Electronic Monitoring (EM) of Purse-Seine Vessel Activities and Catches (SAC-09-05)
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Outline

- Project overview

  - Objective

  - Timeline

- Survey of vessel characteristics and fishing operations

  - Purpose

  - Survey overview

  - Summary of results

  - Implications for camera placement

- Vessel selection

  - Identification of vessels groups

    - Data and methods

    - Results

  - Criteria for selecting vessels for EM data collection
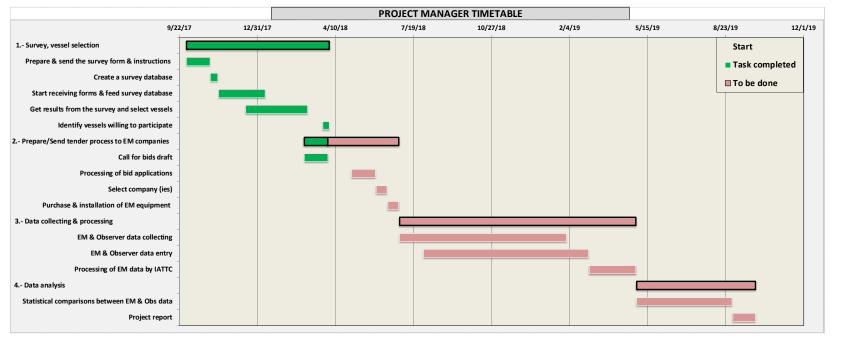
Project objective and timeline

- ## Objective

  - Conduct a proof-of-concept EM study for the EPO small-vessel purse-seine fleet component

    - What catch and vessel data can be reliable collected?
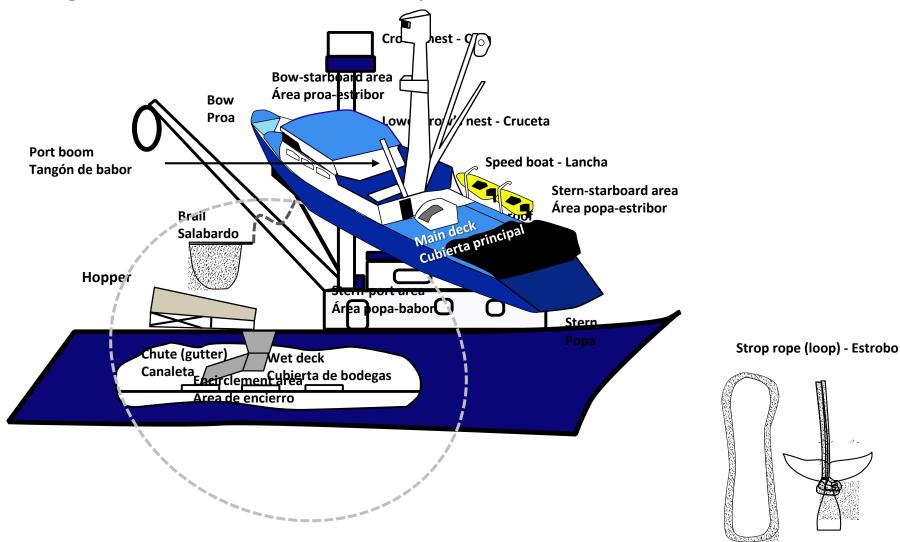
    - How does EM video compare to EM still imagery?

- ## Timeline

  - ✓ Survey

  - ➤ Vessel selection

  - ➤ Call for bids

  - o EM data collection

  - o EM data analysis

  - o Comparison to onboard observer data

  - o Develop EM pilot sampling design

Terminology used in this presentation

- Vessel gear terms used in this presentation

Survey: Purpose and question topics

Purpose

- Identify operational characteristics that may affect placement of EM equipment and data collection
- Provide data to help with selection of participating vessels
- Generate data to assist in development of a pilot EM sampling design

Survey questions

Catch handling

- Well loading methods
- Catch sorting methods
- Methods for removal of megafauna from the sack
- Accessibility of wet deck
- Brail capacity

Operational characteristics

- Percentage of floating-objects sets where object remain in the net after encirclement?
- Number of operable speed boats onboard
- Typical number of speed boats used, by set type
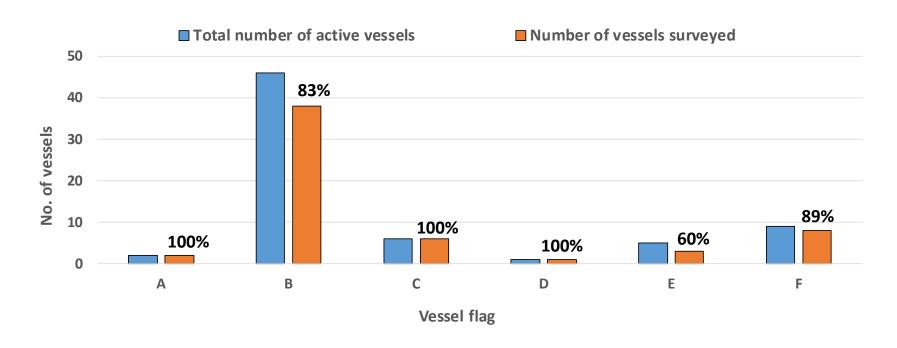
FAD deployment

- Methods
- Sites aboard the vessel

Vessel characteristics

- Height of crow's nest
- Number of wells
- Vessel capacity
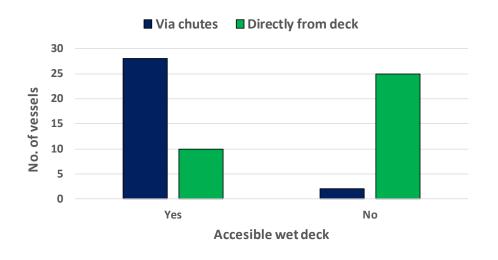
Survey: Response

Responses received by flag

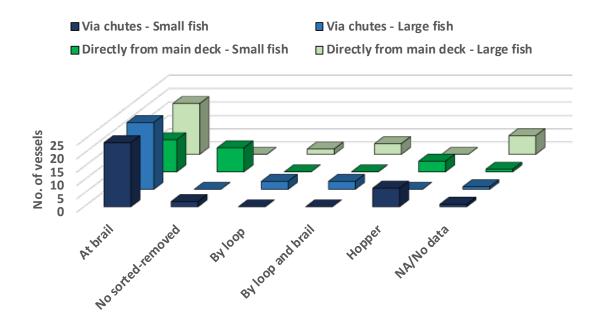- 58 out of 69 small purse-seine vessels (84%) responded to the survey

Survey results: catch handling

How wells are loaded vs. wet deck access
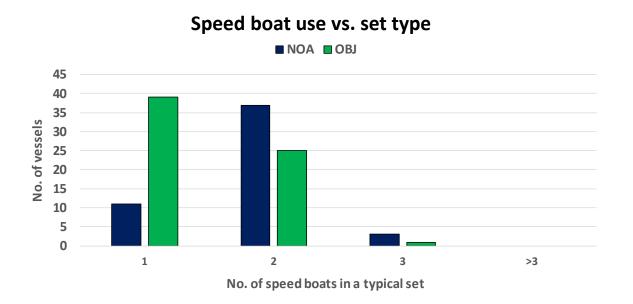

How wells are loaded on the wet deck vs. catch handling

- A little more than half of the vessels (55%) have an accessible wet deck
- Many of the vessels with accessible wet deck (93%) loaded the wells with chutes
- Most of the vessels without accessible wet deck (71%) load the wells directly from the main deck
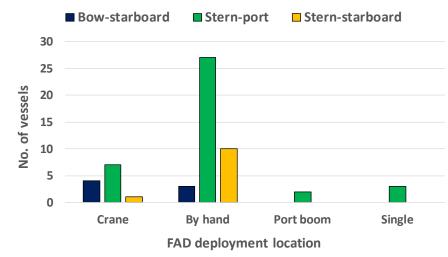- Many of the vessels (70.2%) sort/remove species at the brail

Survey results: operational characteristics

Speed boat use vs. set type

■ NOA ■ OBJ

No. of vessels (y-axis: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45)

No. of speed boats in a typical set (x-axis: 1, 2, 3, >3)

How and from where in the vessel FADs are deployed*

■ Bow-starboard ■ Stern-port ■ Stern-starboard

No. of vessels (y-axis: 0, 5, 10, 15, 20, 25, 30)

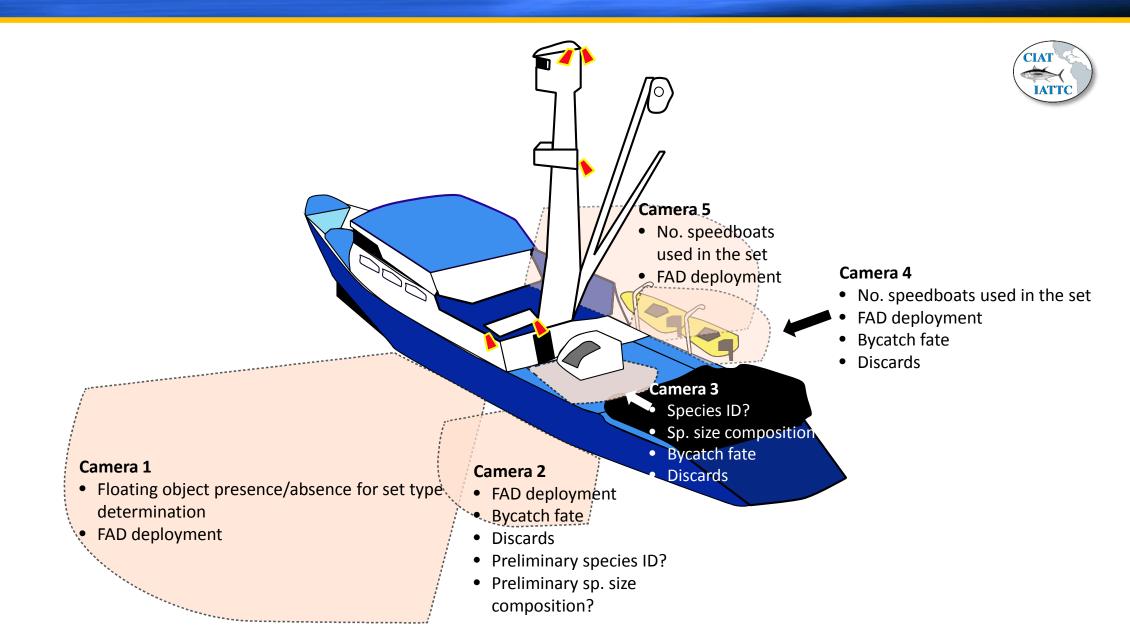FAD deployment location (x-axis: Crane, By hand, Port boom, Single)

* No FAD deployment reported for Bow and Bow-port vessel areas

- Many of the vessels (88%) use speed boats during the set
- Many of the vessels (75%) made FAD deployments
- Most of the vessels (94%) keep the OBJ (or FAD) inside the net when the encirclement is finished
- The number of speed boats used may depend on the set type (e.g. NOA: >1 speed boat = 78%)
- Most FAD deployments were by hand (70%), around the stern-port area (47%)

Camera 5
- No. speedboats used in the set
- FAD deployment

Camera 4
- No. speedboats used in the set
- FAD deployment
- Bycatch fate
- Discards

Camera 3
- Species ID?
- Sp. size composition
- Bycatch fate
- Discards

Camera 1
- Floating object presence/absence for set type determination
- FAD deployment

Camera 2
- FAD deployment
- Bycatch fate
- Discards
- Preliminary species ID?
- Preliminary sp. size composition?

Camera 6 and 7
- ID of wells loaded
- Species ID?
- Sp. size composition?

Vessel selection: identifying groups of vessels

- **Data and methods**
  - Data of 51 vessels analyzed
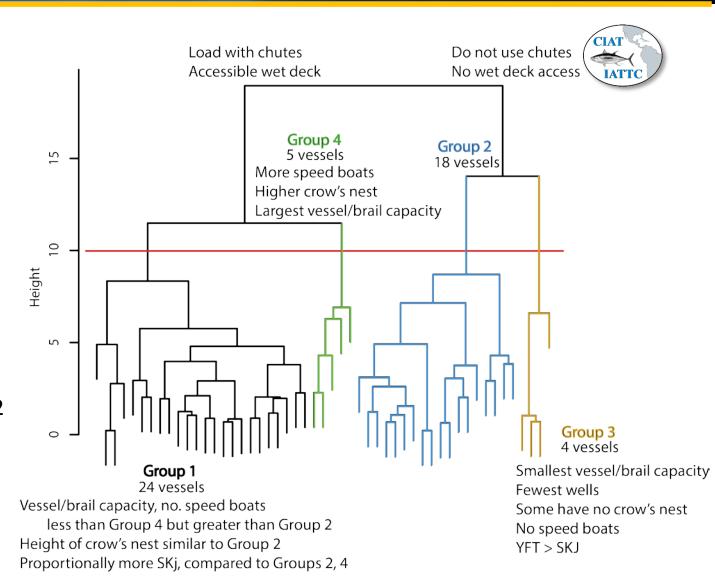 - A hierarchical cluster analysis was used to group vessels with similar characteristics

- **Variables used**
  - Wells loaded with chute (Y/N)?
  - Number of wells
  - Accessible wet deck (Y/N)?
  - Brail capacity
  - Height of crow's nest
  - Number of operable speed boats
  - Vessel capacity
  - Tuna catch composition information (from logbooks and/or unloading information)
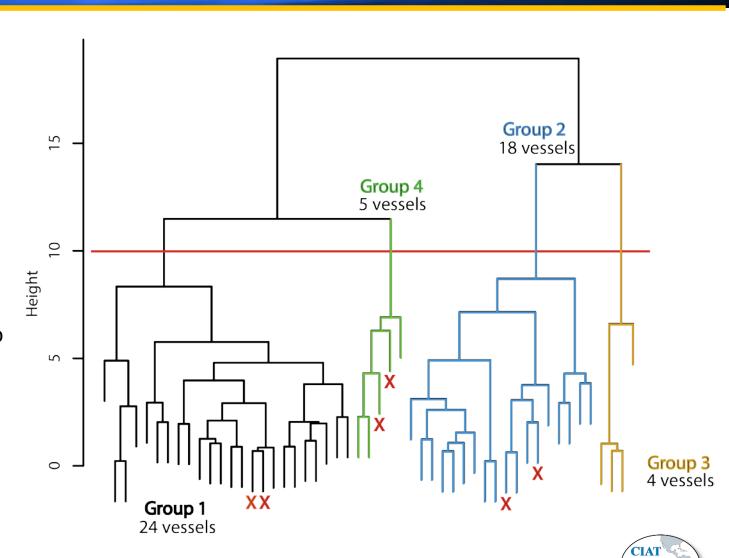
Vessel selection: identifying groups of vessels

Results

- Four large groups of vessels identified

- Primary split based on:
  - Use of chutes, accessibility of wet deck

- Smaller splits based on other variables

- For example:
  - Group 4 contains vessels with:
    - Largest vessels/brail capacity
    - Higher crow's nests
    - More speed boats
    - But catch composition similar to Groups 1-2

- Group 3 contains vessels with:
  - Smallest vessels/brail capacity
  - Some have no crow's nest
  - No speed boats
  - YFT > SKJ

Load with chutes
Accessible wet deck

Do not use chutes
No wet deck access

Group 4
5 vessels
More speed boats
Higher crow's nest
Largest vessel/brail capacity

Group 2
18 vessels

Group 1
24 vessels
Vessel/brail capacity, no. speed boats less than Group 4 but greater than Group 2
Height of crow's nest similar to Group 2
Proportionally more SKj, compared to Groups 2, 4

Group 3
4 vessels
Smallest vessel/brail capacity
Fewest wells
Some have no crow's nest
No speed boats
YFT > SKJ

Criteria for selecting vessels for EM data collection

- Large enough to safely carry an observer (likely eliminates vessels in Group 3)

- Logistical constrains

- Choose vessel pairs with similar characteristics to facilitate evaluation of video vs. still imagery

- Two vessels from each of Groups 1, 2 and 4:
  - Select two vessels from each group as close to each other in the dendrogram as possible
  - One vessel will carry EM video and the other EM still-image

- Willingness of vessel owner/captain to participate in project (**participation is voluntary**).

Call for bids

- Addressing questions/comments from EM providers

Vessel owners

- Receiving feedback

- Obtaining willingness to participate

    - Two trips per vessel

    - No cost to participants

    - Incentives

Questions

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