



# Monitoring Fishway Passages on the Peconic River

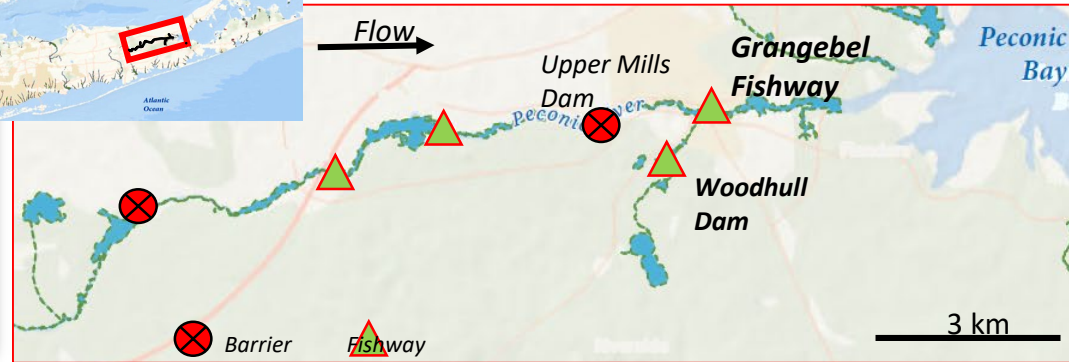


Kellie McCartin (Suffolk Community College)

Peter Daniel (Hofstra University)

Caroline Appel (Hofstra University)

# Study Site: Peconic River



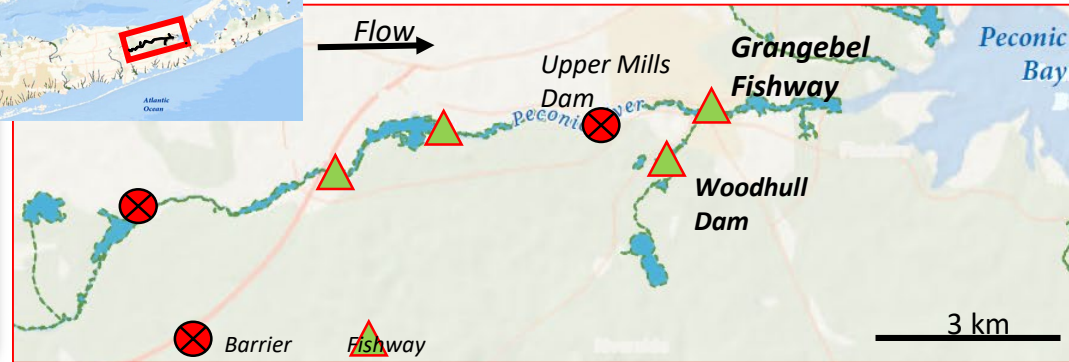
- One of the largest Alewife runs in LI, NY
  - ~24 km, 6 barriers
- A nature-like fishway built in 2010 at head of tide (Grangebel Park)
  - Restored 25 acres of spawning habitat
- Byron Young Fish Passage (2022) at Woodhull Dam
  - Restored 95 acres of spawning habitat



*Grangebel Rock-ramp fishway*



# Study Site: Grangebel



- Nature Like fishway
  - Monitoring since 2020
  - Camera – Total Alewife entering system
  - PIT tag antennas
    - Repeat Passage within season – adjust camera counts
      - 70% reduction in visual counts
  - Annual Returns
  - Residency
  - Passability



*Grangebel Rock-ramp fishway*





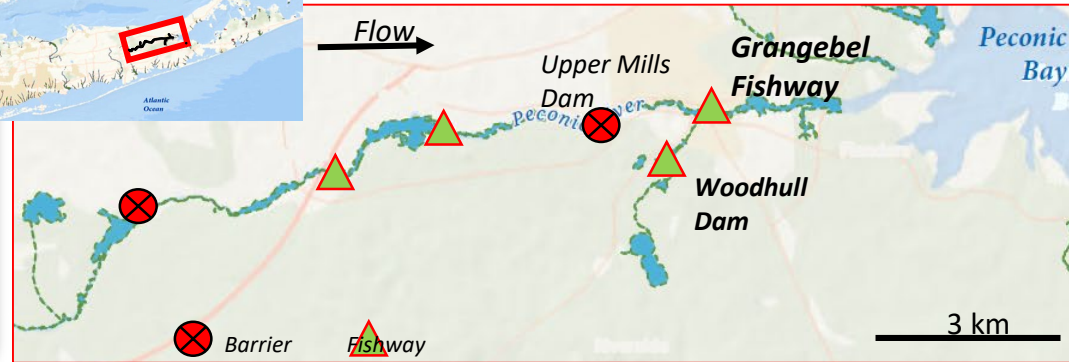
# Study Site: Grangebel

- No video monitoring/ analysis was completed in 2024
- Installed late in the season-  
missed ~10-20,000 fish first week  
of March
- Severe flooding – fish bypassing  
system for weeks
- PIT Tag Antenna flooded
- Move further upstream?
- Electrical issues:
  - New Camera and Computer  
setup

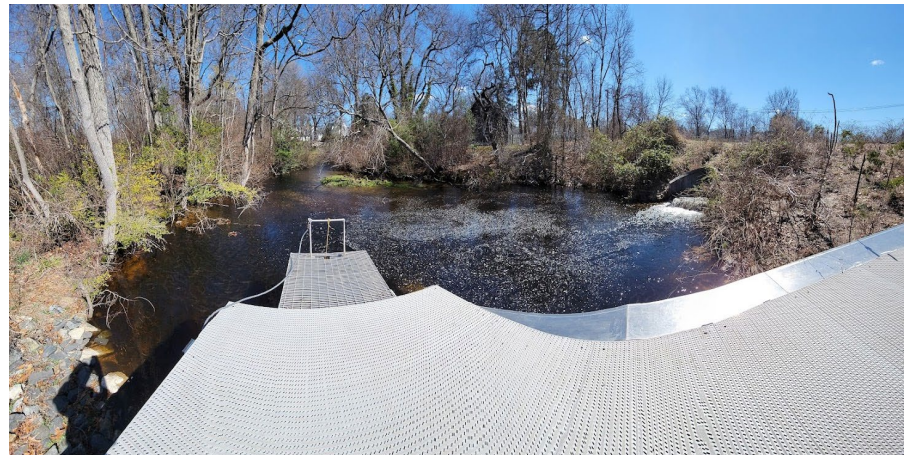
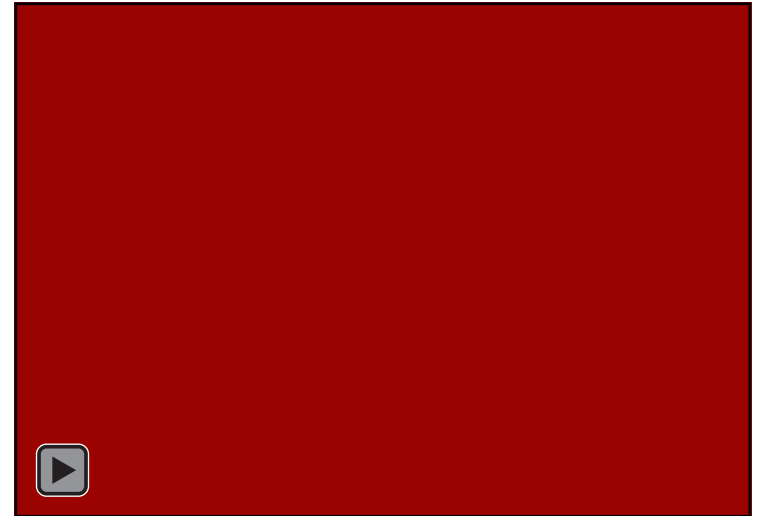




# Study Site: Woodhull



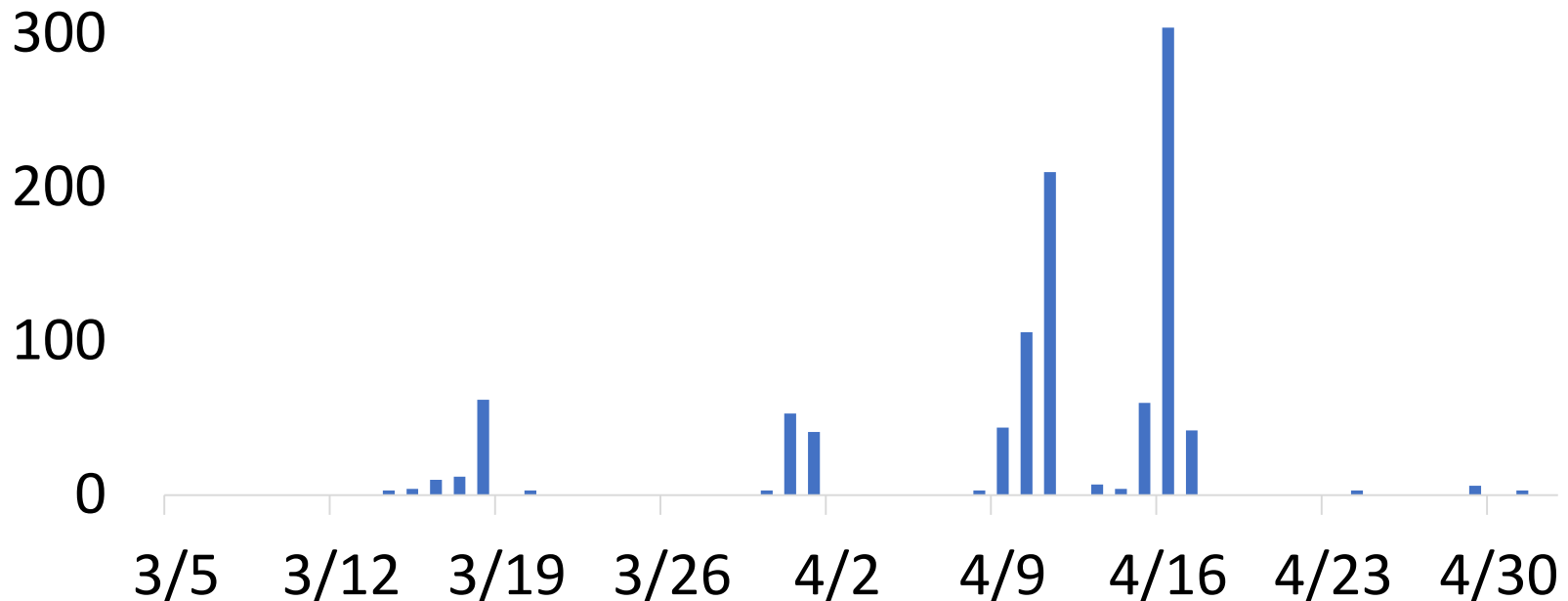
- Monitoring since 2023
- Pool and Weir Fishway
  - Camera – Total Alewife entering Wildwood lake habitat
  - PIT tag antennas
    - **Passability**
    - Repeat Passage within season
    - Residency



# Woodhull Camera Results

- Monitored Feb 27<sup>th</sup>- May 6<sup>th</sup>
- Pool filled on March 1<sup>st</sup>
- ~1000 Alewife successfully passed

## 2024 Alewife Passage at Woodhull

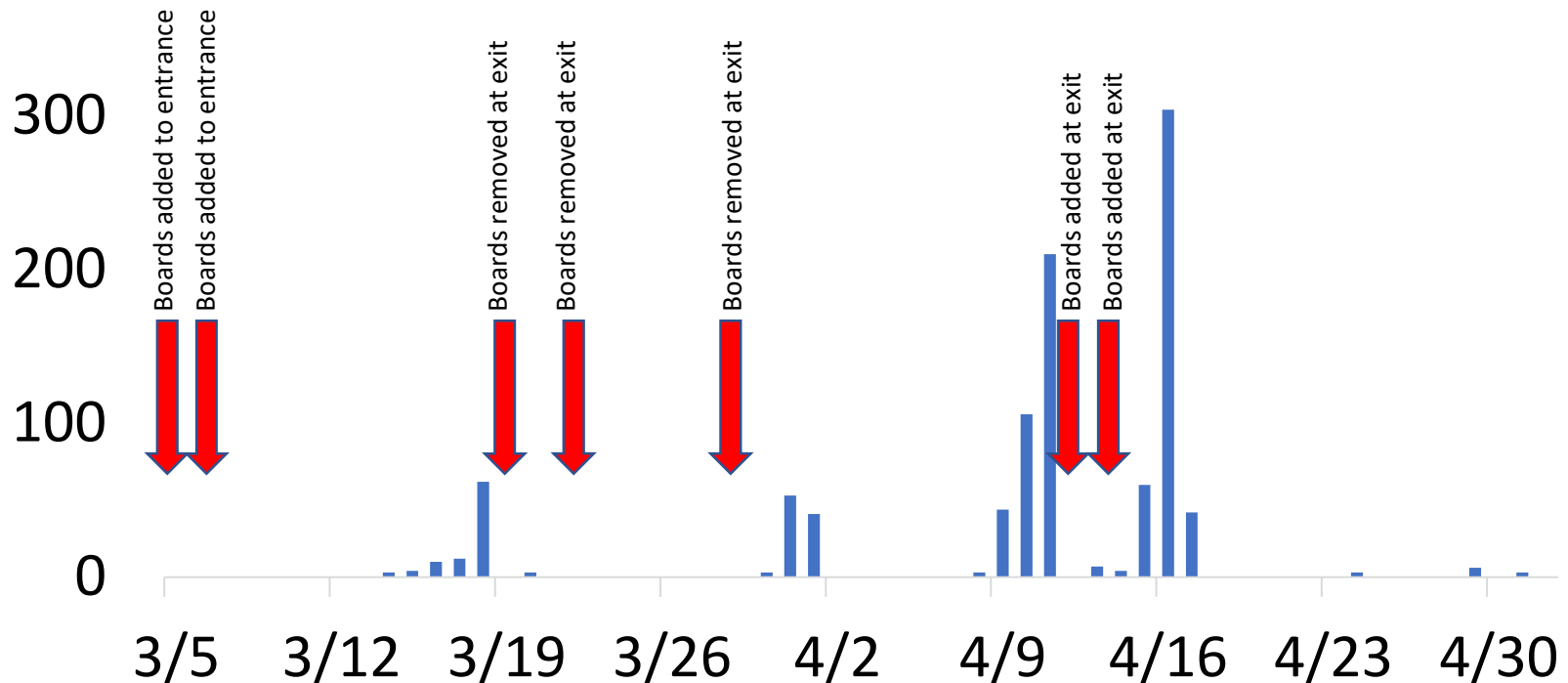




# Woodhull Camera Results

- Boards can be added or removed to exit or entrance
- Need to monitor flow constantly

## Modifications to ladder



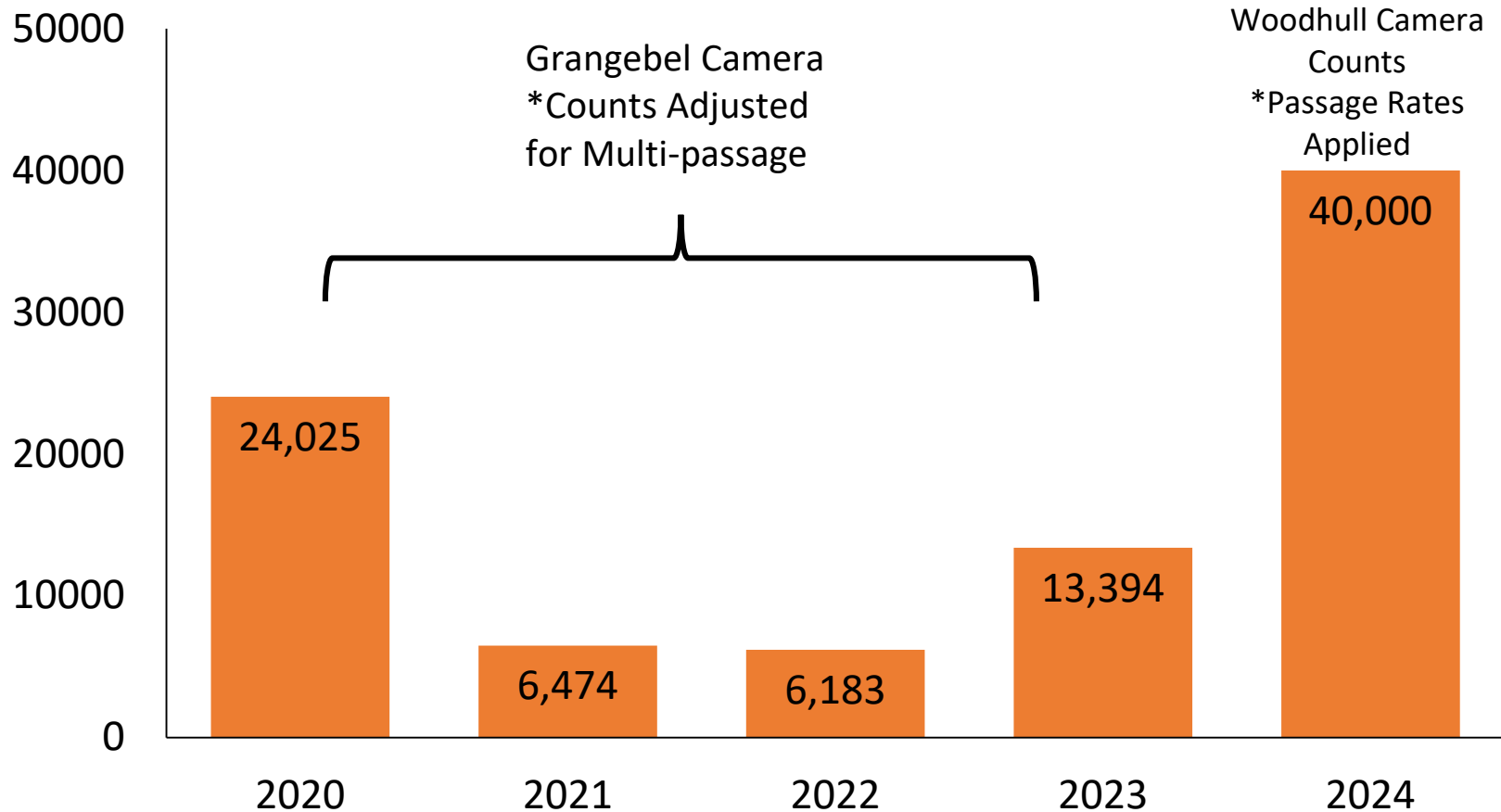
# Annual Alewife Population Estimate for Peconic River

- Apply PIT tag Passage efficiency ( 2.5%) to camera counts of total fish passage (~1000)
- Mark recapture estimates





# Annual Alewife Population Estimate for Peconic River



# Mark Recapture Estimate

- Two Occasion Lincoln- Petersen Estimator

$$N = \frac{\text{marked} \times \text{total captured}}{\text{recaptured}}$$

Day of Tagging 2024: 3/29/2024

$$N = (386 \text{ Fish tagged} \times 253 \text{ Captured}) / (3 \text{ Tagged Fish})$$
$$= 32,553 \text{ Alewife}$$

2 weeks after tagging: 4/12/24

$$N = (62 \text{ Fish tagged in system} \times 241 \text{ Captured}) / (1 \text{ Tagged Fish})$$
$$= 14,942 \text{ Alewife}$$



# PIT-Tag Monitoring of Fishway Passage

## Grangebel

2024:

- Tagged and released 400 fish
- Monitored movements of tagged fish
- Video cameras at both sites



Downstream Antenna



## Woodhull



Upstream Antenna



# Returns from Prior Year Releases

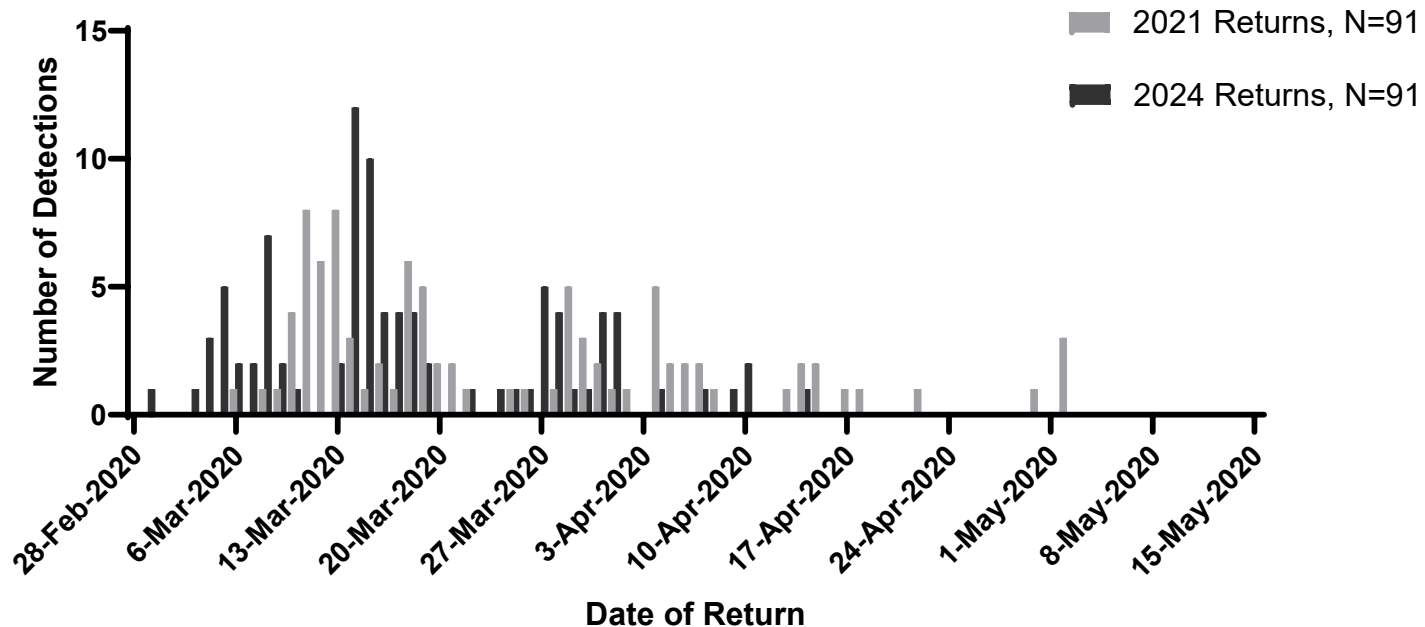
Return Year	Tagged and Released Prior Year	Detected %
2020	403	20.1%
2021	No tagging in 2020	
2022	267	9.3%
2023	No tagging in 2022	
<b>2024</b>	<b>296</b>	<b>30.8%</b>

# Antenna Monitoring Periods

- Woodhull: 2/16 – 5/12/2024
  - 3/6 – 4/14: Weir boards at entrance and exit added or subtracted to change flow
- Grangebel: 3/8 – 5/5/2024
  - Late set-up due to permitting delay in monitoring
  - Two floods submerged equipment
  - DS antenna stopped working 4/1
  - US antenna stopped working 5/5



# Date of First Arrival of Returns



Detected before April:

2021: 71%

2024: 89%

# Passage Efficiency

## Grangebel Park: Rock Ramp

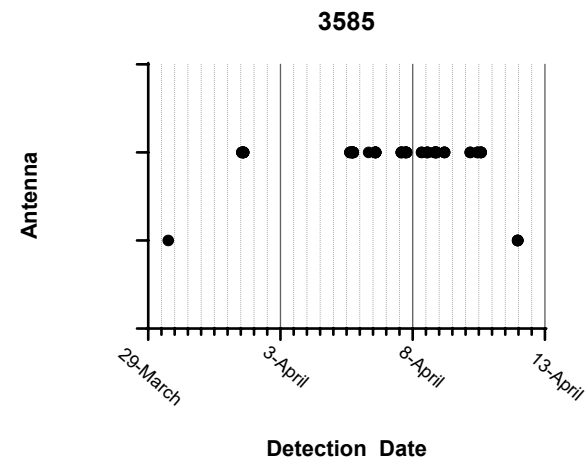
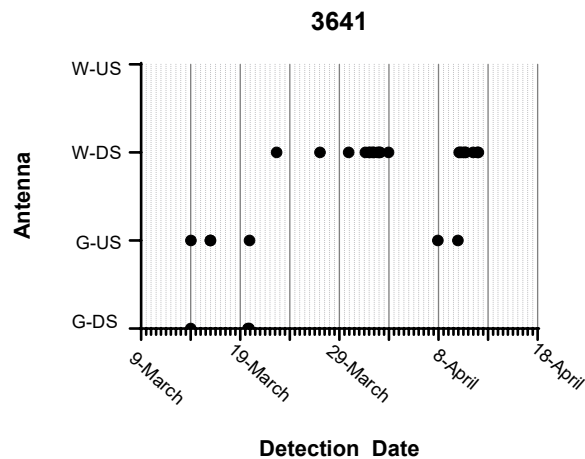
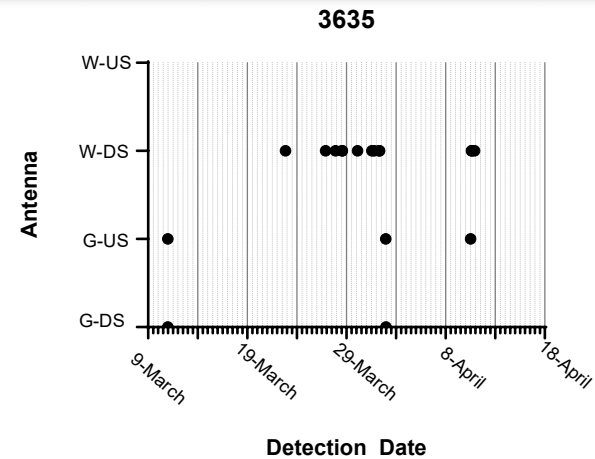
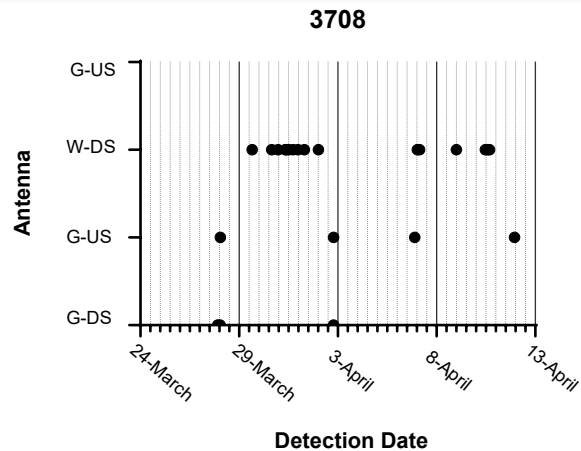
Year	Number Attempted	Passage %
2021	11	100%
2022	25	88%
2023	3	100%
<b>2024</b>	<b>81</b>	<b>96%</b>

## Woodhull Dam: Pool and Weir

Year	Number Attempted	Passage %
2021		
2022		
2023	3	100%
<b>2024</b>	<b>81*</b>	<b>2.5%</b>

\*One return from 2021 release!

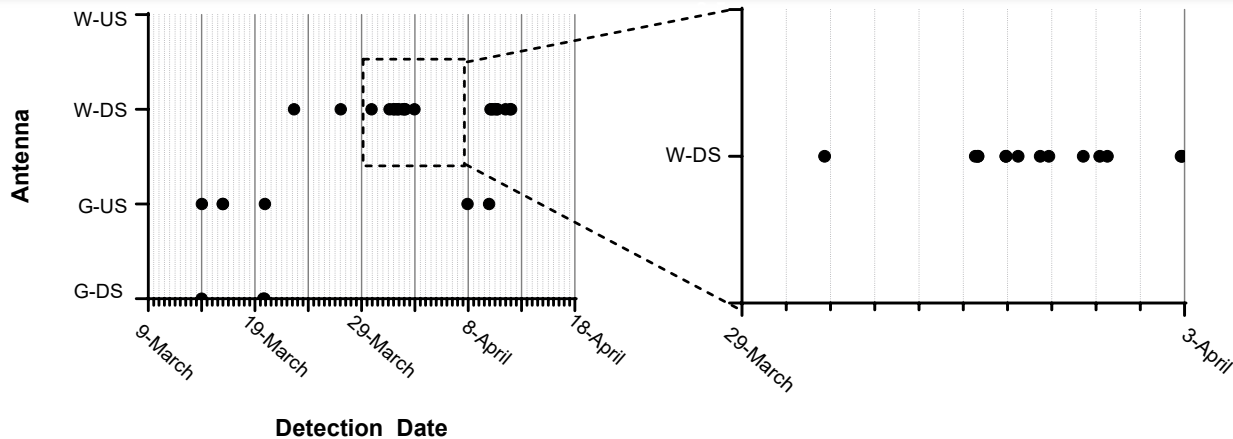
# Examples of Movement Patterns at the Two Fishways



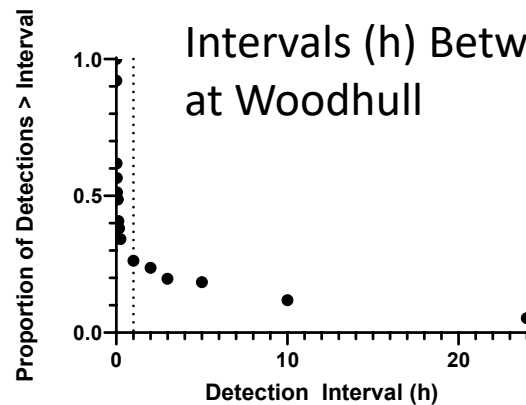


# Multiple Attempts at Woodhull

3641

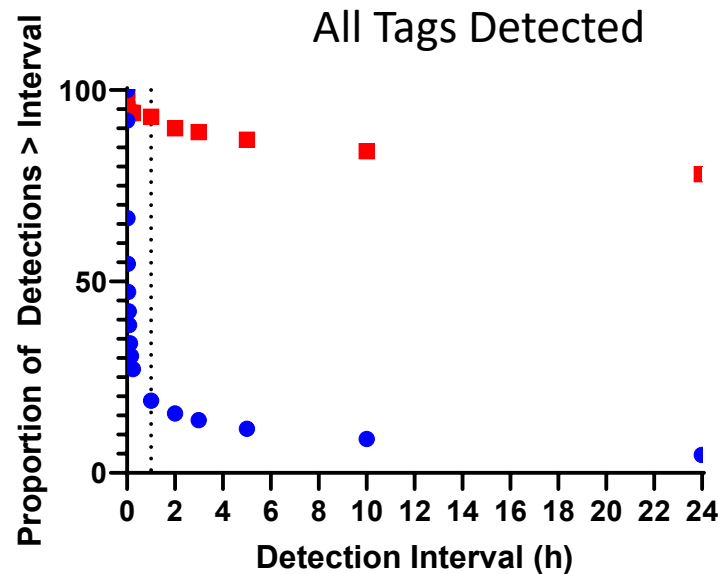


Intervals (h) Between Detections  
at Woodhull



- 50% of detection intervals are < 3 min
- 75% of detections are < 1 h

# Detection Intervals at Grangebel Rock Ramp Longer than those for Woodhull Pool-and-Weir



	Woodhull	Grangebel
Tags detected	91	*68
Total detections	6438	167
Avg detections/tag	71	2.5
Detections > 1 h (%)	18.9	93

\*Shorter monitoring period at Grangebel

# Eels Etc.

- Woodhull Eelpass
- Net Deployed from March 1<sup>st</sup> through May 24<sup>th</sup>
- Caught 5 Elvers





# Eels Etc.

- Woodhull Eelpass
- Potential modifications needed
  - Openings along eel pass to allow light in
  - Open grate underwater
  - Pump needs to be fixed



# Who Else Is Using The Fishway?





# Acknowledgments

- Byron Young
- Heidi O'Riordan (DEC)
- Seatuck
- SCCC/PEP Interns
  - Kyler Vander Putten
  - Grace Nelson
  - Carlin Byrne
  - Ian Trendel
  - Isabelle Morrison
- Hofstra Volunteers
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