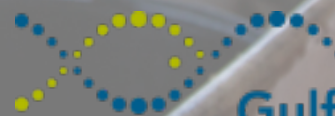


# Northern Gulf of Maine Scallop Camera Monitoring Project 2019



Gulf of Maine  
Research Institute

Science. Education. Community.



# Project Overview

Develop a robust program design that will inform the development of a camera monitoring option within the Northern Gulf of Maine scallop fleet.

Test the effectiveness and efficiency of utilizing cameras to independently collect data.







# Project Objectives





# **Proof of Concept**

A photograph of two fishermen on a boat, working with a large, circular fishing net. The net is filled with oysters. One fisherman is wearing a bright yellow raincoat and blue gloves, while the other is wearing a red raincoat and blue gloves. They are both bent over, handling the oysters. In the foreground, two red plastic baskets are visible, filled with oysters. The background shows the ocean and a cloudy sky.

- One-month season
- Centrally located in Gloucester
- Utilize 3 boats, all home ported in Maine



# Program Design

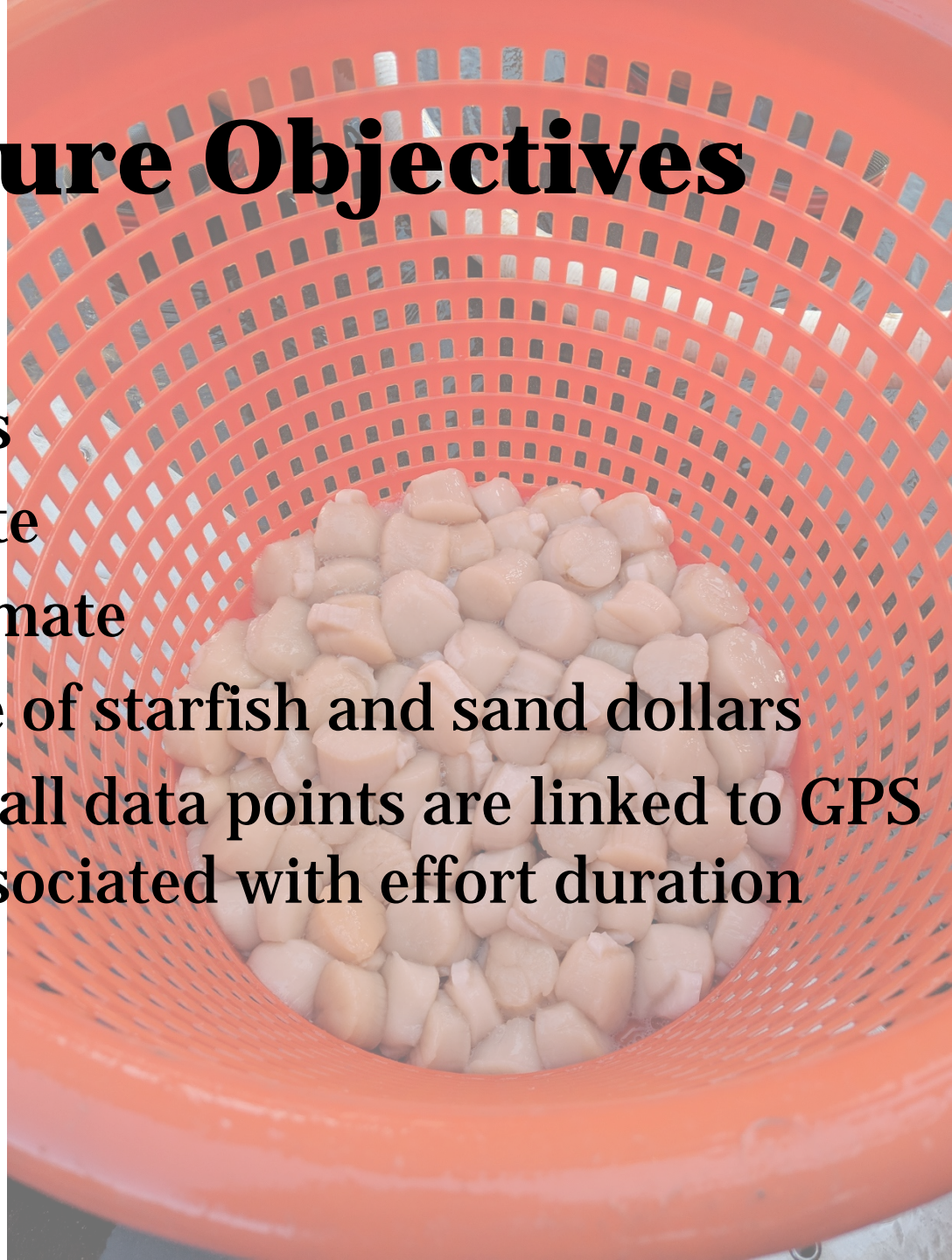
- Include partners who collect data, utilize data for science, and utilize science for management.
- Learn from past experiences
- Ensure tasks for on the boat were not overly burdensome on the participants





# Data Capture Objectives

- Groundfish counts
- Scallop shell heights
- Kept scallop estimate
- Discard scallop estimate
- Presence or absence of starfish and sand dollars
- Fishing effort data- all data points are linked to GPS /time stamp and associated with effort duration





# Custom Equipment





# Vessel Monitoring Plans

Unique to Each Vessel and includes:

- ✓ Vessel information
- ✓ Project information
- ✓ Specific catch handling requirements
- ✓ Vessel layout diagram
- ✓ Camera system specifics
- ✓ Screen grabs of camera views
- ✓ Support information
- ✓ Change history

## Experimental Electronic Monitoring for The Northern Gulf of Maine Scallop Fishery: Vessel Specific Monitoring Plan

Vessel information:

|                 |  |
|-----------------|--|
| Vessel Name     |  |
| Hull Number     |  |
| Permit Number   |  |
| Home Port       |  |
| Vessel Owner    |  |
| Vessel Operator |  |
| Vessel Contact  |  |
| VMP Version     |  |

Program Goals: Explore the use of EM to collect data for the Northern Gulf of Maine Scallop Fishery

1. Explore methods for collecting data onboard NGOF scallop vessels including EM system design, installation and operation, catch handling operations and video review operations.
2. Lay groundwork for utilizing EM as a data collection tool in NGOM Scallop
3. Asses the ability for EM to collect useful data in NGOM Scallop.

Data collection objectives:

1. Obtain counts all groundfish catch by species
2. Obtain volumetric estimate of kept and discarded scallop
3. Obtain shell height measurements of kept and discarded scallops
4. Document the presence or absence of san dollars and starfih in catch

Catch Handling:

1. Vessel will pick all scallops into bushel baskets in view of the camera. Scallops will be sorted by kept or discarded either:
  - a. At the time of initial picking
  - b. During cutting, where discard scallops will be dropped into baskets in view of the camera. Baskets of discarded scallops will be dumped as they become full at the shucking window
2. A target of 100 kept scallops should be measured per tow
3. A target of 100 discarded scallops should be measured per tow



# Example Video



GMRI - Julie Ann



Toggle Map

Latitude: S41°16'30.32 Longitude: E173°16'45.30  
Video Time: 19/04/18 07:12:39 Play Speed: 1

Delete Review View Events Close Exit

Haulback Begin Haulback End Catch Sort End

High Medium Low Unusable

Discards Vessel Crew Health/Safety Optional

77 Sea Scallop *Placopecten magellanicus* SSC

Visual Estimate 6  
Weight Determined by Qty  
0 Intact Other  
Weight (lbs) Condition Gear type  
INC life status Retained

6 Bushels Kept

Comments

Submit Clear





# The Numbers

- 3 vessels, ~7% of all NGOM active vessels
- 40 trips, ~16% of all NGOM scallop trips
- 199 hauls
- 1,254 kept bushels
- 135 discarded bushels
- 527 groundfish
- 400 non-groundfish
- 5,764 kept scallops measured (~144 per trip)
  - Average shell height: 130mm
- 613 discarded scallops measured
  - Average shell height: 42mm

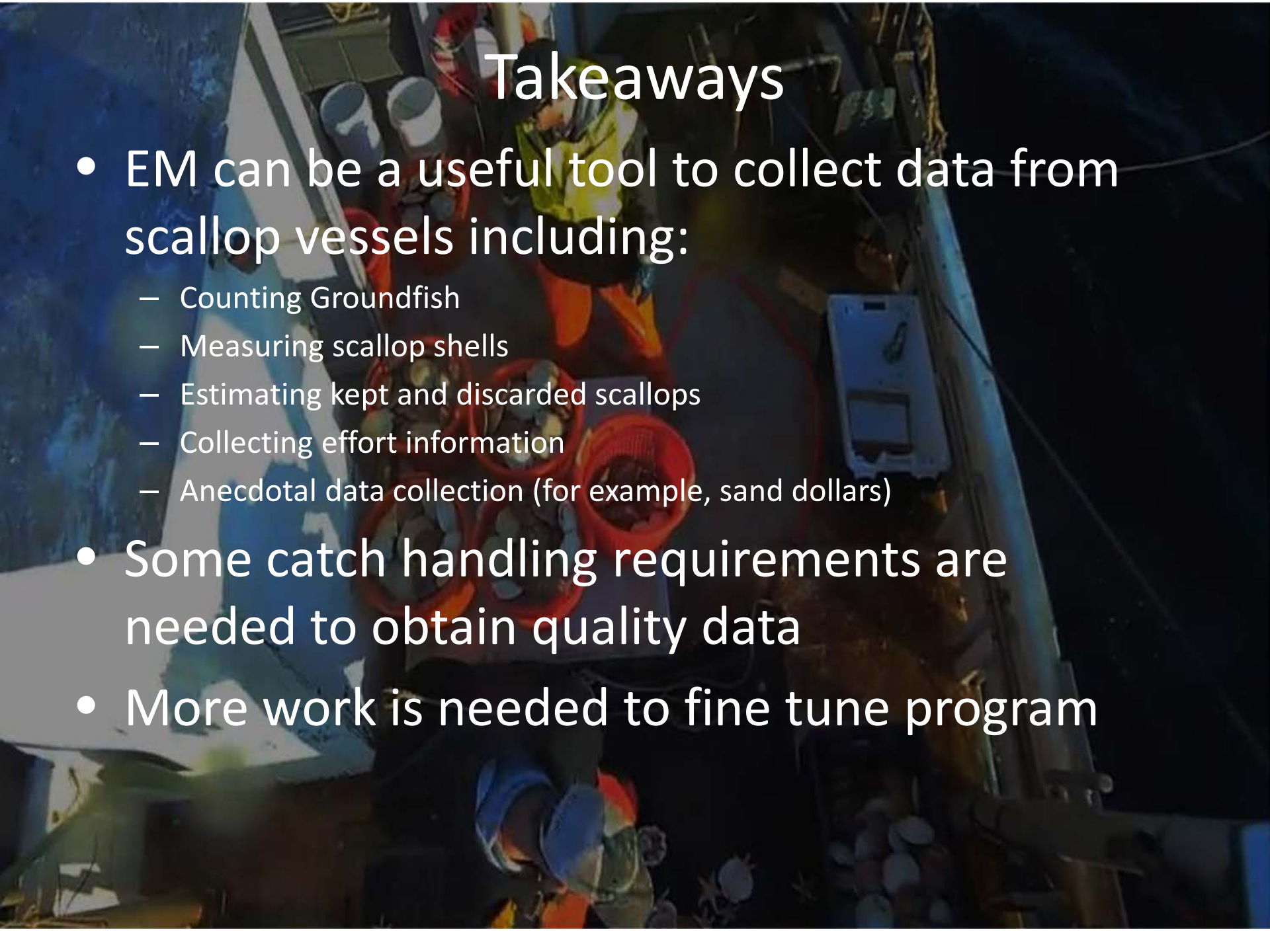
# Groundfish Bycatch

| Trip | Groundfish | Windowpane | Yellowtail | Winter | Plaice | Haddock |
|------|------------|------------|------------|--------|--------|---------|
| 1    | 16         | 12         | 4          | 0      | 0      | 0       |
| 2    | 5          | 1          | 4          | 0      | 0      | 0       |
| 3    | 35         | 12         | 14         | 7      | 2      | 0       |
| 4    | 13         | 2          | 10         | 1      | 0      | 0       |
| 5    | 11         | 1          | 5          | 4      | 1      | 0       |
| 6    | 15         | 5          | 8          | 1      | 1      | 0       |
| 7    | 12         | 1          | 9          | 2      | 0      | 0       |
| 8    | 20         | 7          | 13         | 0      | 0      | 0       |
| 9    | 25         | 13         | 11         | 1      | 0      | 0       |
| 10   | 9          | 4          | 3          | 2      | 0      | 0       |
| 11   | 10         | 5          | 2          | 2      | 0      | 1       |
| 12   | 20         | 9          | 6          | 4      | 1      | 0       |
| 13   | 18         | 3          | 8          | 7      | 0      | 0       |
| 14   | 9          | 2          | 5          | 2      | 0      | 0       |
| 15   | 32         | 4          | 24         | 4      | 0      | 0       |
| 16   | 21         | 2          | 17         | 2      | 0      | 0       |
| 17   | 14         | 4          | 8          | 2      | 0      | 0       |
| 18   | 5          | 1          | 4          | 0      | 0      | 0       |
| 19   | 8          | 3          | 3          | 2      | 0      | 0       |
| 20   | 8          | 1          | 5          | 2      | 0      | 0       |

| Trip  | Groundfish | Windowpane | Yellowtail | Winter | Plaice | Haddock |
|-------|------------|------------|------------|--------|--------|---------|
| 21    | 9          | 3          | 3          | 3      | 0      | 0       |
| 22    | 13         | 3          | 9          | 1      | 0      | 0       |
| 23    | 6          | 2          | 4          | 0      | 0      | 0       |
| 24    | 9          | 0          | 5          | 4      | 0      | 0       |
| 25    | 11         | 2          | 6          | 3      | 0      | 0       |
| 26    | 19         | 2          | 12         | 5      | 0      | 0       |
| 27    | 14         | 1          | 8          | 5      | 0      | 0       |
| 28    | 2          | 2          | 0          | 0      | 0      | 0       |
| 29    | 23         | 10         | 13         | 0      | 0      | 0       |
| 30    | 8          | 4          | 3          | 1      | 0      | 0       |
| 31    | 2          | 0          | 1          | 1      | 0      | 0       |
| 32    | 10         | 1          | 8          | 1      | 0      | 0       |
| 33    | 11         | 5          | 6          | 0      | 0      | 0       |
| 34    | 0          | 0          | 0          | 0      | 0      | 0       |
| 35    | 5          | 2          | 1          | 2      | 0      | 0       |
| 36    | 10         | 4          | 5          | 1      | 0      | 0       |
| 37    | 7          | 3          | 4          | 0      | 0      | 0       |
| 38    | 26         | 11         | 14         | 0      | 1      | 0       |
| 39    | 23         | 6          | 16         | 1      | 0      | 0       |
| 40    | 14         | 4          | 8          | 2      | 0      | 0       |
| TOTAL | 527        | 157        | 288        | 75     | 6      | 1       |





An aerial photograph of a scallop fishing vessel's deck. Several workers in high-visibility gear are visible, surrounded by numerous red and blue plastic baskets filled with scallops. The deck is cluttered with equipment, including buckets and a blue cooler. The water is dark blue, and the vessel's white hull is visible on the left side.

# Takeaways

- EM can be a useful tool to collect data from scallop vessels including:
  - Counting Groundfish
  - Measuring scallop shells
  - Estimating kept and discarded scallops
  - Collecting effort information
  - Anecdotal data collection (for example, sand dollars)
- Some catch handling requirements are needed to obtain quality data
- More work is needed to fine tune program

# Lessons Learned

Measuring Board Distance



Measuring Board Glare





# Lessons Learned

## VMP protocols- Fish Sorting

Difficult



Better

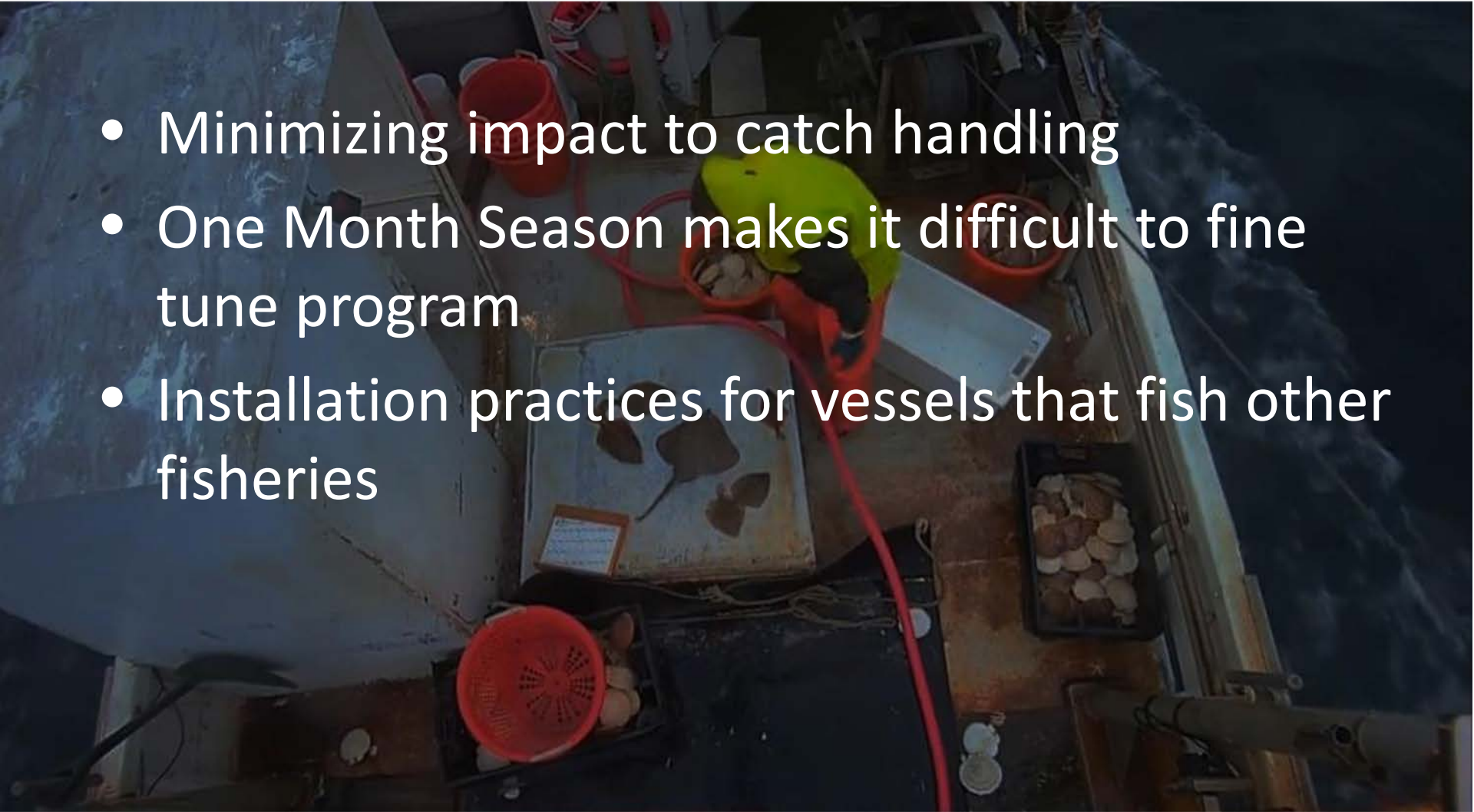


Best



# Continued Challenges

- Minimizing impact to catch handling
- One Month Season makes it difficult to fine tune program
- Installation practices for vessels that fish other fisheries





# Moving Forward

- Review and refine data collection objectives
- Strengthen VMP's with refined catch handling requirements
- Stronger zoom lens
- Polarized filters on lens and new measuring boards
- Installation adjustments
- Collaboration with science and management



# Acknowledgements



FV Julie Ann  
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