Statewide California Halibut Trawl Bycatch Assessment





Nov 12, 2026

Presented to:

Marine Resources Committee

California Fish and Game Commission

Presented by:

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Marine Region

Timeline

Winter/ Spring 25/26

- Data/information compilation & initial analyses
- Finalized bycatch species priority list for further analyses

Spring/ Summer 2026

- Finalized expansion numbers
- Completed PSA Method and Initial Scoring
- Began Core Criteria Evaluation Method

Winter/ Spring 26/27

- Finalize PSA
- Complete Core Criteria Evaluation
- Present preliminary acceptability results at March 2027 MRC

Summer/ Fall 2027

- Peer Review
- Present Final Results to FGC
- Begin iterative process to address unacceptable bycatch (if found)

Ongoing Tribal and stakeholder engagement and opportunities for input

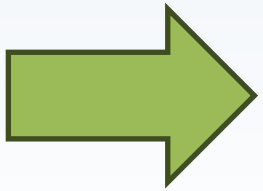
Marine Life Management Act (MLMA)



Step 1. Collection of information on the amount and type of catch



Step 2. Distinguish target, incidental, and bycatch species

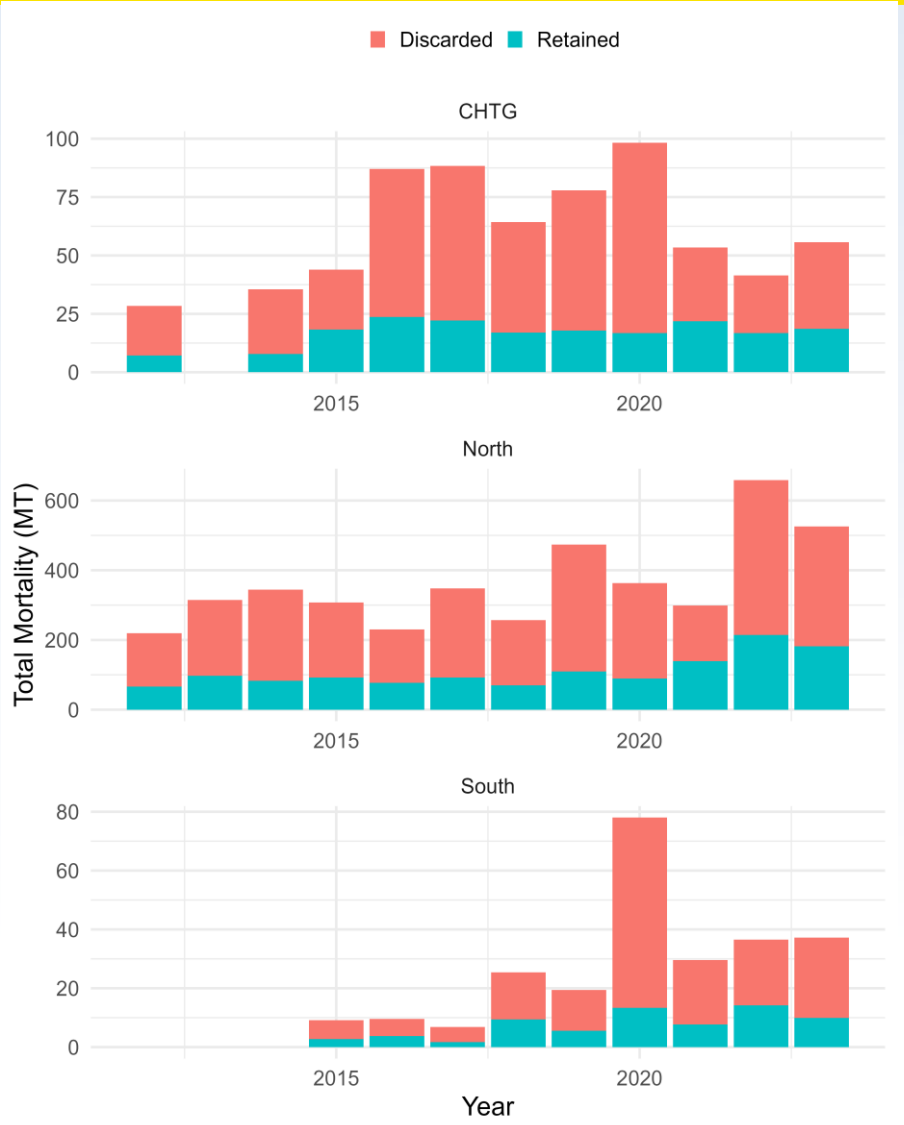


Step 3. Determine acceptability – Core Criteria

Step 4. Address unacceptable bycatch (if found)

Total Amount of Catch by Region Expansions

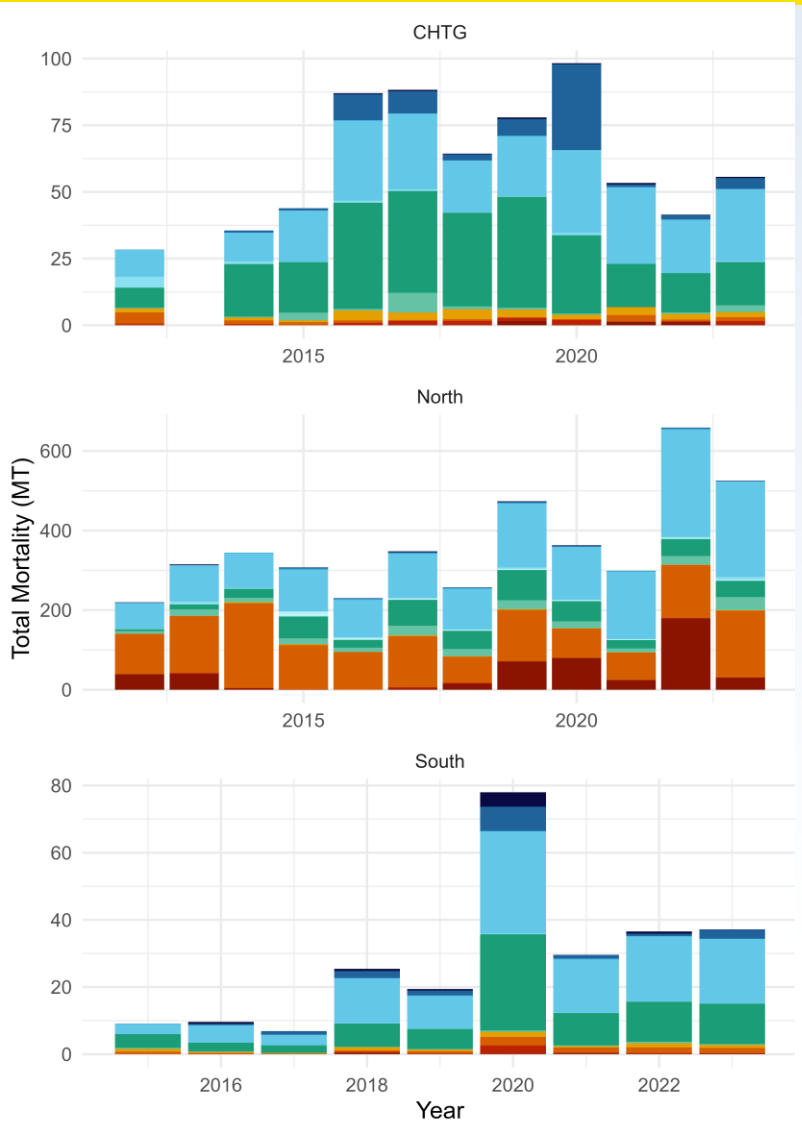
- Data sources:
  - WCGOP Data 2012 – 2023
  - Marine Landings Data System 2012-2023
- Discard mortality accounting
  - Product of species-specific discard ratio and total halibut landings
  - Four species mortalities estimated at 50%
  - Stratified by year and region
- Retained mortality accounting
  - Species-specific landings attributed to likely CHLB fish tickets
  - Stratified by year and region



Total Amount of Catch by Species Group

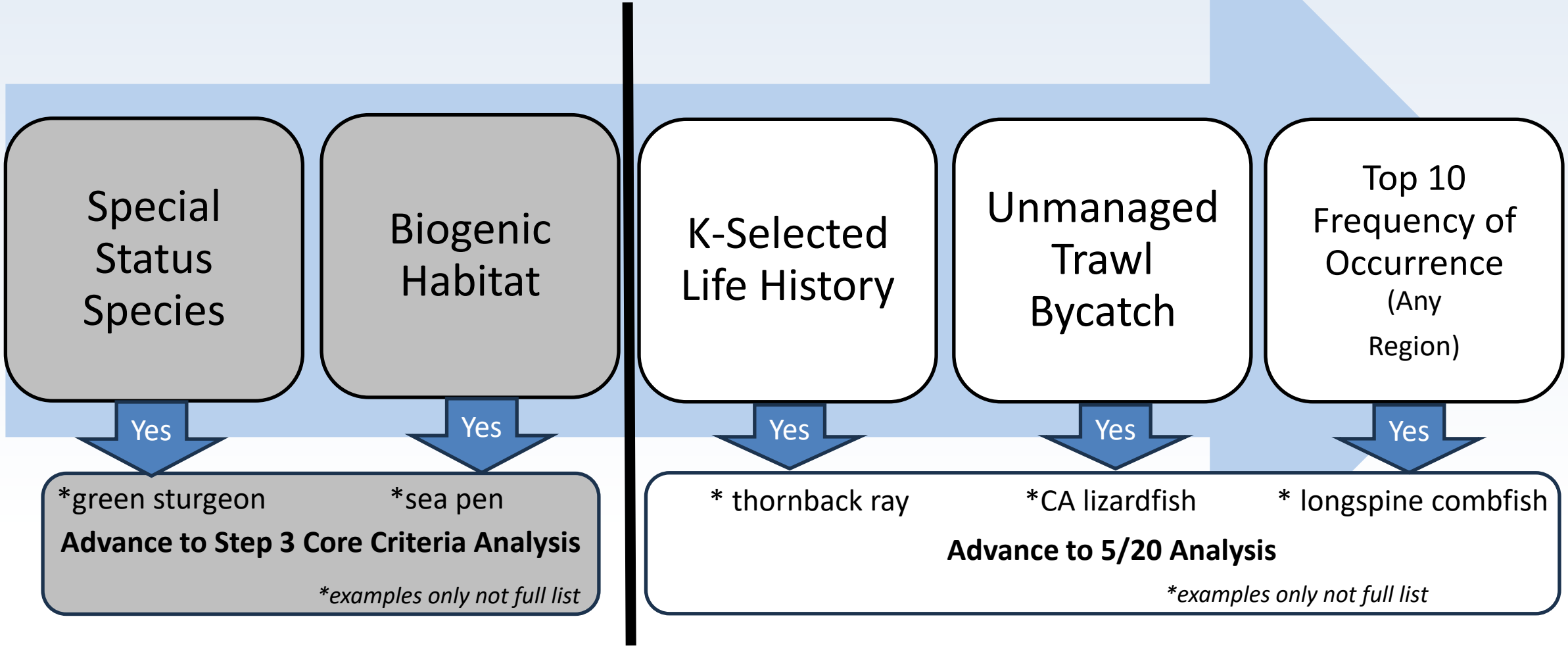
Group

- Shallow Reef Finfish
- Deep Reef Finfish
- Shallow Soft-Bottom Finfish
- Deep Soft-Bottom Finfish
- Pelagic Finfish
- Shallow Flatfish
- Deep Flatfish
- Anadromous
- Shallow Benthic Elasmobranch
- Deep Benthic Elasmobranch
- Pelagic Elasmobranch
- Shallow Crabs
- Deep Crabs
- Biogenic
- Mobile Benthic Invertebrate
- Sessile Benthic Invertebrate
- Pelagic Invertebrate



Amount of Catch

Rapid Risk Assessment Tool



Species List Prioritization 5/20 Analysis

Was the species observed in **>5% of trawls** per region?

Northern Region (>36°N)
>123 of 2,452 total trawls (2012-2023)

Southern Region
>55 of 1,106 total trawls (2012-2023)

California Halibut Trawl Grounds
>47 of 934 total trawls (2012-2023)

Has the species been observed by West Coast Groundfish Observer Program (WCGOP) in California halibut trawls **since 2016**?

Did the species exhibit **±20% change** (mean annualized weight) from baseline to recent years (post-COVID)?

baseline: 2016-2021, recent: 2022-2023

Prioritized Species List - Fishes

Group	Species
Anadromous **N = 6**	**Chinook (king) salmon**
	coho (silver) salmon
	green sturgeon
	longfin smelt
	striped bass
	white sturgeon
Deep Benthic Elasmobranch **N = 3**	big skate
	longnose skate
	spiny dogfish shark
Deep Flatfish **N = 2**	longfin sanddab
	Pacific sanddab
Deep Reef Finfish **N = 3**	bronzespotted rockfish
	quillback rockfish (California)
	vermilion rockfish
Pelagic Finfish **N = 2**	Pacific butterfish
	white sea bass

Group	Species
Shallow Benthic Elasmobranch **N = 12**	bat ray
	brown smoothhound shark
	California skate
	horn shark
	leopard shark
	Pacific angel shark
	Pacific electric ray
	shovelnose guitarfish
	soupfin shark
	starry skate
	swell shark
	thornback
Shallow Reef Finfish **N = 3**	copper rockfish
	giant sea bass
	Pacific staghorn sculpin

Group	Species
Shallow Flatfish **N = 9**	bigmouth sole
	California halibut discard
	California tonguefish
	curlfin sole
	diamond turbot
	English sole
	fantail sole
	hornyhead turbot
	starry flounder
Shallow Soft-Bottom Finfish **N = 8**	barred sand bass
	California lizardfish
	longspine combfish
	pink surfperch
	plainfin midshipman
	queenfish
	specklefin midshipman
	white croaker

Fishes N = 48

Prioritized Species List - Other

Invertebrates N = 12 + Biogenic

Group	*Species*
Deep Crabs **N = 3**	armed box crab
	Dungeness crab
	graceful crab
Mobile Benthic Invertebrate **N = 4**	California sea cucumber
	California spiny lobster
	mantis shrimp
	ridgeback prawn
Shallow Crabs **N = 5**	Pacific rock crab
	purple globe crab
	red rock crab
	sheep crab
	Xantus' swimming crab

Group	*Species*
Biogenic N = 10	sand dollar unid
	brittle/basket star unid
	sponge unid
	ectoprocta unid
	horny gorgonian
	sea whip
	sea pen
	tunicate unid
	sea pansy
	soft coral

Mammals N = 5

Species
California sea lion
northern elephant seal
harbor seal
Stellar sea lion
harbor porpoise

Seabirds N = 5

Species
brown pelican
western grebe
western gull
Brandt's cormorant
common murre

Species Specific Acceptability

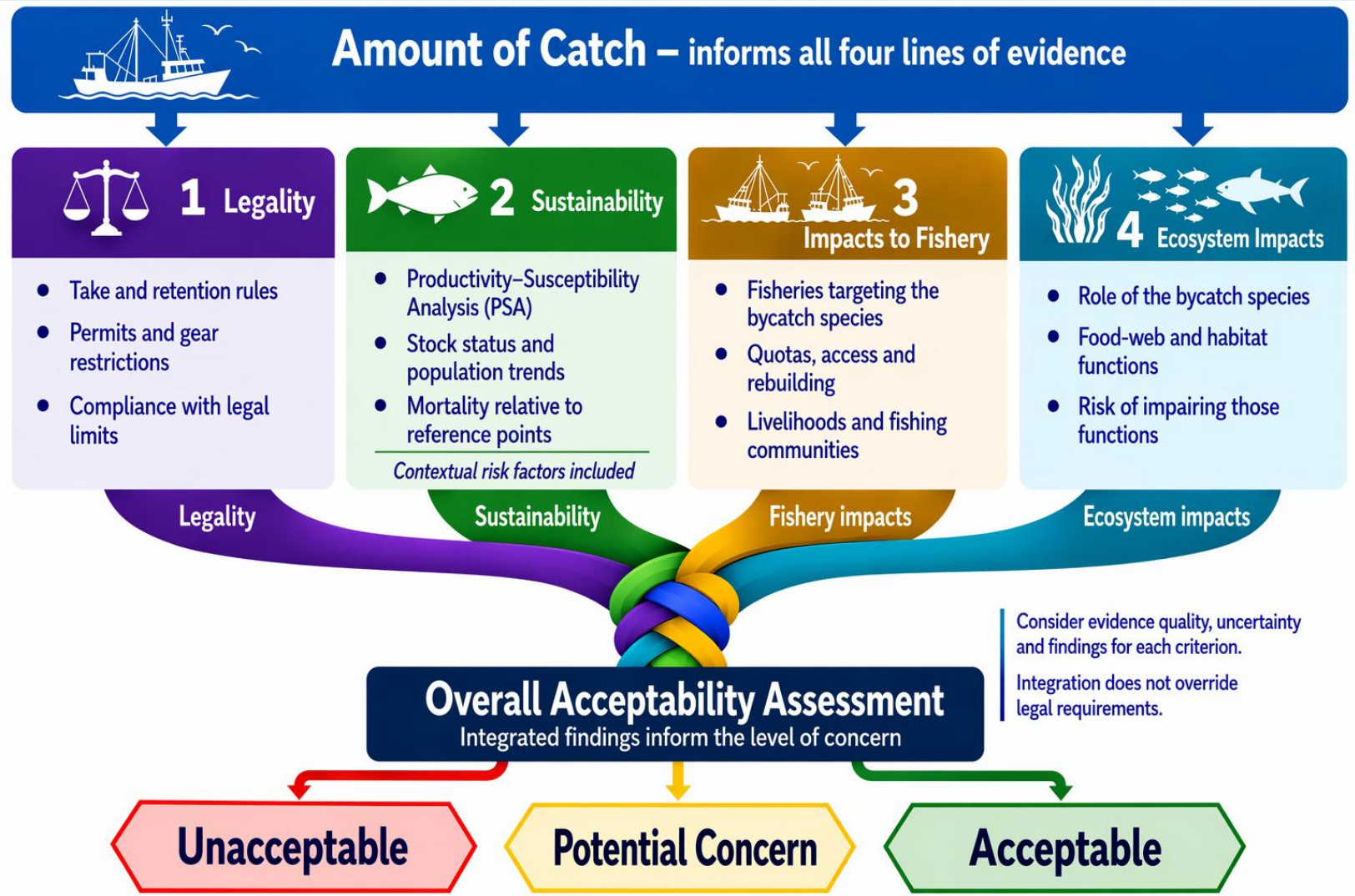
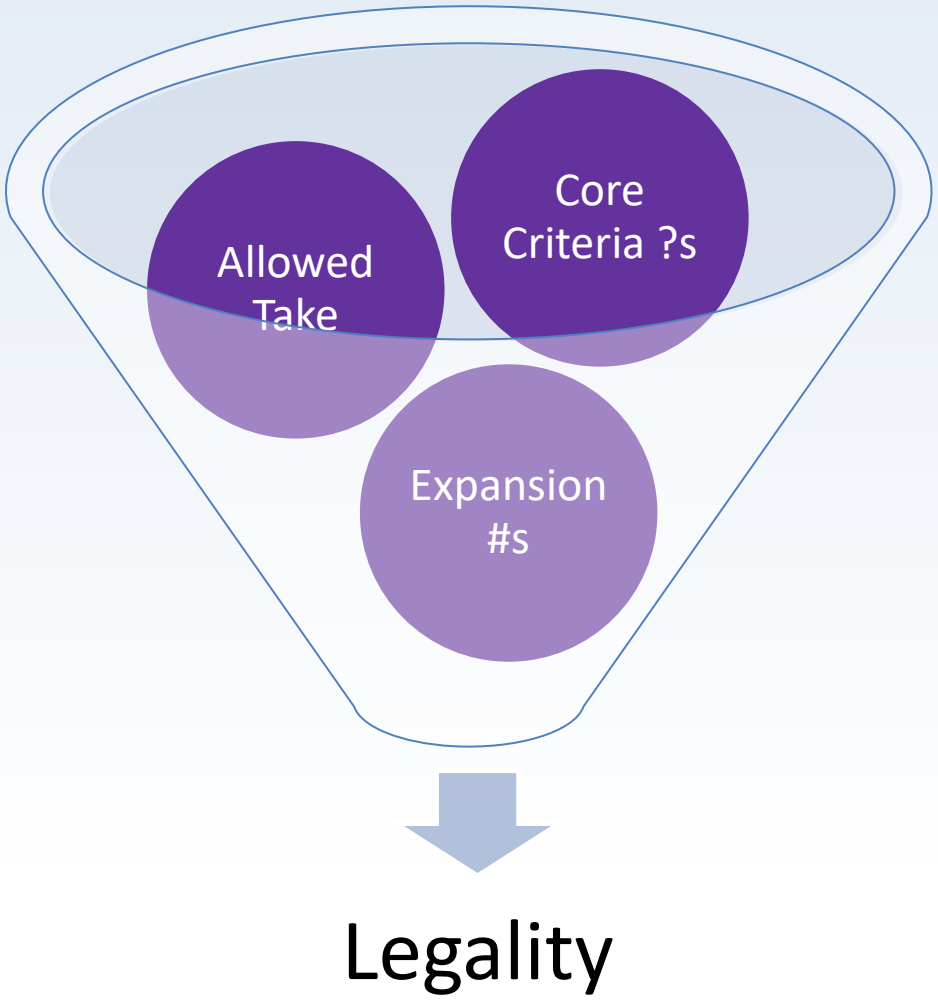


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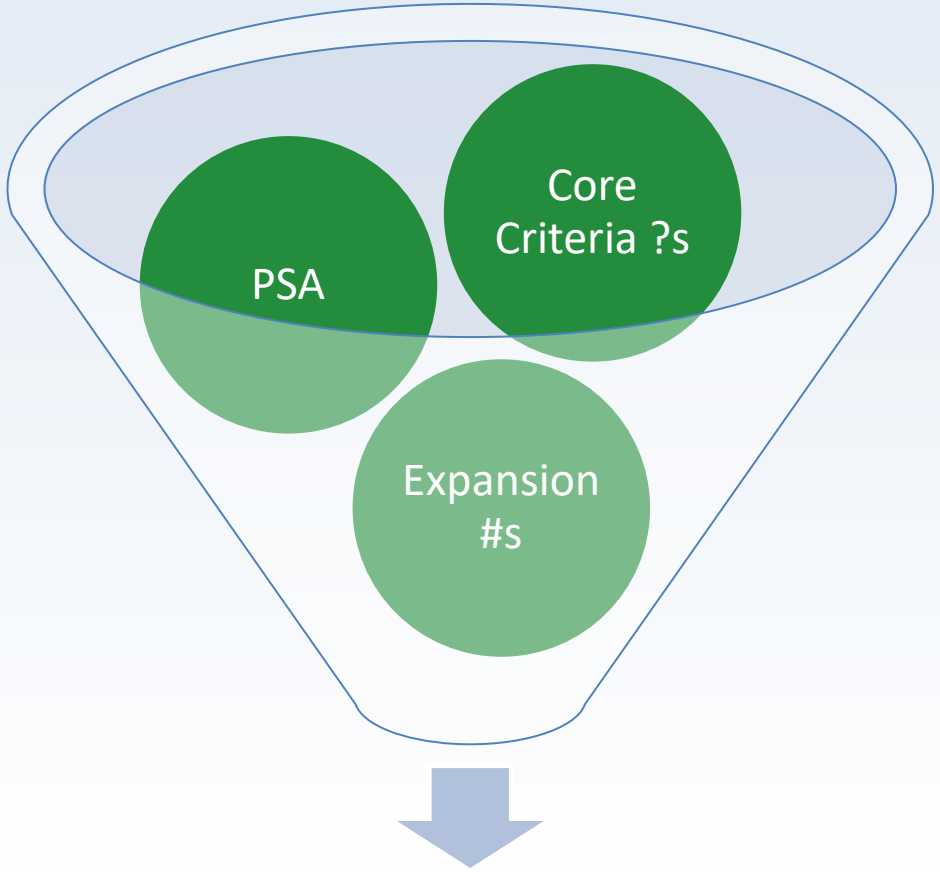
Core Criteria 1 - Legality Analysis Process



- Bycatch species list (n = 197) plus seabirds (n = 5), marine mammals (n = 5), special status (n = 5) and management concern (n = 5)

- Results = “Legal” or “Illegal”
  - ❖ Legal → Core Criteria 2 Analysis
  - ❖ Illegal → May be considered unacceptable and management action may be necessary

Core Criteria 2 - Sustainability Analysis Process



- Prioritized bycatch species list (n = 50)
- Refinements in process
- Results = High, moderate or low concern level
- All categories of results move to Core Criteria 3 Analysis

Core Criteria 2 -Productivity & Susceptibility Analysis (PSA)

Data Sources

- Prioritized species list (n=50)
- Published/Grey Literature
- Stock assessment and other reports

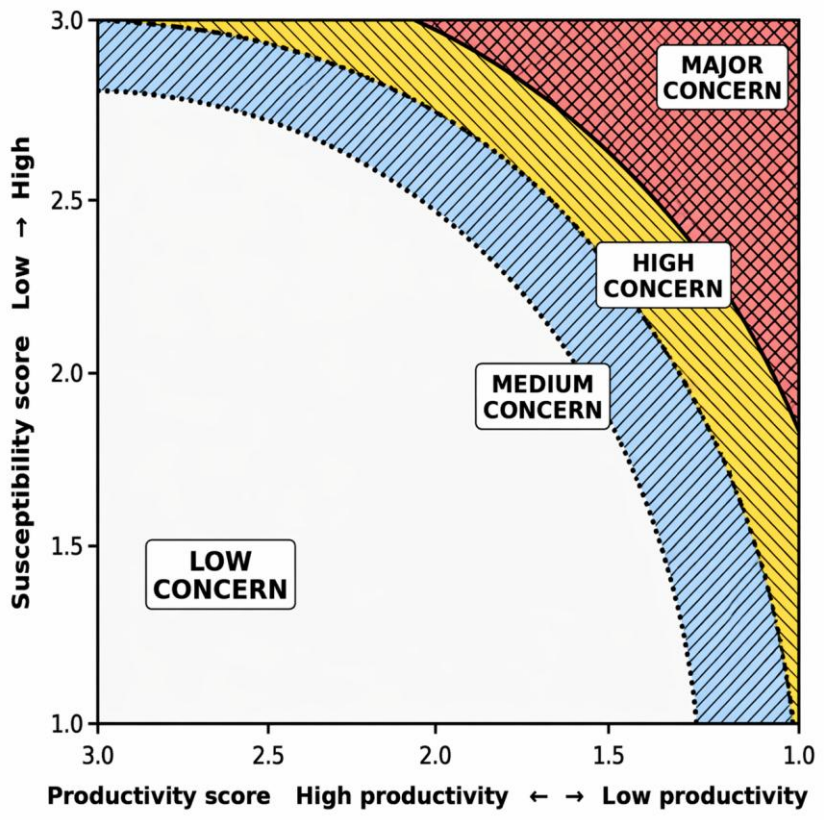
PSA Assessment

- Productivity – Life history/biology
- Susceptibility – fishery interaction/ecology

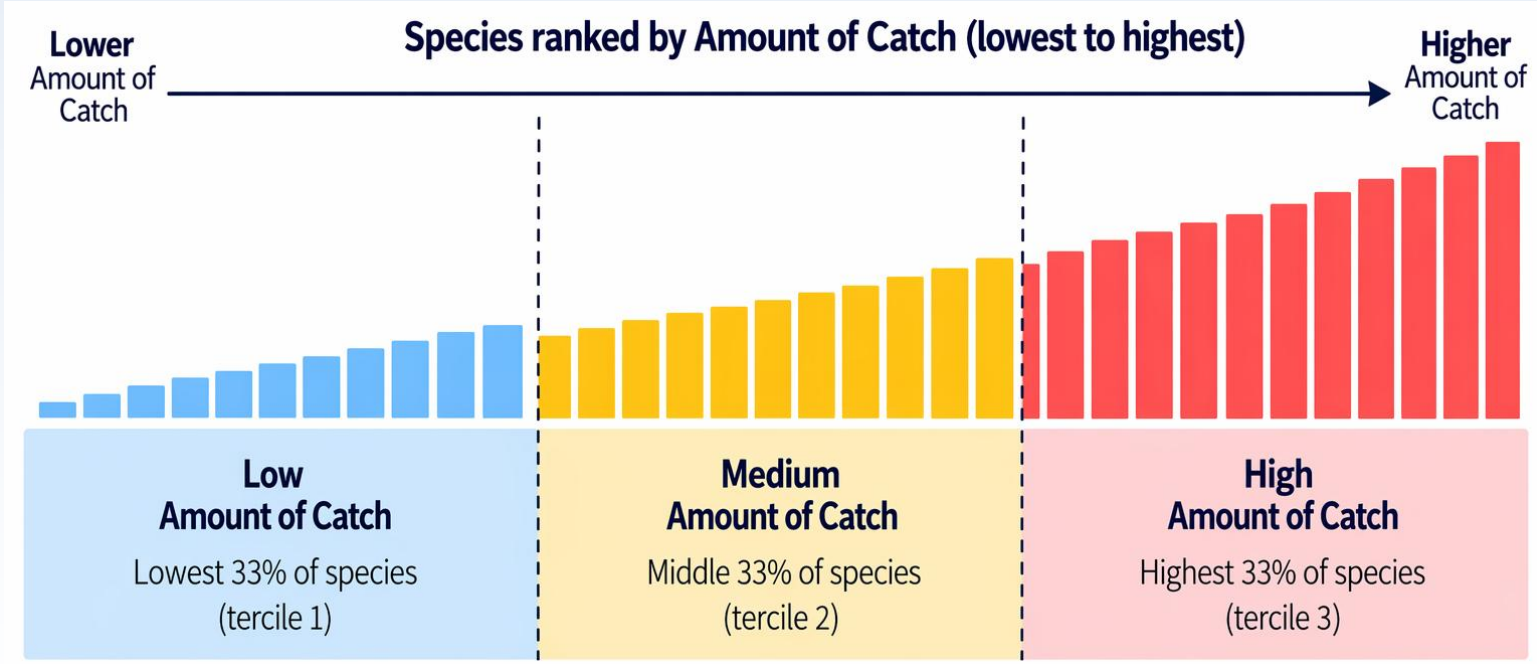
Refinements (in progress)

- Interscorer alignment
- Sensitivity testing of attributes

Core Criteria 2 - Combining PSA and Amounts



+



Vulnerability thresholds from Cope et al. (2011)

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Core Criteria 2 – Calculated Sustainable Risk Level

PSA Vulnerability	Relative Amount of Catch: Low	Relative Amount of Catch: Moderate	Relative Amount of Catch: High
Low (< 1.6)	Low	Low – Moderate	Moderate
Moderate (1.6 – 2.2)	Low – Moderate	Moderate	High
High (> 2.2 – 2.8)	Moderate	High	Very High
Very High (> 2.8)	High	Very High	Very High

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Core Criteria 2 - Sustainability Method Summary

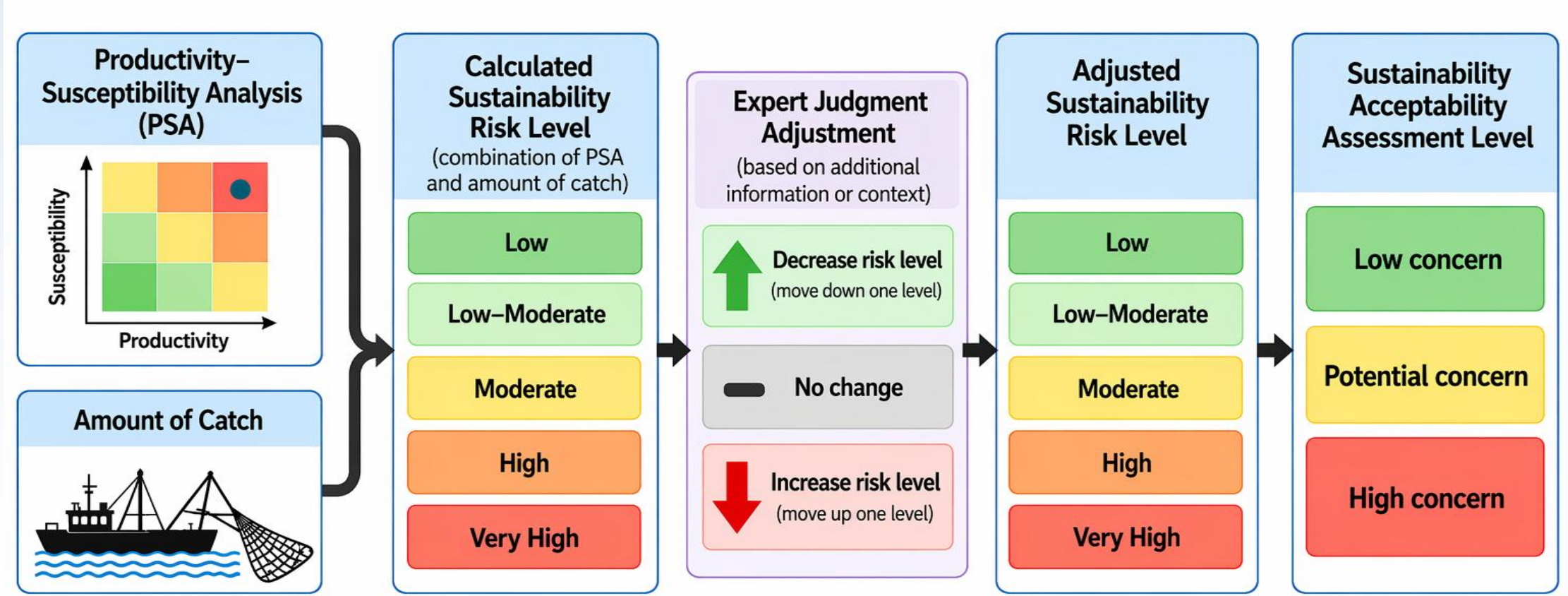
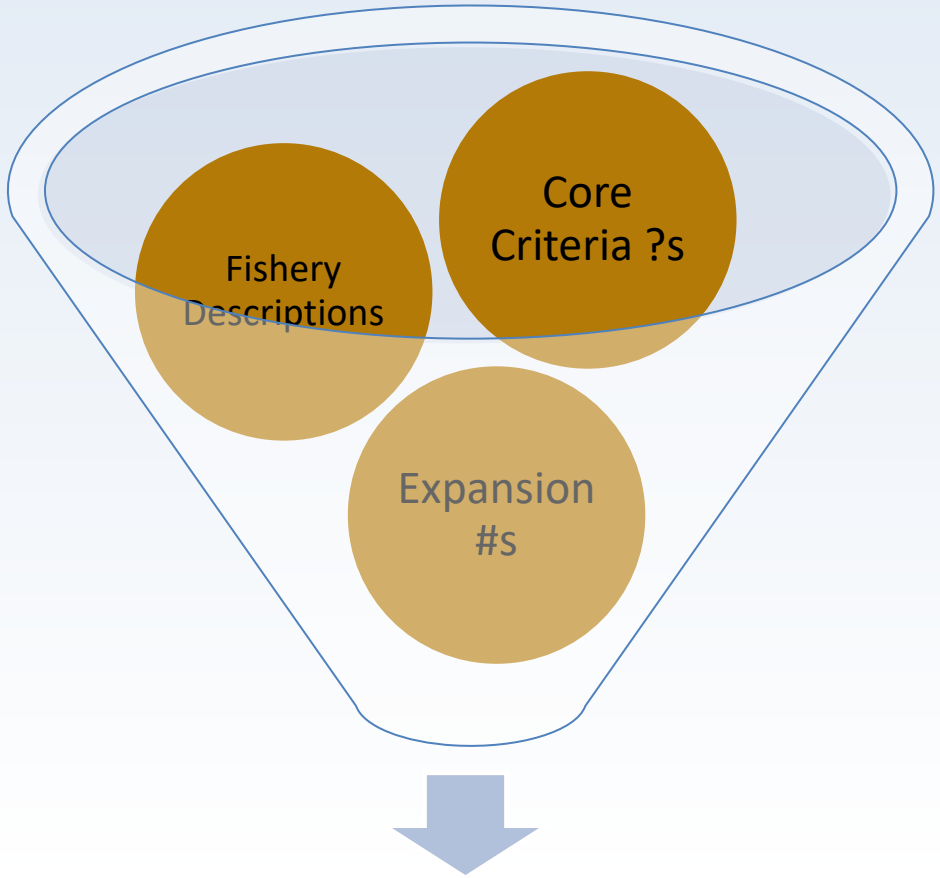


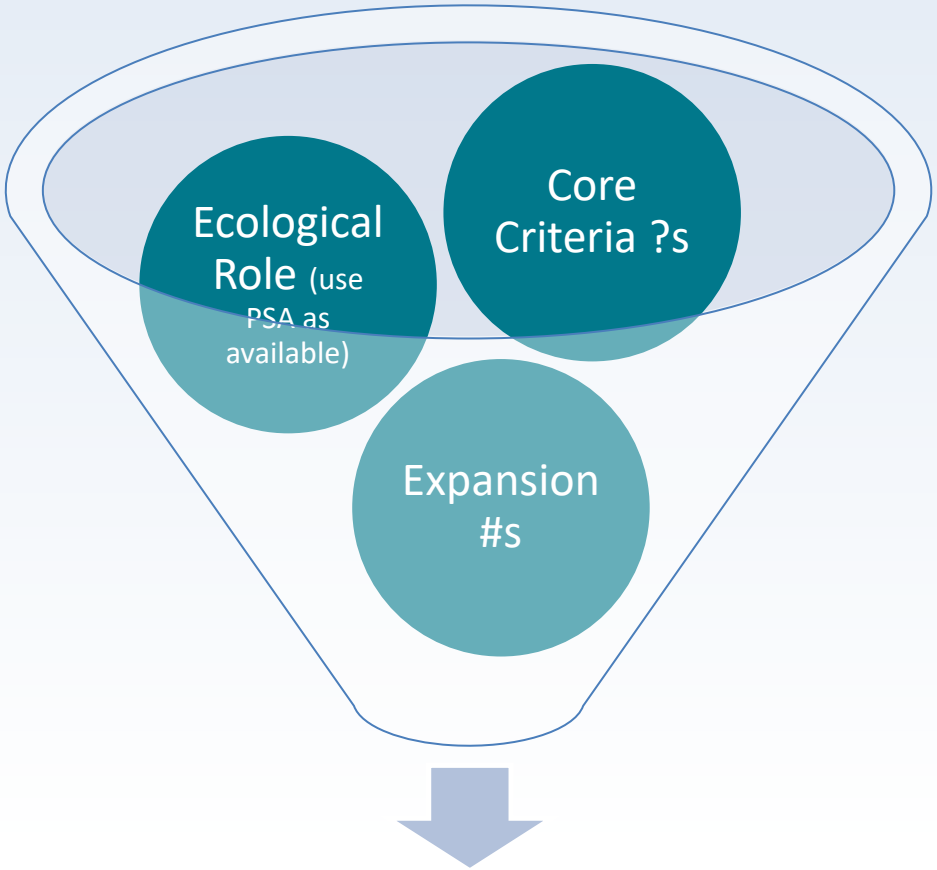
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Core Criteria 3 - Impacts on fisheries



- All bycatch species that have directed fisheries (n = 18)
- Results = Narrative description of fishery, participants, and priority research gaps in socioeconomics
- All species move to Core Criteria 4

Core Criteria 4 -Ecosystem Impacts



- Prioritized bycatch species list (n = 50)
- Score Ecological Role
- Results = No evidence; Low, Potential or High Concern
- **+ Spatial Analysis for Biogenic Habitat**

Core Criteria 4 -Ecosystem Impacts Method

Ecosystem Impact Risk Level

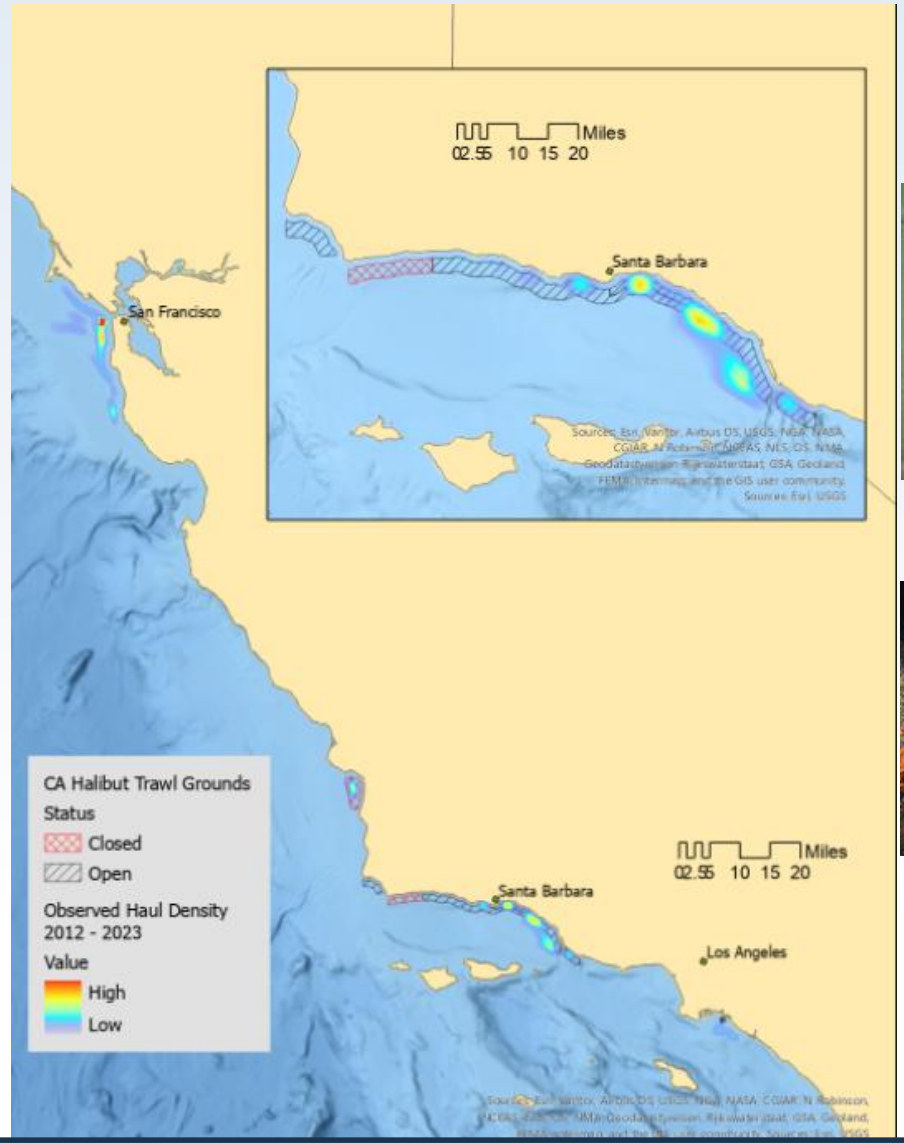
Ecological Importance	Adjusted Sustainability Risk Level				
	Low	Low – Moderate	Moderate	High	Very High
1 – Low functional importance / high redundancy	Low	Low	Low – Moderate	Low – Moderate	Moderate
2 – Moderate functional importance / high redundancy	Low	Low – Moderate	Moderate	Moderate	High
3 – Moderate functional importance / low redundancy	Low – Moderate	Moderate	High	High	Very High
4 – High functional importance / low redundancy	Moderate	High	High	Very High	Very High

Ecosystem Impact Acceptability Assessment Level

- No Evidence
- Low concern
- Potential concern
- High concern

Biogenic Habitat Spatial Overlap Analysis

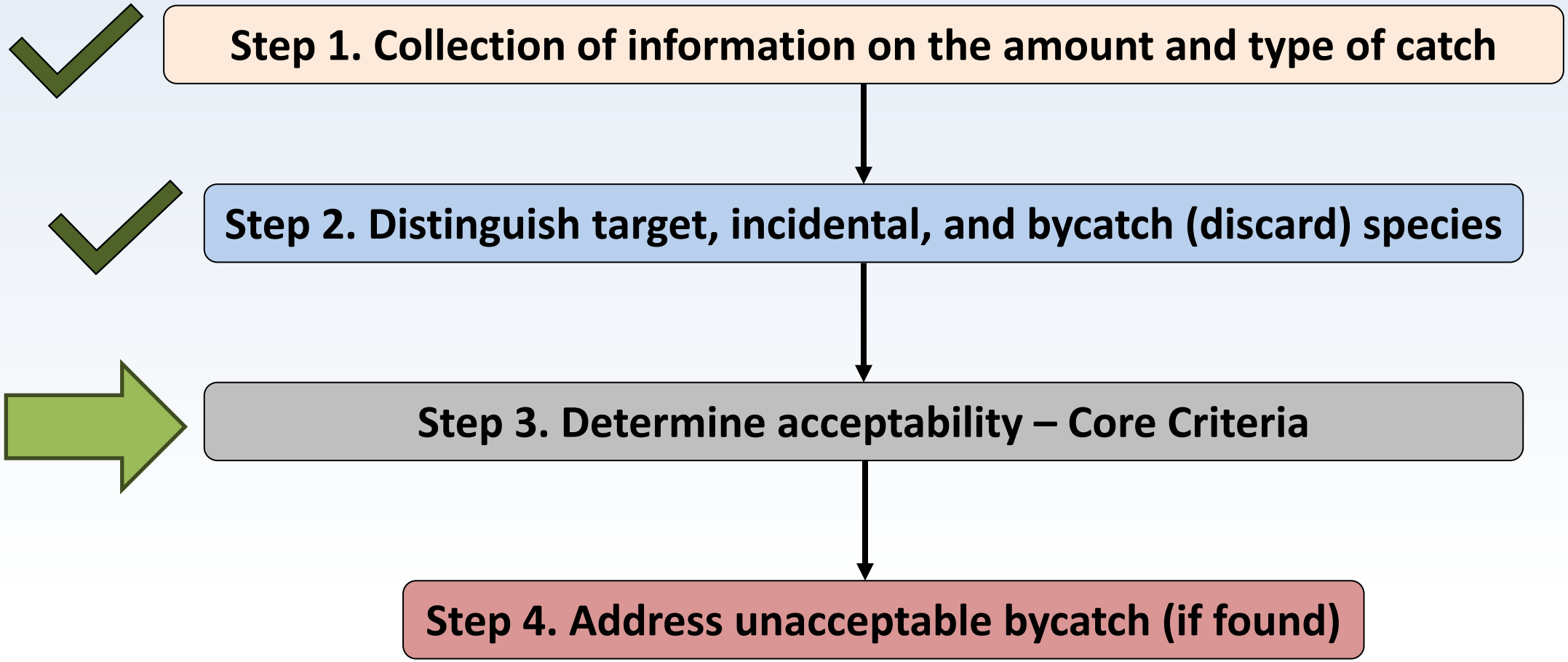
- Tow start and stop data
- NOAA Deep Sea Coral and Sponge Map
- NCCOS Habitat Suitability Benthic Macrofauna Models
- EXPRESS Benthic Mapping





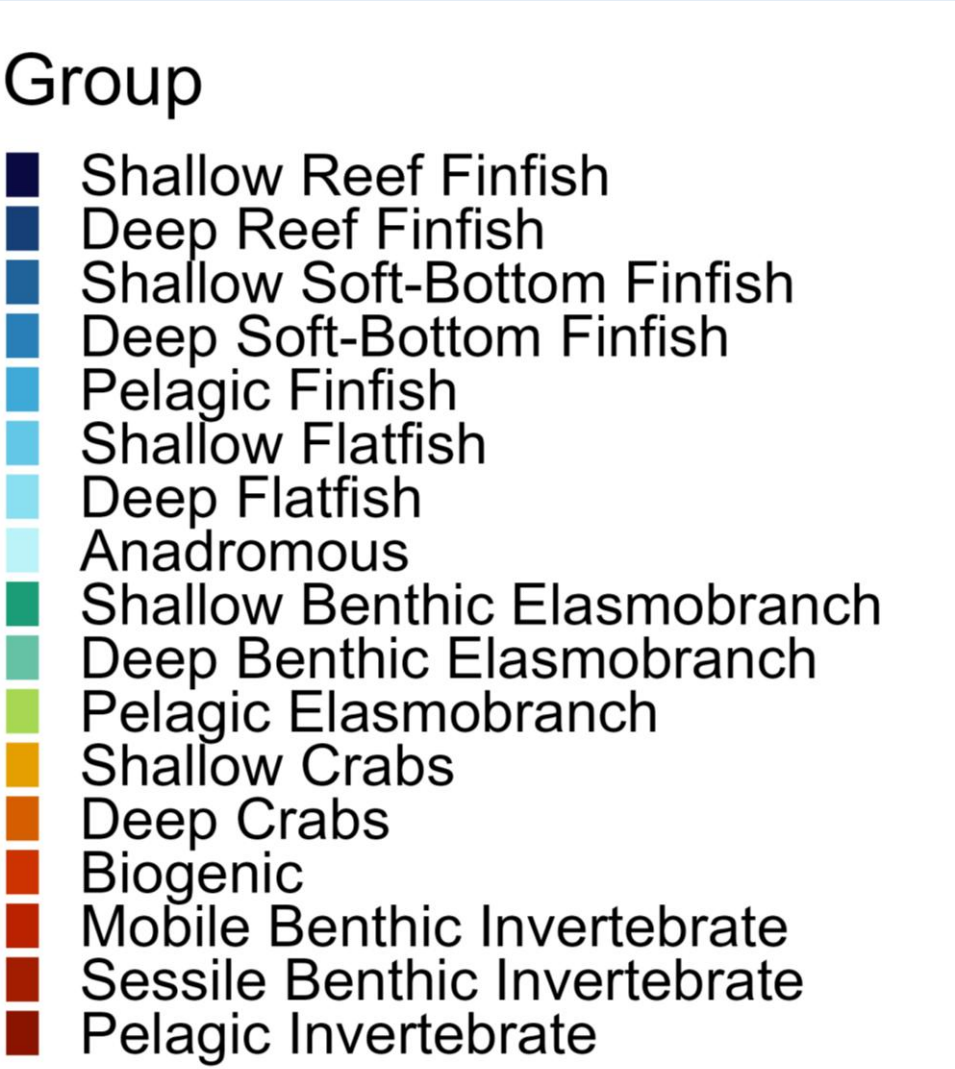


MLMA Four-step Bycatch Evaluation Process



Cumulative Impacts

- **Evaluate impact on whole ecosystem**
- Determine risk levels for all functional groups
  - Average species-specific PSA thresholds for prioritized species in group
  - Relative catch exposure by functional group
- Translate group risk into acceptability assessment with modifiers
  - Proportion of high-risk species per group
  - Functional redundancy within group
  - Expert judgement
- Qualitative assessment of whole-ecosystem risk based on functional group determinations



Progress

- Customized MLMA Bycatch Analysis Framework for the CA Halibut Trawl Fishery
- Used existing data to calculate total catch estimates
- Continue to advance MLMA-required Core Criteria Analyses
  - Legality
  - Sustainability
  - Fishery Impacts
  - Ecosystem Impacts

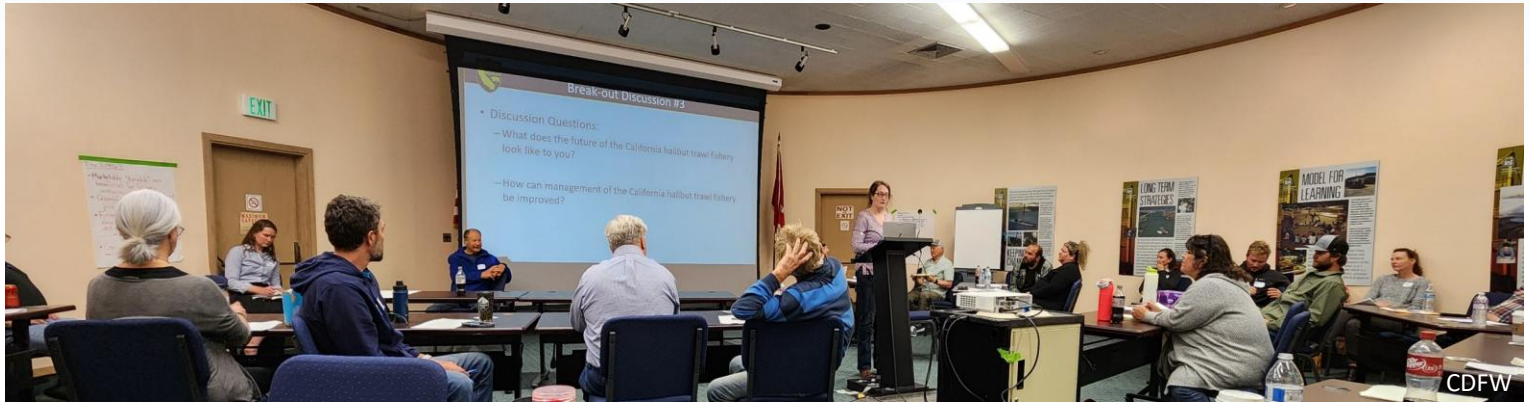
Next steps

- Complete Core Criteria Analyses
- Receive feedback on initial results
- Continue development of MRC requested cumulative analysis

Outreach

- Highlights
  - March 2026 – MRC update
  - February 2026 – Outreach to Tribes, fleet, NGOs
  - December 2025 – Calls to fleet
  - November 2025 – MRC update
  - October 2025 – Stakeholder update webinar
  - June 2025 – Stakeholder update webinar
  - April 2025 – Kickoff in-person workshop
  - November 2026 – Stakeholder update webinar
  - November 2026 – MRC update

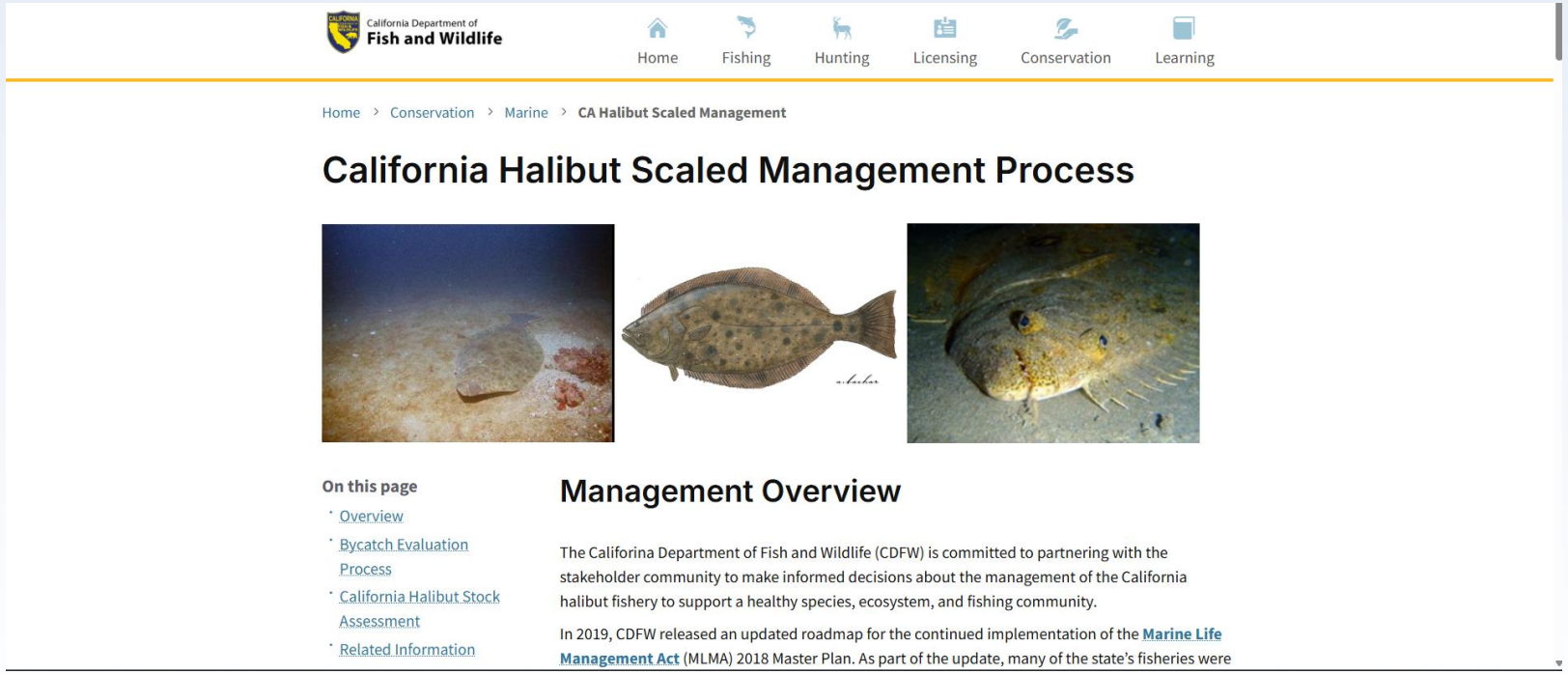
- Upcoming/Ongoing
  - Workshop, surveys and updates as needed
  - March 2027 MRC update – present results



CDFW

Thank you!

Email: MLMAFisheriesMgmt@wildlife.ca.gov



https://wildlife.ca.gov/Conservation/Marine/CA-Halibut-Scaled-Management

Team members: Kirsten Ramey-Burbank, Carlos Mireles, Helen Killeen, Cyndi Dawson, Ken Oda, Travis Tanaka, and Kim Walker