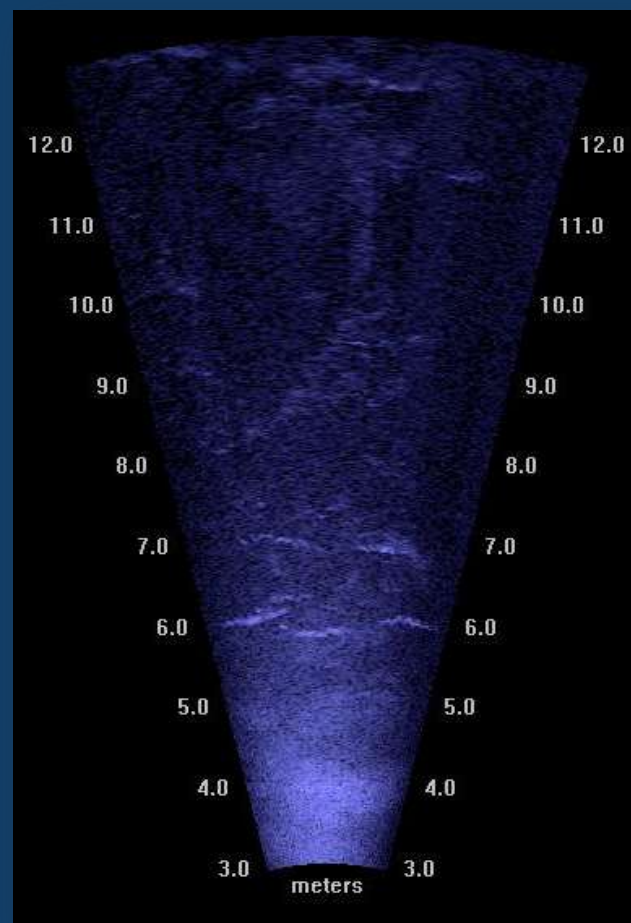
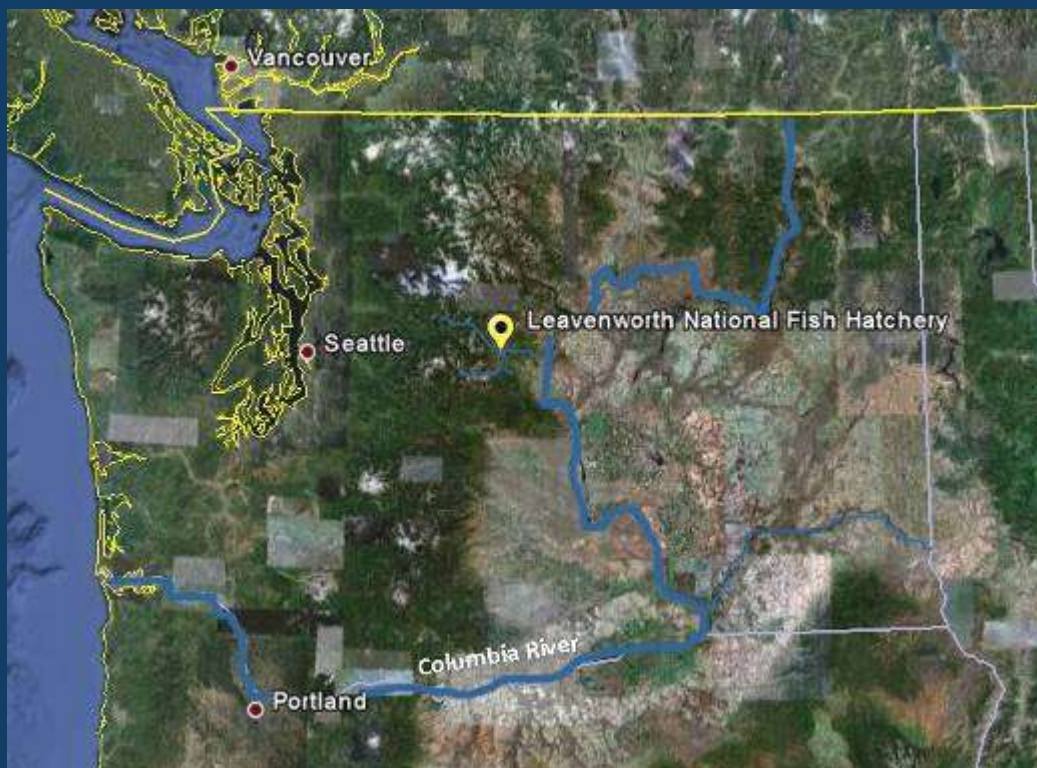


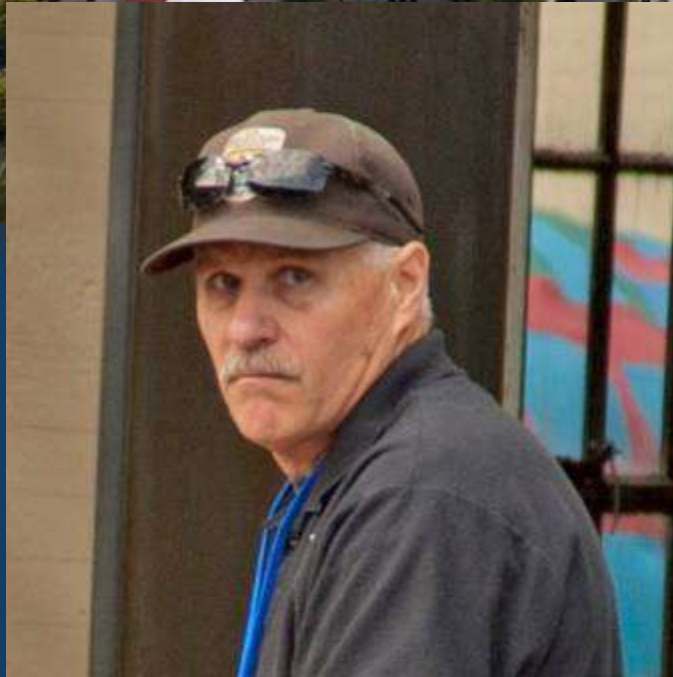
Using an Acoustic Camera to Monitor Fish Passage at the Leavenworth National Fish Hatchery



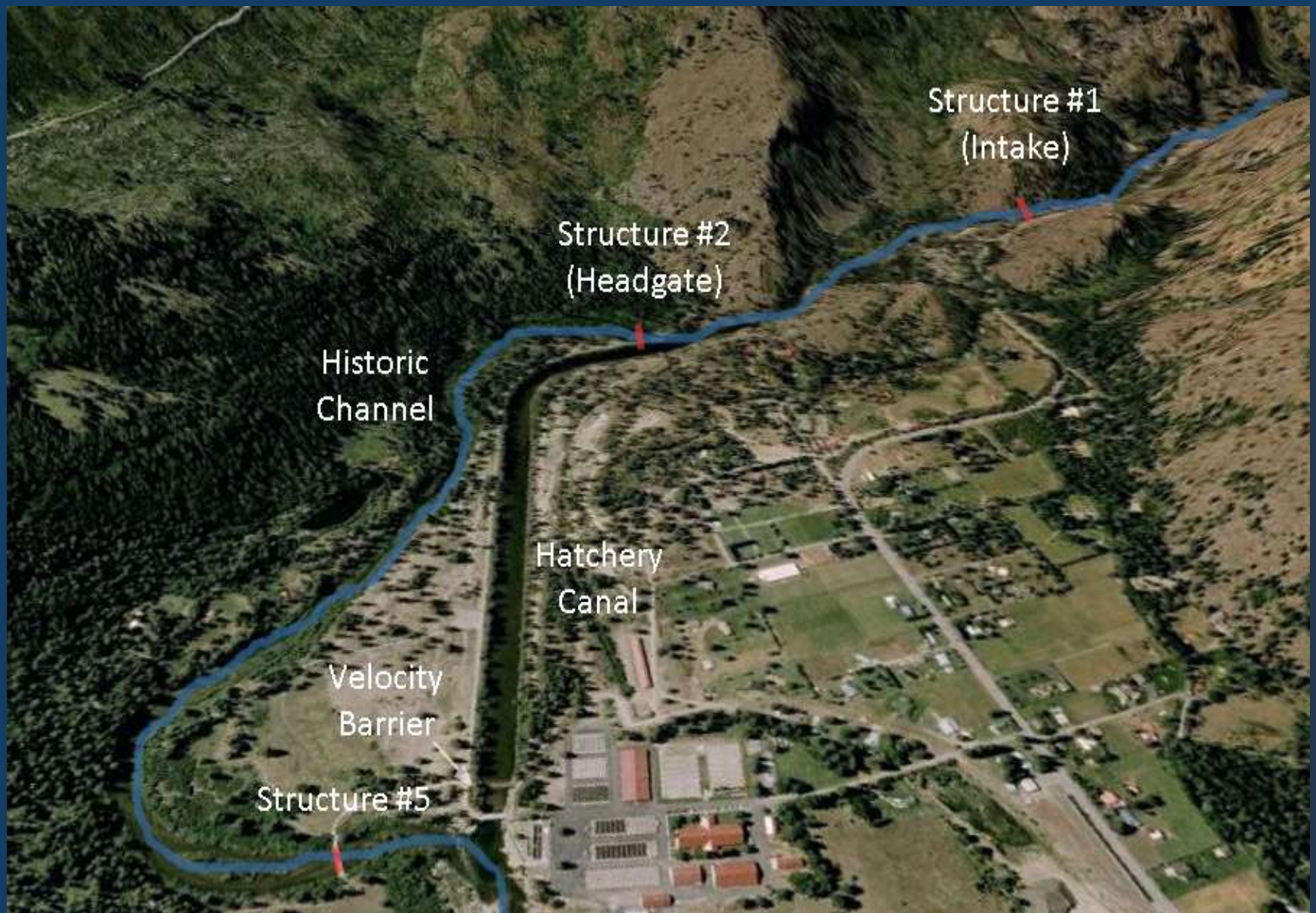
Mathew Hall
Mid-Columbia River Fisheries Resource
Office
U.S. Fish and Wildlife Service



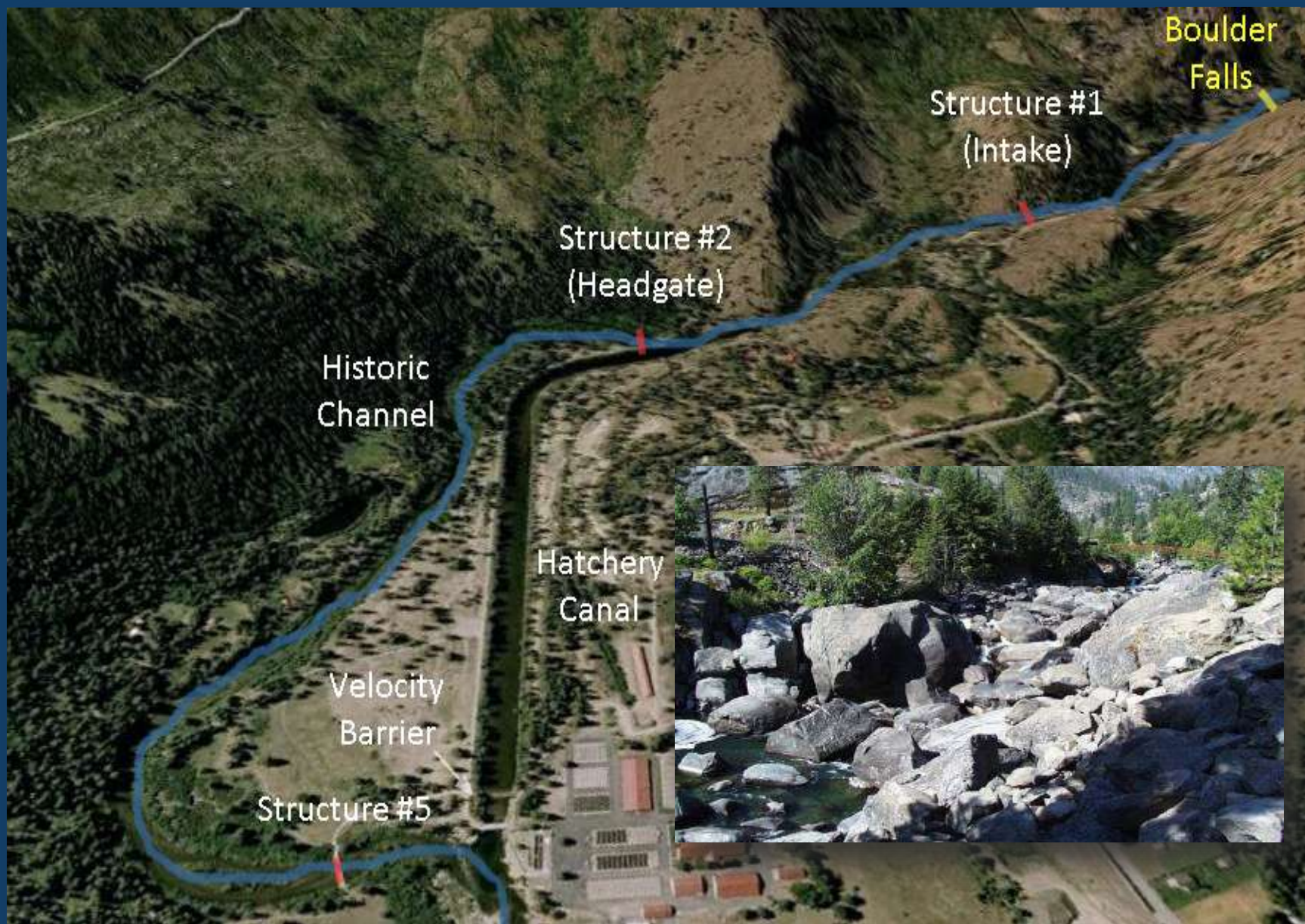








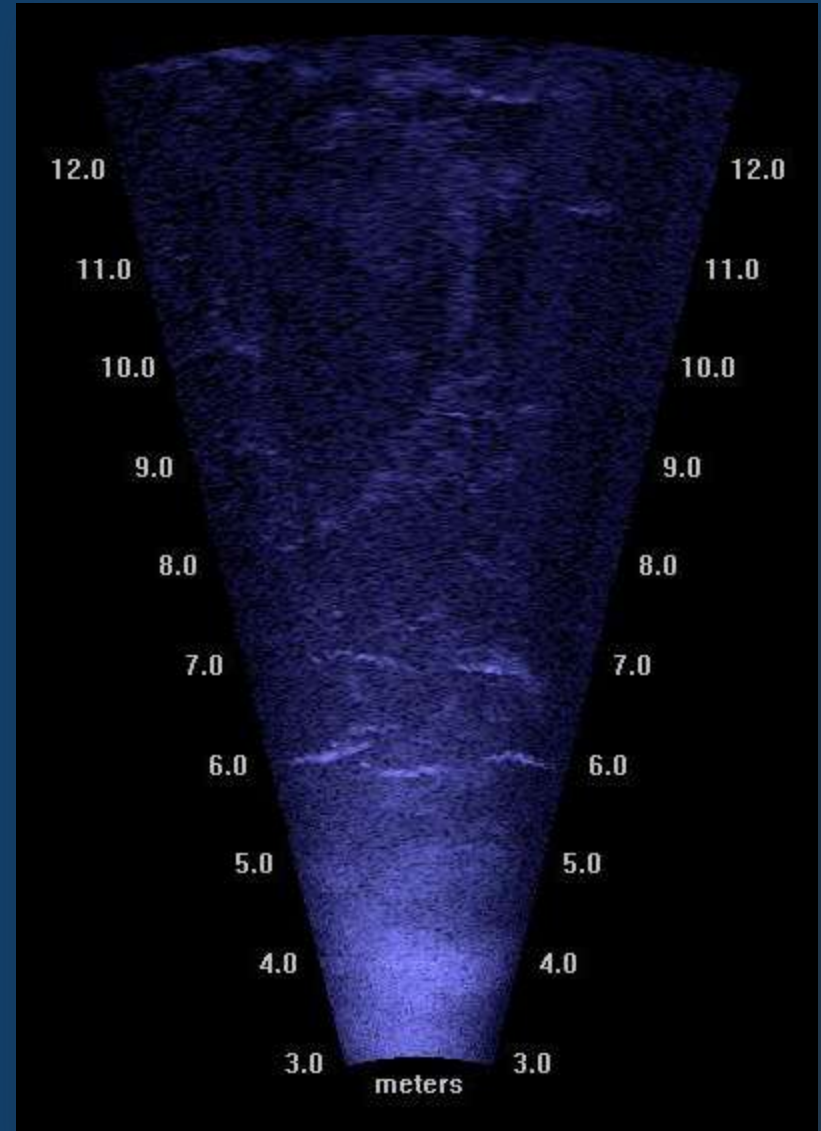




Problem?



DIDSON–Dual-frequency IDentification SONar

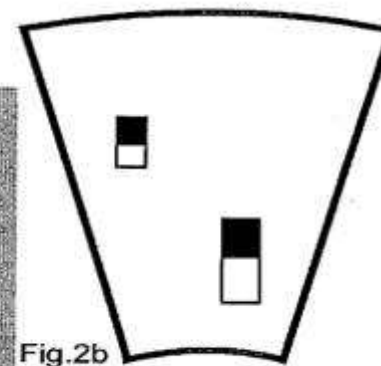
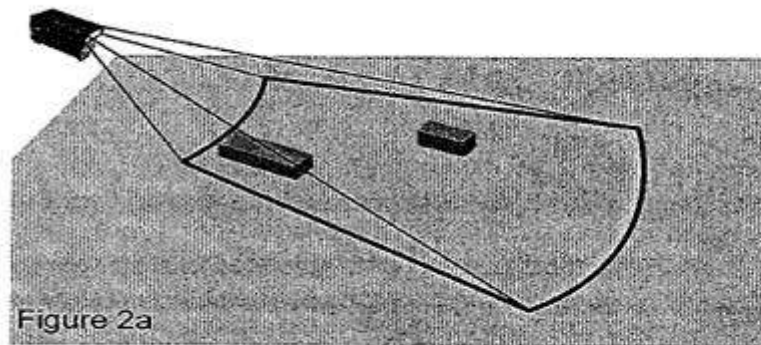


DIDSON Specs:

- Models: 300m, 1000m, 3000m
- 17.4lbs
- 100ft cable (500ft or less)
- Must be tethered to a CPU
- Creates a .ddf file
- Projects a field at 30 degrees horizontal and 14 degrees vertical
- Up to 20m, other lenses available



Photos Courtesy
Sound Metrics



Literature Review

Site selection

Use of weirs

Power

Camera Performance

Personnel

Data management



Photo Courtesy Cariboo Envirotech Ltd.

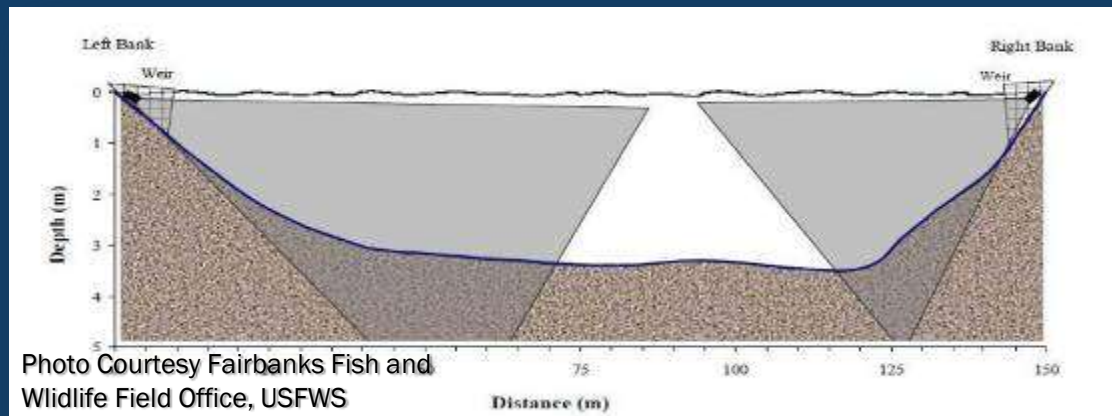
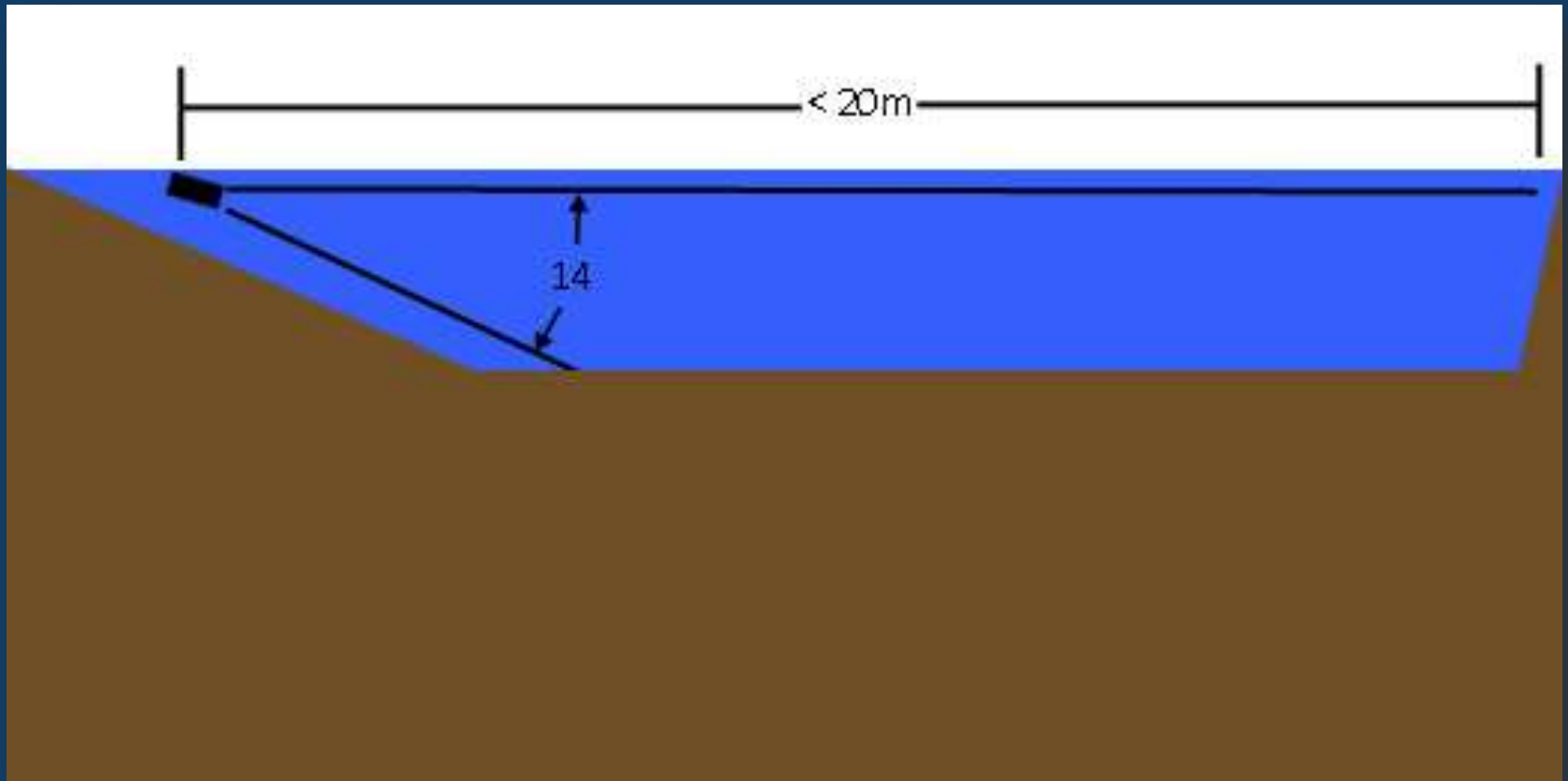


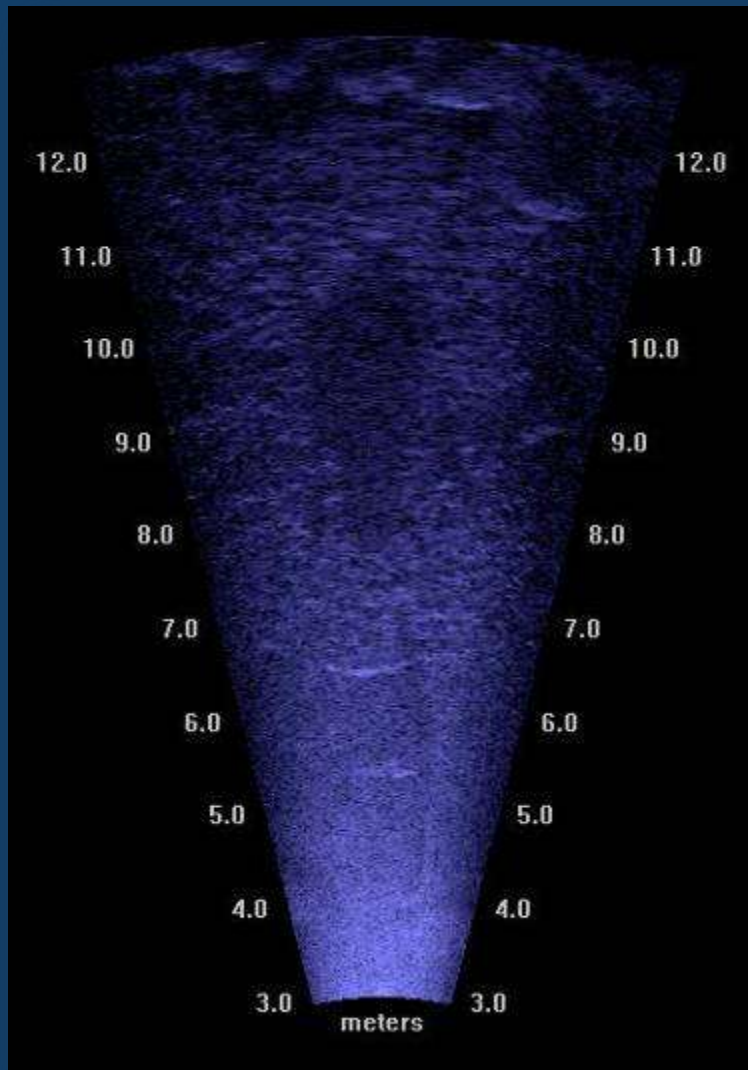
Photo Courtesy Fairbanks Fish and Wildlife Field Office, USFWS

Site Selection

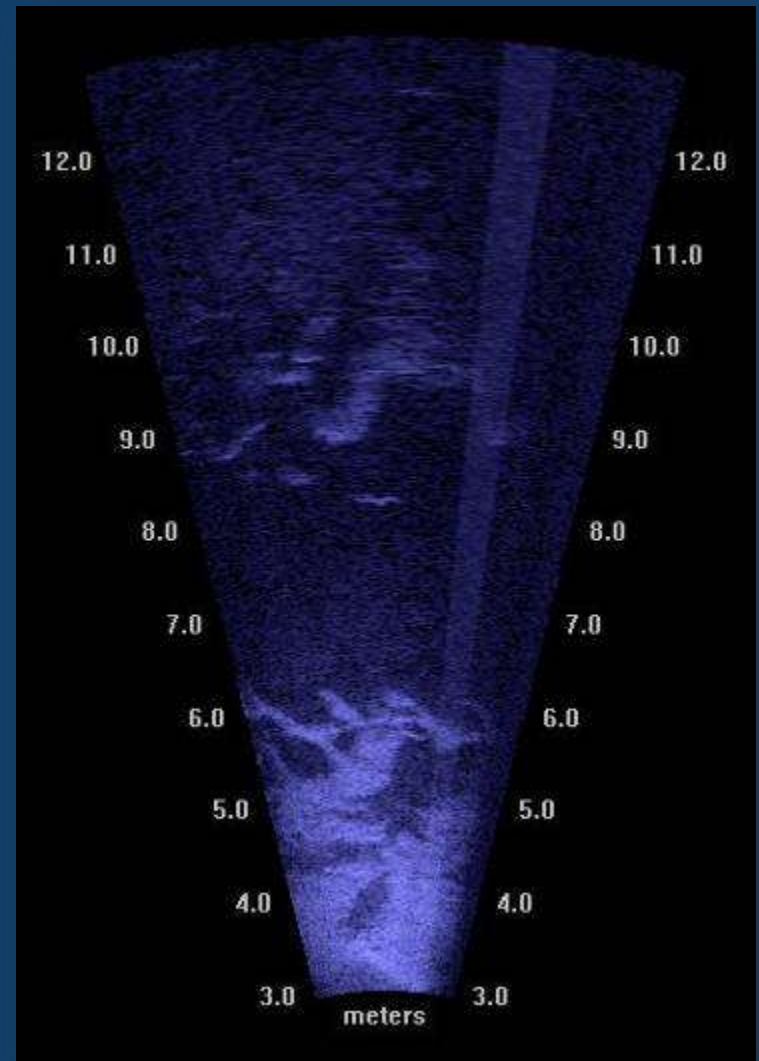


Site Selection

2010-07-07



2010-07-19



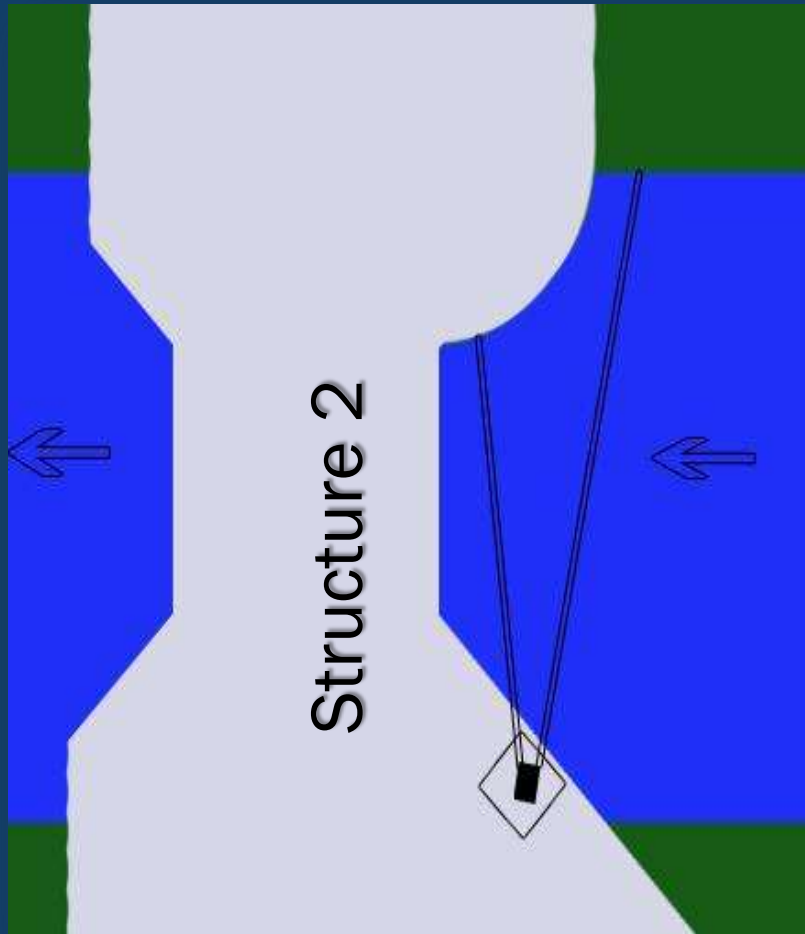
Site Selection



Use of Weirs



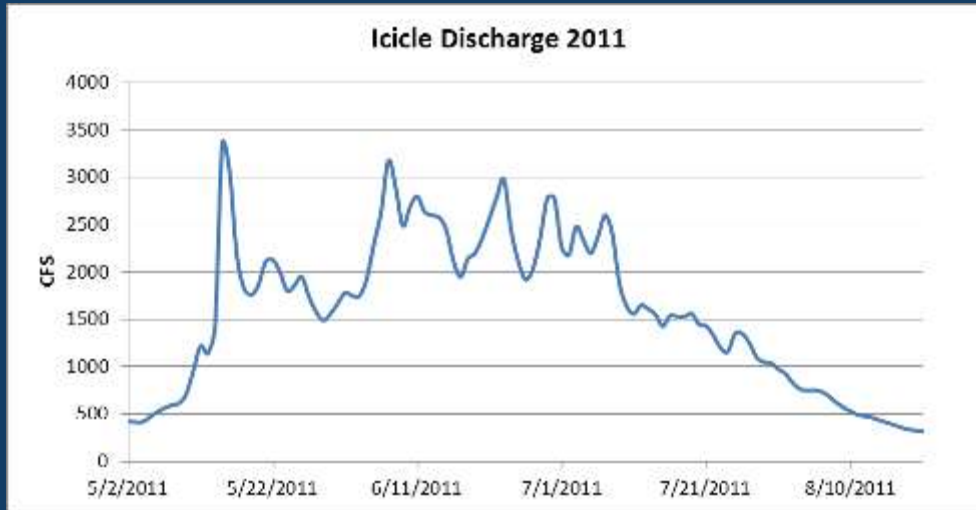
Use of Weirs



Power



Camera Performance



Personnel

“You watched this stuff for 6 months?”

8fps recording – up to 40fps viewing

CSOT – Convolved Samples Over Threshold
removes up to 90% of the frames

“At present we do not use any form of automated counting...”
- Enzenhofer et al 2010

Personnel

“Reviewing of DIDSON-LR files is a tiresome and boring task...”
– CRITFC 2005

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2010-07-15_160000.dcf	2010-07-16_093000.dcf	2010-07-17_030000.dcf	2010-07-17_203000.dcf	2010-07-18_140000.dcf
2010-07-15_163000.dcf	2010-07-16_100000.dcf	2010-07-17_033000.dcf	2010-07-17_210000.dcf	2010-07-18_143000.dcf
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2010-07-16_073000.dcf	2010-07-17_010000.dcf	2010-07-17_183000.dcf	2010-07-18_120000.dcf	



Data Management

$1.2\text{GB/hr.} \times 24\text{hrs.} \times 120\text{days} = 3456\text{GB or } 3.45\text{TB}$

“Data storage is cheap.” – Sound Metrics



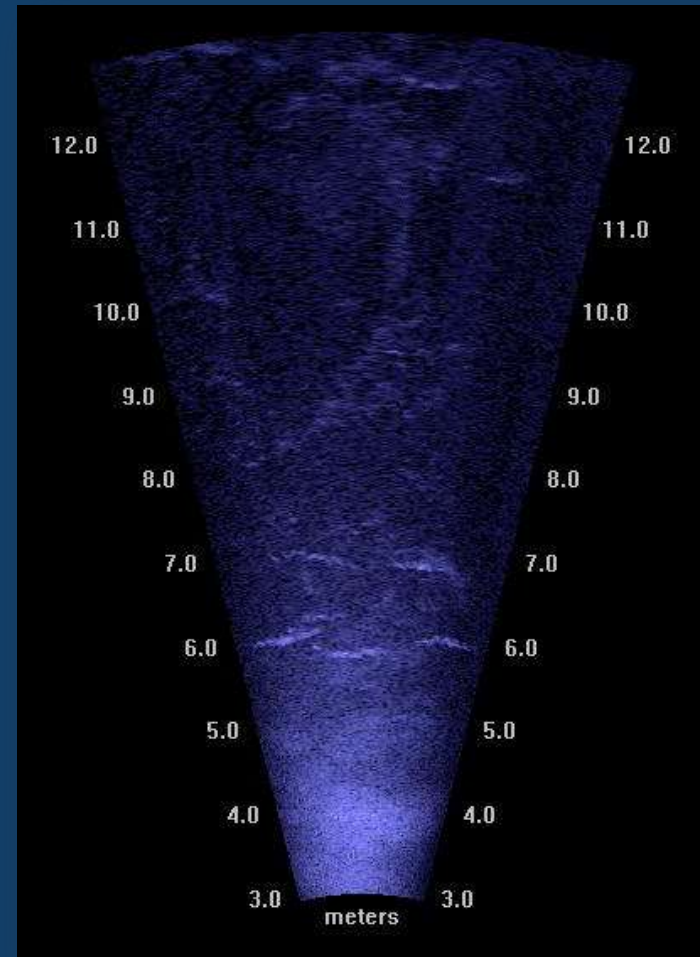
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Using an Acoustic Camera to Monitor Fish Passage at the Leavenworth National Fish Hatchery

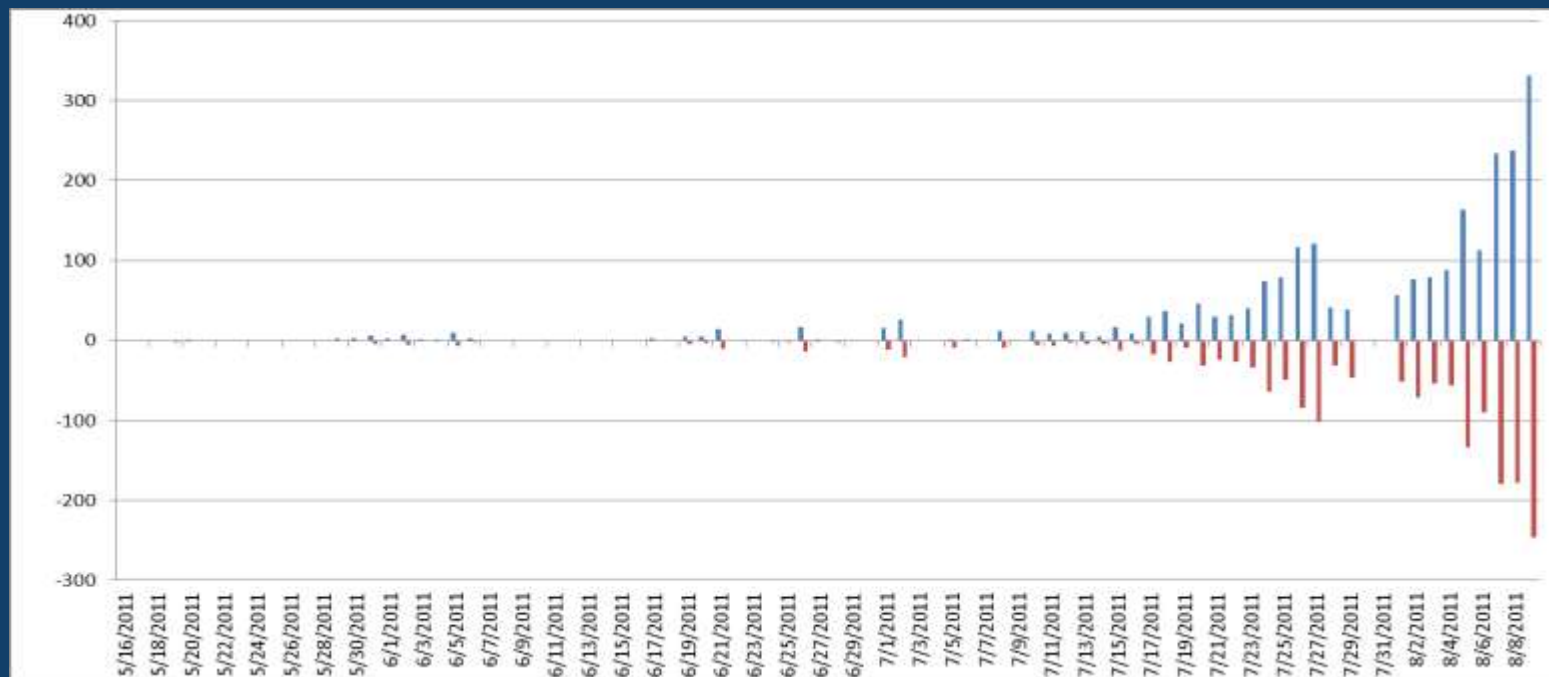
The Team

Kendall Henry
Brandon Haynes
Kali Kotsar
LNFH Staff

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Mid-Columbia River Fisheries Resource
Office
U.S. Fish and Wildlife Service



Using an Acoustic Camera to Monitor Fish Passage at the Leavenworth National Fish Hatchery



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