

# **Movements, habitat use and physiology of coastal cutthroat trout**

**Please Note:**

**Information presented here is preliminary as of  
March 2003**

**Do not cite data results**

# Movements, habitat use and physiology of coastal cutthroat trout



Joseph Zydlewski, John Brunzell, Todd Gilmore, Jeff Hogle,  
Jeff Johnson

USFSW – CRFPO, Vancouver, WA

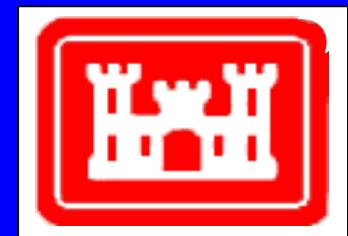
*In collaboration with*



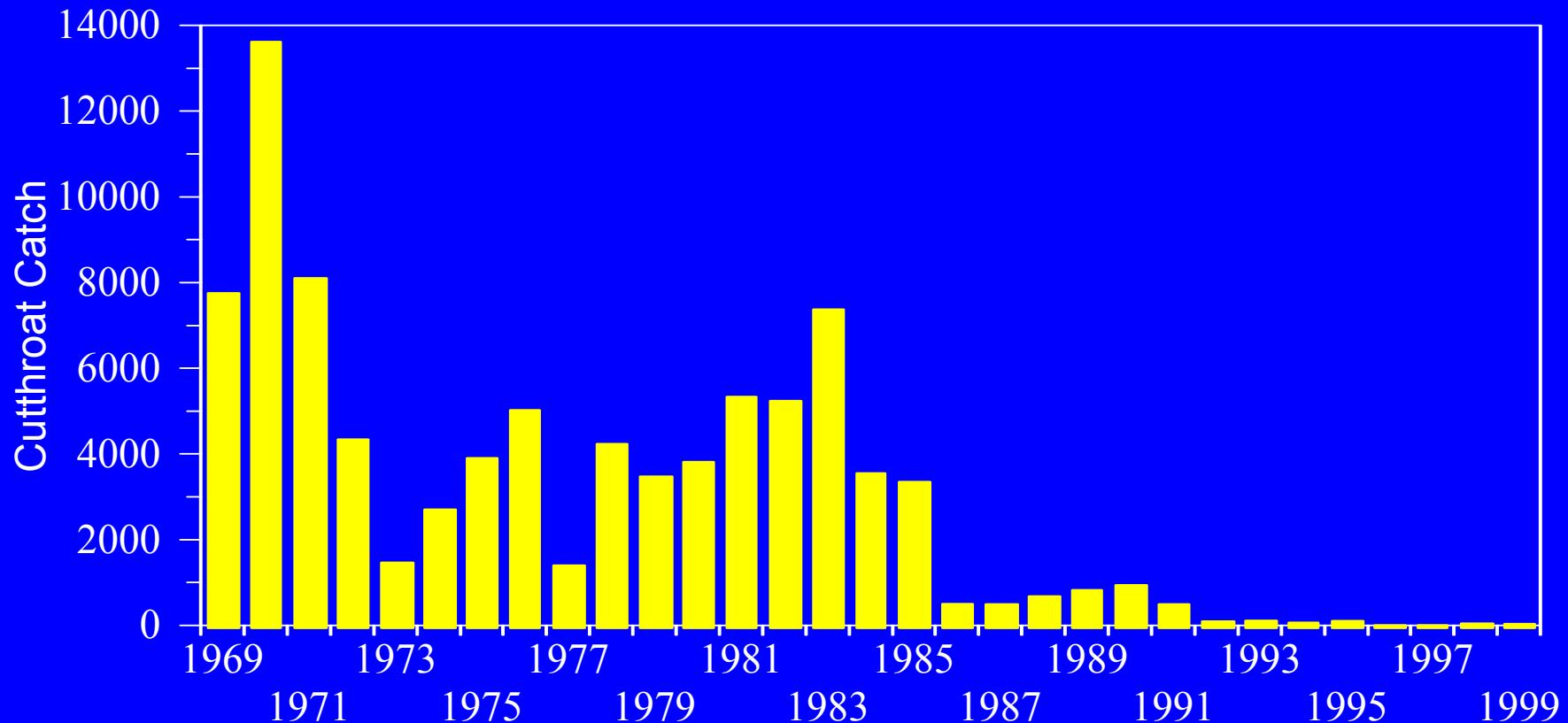
Gayle Zydlewski  
USFWS-AFTC

Shaun Clements, Mark  
Karnowski, Carl Schreck  
OSU, Corvallis, OR

Robert Warren  
Sea Resources, Chinook,  
WA  
Antonio Baptista  
OGI, Beaverton, OR

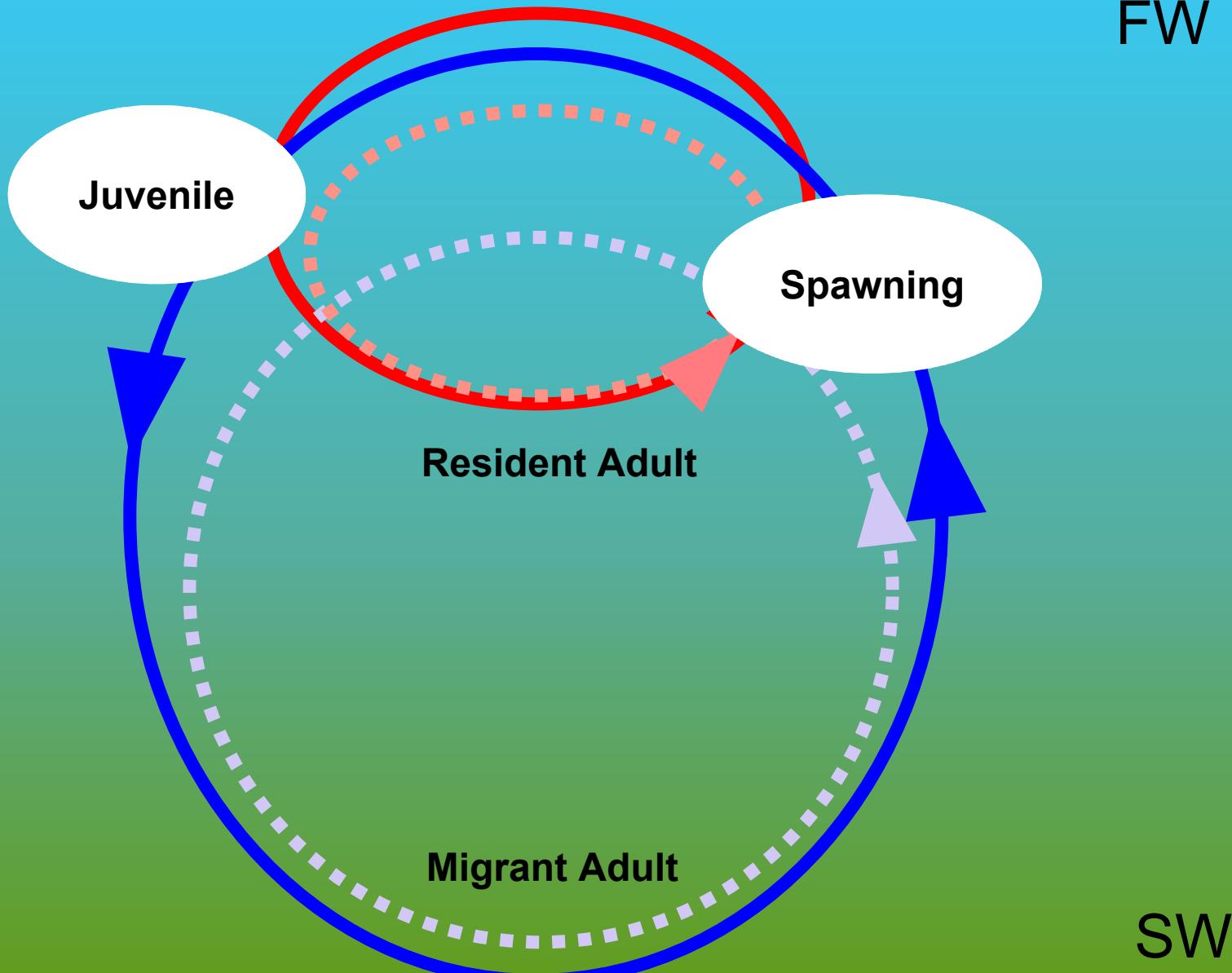


# Recreational take of Coastal Cutthroat Trout in the Lower Columbia River



Dan Rawding, WDFW, unpublished data

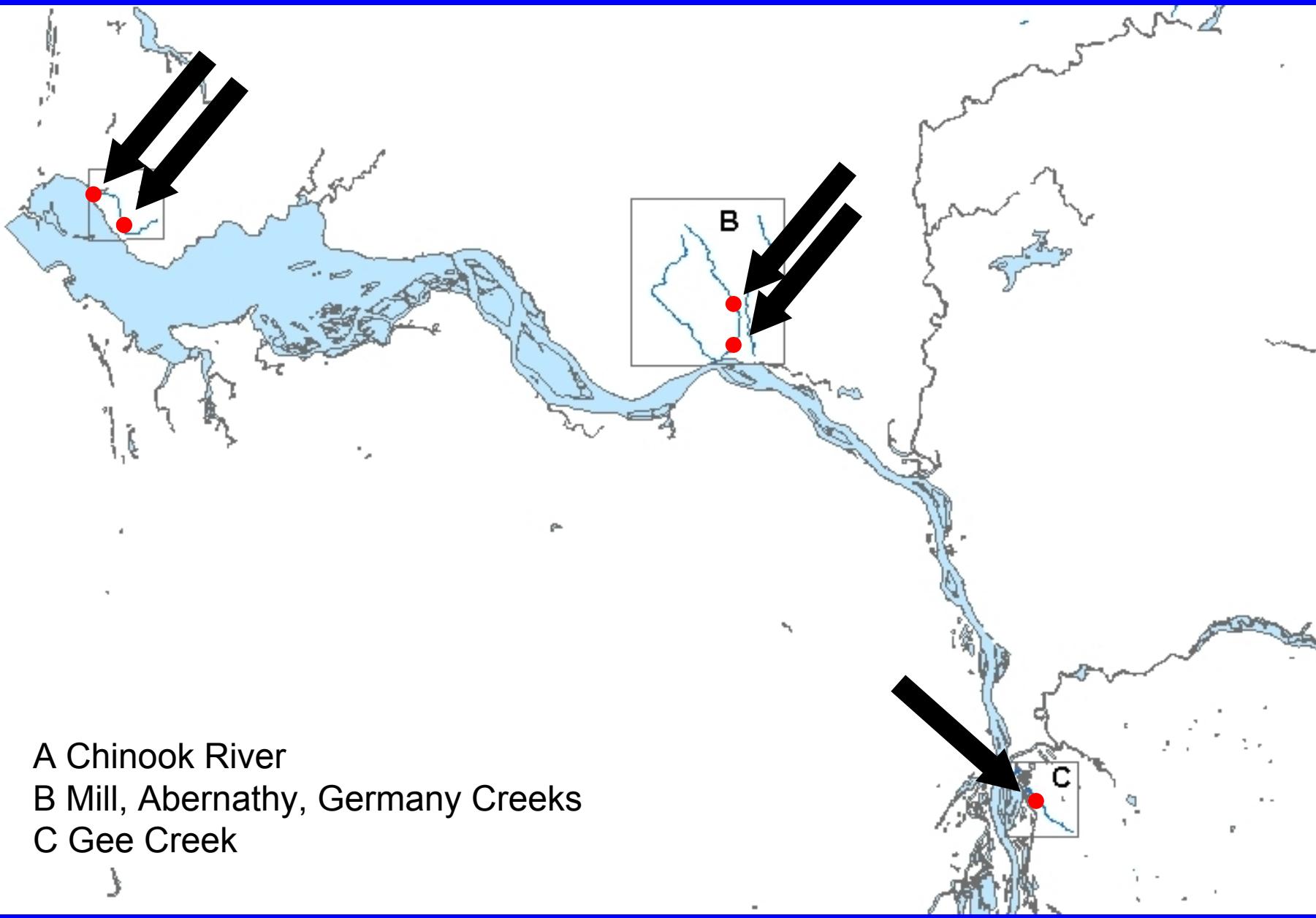
# Coastal Cutthroat Trout Life History



# Goals

- Juvenile (and adult) migrations and movements into main stem areas
  - Long range PIT tag methodology
- Main stem habitat use of smolts
  - Radio and acoustic telemetry
- Physiological indicators of smolting
  - Compare resident and anadromous fish
- Spatial patterns of historical catch data
  - Data consolidation and analysis



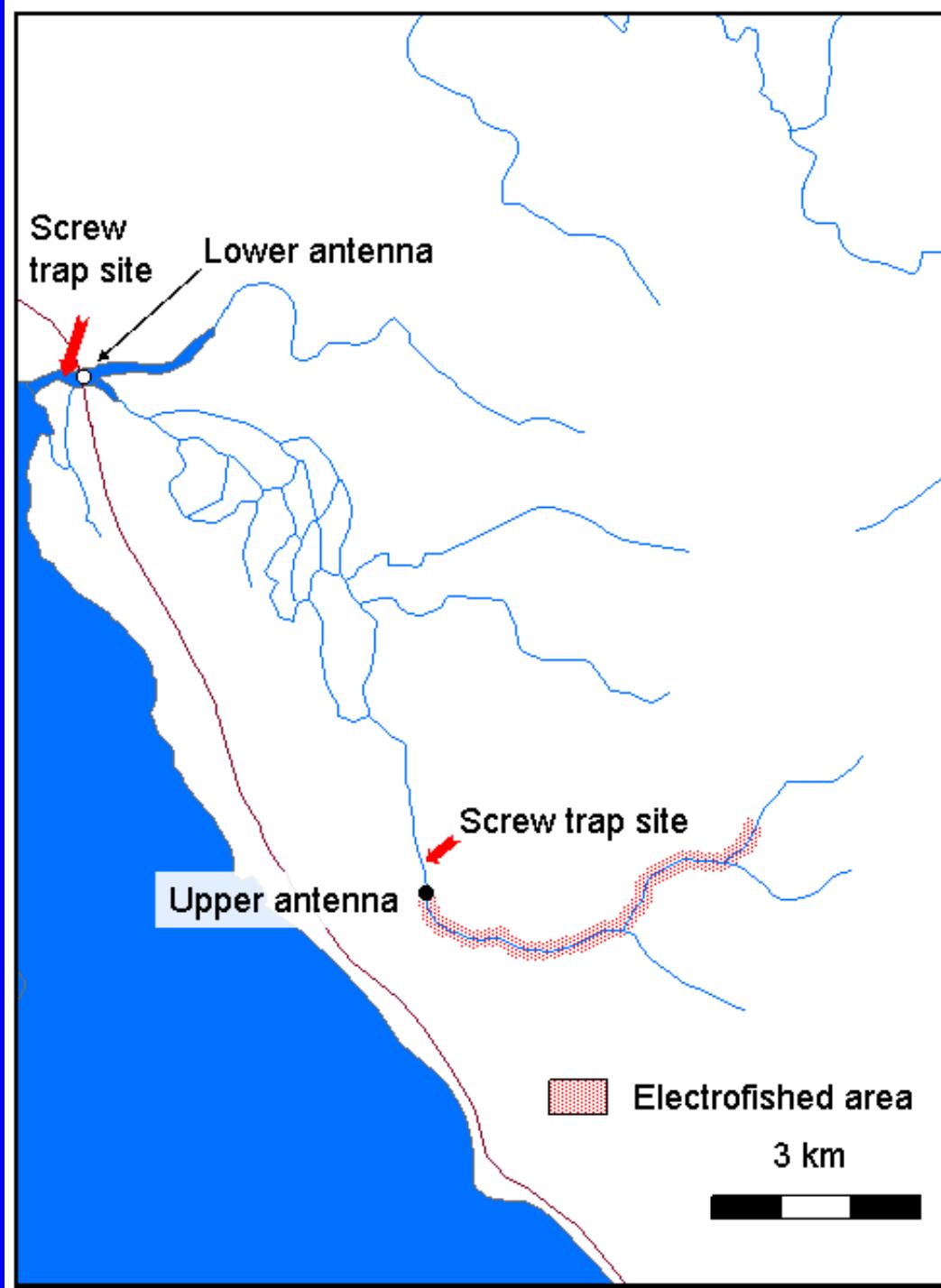


A Chinook River

B Mill, Abernathy, Germany Creeks

C Gee Creek

# Chinook River



# Chinook River - Upstream Installation Antennae



Chinook River - Upstream Installation  
Antennae

# Chinook River - Upstream Installation Tranceivers



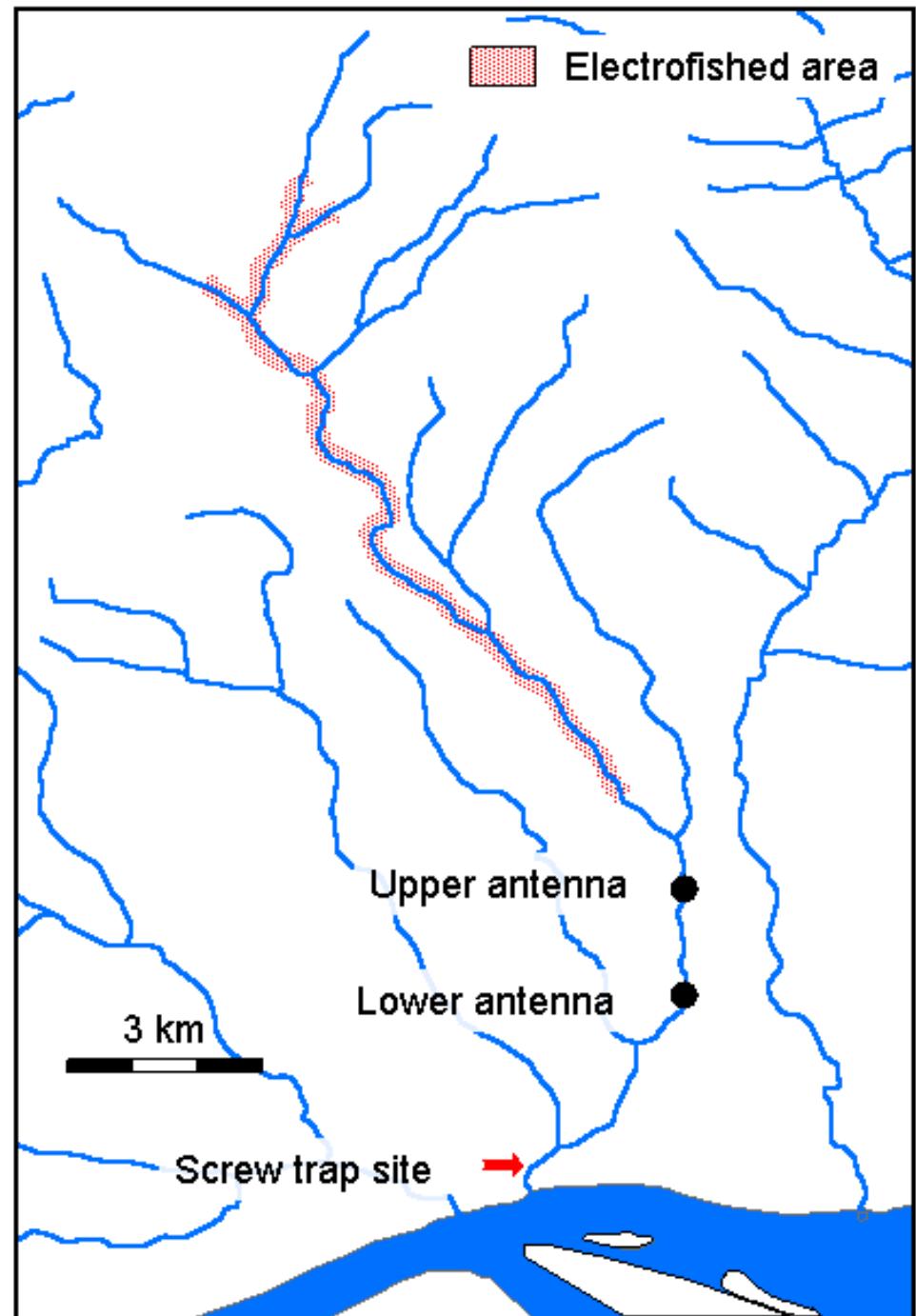
# Chinook River - Electrofishing and PIT Tagging



# Chinook River - Electrofishing and PIT Tagging



# Abernathy Creek



# Abernathy Creek - Upstream Installation Antennae



# Abernathy Creek - Lower Installation Antennae



# Abernathy Creek - 2001

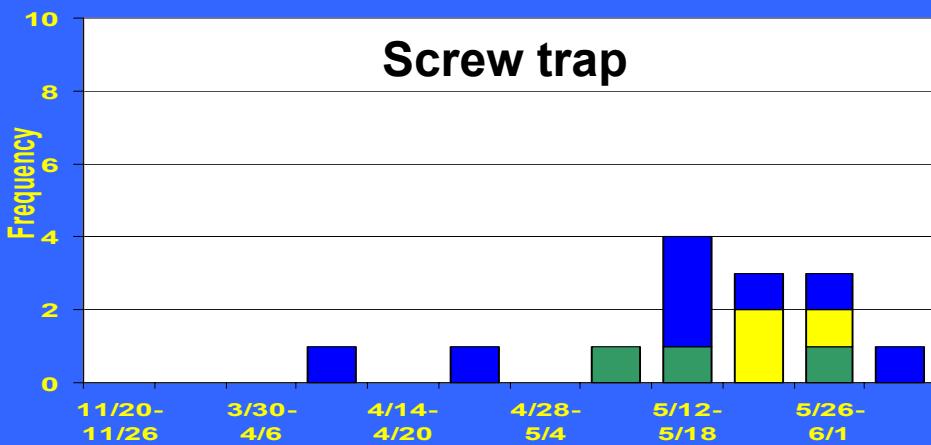
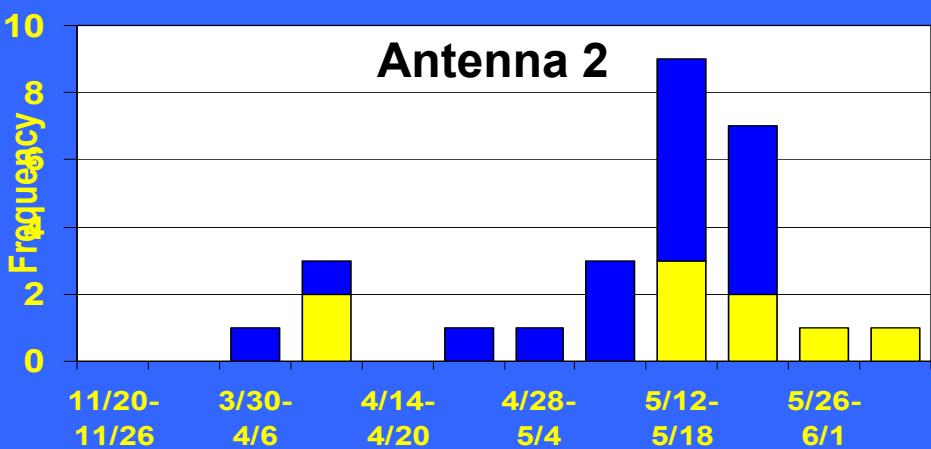
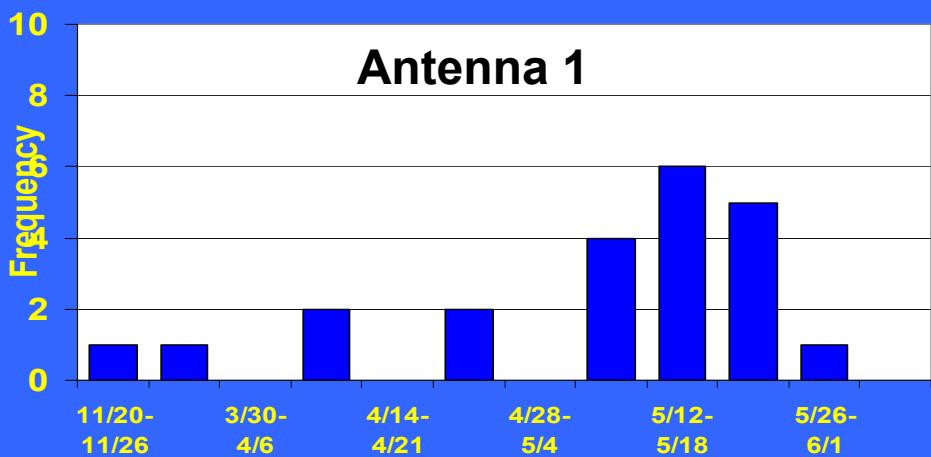
Upper

Middle

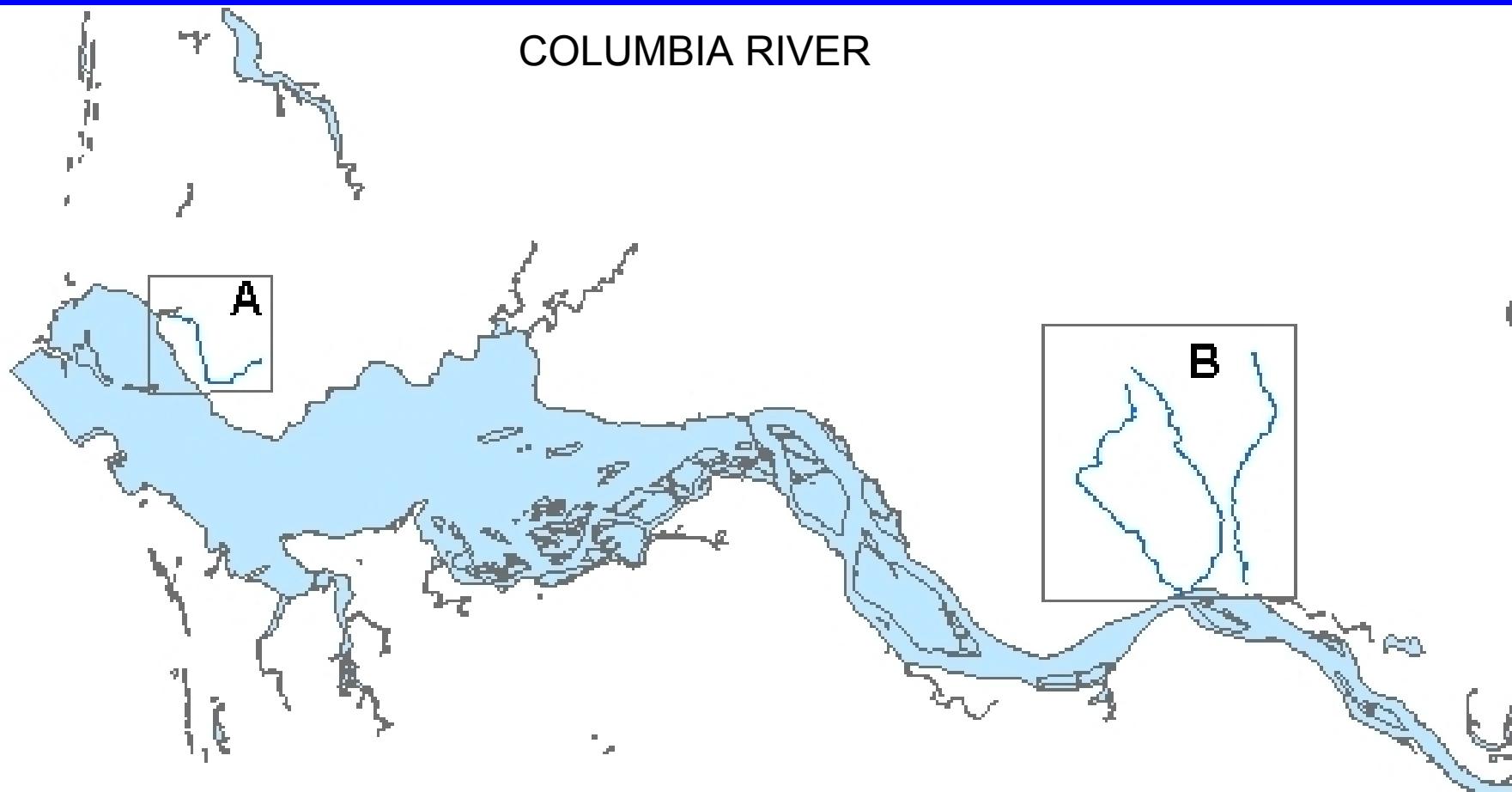
Antenna 2

Columbia River

Abernathy  
creek



# COLUMBIA RIVER



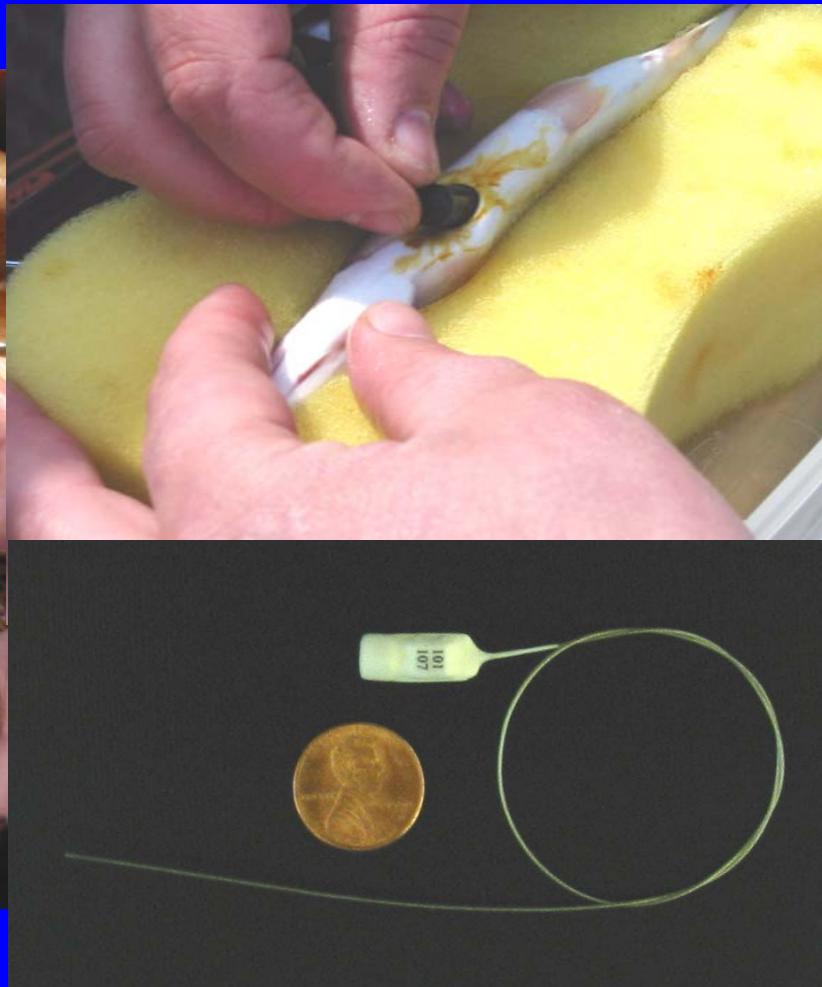
A Chinook River

B Mill, Abernathy, Germany Creeks

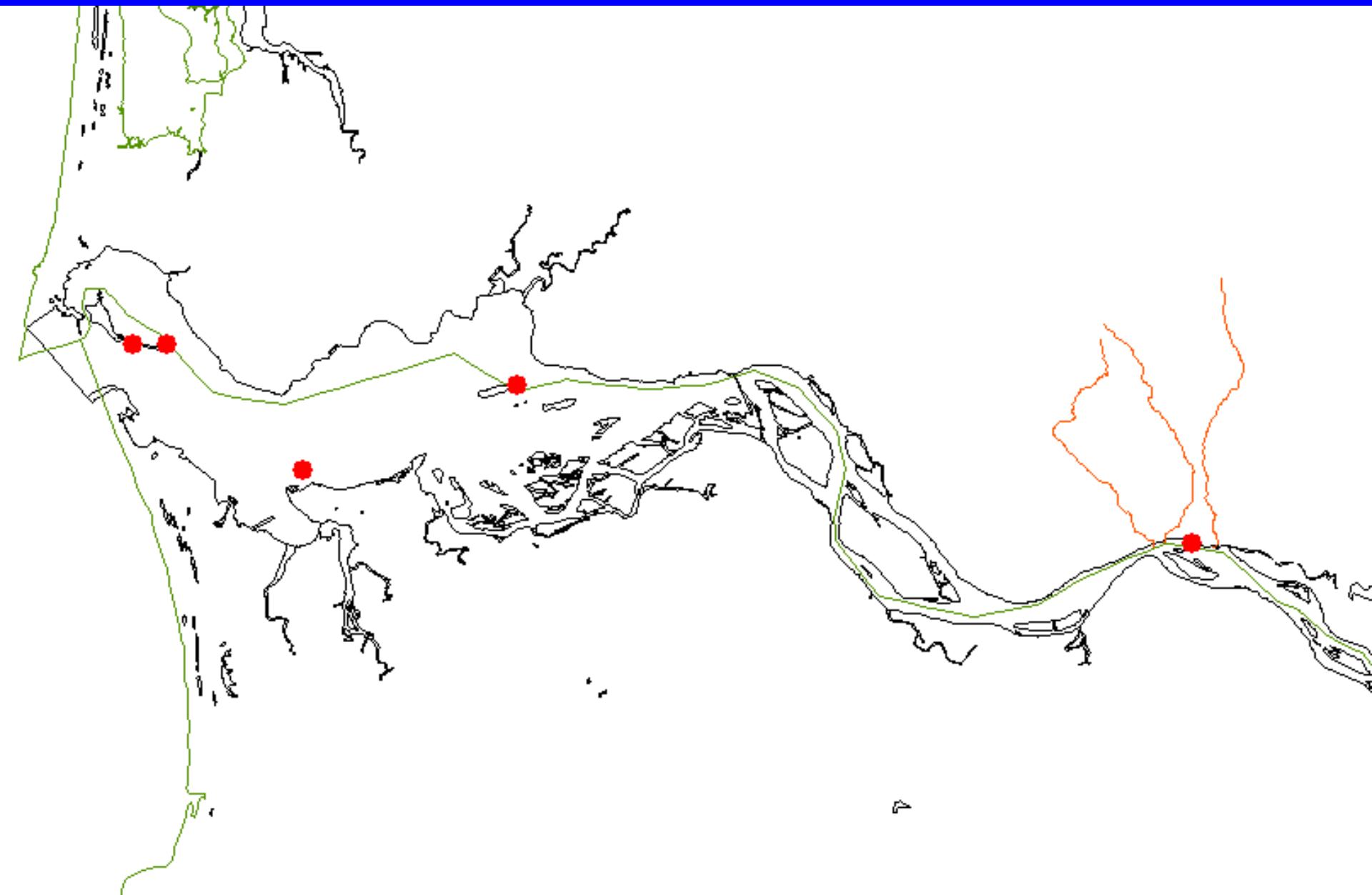
## **Main stem habitat use of smolts**

- Capture smolts in screw traps at Abernathy, Mill, Germany Creeks and Chinook River
- Implant with radio and acoustic telemetry
- Monitor movements with active and passive telemetry

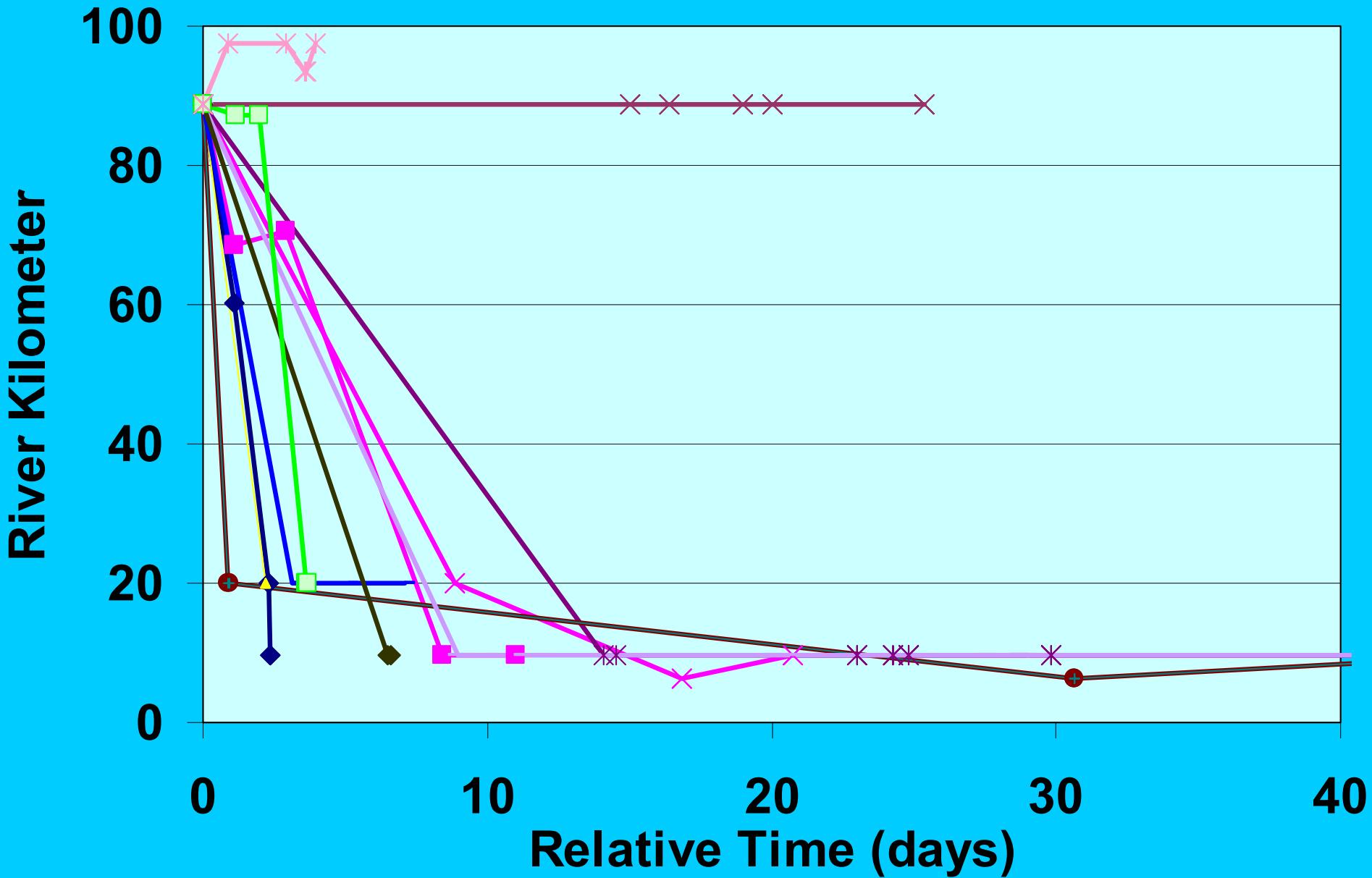
# Radio and Acoustic Telemetry

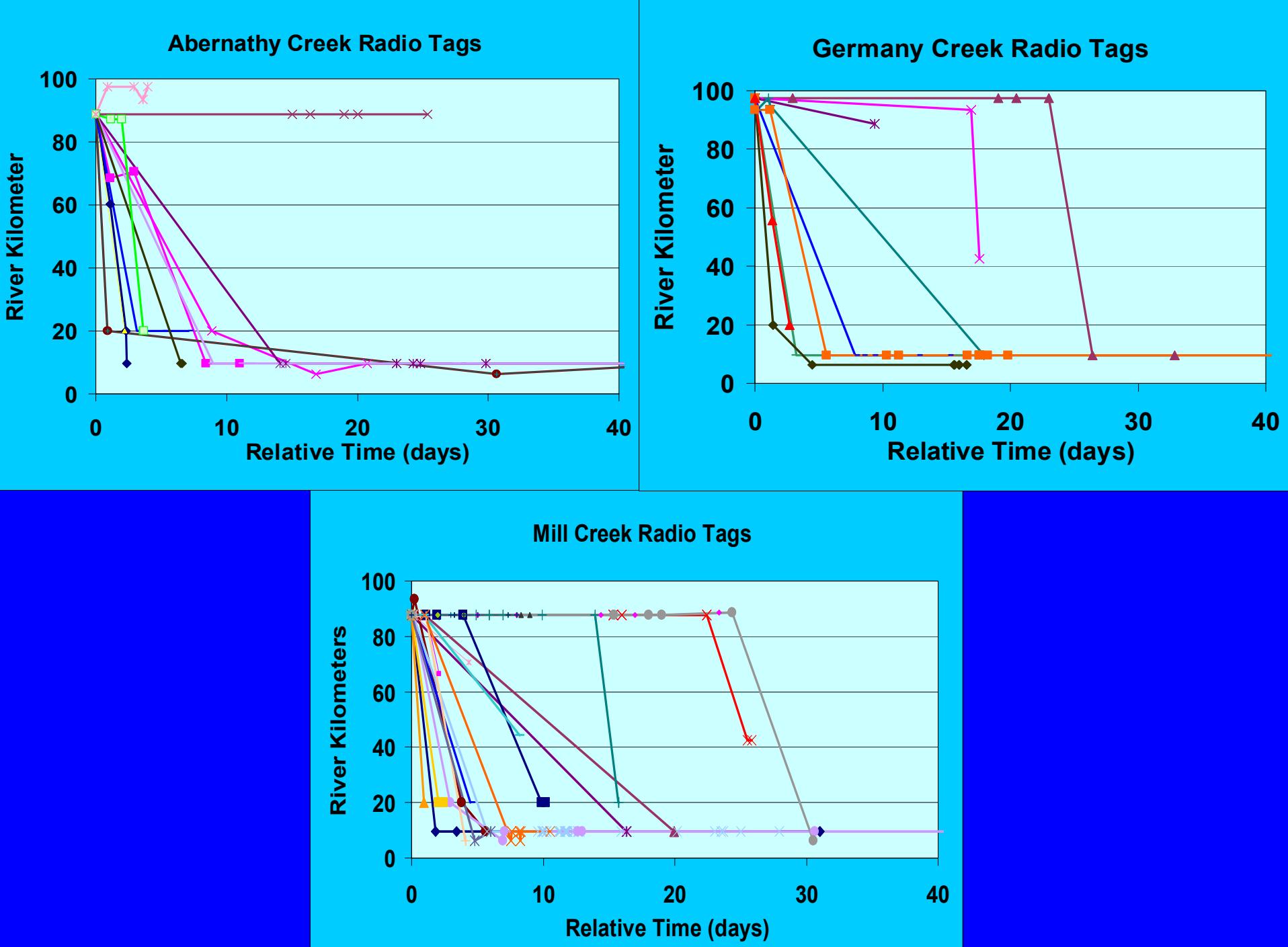


# Radio Telemetry – Stationary and Mobile

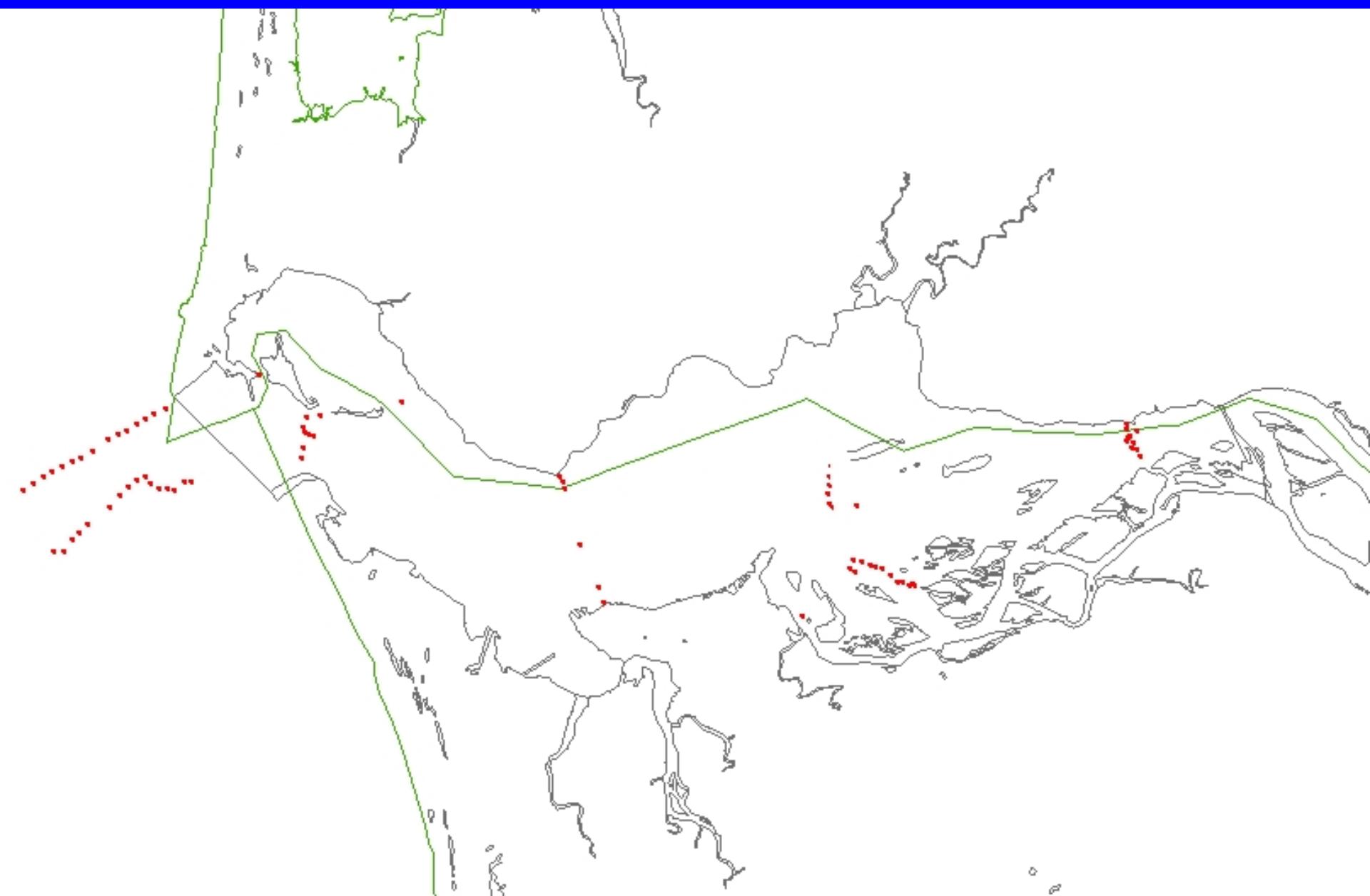


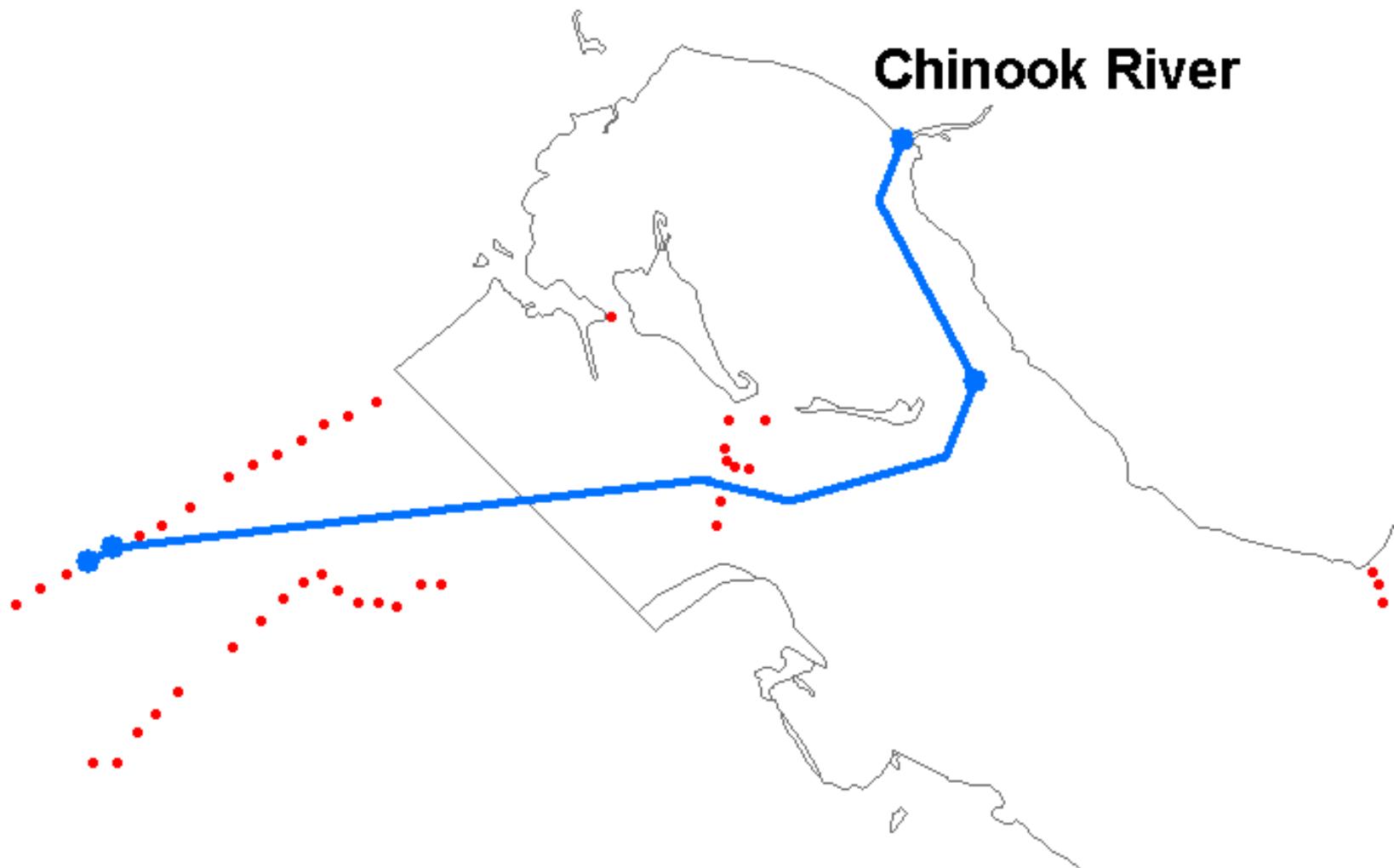
# Abernathy Creek Radio Tags



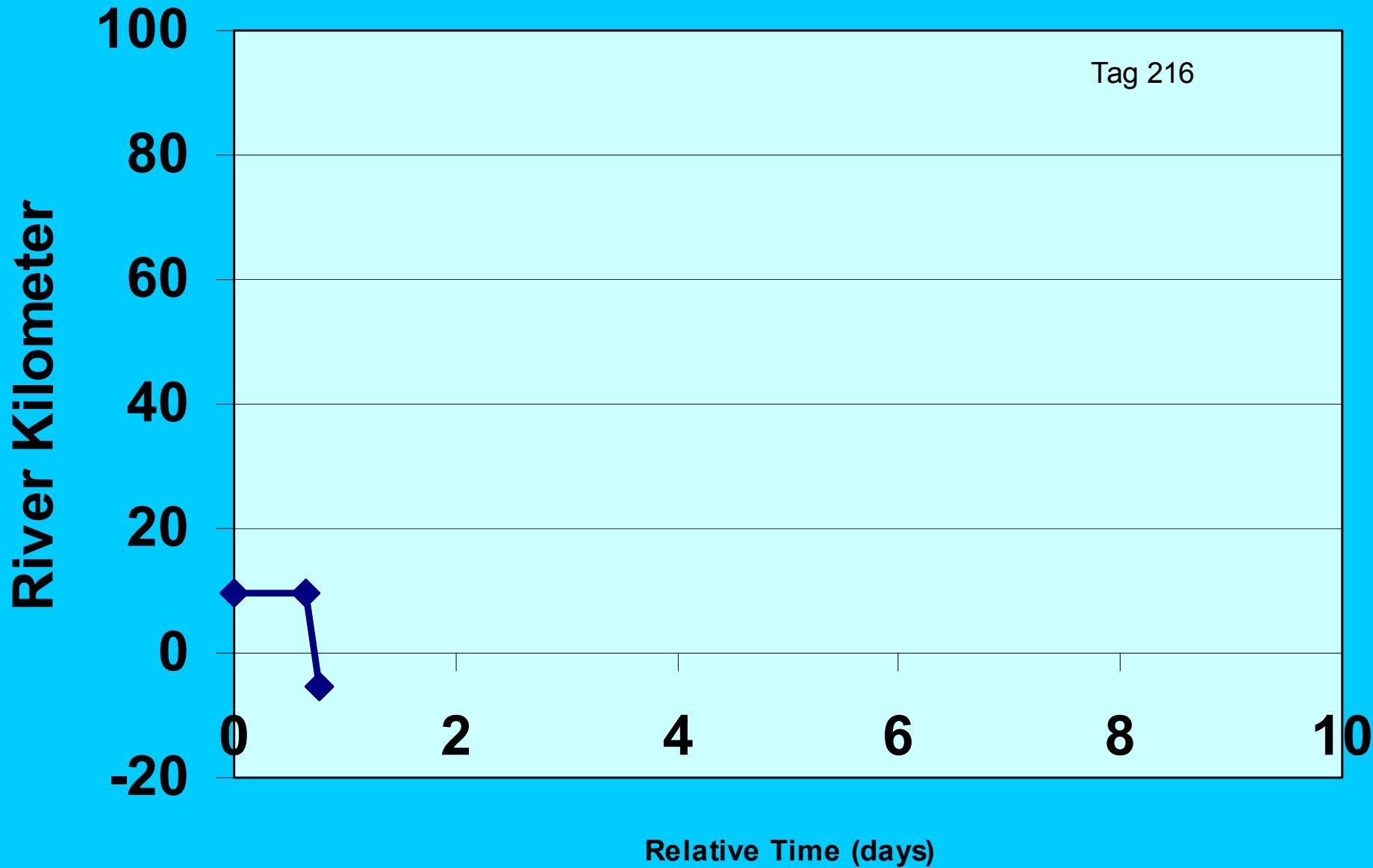


# Stationary Acoustic Receivers



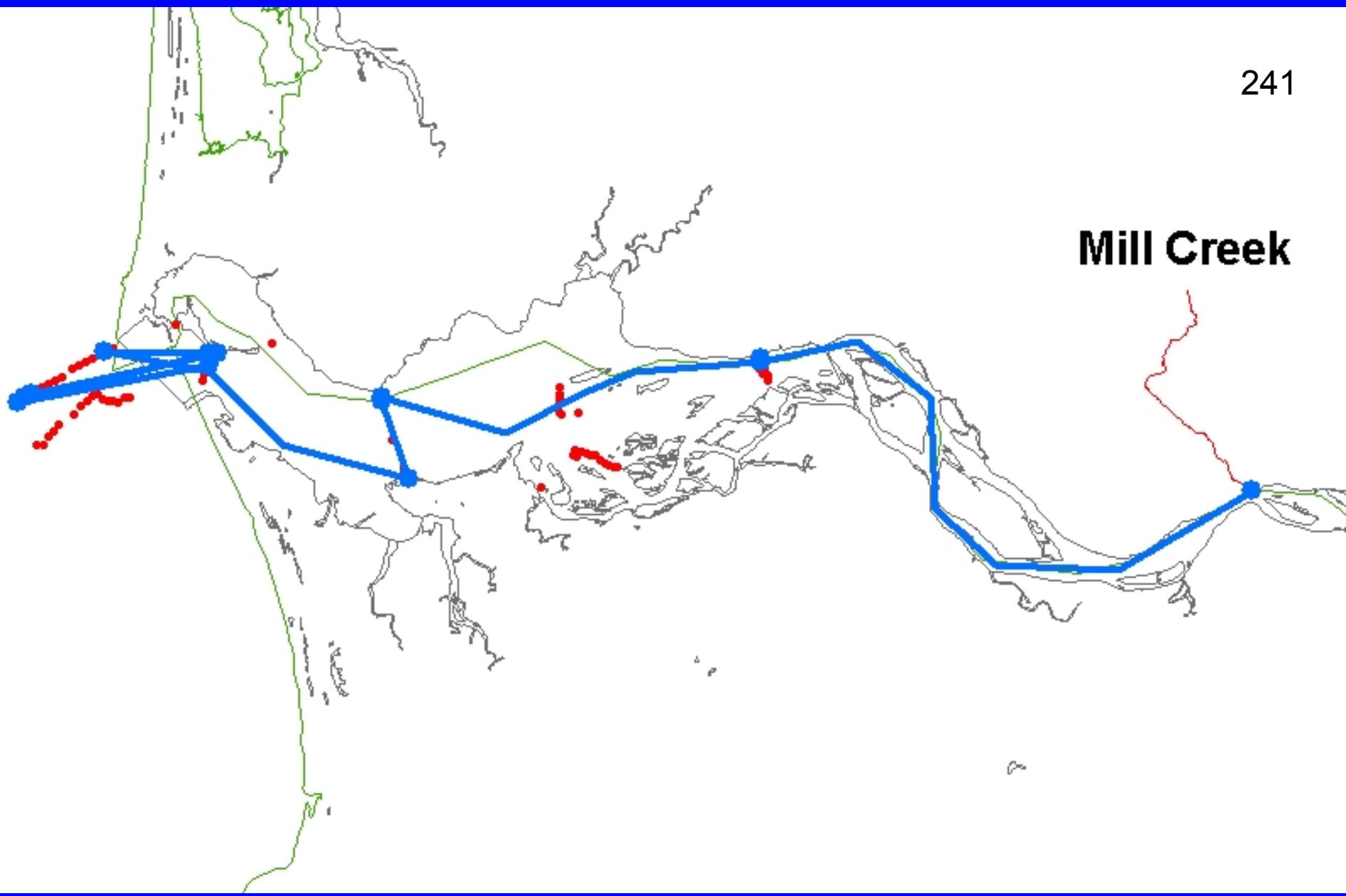


# Chinook River Acoustic Tag

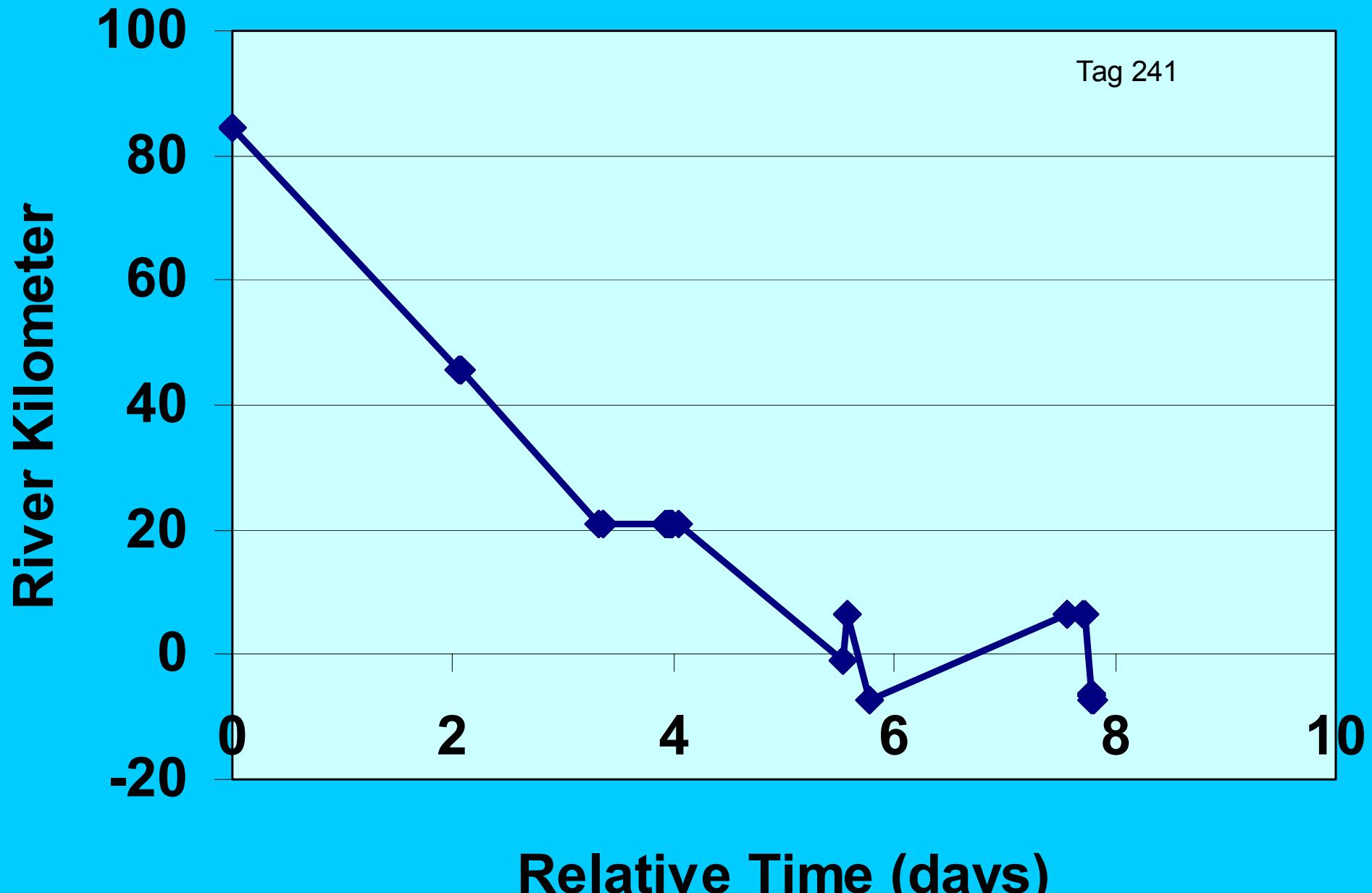


241

## Mill Creek

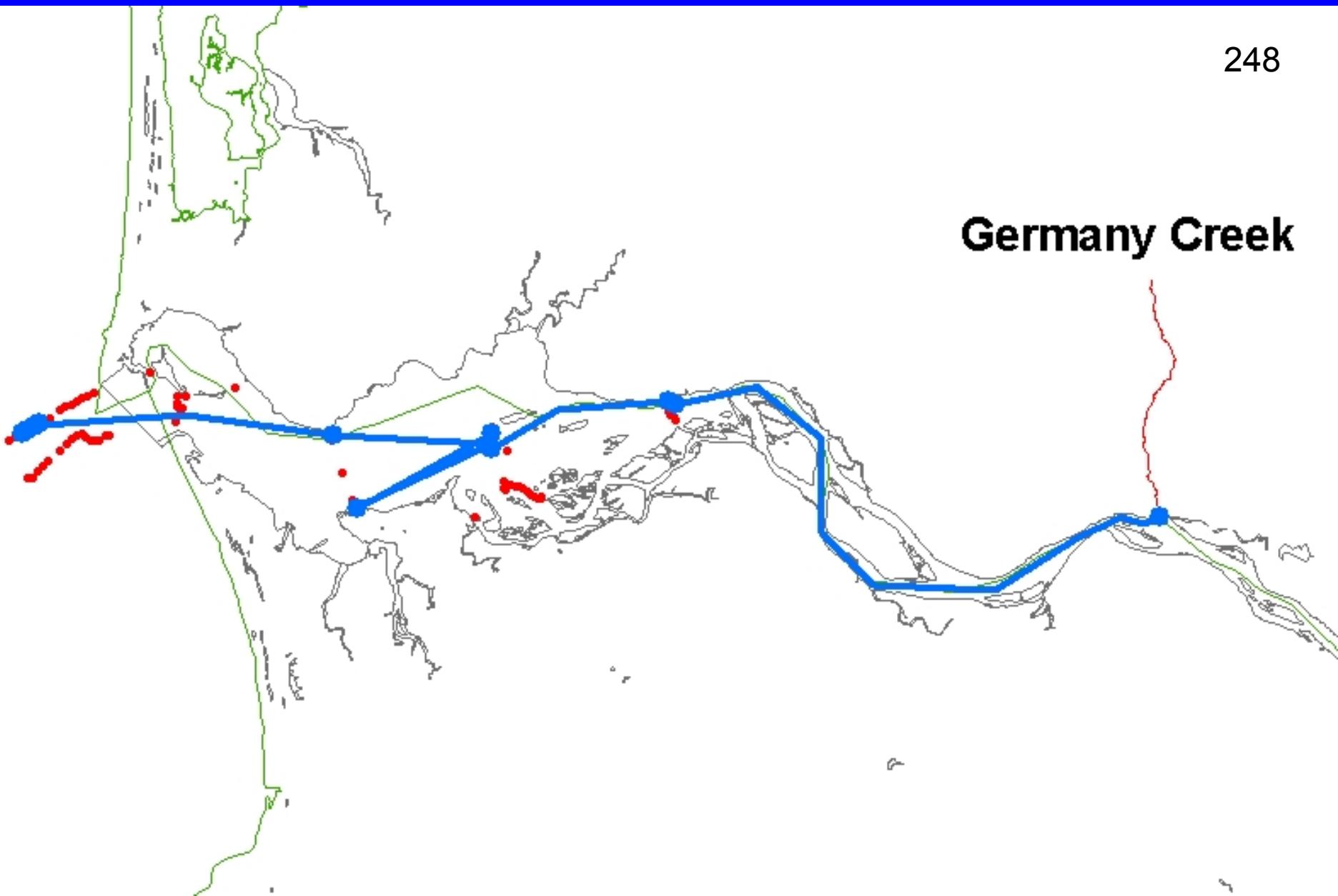


# Mill Creek Acoustic Tag

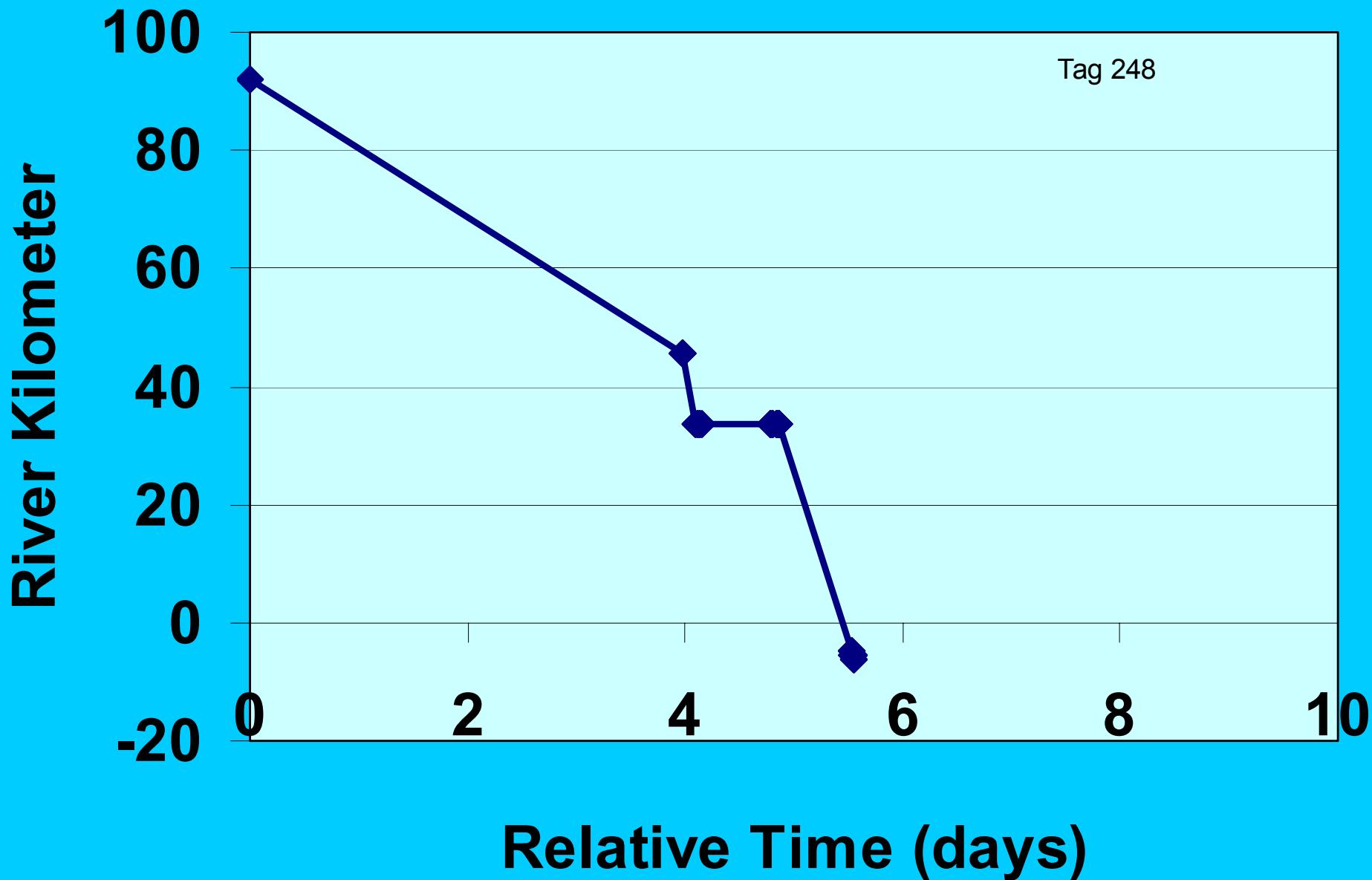


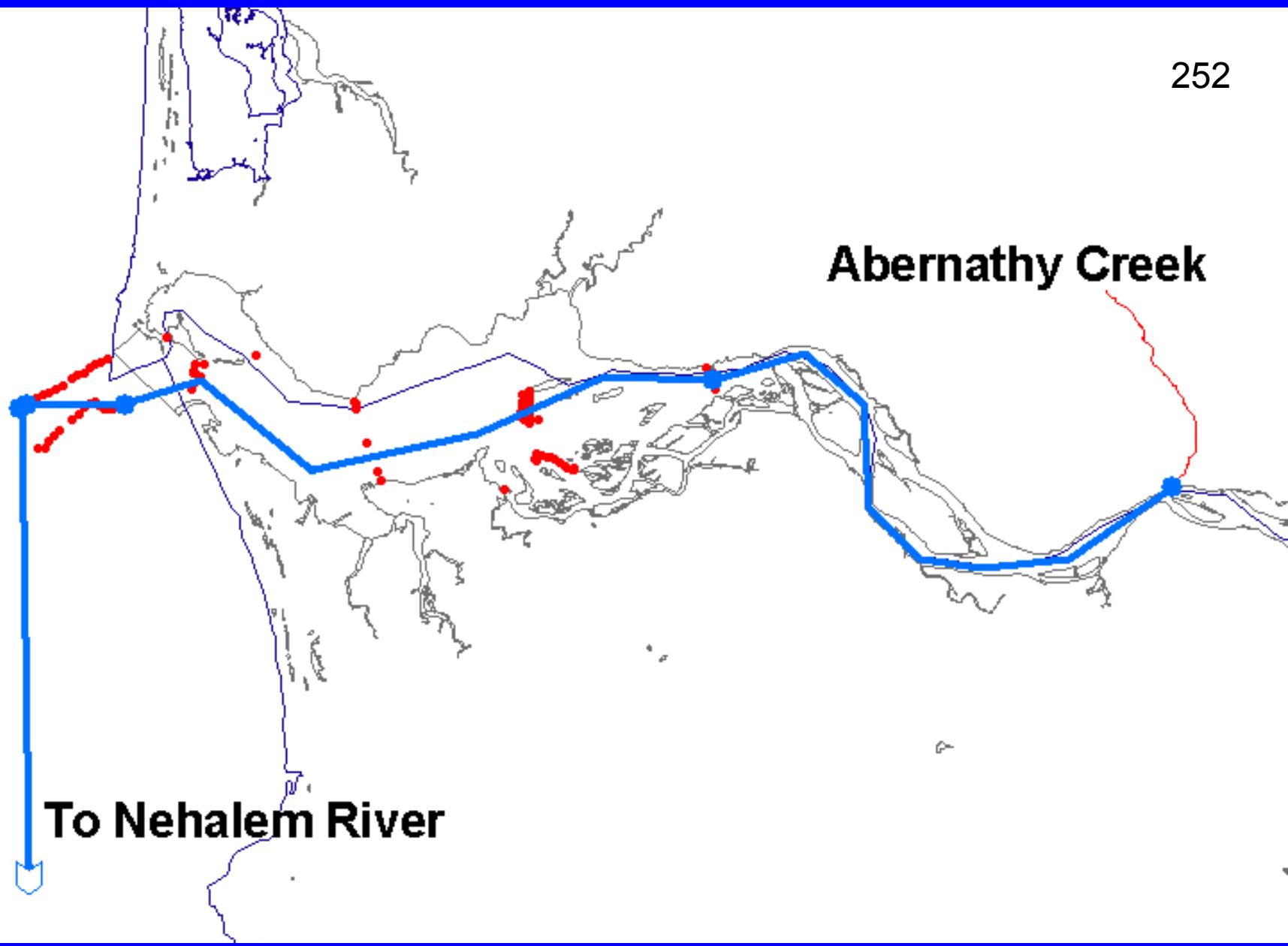
248

## Germany Creek

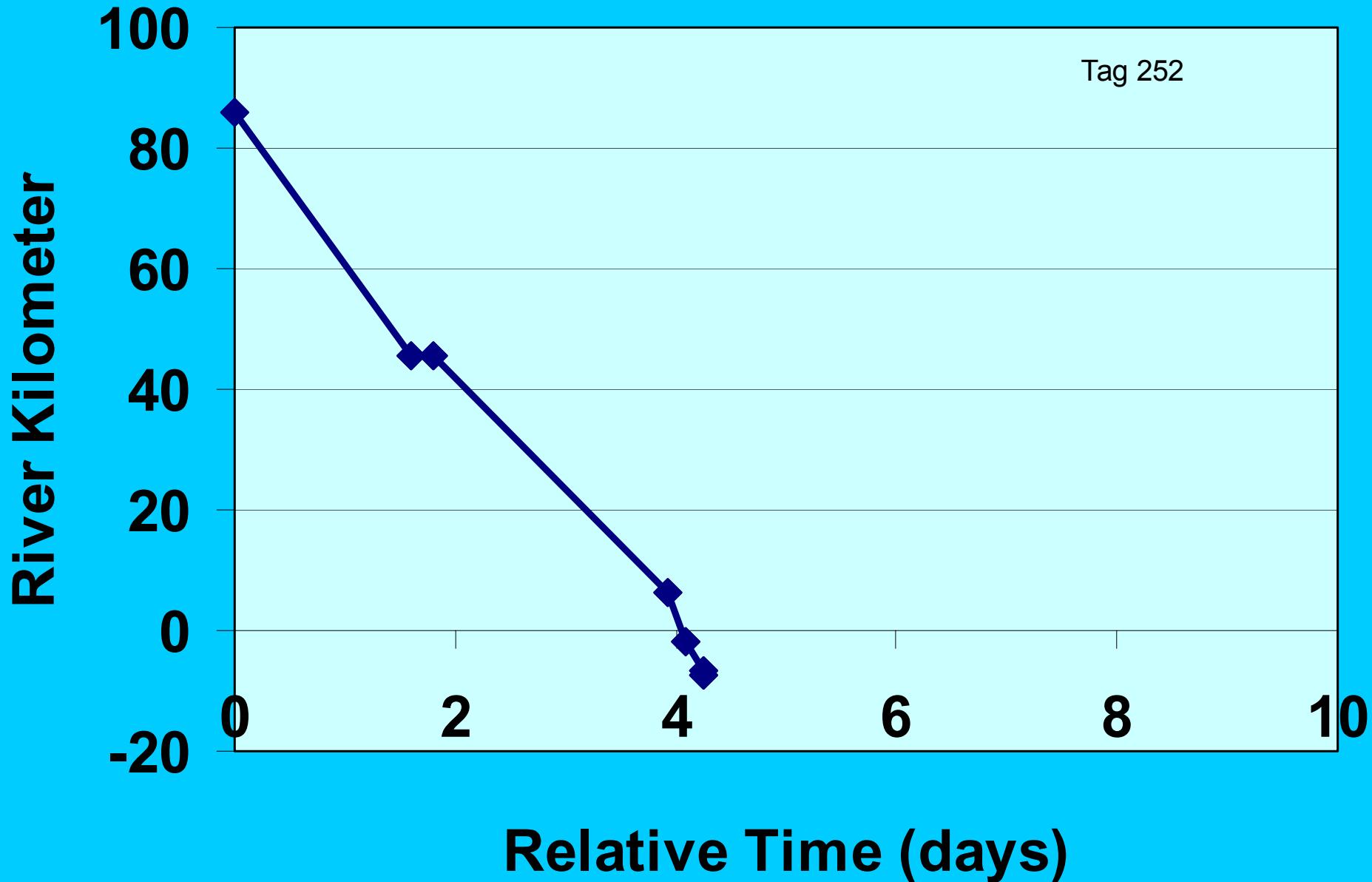


# Germany Creek Acoustic Tag

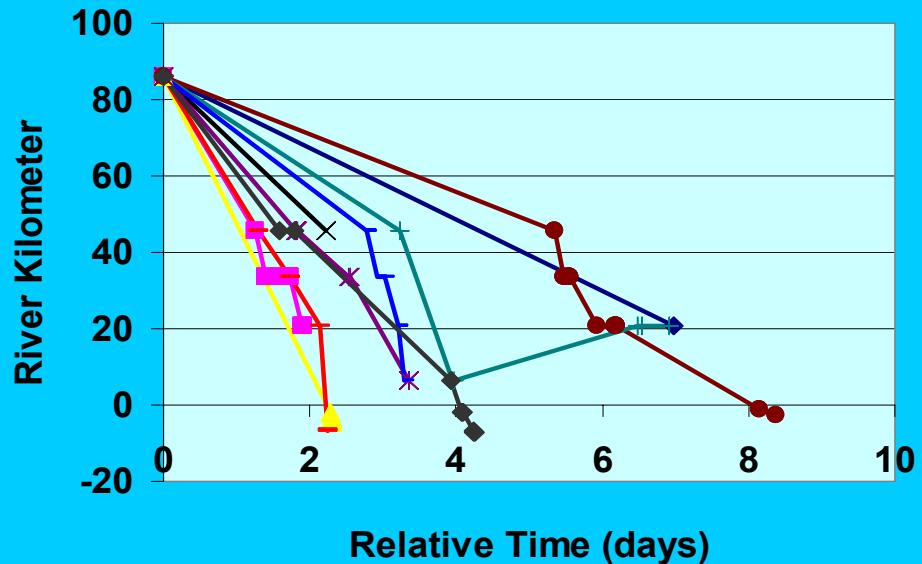




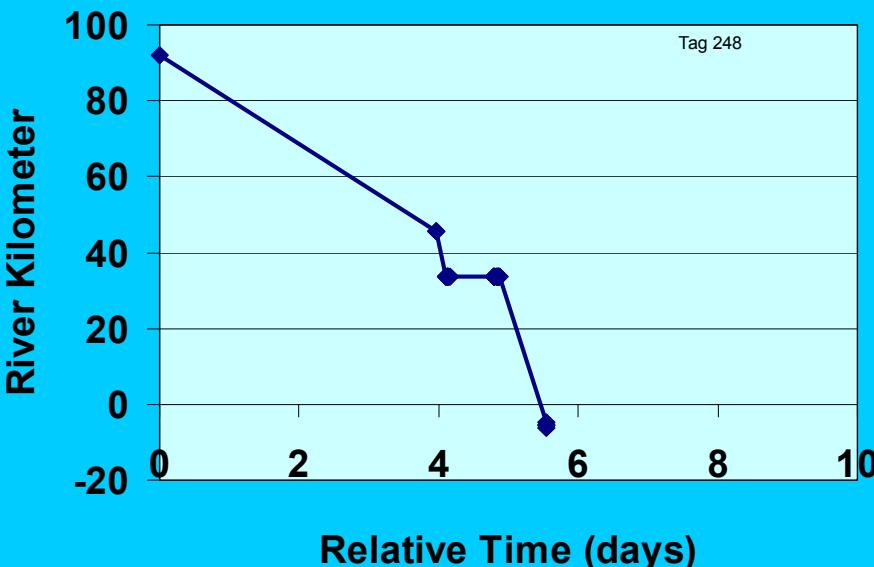
# Abernathy Creek Acoustic Tag



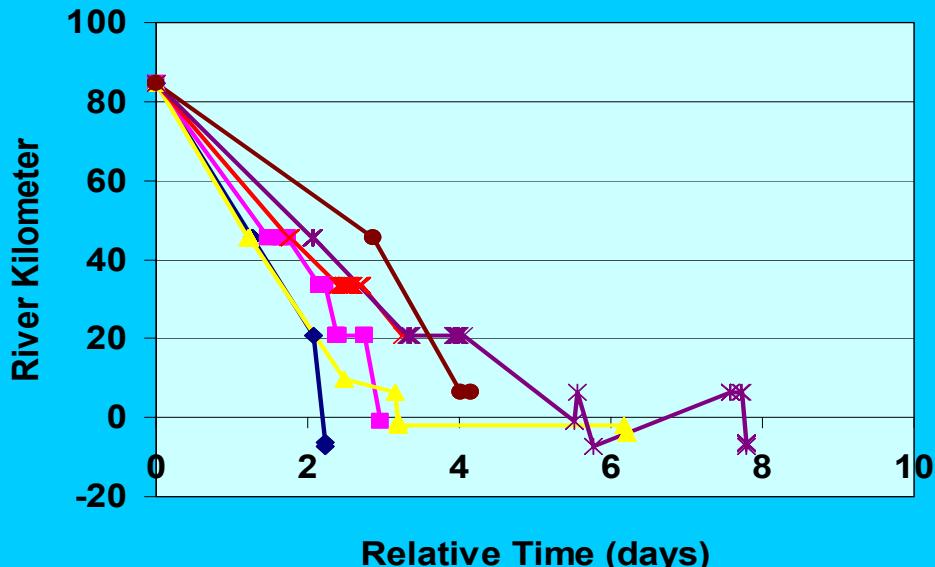
### Abernathy Creek Acoustic Tags



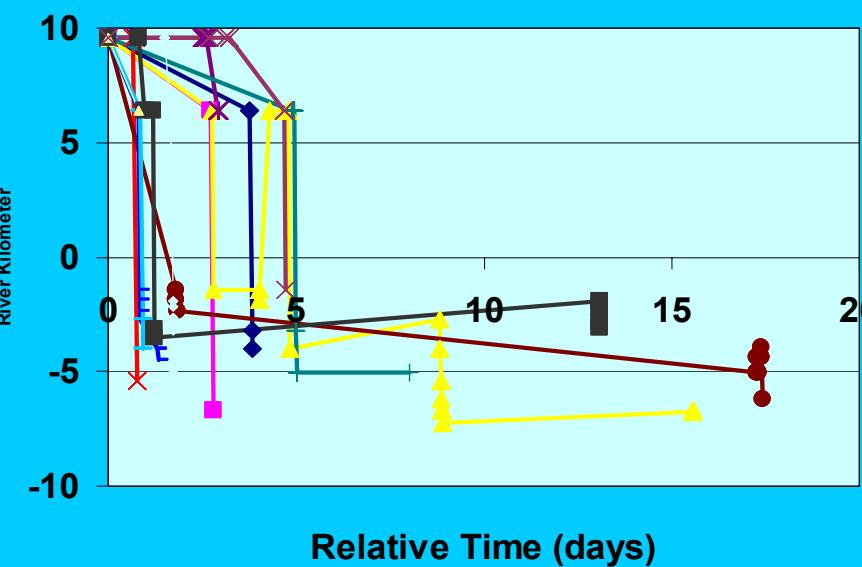
### Germany Creek Acoustic Tag



### Mill Creek Acoustic Tags



### Chinook River Acoustic Tags



# SPEED OF DOWNSTREAM MIGRATION (days to river mouth)

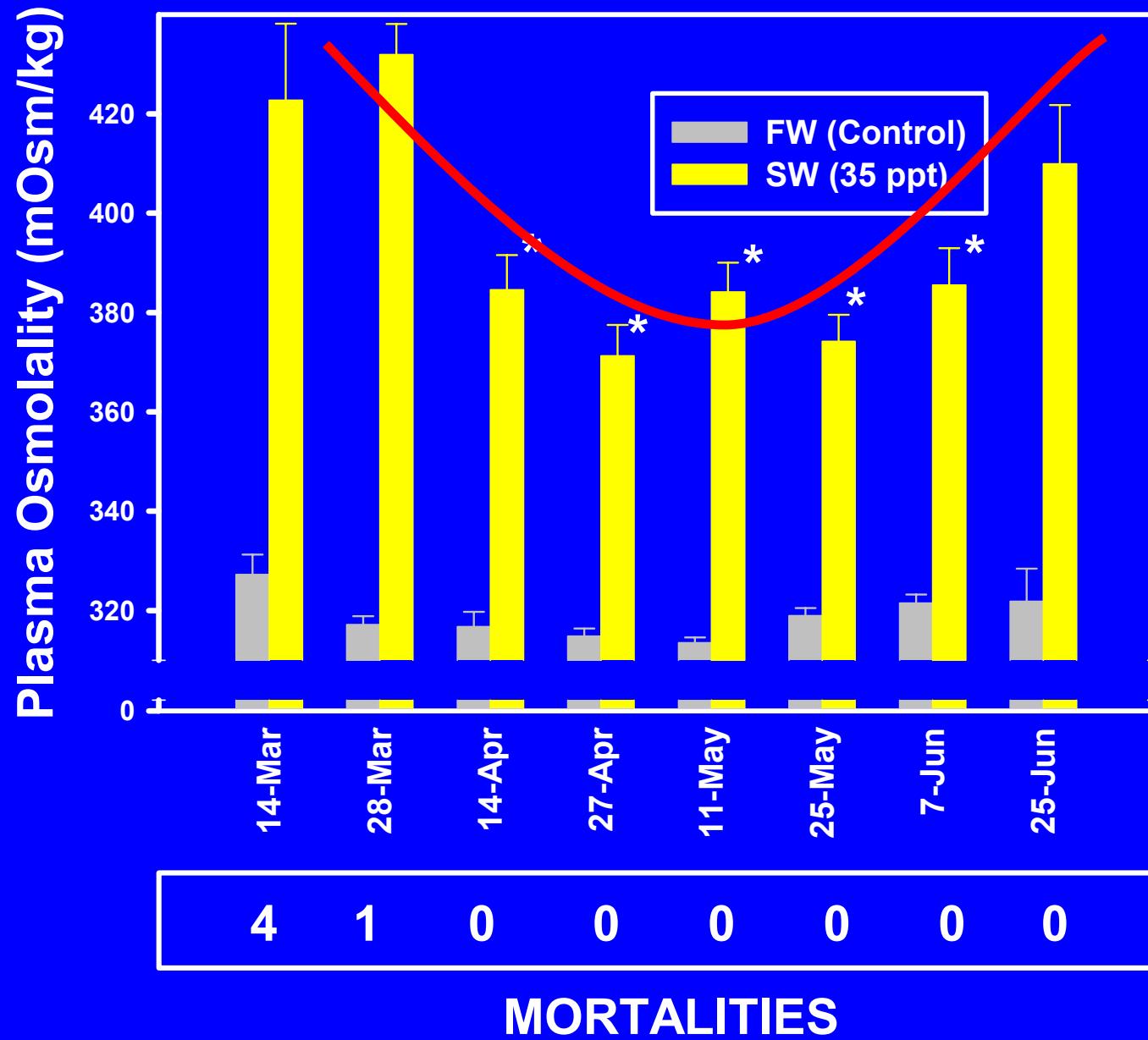
	n	Median	Min	Max
<b>RADIO</b>				
<i>Mill Creek</i>	23	<b>4.88</b>	0.94	36.84
<i>Abernathy Creek</i>	20	<b>3.39</b>	0.88	26.78
<i>Germany Creek</i>	10	<b>3.84</b>	1.16	44.95
<b>ACOUSTIC</b>				
<i>Mill Creek</i>	7	<b>2.39</b>	1.84	3.31
<i>Abernathy Creek</i>	9	<b>3.21</b>	1.89	6.98
<i>Germany Creek</i>	1	<b>4.07</b>	N/A	N/A

# Evaluate the physiology of “smolting”

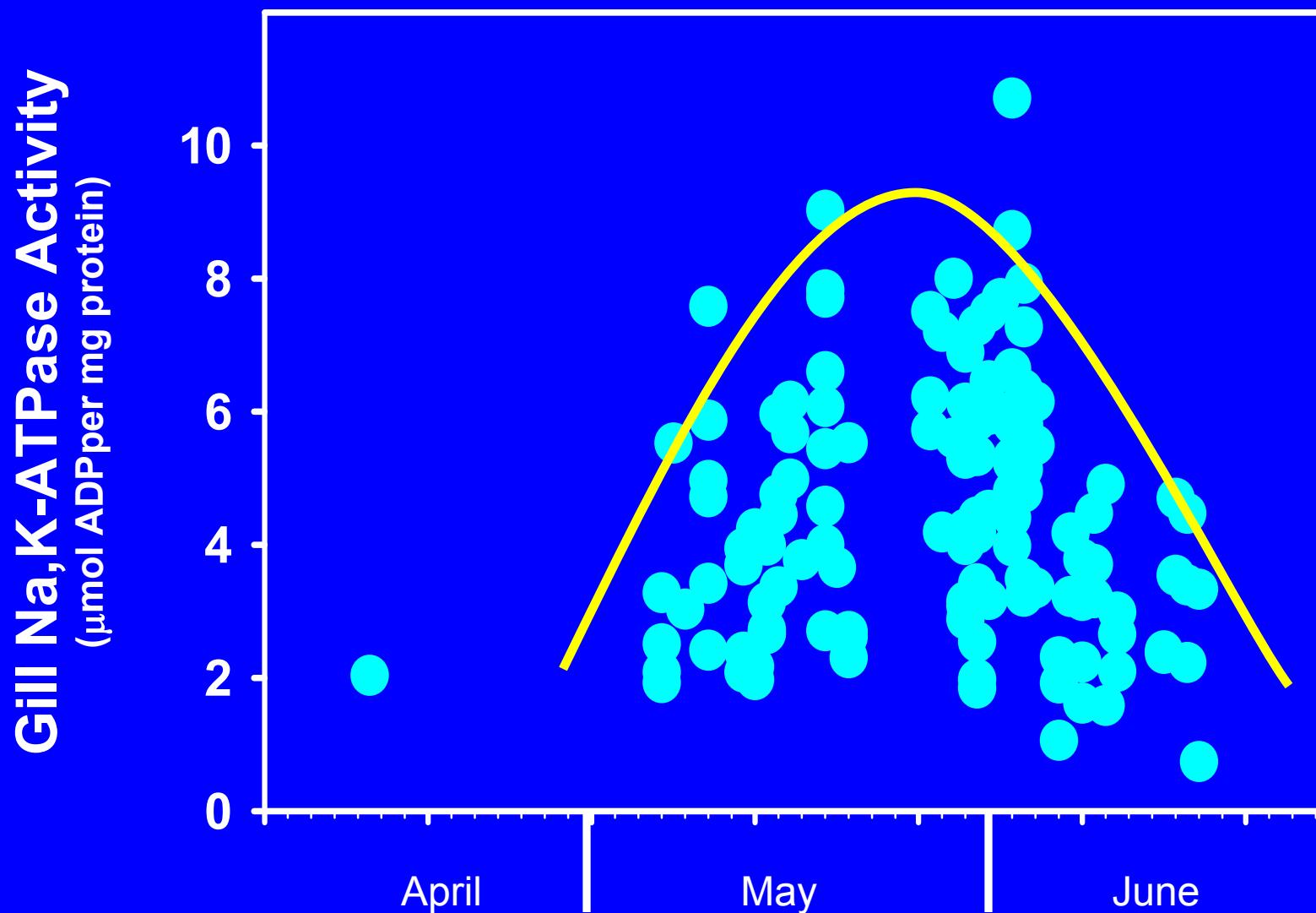


- Gill  $\text{Na}^+,\text{K}^+$ -ATPase activity
- Seawater tolerance

# Plasma Osmolality from Hatchery Cutthroat Trout Subjected to 24h 35ppt Seawater Challenges



# GILL Na,K-ATPase FROM CUTTHROAT TROUT CAPTURED IN ABERNATHY CREEK





## Summary

- Directed spring migration into main-stem
- Rapid directional movement to the ocean
- Increased seawater tolerance (and increased Na,K-ATPase activity in the wild) – “smolting”