



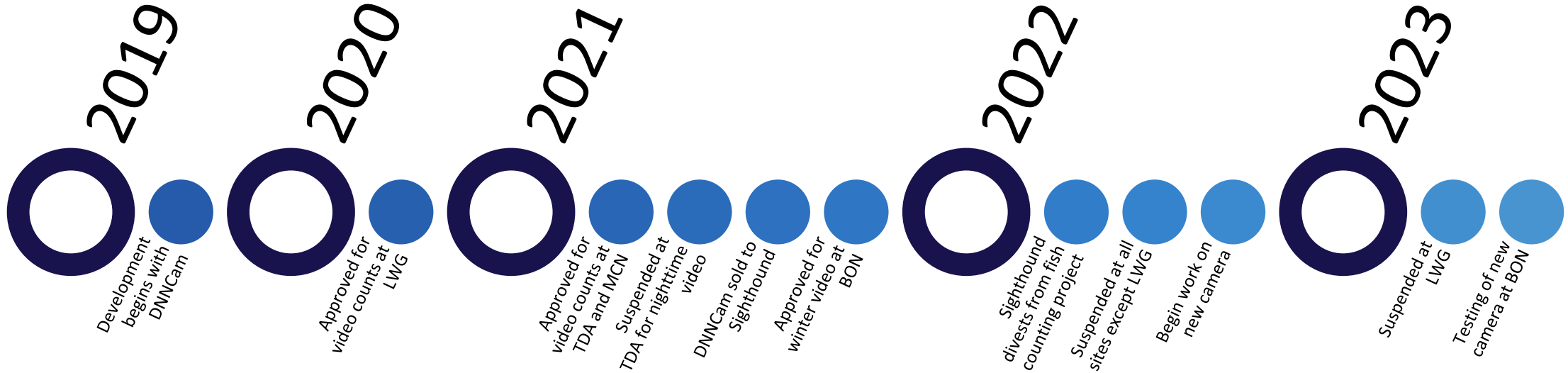
# BLUEFISH FISH COUNTING SYSTEM



Fish Passage Operations and Maintenance Meeting

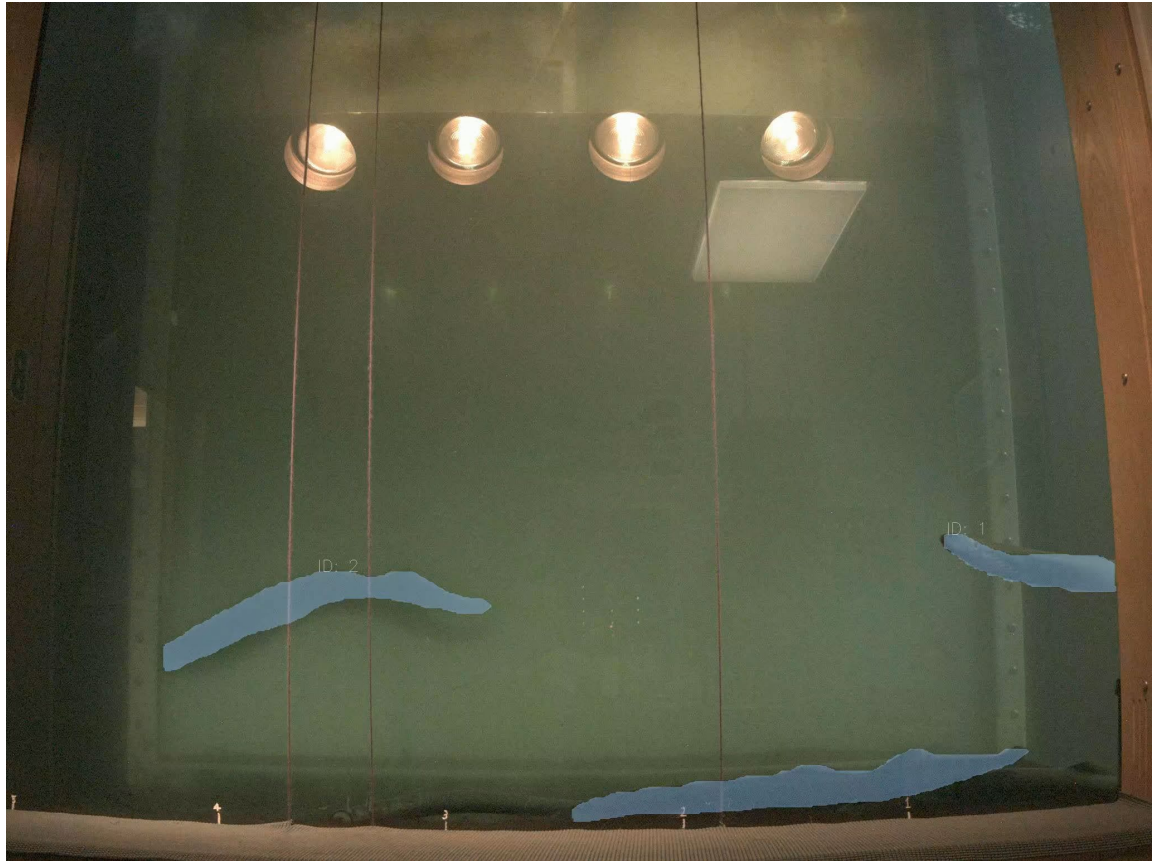
May 9, 2024

# BLUEFISH HISTORY



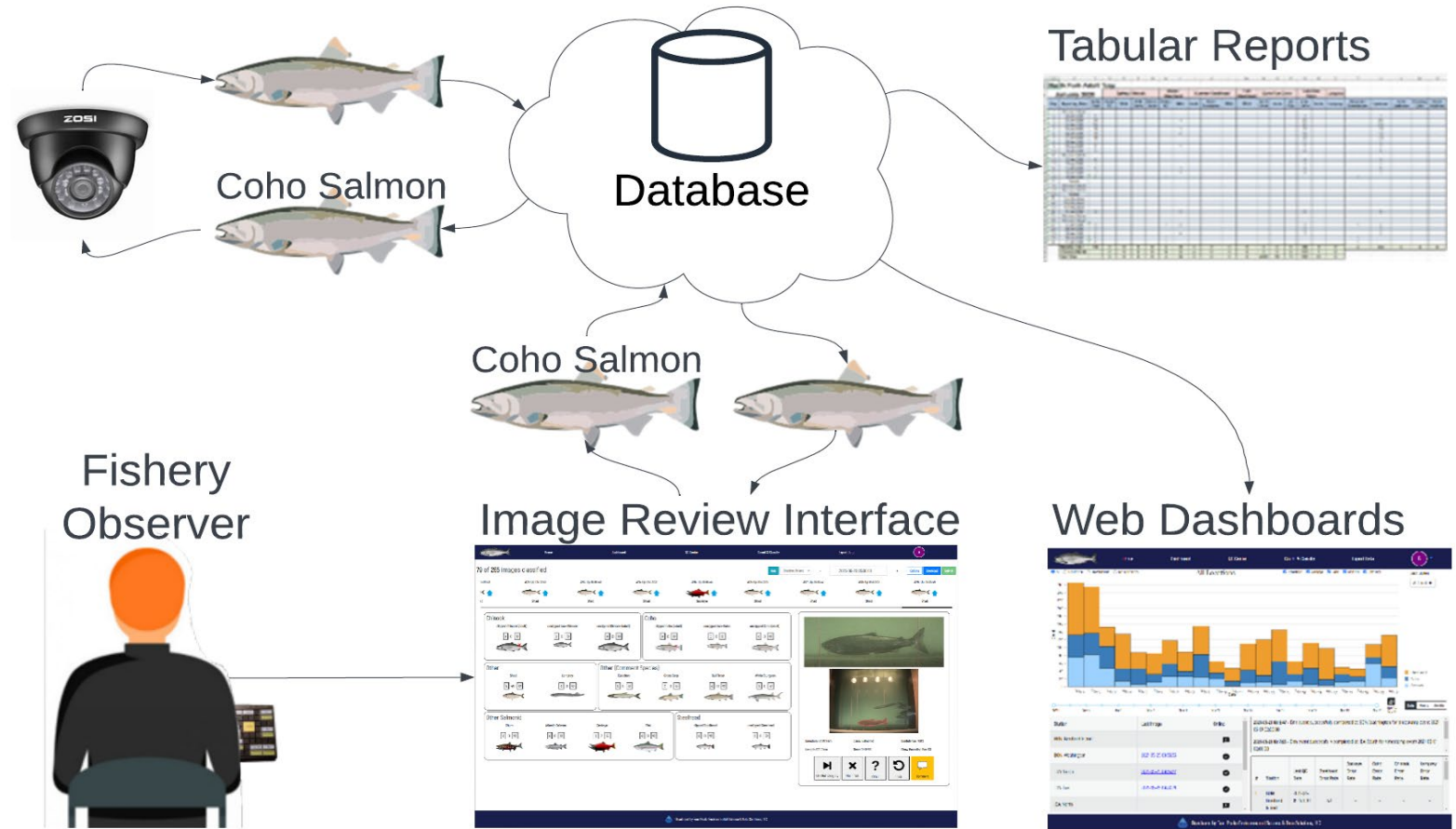
# WHAT IS BLUEFISH

- Video camera with a computer
- Tracks fish moving through frame
- Recognizes four classes: Salmonid, Shad, Lamprey, and Other
- Transmits a picture of each passing fish with contextual information
  - Direction of movement
  - Size
  - Bounding polygon and track

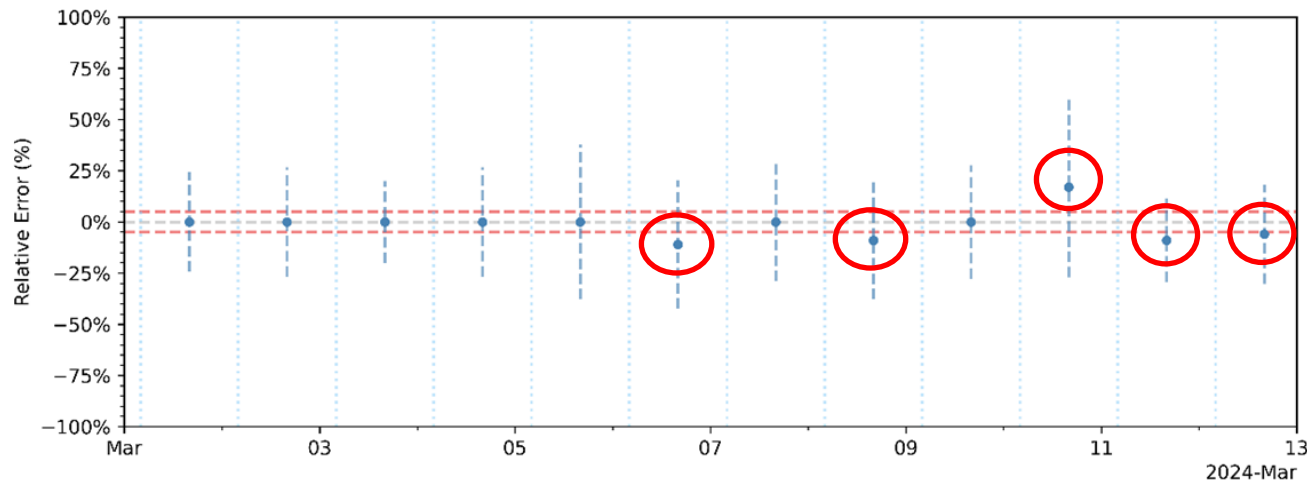
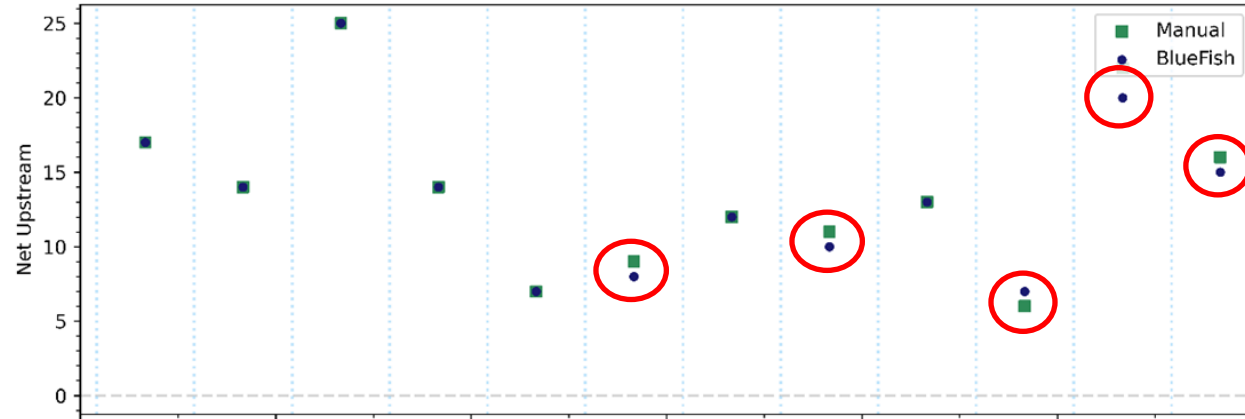


# IMAGE REVIEW PROCESS

- Camera captures images of passing fish
- Fishery observer identifies the species of each image
- Up/downstream images aggregated for hourly net upstream counts
- Classified images build dataset for automatic species identification



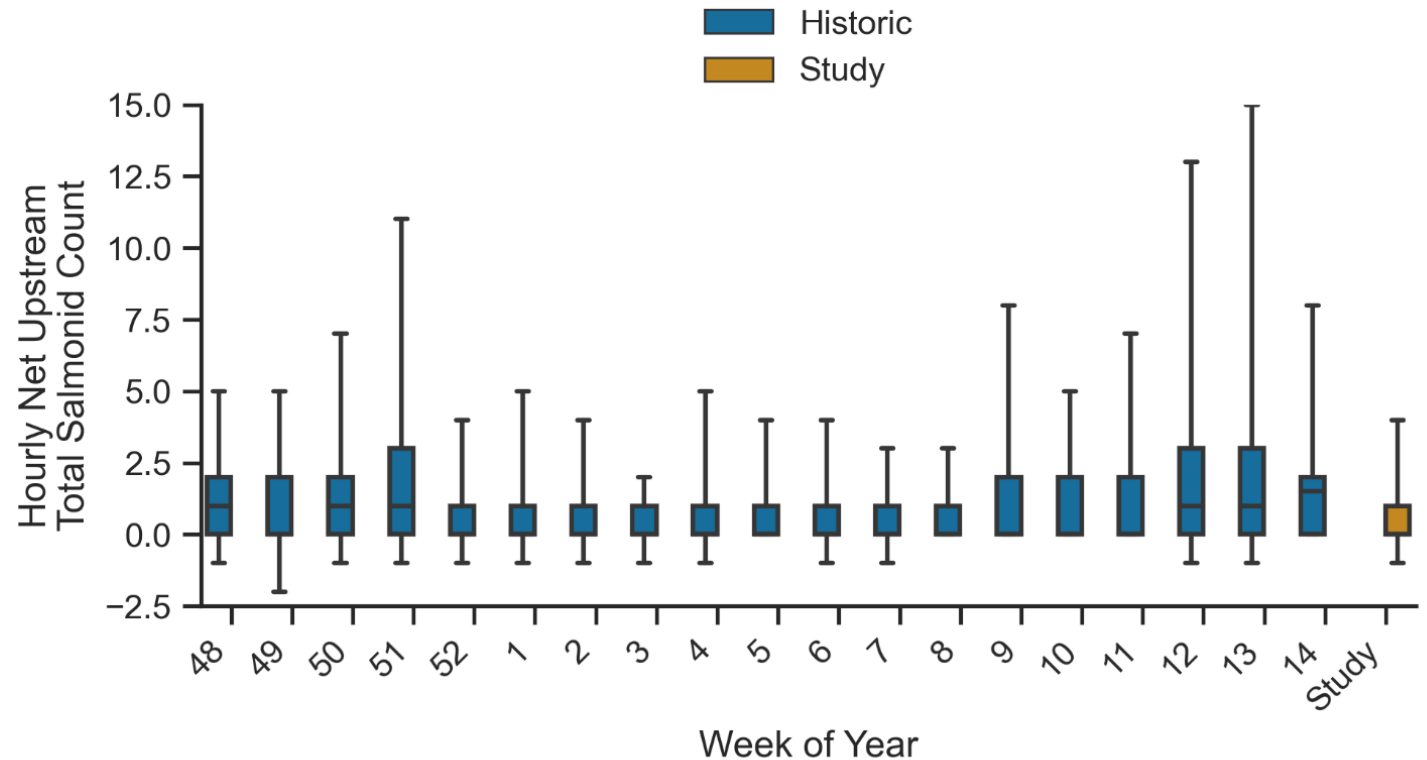
# TESTING AND VERIFICATION PROCESS



- Count with BlueFish in parallel to production counts
- Compare net upstream counts obtained with BlueFish to the production count data
- Investigate a sample of the discrepancies to determine the source of the error
- Adjust where necessary and retest

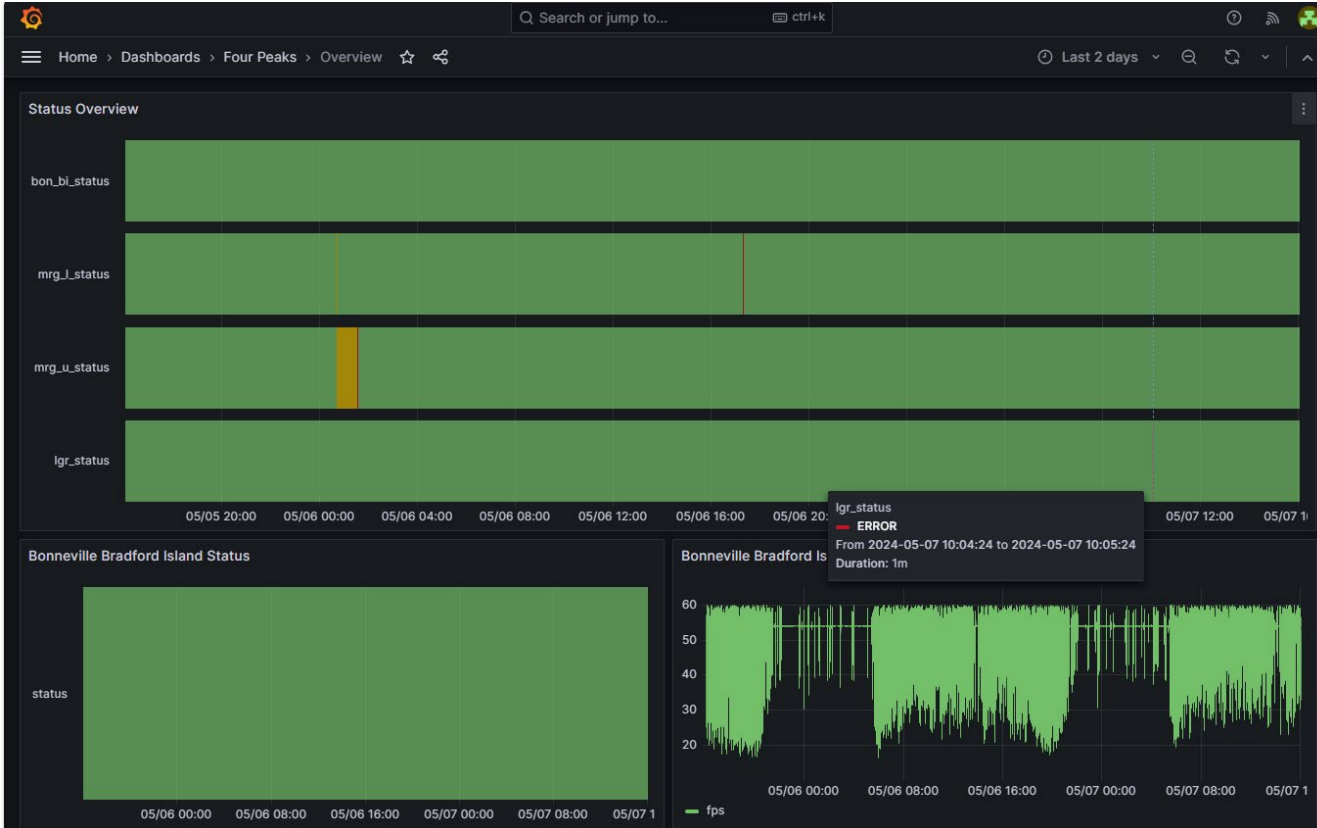
# APPLICATION OF TESTED DEPLOYMENTS

- Accuracy can be affected by the number of fish passing simultaneously
- Compare the passage volume during the test period to the expected volume during the planned application period





# PRODUCTION OPERATIONS PROTOCOL



- Apply to video counting periods with relatively low passage
  - Fewer than 600 net upstream movements per hour
  - Limited lamprey schooling
- Use web dashboard to check for outages and use video for impacted hours
- Perform weekly recounts from video for quality control

# 2024 TARGETS

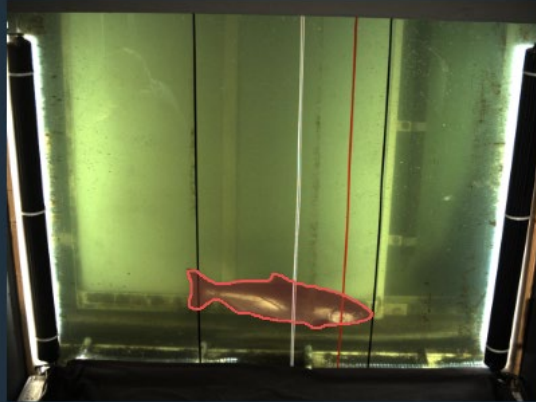
Station	Target Period	Testing Status	Approval Status
Bonneville Washington	Daytime Winter Video	Tested	Approved
Bonneville Bradford Island	Daytime Winter Video	Tested	Pending
Lower Granite	Nighttime Summer Video	In testing	
Lower Granite	Daytime Winter Video	In testing	



# FUTURE DEVELOPMENT

- Automate identification of salmonid species, marks, and injuries
- Stereo optics for better tracking in schools and size estimation
- Underwater camera to expand deployments to ladders without windows





Direction: Upstream

Class: Salmonid

Confidence: 95%

Length: 2245 in

Time: 10:02:08

Show Bounding Box:



Use BAI category



Not a fish



Other



Undo



Comment



Injured Fish

