California Halibut Trawl Bycatch Evaluation Webinar
June 5, 2025, 9am-3pm

9:00 Welcome, Introductions, and Agenda Review
Purpose: Welcome attendees, share logistics and ground rules, review the agenda and workshop goals

9:15 Marine Life Management Act (MLMA) and CA halibut management process
Purpose: Overview of MLMA, management priorities, and bycatch evaluation process

9:45 Morning Break and Survey (15 min)

10:00 Break-out Session 1 – Bycatch species for consideration
Purpose: In small groups, discuss and individually rank species groups for consideration as part of the bycatch evaluation process

10:30 Fishery Overview and Collaborative Research
Purpose: California halibut trawl fishery overview and collaborative research

11:00 Industry Panel and Perspectives
Purpose: Hear from industry members to learn about experiences and history

11:30 Available Data Sources for Bycatch Evaluation
Purpose: Overview of available data for evaluation, limitations, and data gaps

12:00 Lunch (1 hour)

1:00 Summary of the morning topics
Purpose: Summarize discussions from morning session and prepare for break-out discussion

1:15 Break-out Session 2 – Sustainable CA halibut fishery
Purpose: In small groups, discuss what a sustainable fishery looks like, as it relates to bycatch

2:00 Break-out Session 3 – Future of CA halibut fishery
Purpose: In small groups, discuss your future aspirations for the CA halibut fishery

2:45 Next Steps and Timeline

2:55 Closing Remarks and Adjourn 3:00

Statewide Halibut Trawl Bycatch Assessment Webinar

Photo credit: CDFW

Photo credit: CDFW

5 June 2025

Presented by:

California Halibut Management Project Team

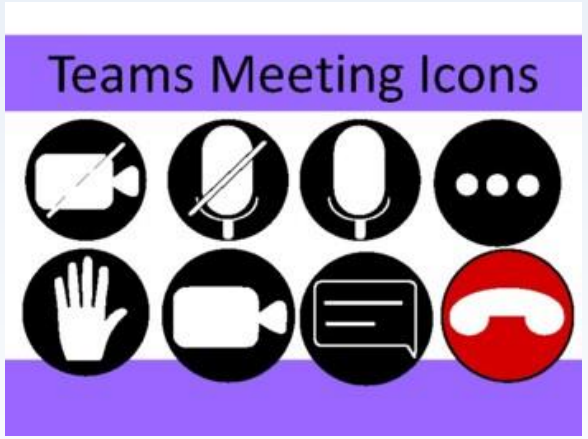
Marine Region

Meeting Agenda

- Welcome, Introductions, and Agenda review - 9:00
- Marine Life Management Act - 9:15
- **Break – 09:45**
- Break-out Session 1 – 10:00
- Fishery Overview and Collaborative Research - 10:30
- Industry Panel and Perspectives - 11:00
- Available Data Sources for Bycatch Evaluation - 11:30
- **Lunch -12:00**
- Summary of the morning topics
- Break-out Session 2 - 1:15
- Break-out Session 3 - 2:00
- Next Steps and Timeline - 2:45
- Closing Remarks and Adjourn - 2:55

Teams Webinar Logistics

- Meeting is being recorded and closed-captions are available
- Having cameras on is encouraged
- Please use the raise hand icon for any questions or comments
- Please keep microphone on mute when not speaking
- Unmuting: To speak
  - Click microphone on top right of your screen
- Chat Function
  - For troubleshooting and clarifying questions only
  - For technical difficulties (send a chat or call 831-400-2539)



It’s nice to meet you!

- CDFW Project Team Introductions
- Rename, if able: To help identify yourself and other participants
  - Click “People/Participants” in meeting controls
  - Locate your name and click the three dots/“More” and choose “Edit Display name/Rename”
  - Enter your full name (first and last) and any identifying sector(s)

Photo credit: CDFW

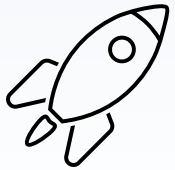
Meeting Agreements

Focus on strategies and solutions that move the conversation forward

Keep Comments Concise and Focused

There are no Bad Questions or Ideas

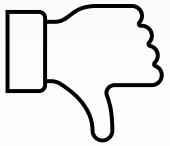
No interruptions, be courteous to speakers



Attack Problems not each other's Point of View

Listen for Understanding

Be Present



No Personal Attacks

Workshop Goals

- Make connections and establish relationships
- Support open collaborative process to share information on the bycatch evaluation process and trawl fishery
- Develop a shared understanding of the need for bycatch evaluation
- Identify information gaps and opportunities for future engagement

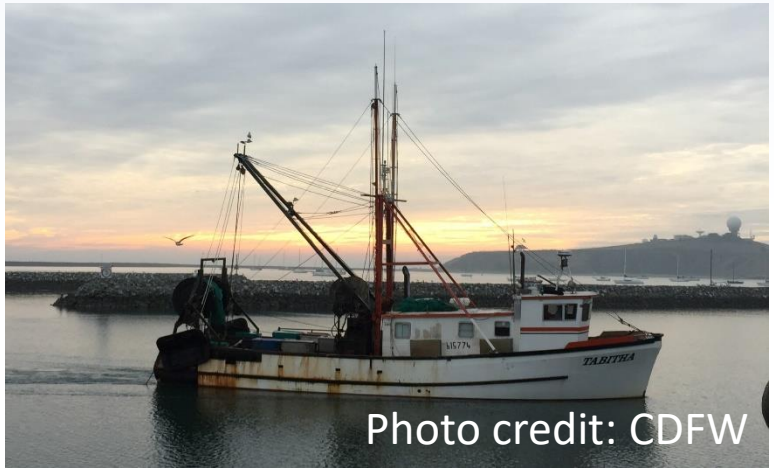


Photo credit: CDFW

MLMA Background and Halibut Management Process

- Provides for conservation, sustainable use, and restoration of California's living marine resources
  - Ecosystem-based approach
  - Best available science
  - Stakeholder involvement
  - California halibut management process
- 2018 Master Plan for Fisheries, A Guide for Implementation of the Marine Life Management Act

Management Priorities for CA Halibut

- Enhanced Status Report –2022
- 2020 stock assessment (southern stock) – 2024
- Ecosystem evaluation –2024
- California halibut trawl grounds (CHTG) assessment –2024
- Bycatch evaluation gill net –2024; bycatch evaluation trawl – in progress
- Management Strategy Evaluation – in progress


Photo Credit: CDFW

MLMA Definitions

- "Target species" is any species that is a primary target of the fishery and the principal focus of management efforts (MLMA Master Plan)
- "Incidental catch" are fish caught incidentally during the pursuit of the primary target species, but legal and desirable to be sold or kept for consumption (MLMA Master Plan)
- "Bycatch" mean fish that are taken in a fishery but which are not the target of the fishery. "Bycatch" includes discards. (FGC §90.5)
- "Discards" means fish that are taken in a fishery but are not retained because they are of an undesirable species, size, sex, or quality, or because they are required by law not to be retained (FGC §91)

MLMA Master Plan Bycatch Evaluation Steps

Four step process:

1. Collection of information
2. Distinguishing target, incidental and bycatch species
3. Determining “acceptable” types and amounts of bycatch
4. Addressing unacceptable bycatch

Bycatch Criteria

Determining “acceptable” types and amounts of bycatch
(Fish and Game Code §7085(b))

- Legality of take
- Threat to sustainability
- Impacts on fisheries
- Ecosystem impacts

Preparation for Breakout Session #1

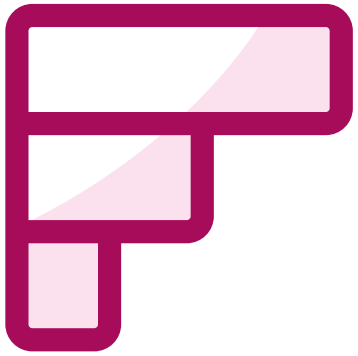
- Rank the species categories in priority order for consideration from highest (1) to lowest priority (11)

Anadromous	Finfish (other)	Mammals & birds
Elasmobranch	Flatfish	Rockfish complex
Biogenic Inverts	Crustaceans	Echinoderm
Invert-Other	Mollusks	

Break

Preparation for Breakout Session #1

- Rank the species categories in priority order for evaluation from highest (1) to lowest priority (11)



Rank these bycatch species from most concern (one) to least concern (11)

Breakout Session #1

- Discussion Question:
  - Are there any groups or individual species that should be highlighted and why?
    - Discard mortality
    - Amount of encounters
    - Population status
    - Unmarketable or illegal to take
    - Challenging to avoid
    - Species biology
    - Important ecological, commercial, or recreational value
    - Important for wildlife viewing and public enjoyment
    - Other?

Statewide Halibut Trawl Fishery

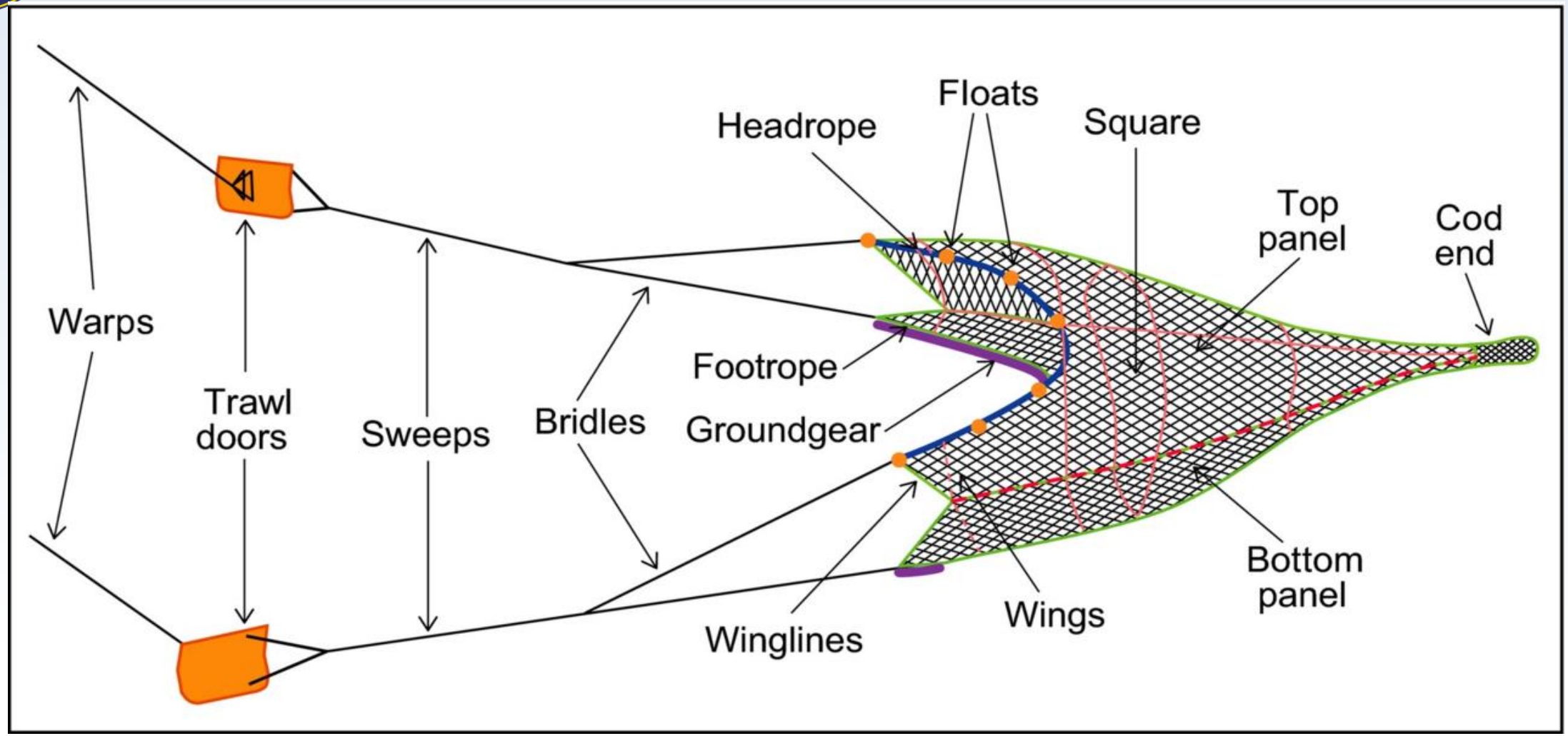
- Federal waters and nearshore CHTG fisheries
- Halibut Bottom Trawl Permit required
  - Groundfish trawler incidental allowance
- Vessels located statewide from north to south
- 22-inch minimum length
- No landing quotas

Photo credit: CDFW

Federal Waters Trawl Fishery

- Trawling allowed in Fishery Conservation Zone, between 3-200 nm from shore
  - Except for EFH Conservation Areas and bays
- Halibut targeted over soft bottom
- Small footrope trawl
  - Chafing gear is allowed with minimum mesh of 6 inches
  - Rollers less than 8 inches
  - At least 4.5-inch cod-end mesh and may consist of only one layer of webbing
- Selective flatfish trawl
  - 104 ft foot rope maximum
    - Headrope length no more than 30% of foot rope length
  - 3 ft breast line maximum

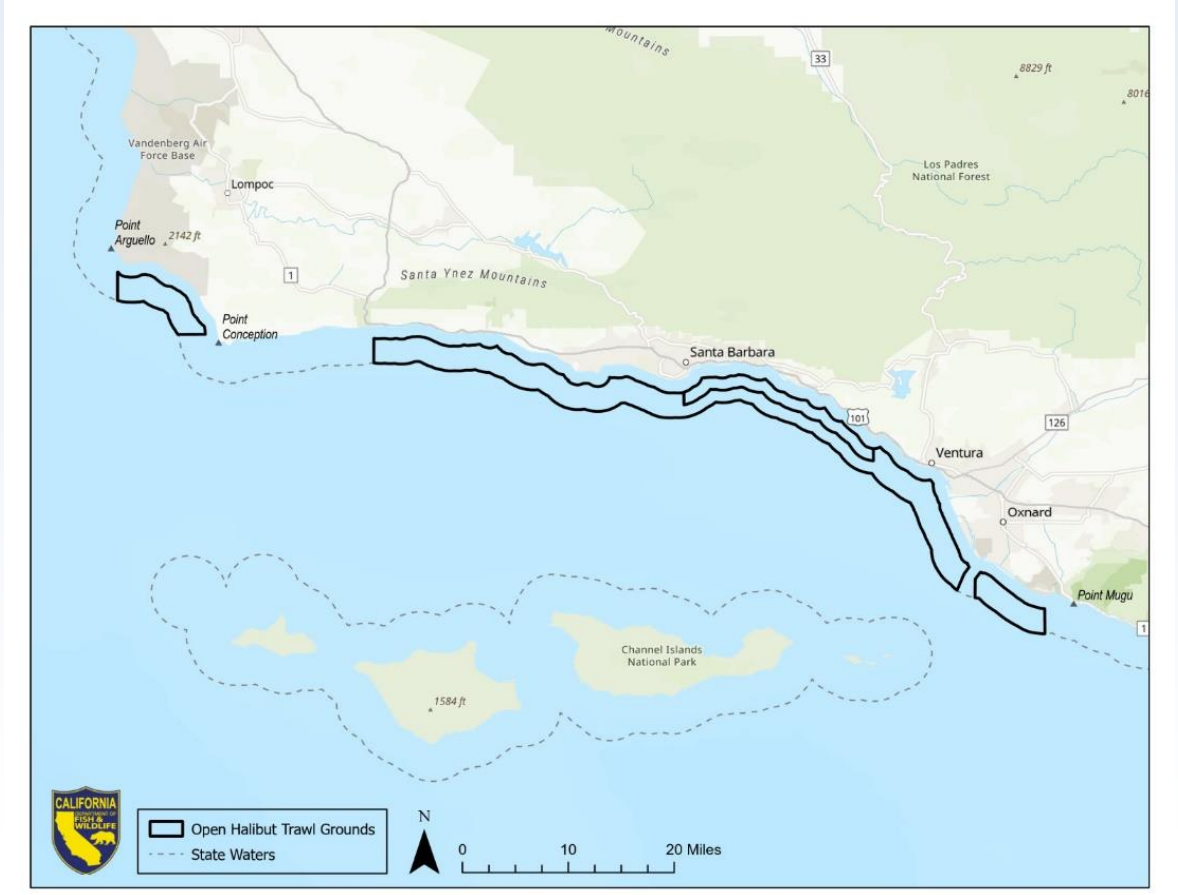
Bottom Trawl Gear



McConnaughey RA, Hiddink JG, Jennings S, et al. Choosing best practices for managing impacts of trawl fishing on seabed habitats and biota. Fish and Fisheries. 2020; 21: 319-337.

California Halibut Trawl Grounds (CHTG)

- Point Arguello to Point Conception and Gaviota to Point Mugu
  - 1 nm from shore out to 3 nm
  - June 16- March 14
  - Light touch gear only
  - State Halibut Bottom Trawl Permit required
- Habitat
  - Average depth of 52 m (170 ft)
  - 98.7% soft bottom
  - No kelp
  - Small amounts of biogenic structure and hard bottom

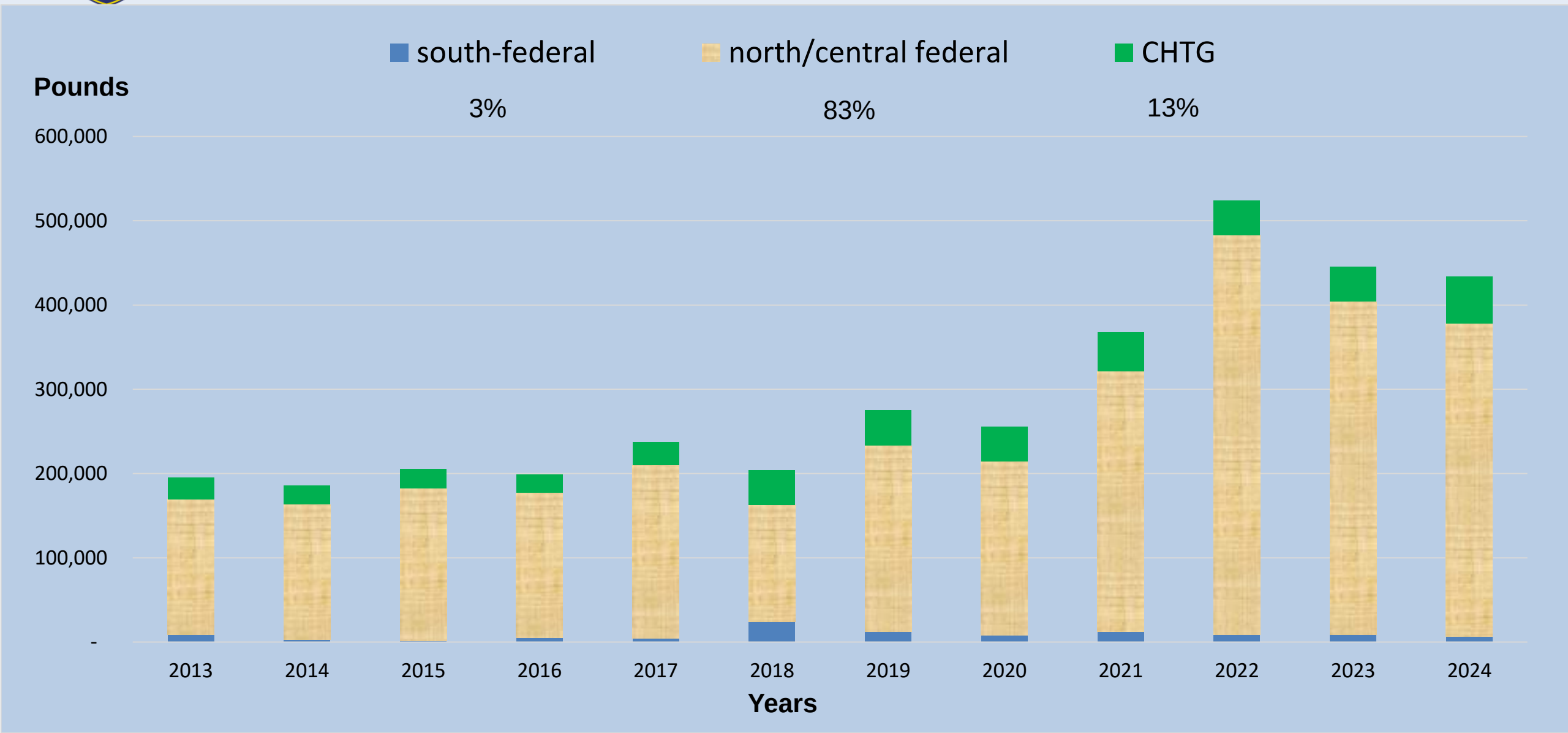


Light Touch Trawl

Photo credit: NMFS

- CHTG required
  - Door weight limit of 500lb
  - 90 ft headrope maximum
  - 7mm or less diameter twine
  - No rollers or bobbins
    - Dropped loop chain allowed
  - 7.5-inch cod-end mesh
- Variations of light touch gear used in the federal fishery

Statewide CA Halibut Trawl Landings



CHTG Assessment

- Bycatch and habitat assessment completed in 2024
  - Four Performance Criteria (FGC §8495)
    1. Does not minimize bycatch
    2. Likely damaging the seafloor
    3. Adversely affecting ecosystem health
    4. Impedes restoration to kelp, coral, or other biogenic habitats
  - Data sources for assessment
    - Department observation trips
    - WCGOP data
    - GIS habitat data
    - Trawl logbook data
    - Scientific literature

Trawl Grounds Assessment Conclusions

- CHTG Assessment evaluated
  - Bycatch
  - Habitat (seafloor) and ecosystem impacts
  - Impacts to kelp and biogenic habitats
- Results
  - Low discard mortality (less than 13%)
  - Light touch trawl gear minimizes contact with seafloor habitat
  - No kelp and avoidance of biogenic habitat
  - Multiple control measures that protect ecosystem function

Green Sturgeon Collaborative Research

- Range: Alaska to Monterey Bay, CA
- Max Depth: ~110 m (60 fm)
- Anadromous
- Two Distinct Population Segments (DPS)
  - Northern DPS (Eel River, north): species of concern
  - Southern DPS (south of Eel river): threatened
- Trawl fishery encounters occur primarily in SF and HMB with the southern DPS

Photo credit: WCGOP

GS Research: Purpose, Goals, Timeline

- Goals
  - Understand effects of bycatch on GS
  - Develop strategies to reduce bycatch and maintain CA Halibut catch
- Key Questions
  - What is the rate of green sturgeon post-release survival in the CA halibut fishery?
  - Could bycatch have a population-level impact?
  - How do we reduce green sturgeon bycatch while maintaining a healthy fishery?

2013 — Initial Workshop

Develop collaborative study to address post-release survival using satellite tagging

2015–2016 — Post-release Survival Study

Fishermen and NOAA Observers deploy satellite tags on green sturgeon; ~ 80% post-release survival (Doukakis et al. 2020)

2017 — Workshop 2

Develop underwater video study to evaluate green sturgeon and CA Halibut behavior, to inform bycatch reduction/gear modifications.

2021–2024 — Behavior/Video Study

Fishermen and NOAA Observers deploy camera systems; analyze underwater video footage of green sturgeon

GS Collaborative Research: Satellite Tagging

Photo credit: CDFW

GS Collaborative Research: Behavior-Video Study

Photo credit: Kyle Pemberton

GS Collaborative Research: Next Steps

- Gear Survey
  - Canvassing fleet participants
  - Improve understanding of fleet fishing behavior and individual halibut trawl gear specifications
    - gear inventory
- Gear Modification Studies
  - Evaluate response of green sturgeon and halibut to gear modifications
    - Test bycatch reduction devices
    - Utilize observers and camera systems to evaluate response

Photo credit: CDFW

Industry Perspective: Movie

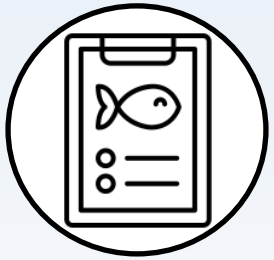
- Highlights personal stories from California halibut trawl fishermen
- Based on oral history interviews from NOAA Fisheries' Voices Oral History Archives Collection: "Who Does Your Local Seafood Come From?"
- Clips are selected to reflect key experiences and industry adaptation
  - Pathways into the fishery
  - life aboard a halibut trawler
  - history and transformation of the fishery
  - the evolution of trawl gear
  - local marketing
  - stewardship and sustainability

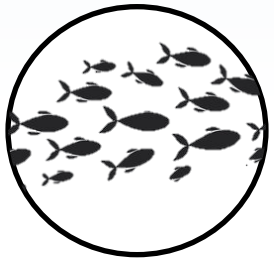
Photo credit: CDFW

https://youtu.be/jv4CMcflRr0

Data for Bycatch Assessment

Photo credit: CDFW

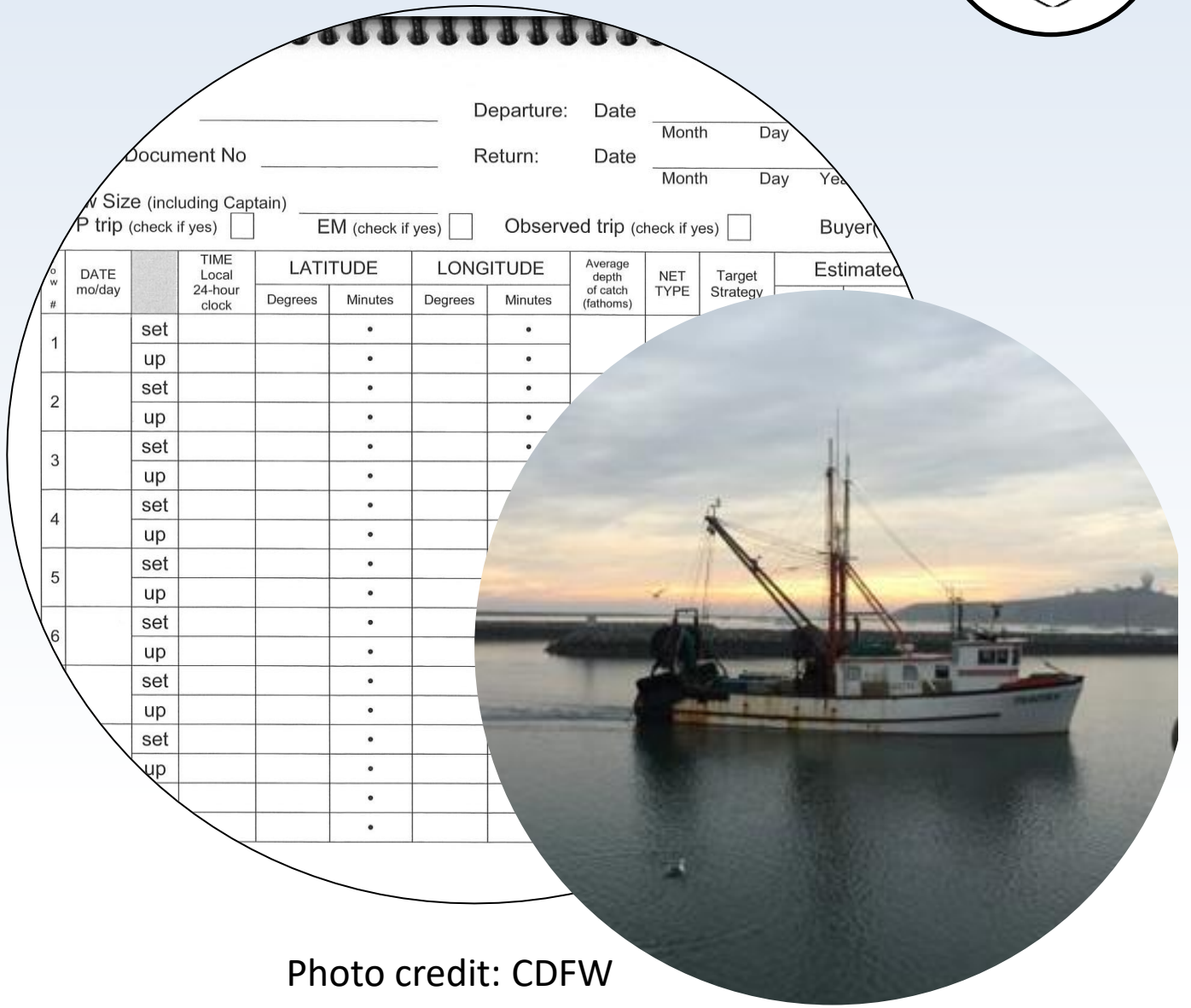




- Fishery-reported data
  - Trawl logs
  - Fish tickets
- Observer data
  - West Coast Groundfish Observer Program
  - CDFW observations
- Spatial data
- Bycaught species data
  - Stock assessments
- Bycatch reports
- Data needs

Fishery-reported data: Trawl logs (1981-Present)

- Tow time and location (GPS)
- Average depth
- Tow duration
- Net type
- Vessel
- Crew
- Estimated total retained catch
  - Weight by species



Departure: Date Month Day

Document No Return: Date Month Day Ye

v Size (including Captain)

P trip (check if yes) EM (check if yes) Observed trip (check if yes) Buyer(

ow #	DATE mo/day		TIME Local 24-hour clock	LATITUDE Degrees	LATITUDE Minutes	LONGITUDE Degrees	LONGITUDE Minutes	Average depth of catch (fathoms)	NET TYPE	Target Strategy	Estimated
1		set			•		•				
		up			•		•				
2		set			•		•				
		up			•		•				
3		set			•		•				
		up			•						
4		set			•						
		up			•						
5		set			•						
		up			•						
6		set			•						
		up			•						
		set			•						
		up			•						
		set			•						
		up			•						
					•						
					•						

Photo credit: CDFW

Fishery-reported data: Trawl logs (1981-Present)

- Merits
  - High spatial and temporal resolution
  - Target
  - Tow-specific, CPUE
- Limitations
  - No discard (disposition) recording
  - Variable self-reporting accuracy and compliance

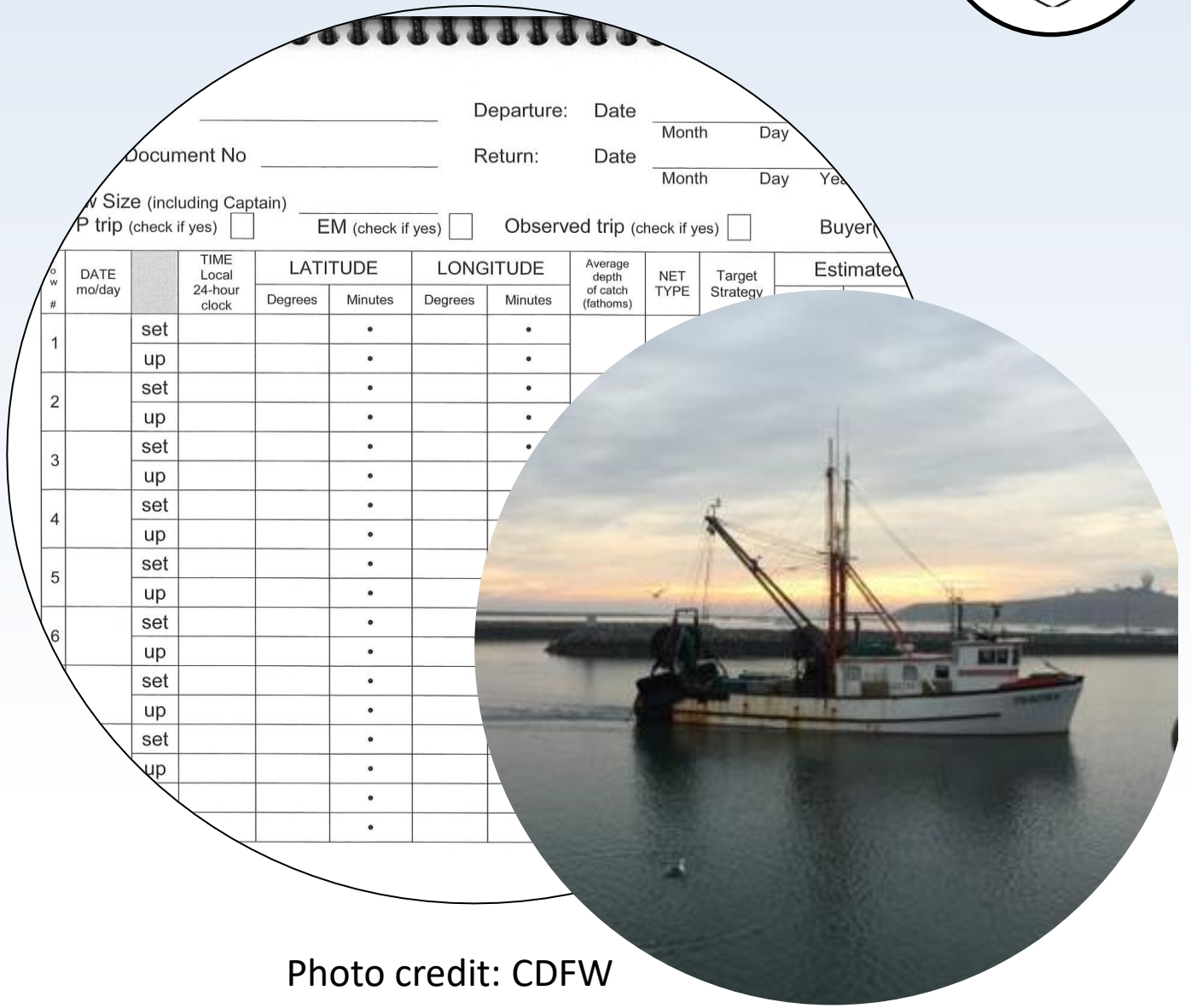
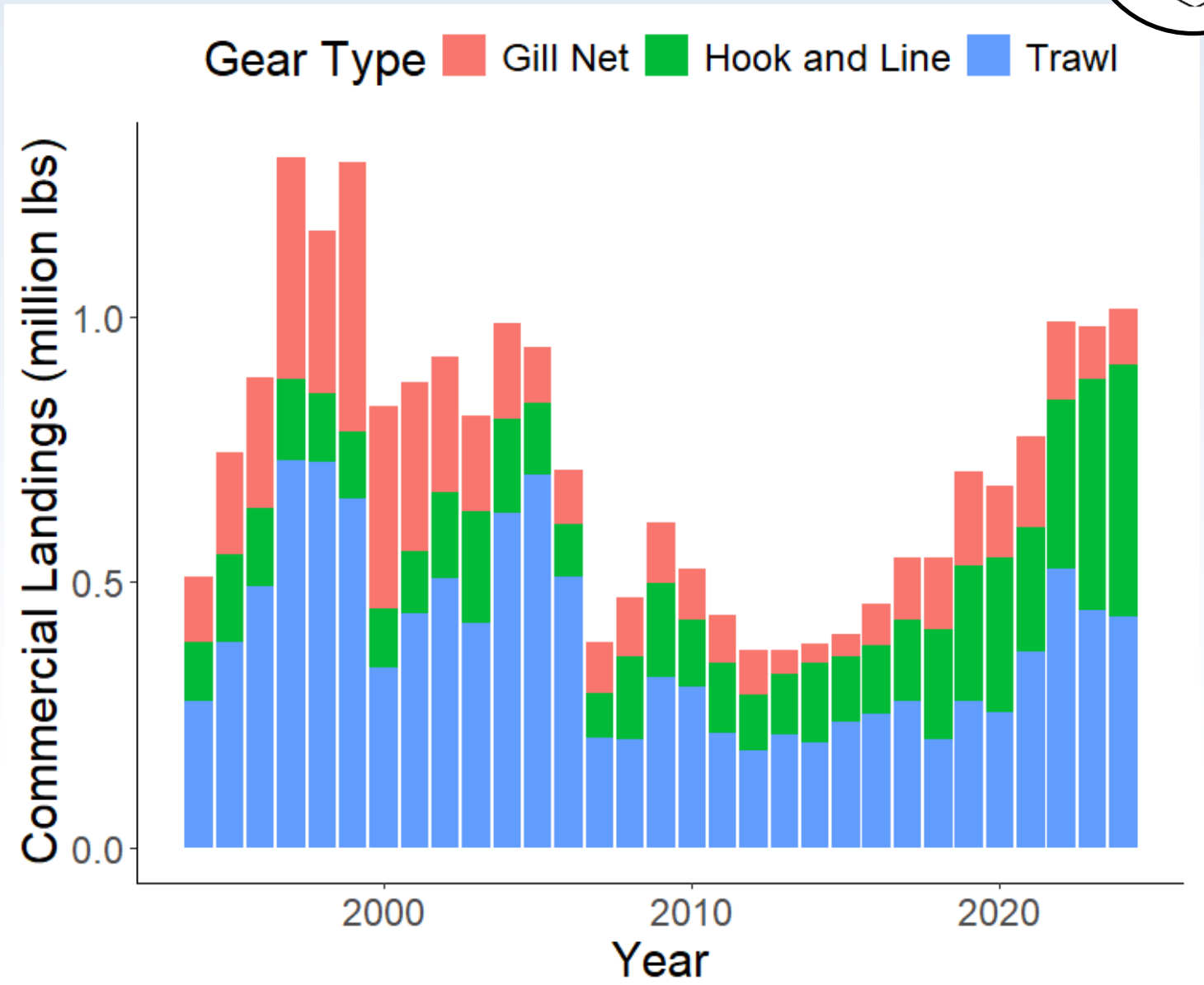


Photo credit: CDFW

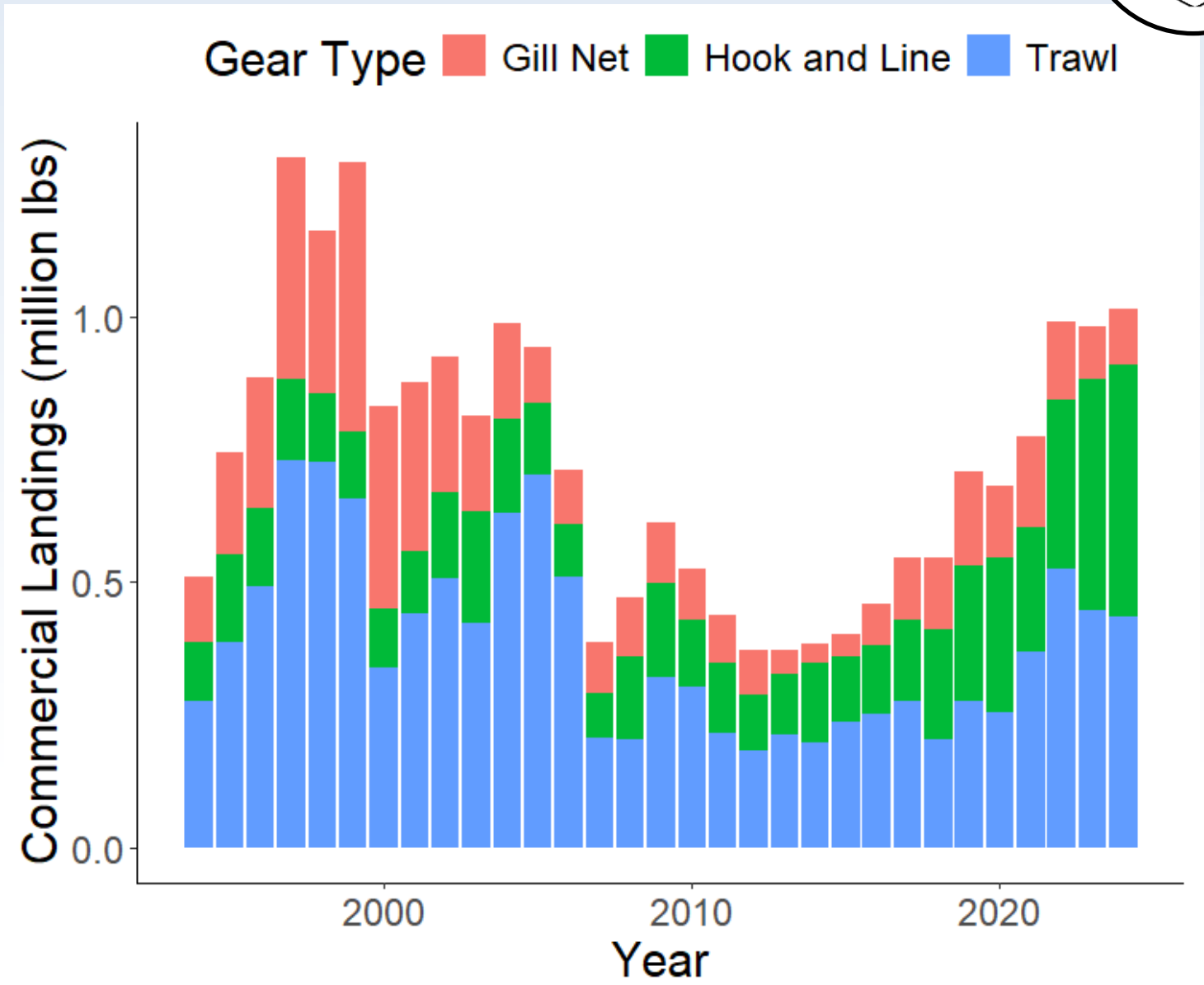
Fishery-reported data: Fish tickets (1969-Present)

- Port and fishing location (block)
- Vessel and fisherman
- Gear type
- Landings
  - Species
  - Weight
  - Price



Fishery-reported data: Fish tickets (1969-Present)

- Merits
  - Fleet-wide coverage
  - Market dynamics and demand
- Limitations
  - Low spatial and temporal resolution
  - No discard (disposition) recording
  - Not tow-specific, no CPUE



Observer data: West Coast Groundfish Observer Program (2002-2024)

- Tow time and location
- Average depth
- Tow duration
- Permit and gear type
- Vessel
- Crew
- Retained catch (trawl log transcribed)
  - Species
  - Weight
- Discards
  - Species
  - Count and weight
  - Lengths
  - Disposition (sub-legal halibut in 2017)
- Protected species interactions

Photo credit: NOAA Fisheries

Observer data: CDFW state trawl ground assessment (2022-2023)

Photo credit: CDFW

- WCGOP data fields
- Comprehensive discard and disposition data
- Comparison/validation for other datasets

Observer data: WCGOP & CDFW

- Merits
  - Third-party
  - Tow-specific
  - High spatial and temporal resolution
- Limitations
  - Limited coverage
  - Limited disposition data

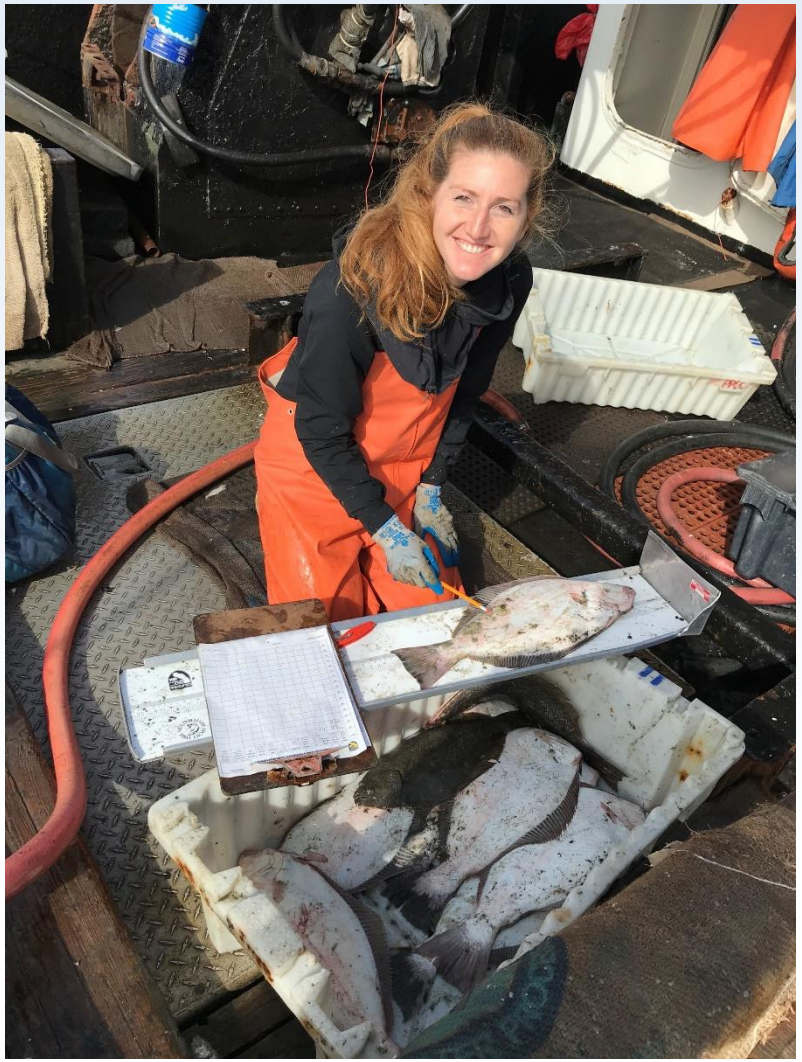


Photo credit: CDFW

Observer data: WCGOP & CDFW

Estimating fleetwide bycatch

- Groundfish Expanded Mortality Multiyear (GEMM) dataset
  - Discards/Landings is consistent
  - Default mortality 100%
  - Pools groundfish and halibut trips
- Machine learning approaches
- Require random sampling

Photo credit: iStock

Spatial data: GIS Habitat Maps

- Spatially explicit analyses
- Habitat characteristics

Maps of the California Halibut Trawl Grounds

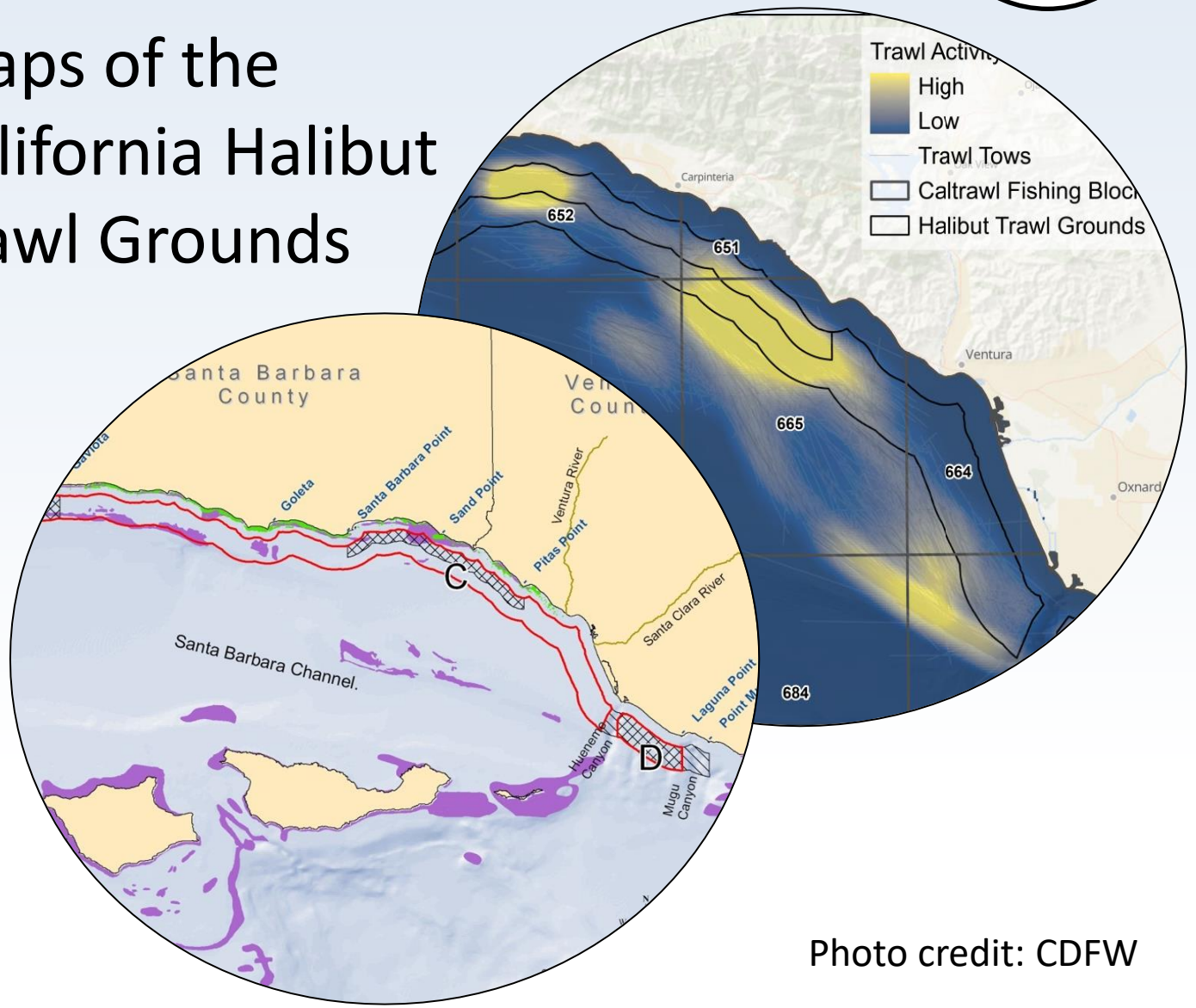


Photo credit: CDFW

Spatial data: GIS Habitat Maps

- Merits
  - Link effort and habitat
  - Model spatially explicit bycatch hotspots
- Limitations
  - Spatial and temporal resolutions vary
  - Static habitat

Maps of the California Halibut Trawl Grounds

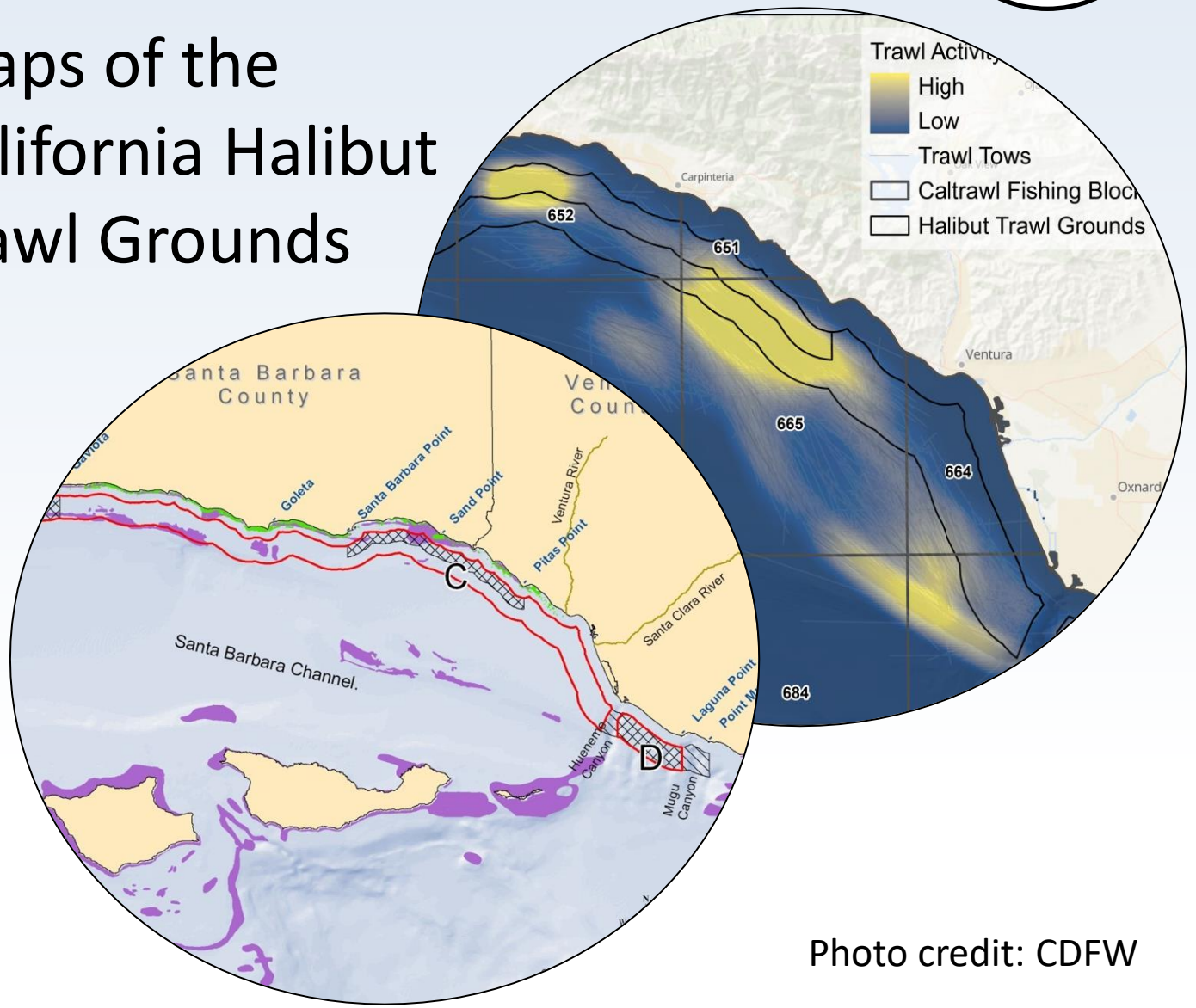
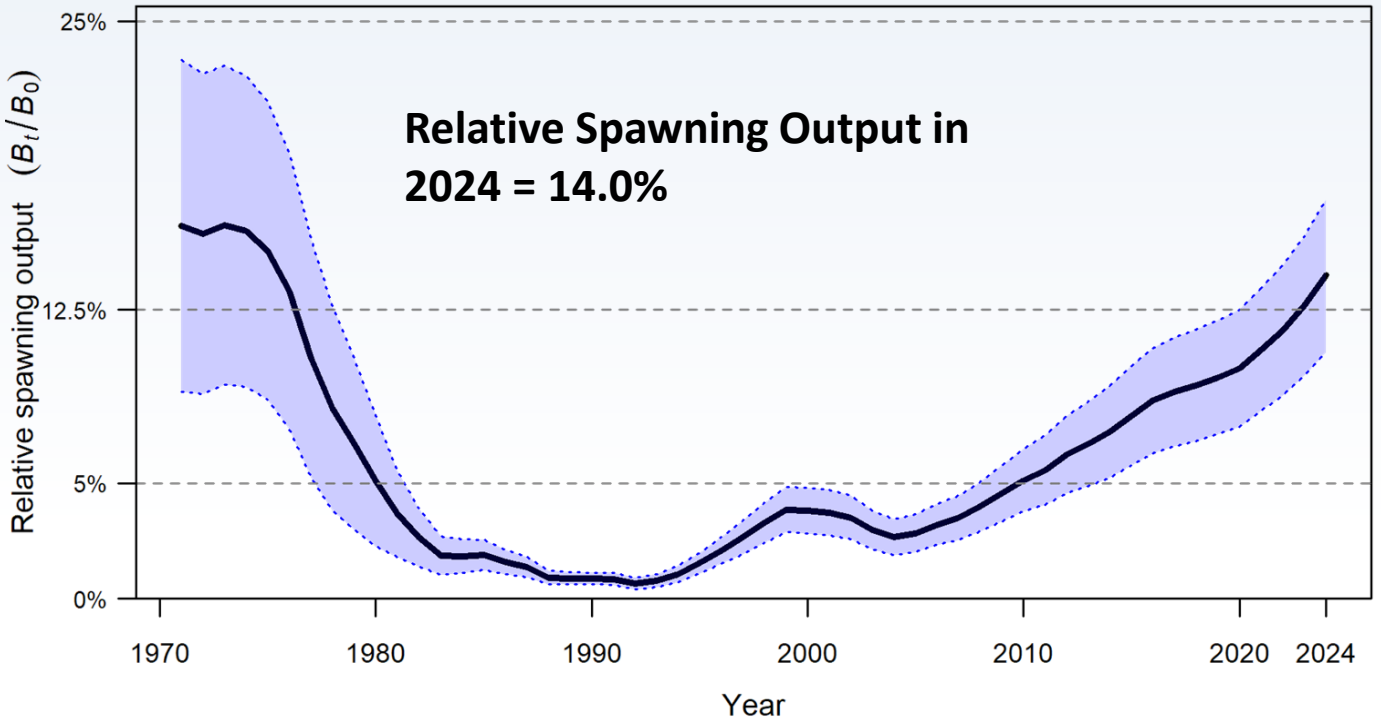


Photo credit: CDFW

Bycaught species data: Stock assessments

- 2021 Assessment (central and southern)
- 2024 Assessment (Southern only)



Coates et al. 2024

Bycaught species data: Peer-reviewed research

Figure 1

Photograph of a Dungeness crab (*Cancer magister*) tagged with a double t-bar anchor tag (TBA-LEVO) for this study in which Dungeness crabs were tagged and released between October 2012 and April 2014 off the coast of Oregon and in Yaquina Bay, Oregon

A comparison of laboratory-holding and tag-return methods for evaluating delayed mortality of Dungeness crab (*Cancer magister*) discarded in Oregon fisheries

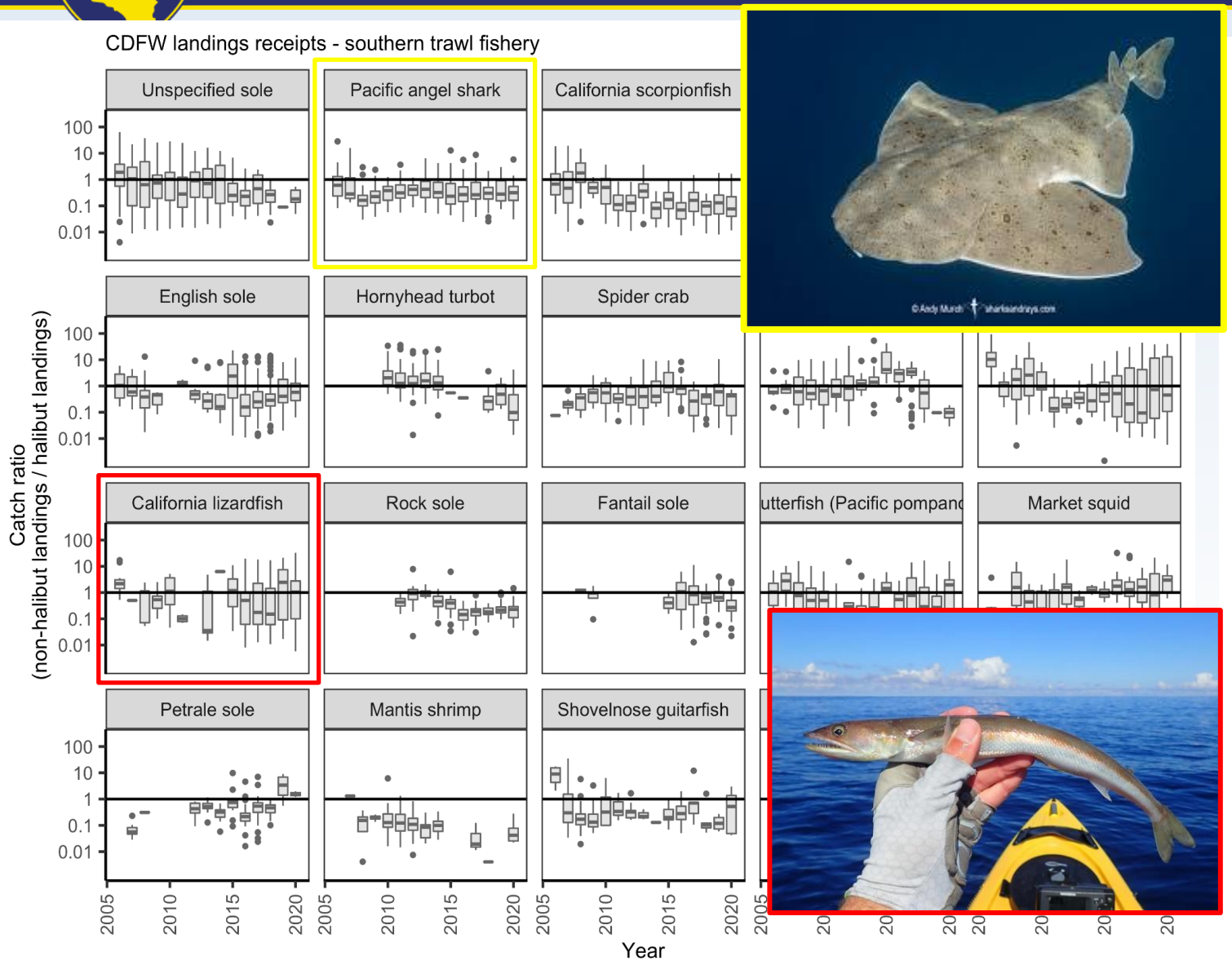
Noëlle Yochum (contact author)[1]
Allan W. Stoner[2]
David B. Sampson[1]
Craig Rose[3]

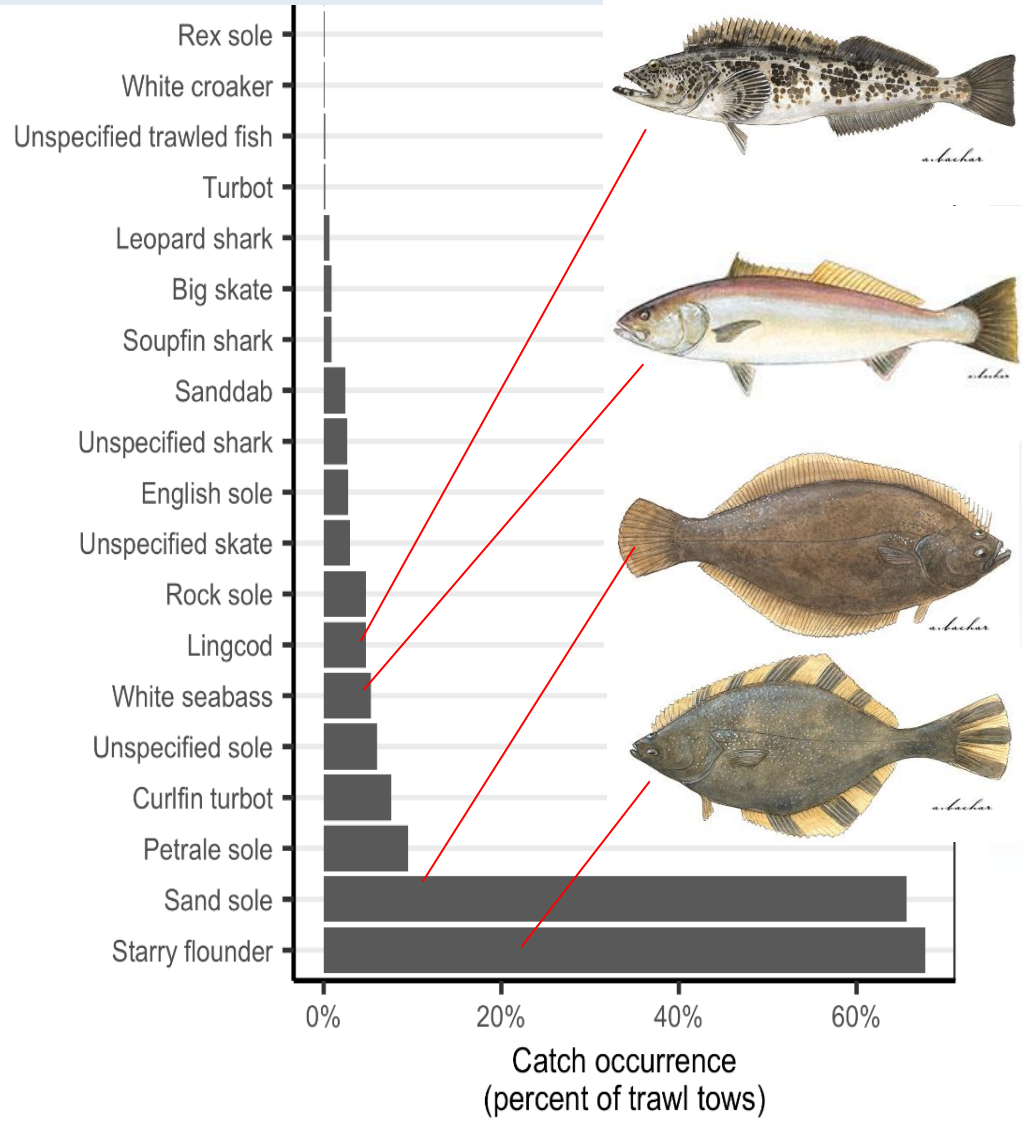
Utilizing reflex impairment to assess the role of discard mortality in "Size, Sex, and Season" management for Oregon Dungeness crab (*Cancer magister*) fisheries

Authors: Noëlle Yochum, Allan W. Stoner, David B. Sampson, Craig Rose, Alan Pazar, and Robert Eder | AUTHORS INFO & AFFILIATIONS

Publication: Canadian Journal of Fisheries and Aquatic Sciences • 11 October 2016 • https://doi.org/10.1139/cjfas-2016-0029

Reports: Bycatch reports



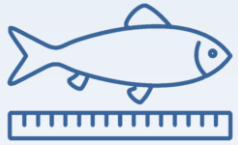


Free 2022

Data needs

Determining "acceptable" types and amounts of bycatch

- (Fish and Game Code §7085(b))
  - Legality of take
  - Threat to sustainability
  - Impacts on fisheries
  - Ecosystem impacts



Key data needs:

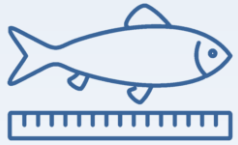
1. **Biological data** related to discarded species
2. **Discard** condition and mortality rates (initial and post-release)
3. Socioeconomic and ecological **impacts** of bycatch by species
4. Impact of potential or existing bycatch **mitigation** efforts

Data needs

Discussion:

What data sources, research, or opportunities for research are you aware of that could meet these needs?

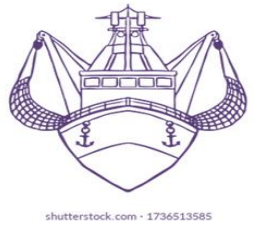
Key data needs:



1. **Biological data** related to discarded species

2. **Discard** condition and mortality rates (initial and post-release)

3. Socioeconomic and ecological **impacts** of bycatch by species



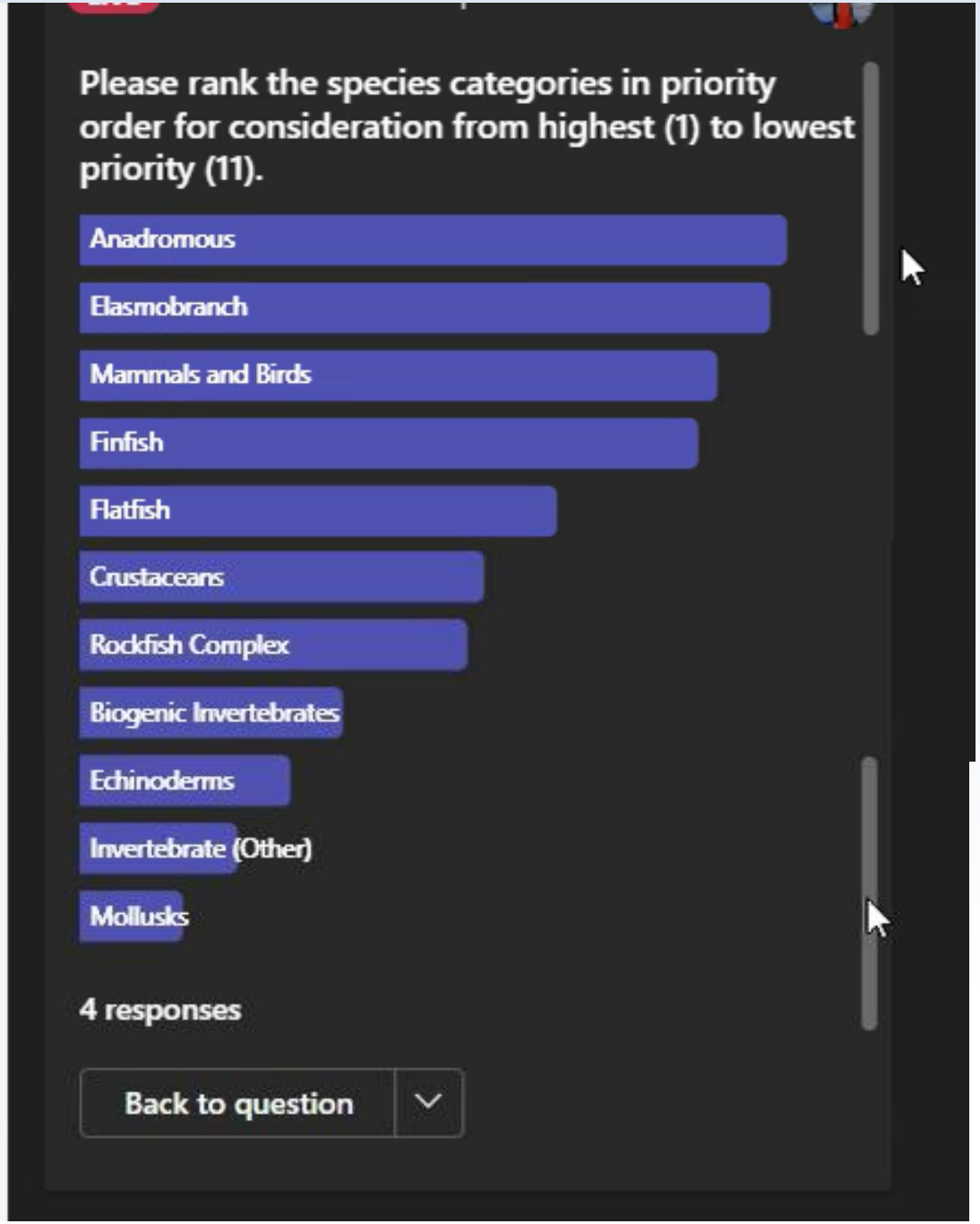
4. Impact of potential or existing bycatch **mitigation** efforts

Wrap-up and Lunch Break

- Reconvene at 1:00 pm
  - Summary of morning session
  - Breakout Sessions 2 and 3

Ranking Poll | 16 votes | 16 participants

1. Anadromous Fishes — 8.5
2. Flatfish — 7.31
3. Elasmobranchs — 6.19
4. Rockfish Complex (RGC) — 5.88
5. Mammals and Birds — 5.81
6. Crustaceans — 5
7. Other Finfish — 3.81
8. Biogenic (habitat forming) Invertebrates — 2.94
9. Other Invertebrates — 2.56
10. Mollusks — 2.44
11. Echinoderms — 1.81



Break-out Discussion #2

Question for discussion:

- How is your vision of a sustainable fishery impacted by bycatch of non-target species?

*"Bycatch" mean fish that are taken in a fishery but which are not the target of the fishery. "Bycatch" includes discards. (FGC §90.5)

Considerations:

- Undesirable bycatch impacts to overall profitability
- Unneeded impacts and harm to the ecosystem
- Removal of prey items that halibut consume
- Other?

Break-out Discussion #3

- Discussion Questions:
  - What does the future of the California halibut trawl fishery look like to you?
  - How can management of the California halibut trawl fishery be improved?

Next Steps and Timeline

- May 2025- Remote workshop
- Summer 2025- Incorporate workshop take aways to prepare for completing the trawl bycatch evaluation framework identified in the master plan
  - Species and/or groups for prioritization
- July 2025- Presentation to Marine Resources Committee
- Ongoing- Additional meetings with stakeholders

Closing Remarks

Thank you!

Email: MLMAFisheriesMgmt@wildlife.ca.gov