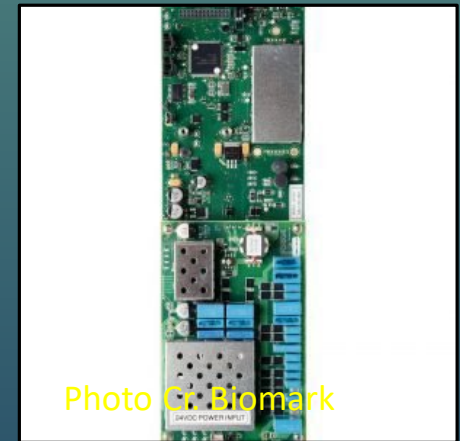
IS1001 Board (ACN) - flexibility

PODs – IS1001 at antenna

Tags – improved performance

Antennas – larger, better construction

## Better read range, less noise!



# Bigger streams:





# Bigger anchors:





# Bigger streams and rivers:





# Innovative antenna designs:



Photo Cr. West Fork Environmental



Photo Cr. West Fork Environmental



Photo Cr. Biomark



Photo Cr. Biomark



# Continued challenges:

High flow



Power



Cables



Vandalism



Noise





Ian Jezorek [ijezorek@usgs.gov](mailto:ijezorek@usgs.gov)

U.S. Geological Survey, Western Fisheries Research Center,  
Columbia River Research Laboratory, Cook, WA