



California Halibut 2020 Stock Assessment & Peer Review Public Sharing Webinar

Wednesday, October 28, 10:00am - 12:00pm PDT

Join webinar [here](#)

(Optional) Phone: 1-669-900-6833 | Webinar ID: 872 1758 2466 | Passcode: 918669

*Welcome! The webinar will begin momentarily.
Please email Halibut@oceansciencetrust.org or send a message in the chat if you are experiencing technical difficulties.*

Third-party, Neutral Facilitation



[OUR WORK](#) [WHAT WE DO](#) [WHO WE ARE](#) [UPDATES](#) [LET'S CONNECT](#) [Q](#)



Dedicated to the power of conversation.

Strategic Earth Consulting is a woman-owned, small business enterprise established in 2008. We are deeply committed to supporting diverse voices in natural resource decision-making and management.

Our core team brings over 20 years of experience developing and implementing communications and public engagement projects based on the value and long-term benefits of relationship building.

Webinar Considerations

- Poll and survey results are anonymous
- Webinar is being recorded and closed captioned
- All participants are muted for the duration of the webinar
- Share questions and perspectives (comments) via Q&A or email (halibut@oceansciencetrust.org)
 - Transcript of anonymous questions/comments will be shared publicly-
Option to include name/affiliation
- Materials available
 - [Agenda](#)
 - [Terms of Reference](#), California Halibut Stock Assessment Scientific Peer Review Process

Webinar Goals

- Engage with Tribes and Native communities, stakeholders, and the broader ocean community who are interested in learning about and becoming involved in the California Halibut fishery management process
- Facilitate understanding by participants of CDFW's current focus on gathering information and assessing the California Halibut resource as part of the 2018 Marine Life Management Act (MLMA) Master Plan for Fisheries implementation

Webinar Goals, Continued

- Share information about the scope and findings of the California Halibut stock assessment conducted by CDFW and the scientific and technical peer review led by OST
- Provide an update on next steps to design a science-based, stakeholder-involved management process for the California Halibut fishery that reflects the diversity of knowledge and priorities of the ocean community
- Facilitate a Q&A with participants to learn of additional insights and perspectives, and address priority questions and concerns

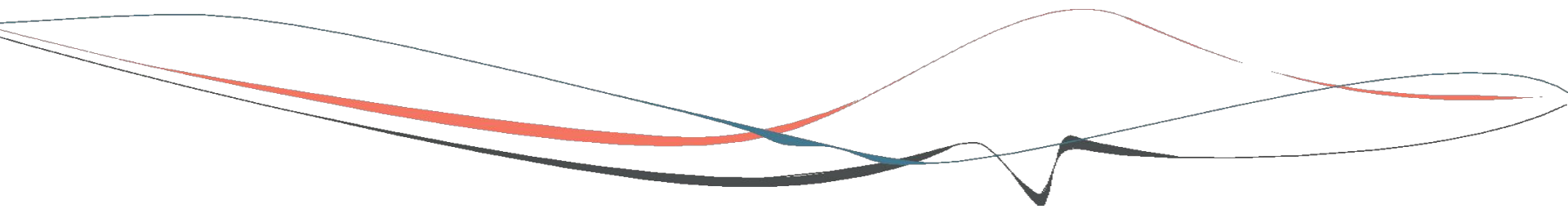
Webinar Agenda

- Welcome and Context
- Overview of the 2020 Stock Assessment and Peer Review
 - Presentations
 - **Q&A**
- Building a Roadmap for California Halibut Fishery Management
 - Presentation
 - **Q&A**
- Next Steps and Participant Feedback
 - **Optional, anonymous survey**

Webinar Agreements

- Listen to build mutual understanding
- Openly discuss ideas and issues with others, and respect the diversity of perspectives
- Explore ideas where common ground is the goal
- Contribute to an inclusive and collaborative environment
- Speak openly and honestly, keep comments concise and focused
- Limit distractions and multi-tasking
- Address any concerns about the webinar with the Project Team
- Personal attacks and disrespectful behavior will not be tolerated

Welcome and Context



Remarks & Presentation

Craig Shuman

Marine Region Manger

California Department of Fish and Wildlife

Kirsten Ramey

Environmental Program Manager, Marine Region

California Department of Fish and Wildlife



Overview of the Marine Life Management Act (MLMA) Master Plan for Fisheries

Kirsten Ramey, California Department of Fish and Wildlife

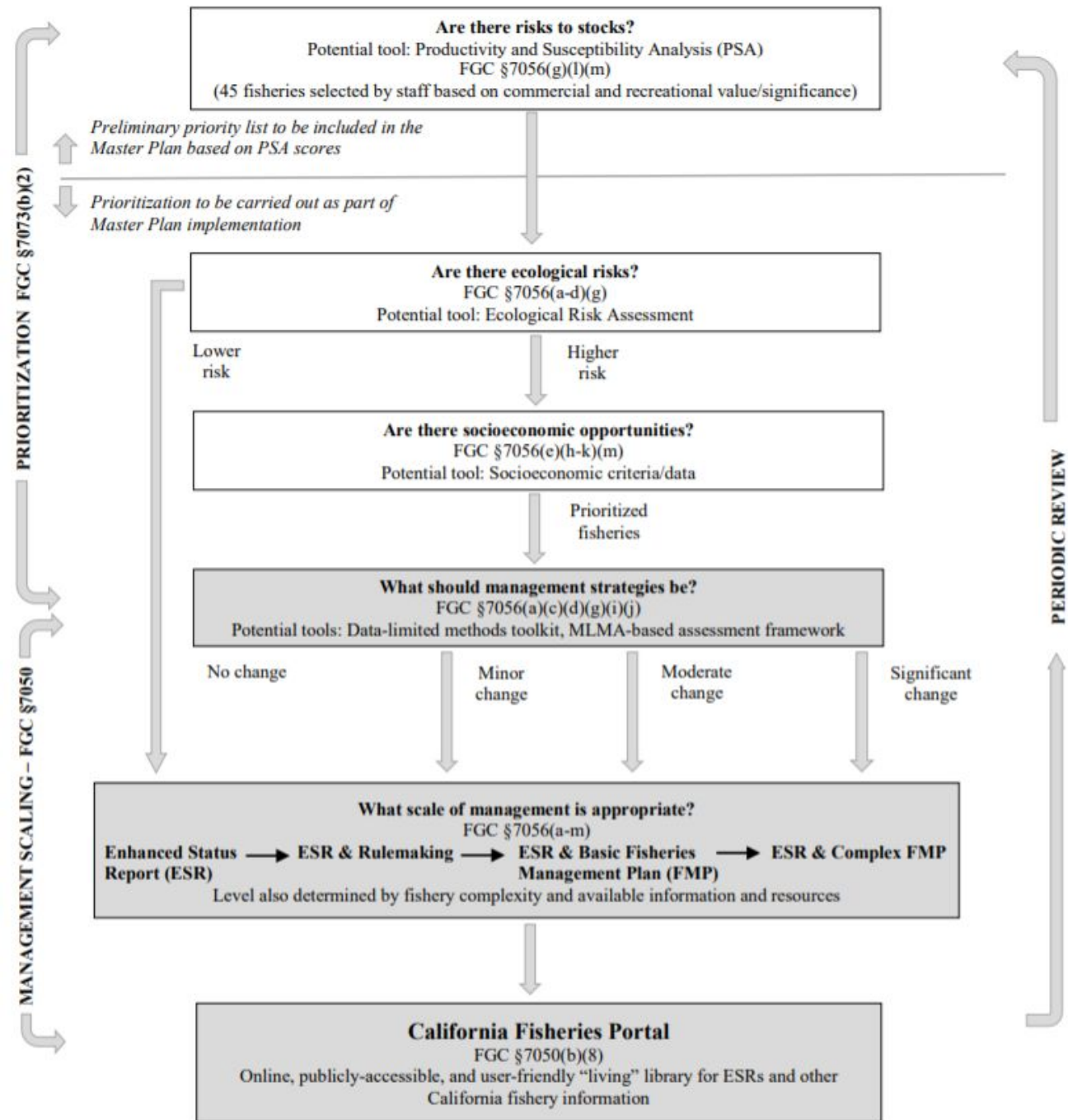




Overview: MLMA Master Plan

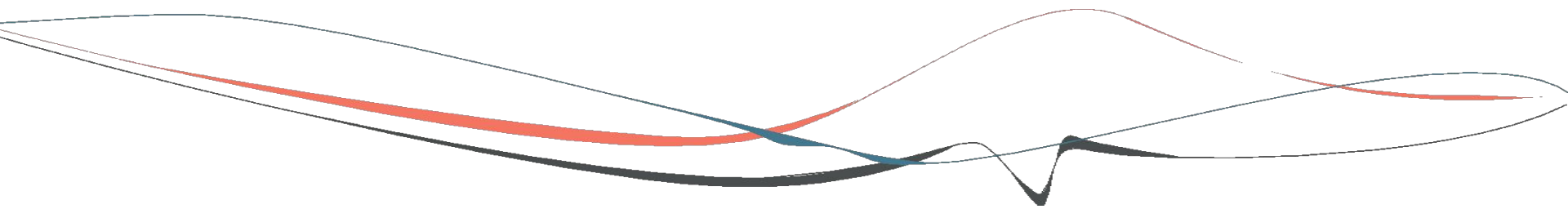
- Enhance **resource stewardship and sustainability** of fisheries
- Elevate **ecosystem health in decision-making**
- Help promote more **efficient, effective, and streamlined** fisheries management
- Establish a **clear pathway** for improving the management of individual fisheries
- Set **clear expectations** for managers and the public
- Foster **transparency and flexibility** in fisheries management with tribes, stakeholders, and interested members of the public

Framework for MLMA-based Management



**Framework
prioritizes and scales
management effort,
considering the
relative risks and
benefits of fisheries,
and meets MLMA
objectives**

Overview of the 2020 Stock Assessment & Peer Review



Presenters

Kathryn Meyer

Formerly Environmental Scientist, California Department of Fish and Wildlife; Currently Fish and Wildlife Biologist, Washington Department of Fish and Wildlife

Anthony Rogers

Strategy Director, California Ocean Science Trust

E.J. Dick (*Peer Review Panel Chair*)

Program Lead, Fisheries Ecology Division, Southwest Fisheries Science Center, National Oceanic and Atmospheric Administration



2020 California Halibut Stock Assessment

Kathryn Meyer

Formerly: State Managed Fisheries Program

Marine Region

California Department of Fish and Wildlife

Stock Assessment Summary

Biological Overview

Fisheries and Management History

Data Sources

Model Structure

Results and Management Implications

Biological Overview

California Halibut (*Paralichthys californicus*)

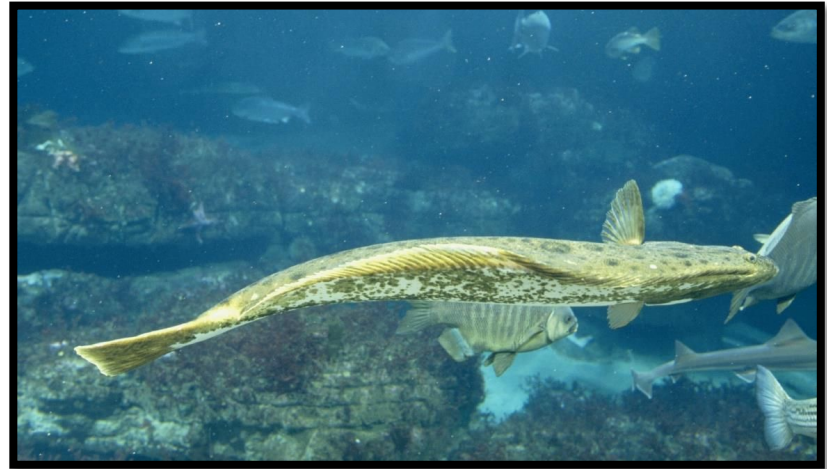


Photo Credit: Monterey Bay Aquarium

- Widely distributed across California, Baja California MX
- Adults typically live in < 300 ft of water, follow schools of forage fish/squid
- Max. observed age is 30 F, 23 M
- Most females are reproductively mature between 4-5 years
- Very productive broadcast spawners; juveniles settle nearshore
- Females grow larger, live longer than males
- **Growth, maturity, and spawn timing change with latitude**

Fisheries and Management

- Commercial exploitation began in the late 1800's, mostly in southern CA
- Early commercial fishery used multiple gear types:
 - Trawl gear (benthic paired trawl, otter trawl, etc.)
 - Entangling nets
 - Nearshore beach seines (later prohibited)
 - Hook and line (low volume)

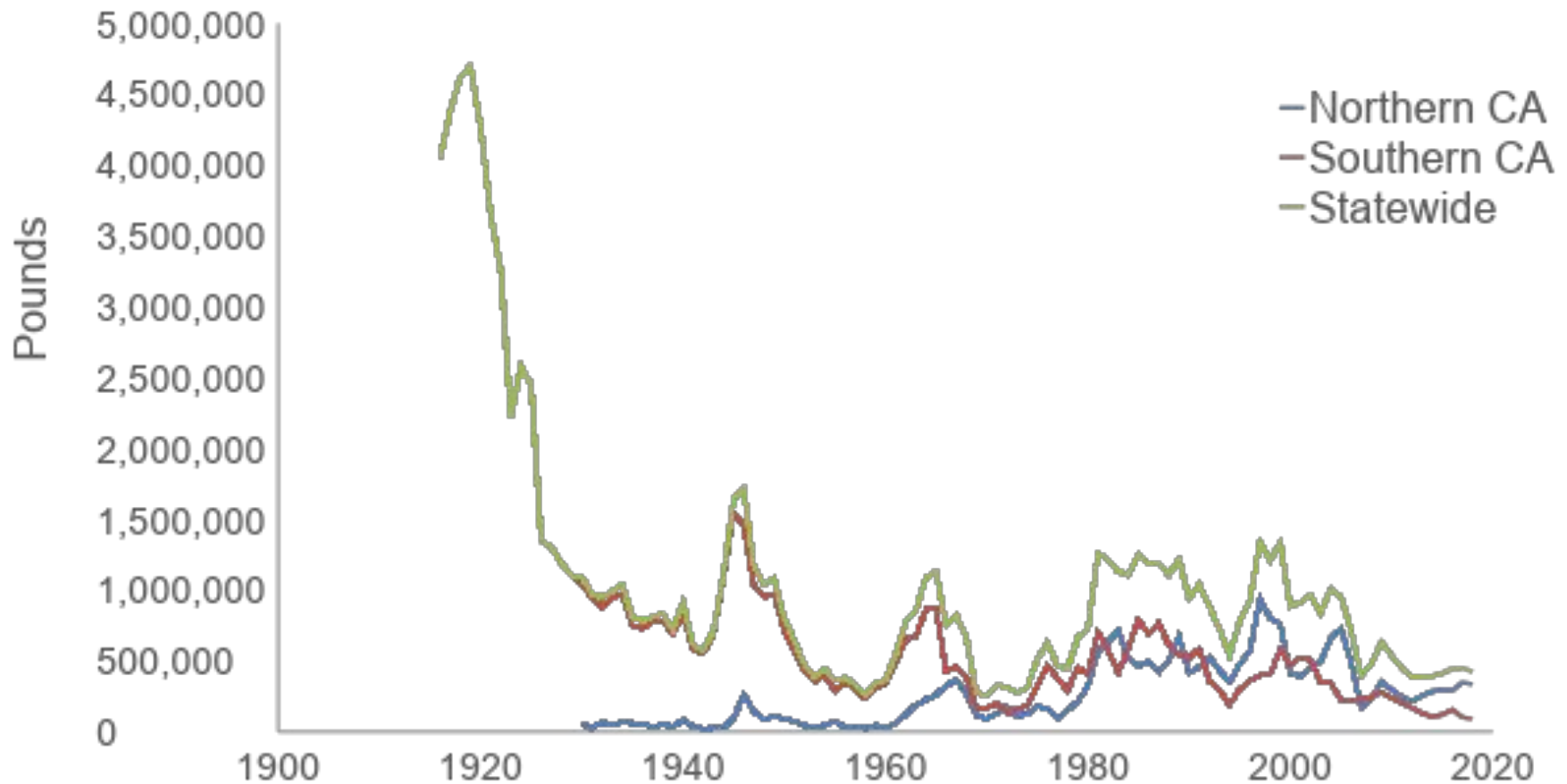


Photo Credit: K. Lesyna, CDFW

- Early recreational fleet included:
 - CPFV
 - Hook and Line from shore, piers, and vessels
 - Less well documented
- Tribal take dates back much further

Fisheries and Management

Commercial Landed Catch since 1916



Fisheries and Management

General Management Measures

Area Closures:

- Gill/trammel (MRPA)
- Trawl (state waters except trawl grounds)

Gear Restrictions:

- Gill/Trammel (min mesh size)
- Trawl (light touch in trawl grounds)
- CPFV
- Commercial H&L
- Recreational H&L

Effort Restrictions:

- Gill/trammel (Limited Entry)
- Trawl (Mostly Limited Entry)
- All Recreational Types (Bag Limit)

Size Restrictions:

- All Fleets – 22-inch minimum legal size

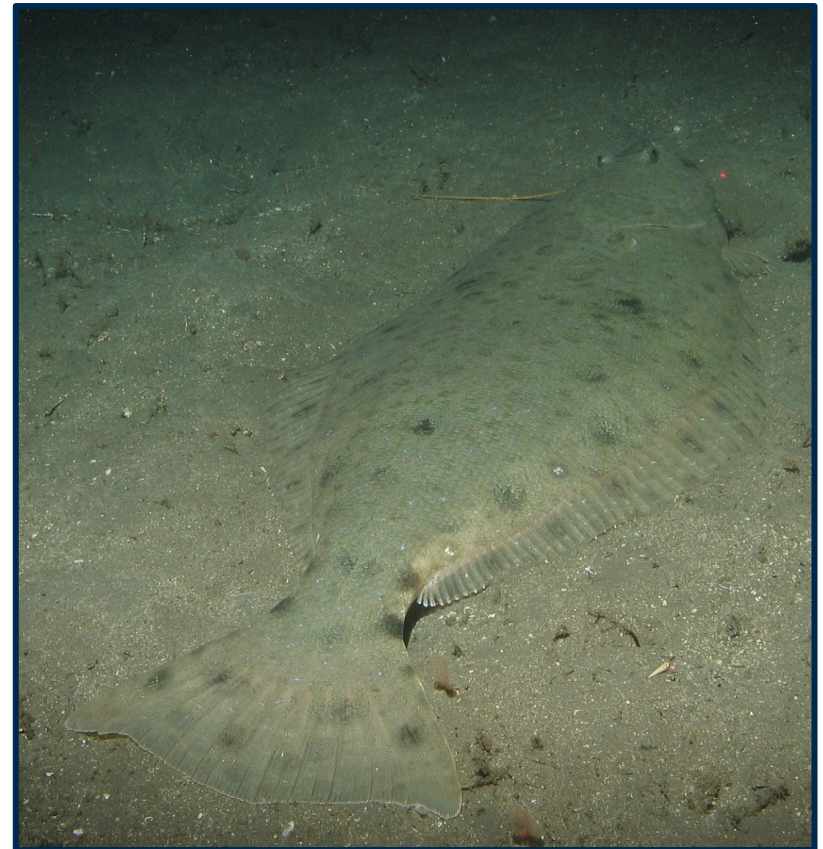


Photo Credit: CDFW/MARE

Data Sources

All available data were evaluated

- Study design
- Geographic scope
- Data sourced from multiple agencies

Two Broad Data Types:

- Fishery-dependent
- Fishery-independent



Data Sources

Fishery-Dependent Data

- Document catch history:
 - Commercial landings data (“fish tickets”)
 - Commercially discarded fish (fishery observers)
 - Recreational catch estimates (CRFS)
 - Recreationally discarded fish (CRFS)
- Catch size/age composition:
 - Commercial lengths & ages (CDFW port sampling)
 - Recreational lengths (CRFS)
 - Commercial discard lengths (fishery observers)
- Catch per Unit Effort Indices
 - Trawl logbooks
 - CPFV logbooks

Data Sources

Fishery-Independent Data

- Index of Abundance for Young Fish

San Francisco Bay Study Boat (Open Water) Stations

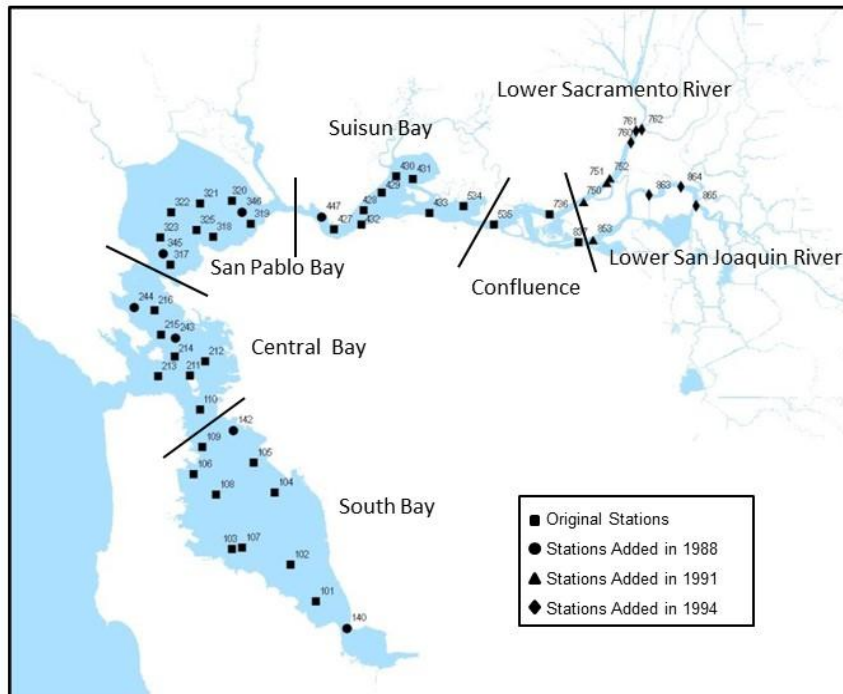


Figure from CDFW Bay-Delta Region

- Index of Spawning Output

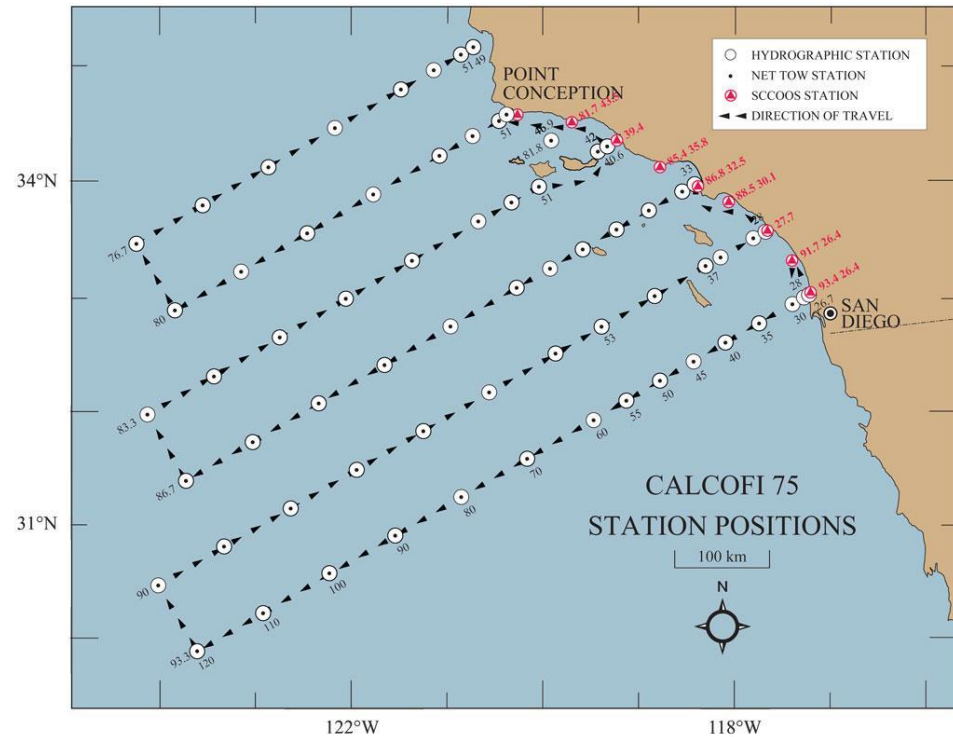
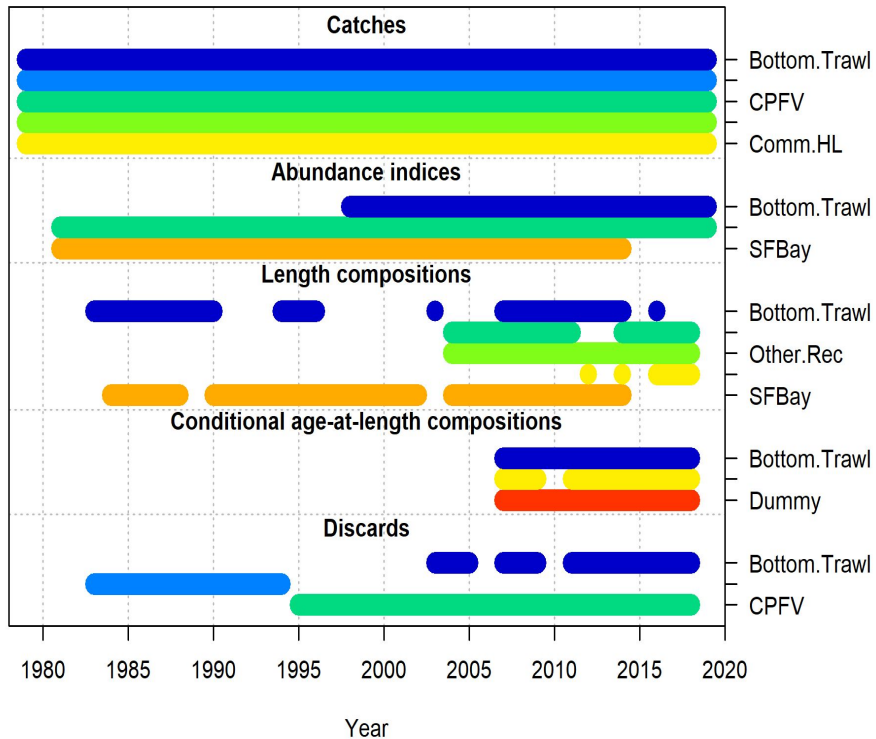


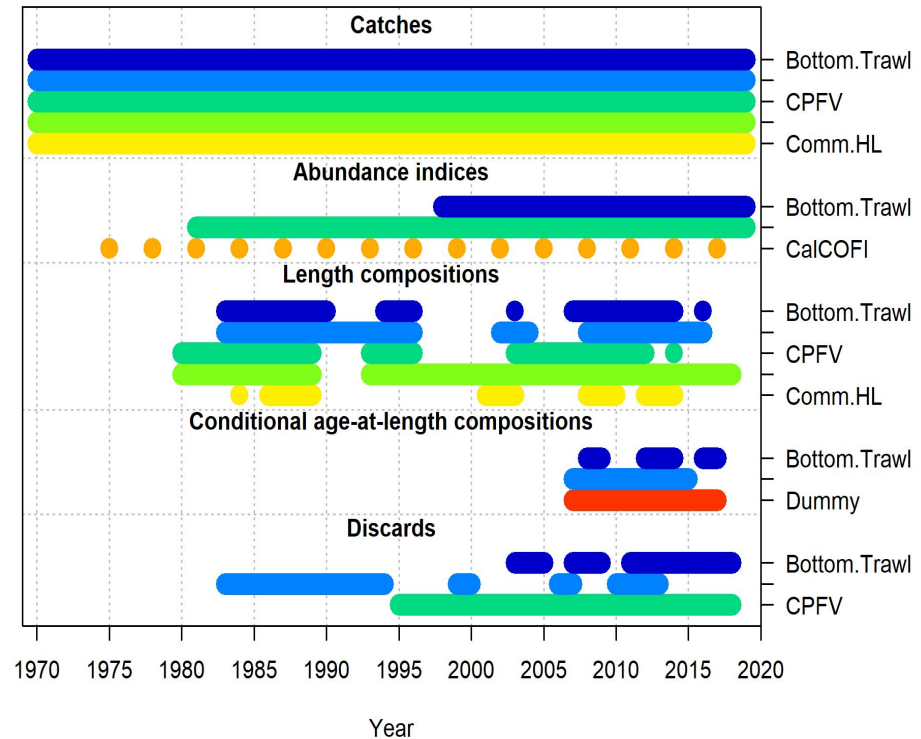
Figure from CalCOFI

Data Sources

Northern California



Southern California



Model Structure

Biological Understanding

- 2 – sex model, with different growth and natural mortality
- Highly productive species (high steepness)
- Ages from 0 -25+ are modeled
- Natural Mortality based on observed male and female max. age

Knowledge of the Fisheries

- 5 fishing fleets: Trawl, Gillnet, Commercial H&L, CPFV, and other Recreational
- Gear dynamics and size limit influence fish size selection
- Modeling period started in a depleted state (substantial fishing occurred prior to data availability)

Model Type

- Age structured, statistical catch-at-age
- Implemented in Stock Synthesis, ver. 3.3.14 (NOAA)

Model Structure

Two Regional Models

- Biological processes (e.g. growth and maturity) are different between northern and southern California
- Fleet dynamics are different at present and historically
- Management history differs significantly between regions
- Stock boundary precedent set in previous assessment (Maunder 2010)



Results and Management Implications

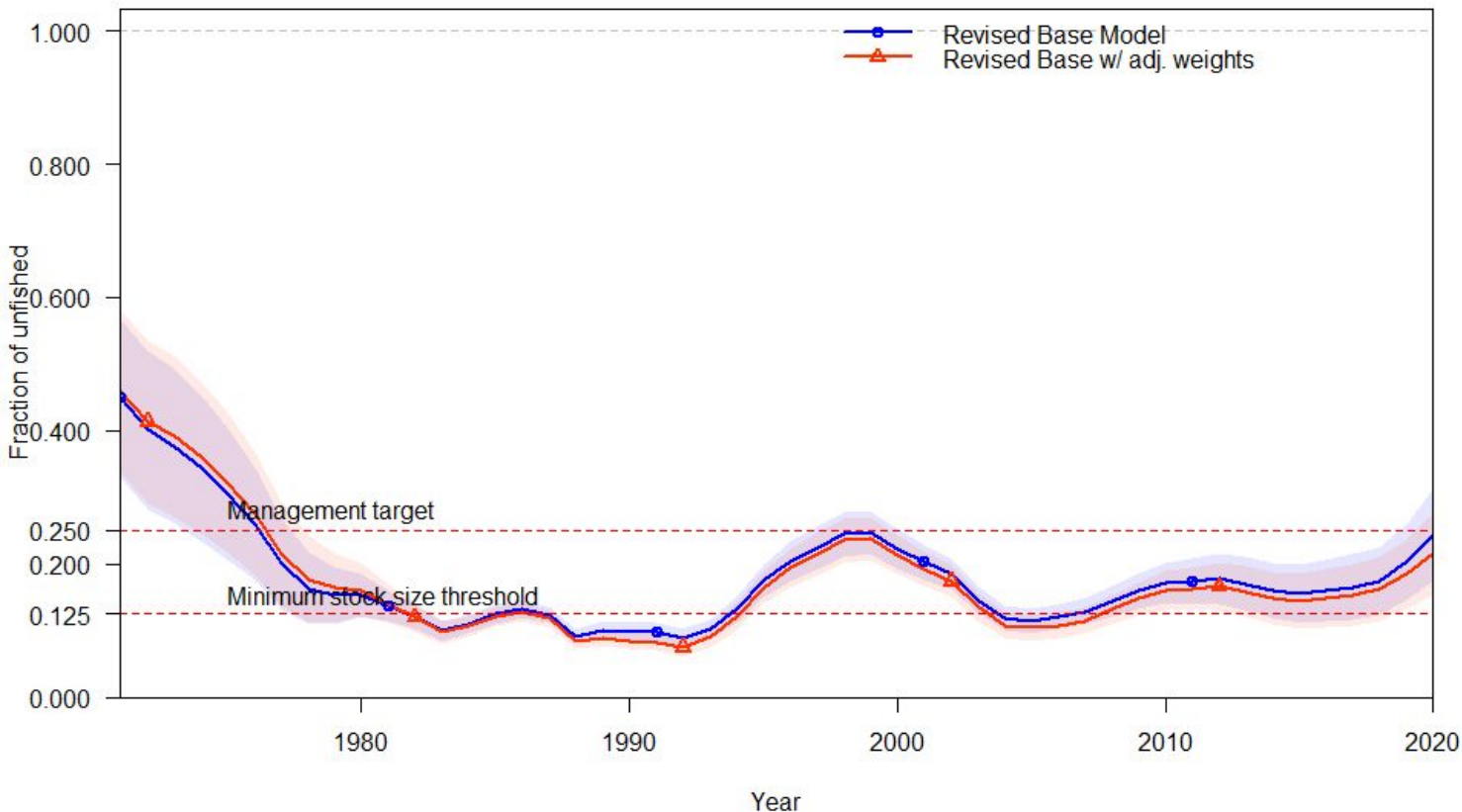
Northern Region

- Synthesizes available data and research
- Thoroughly evaluated during review process, not stable to alternative assumptions
- Limitations discussed in greater detail in peer review presentation & document, as well as in stock assessment document

Results and Management Implications

Southern Region

- timeseries of relative biomass (fraction unfished)
- appears relatively stable through review
- provides relative population status

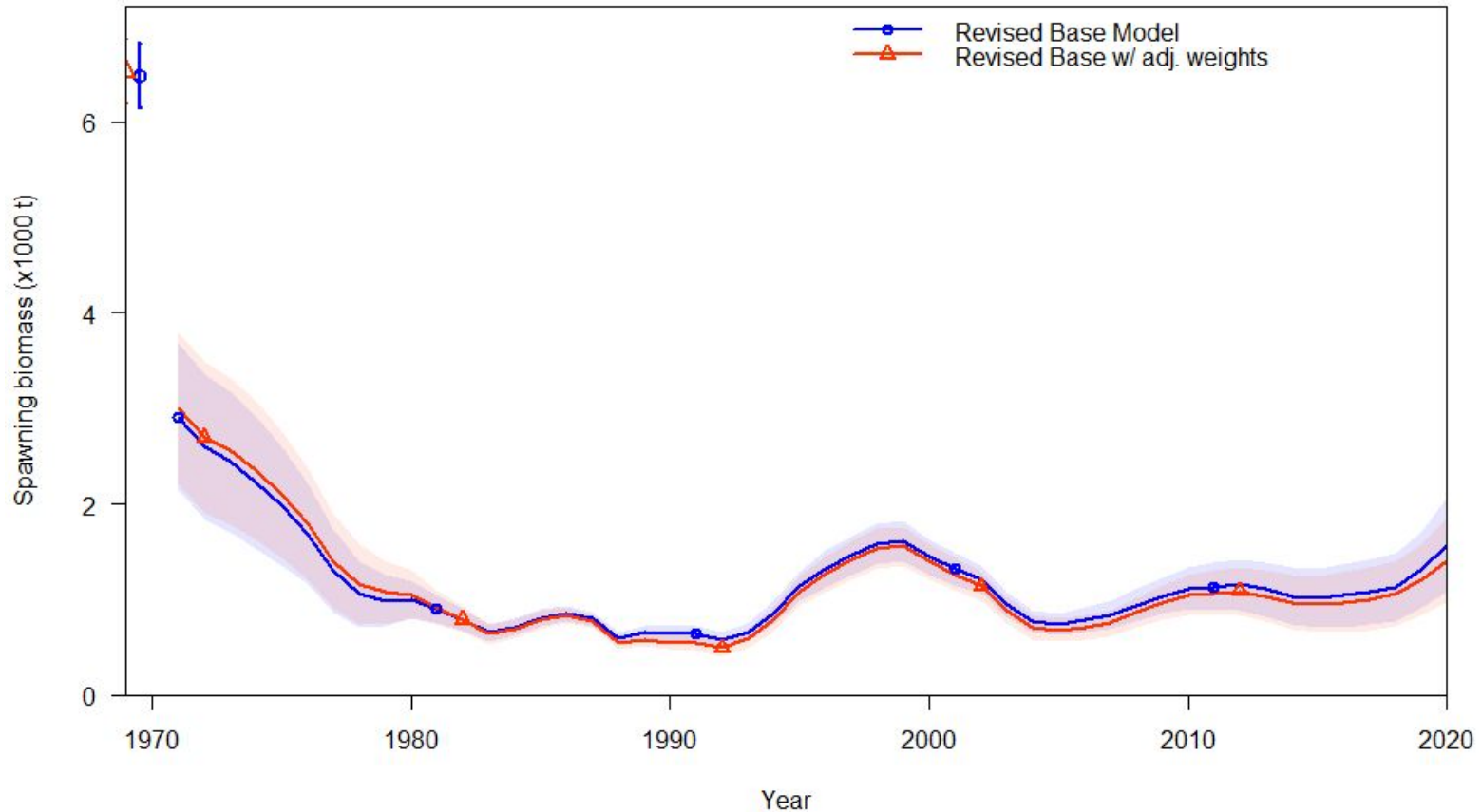


NOTE:
Management target and threshold are not adopted for California Halibut. Provided for general reference only.

Results and Management Implications

Southern Region

- timeseries of spawning biomass
- population scale varied during review
- limits management advice



Results and Management Implications

Southern Region

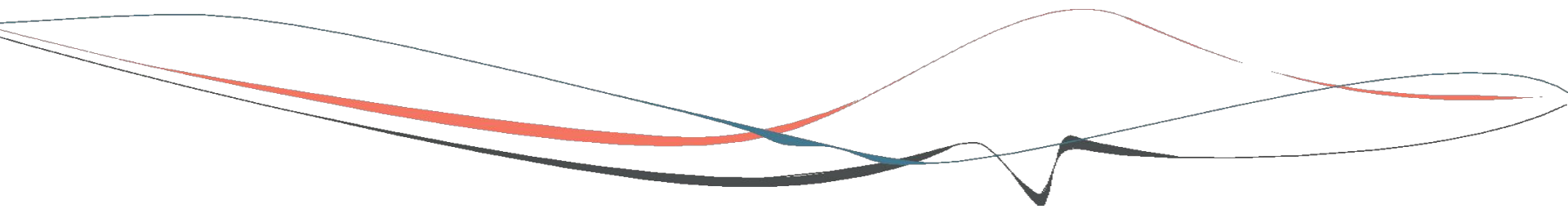
- Relatively depleted throughout the modeling timeframe
 - relatively stable to alternative assumptions
 - provides a good idea of where the stock is now in relative terms
 - however, no management targets or limits have been defined
 - starting point for future MSE work
- Uncertainty surrounding scale of absolute biomass
 - limits ability to generate specific management advice (e.g. TAC)
 - not required under current management framework

Results and Management Implications

Northern Region

- Additional information needed to evaluate fishery status
 - increased sampling of length and age structures
 - reconstruct historical fishery
 - see peer review presentation/report for further detail

Peer Review Panel Process Overview



Overview: Peer Review Process

- California Ocean Science Trust: neutral, independent convener
 - Objectivity, transparency, candor, efficiency, and scientific rigor
- Terms of Reference developed to guide review in scope and process
- Solicitation of potential reviewers with relevant expertise
 - Vetted by the Ocean Protection Council Science Advisory Team Executive Committee

Overview: Peer Review Process

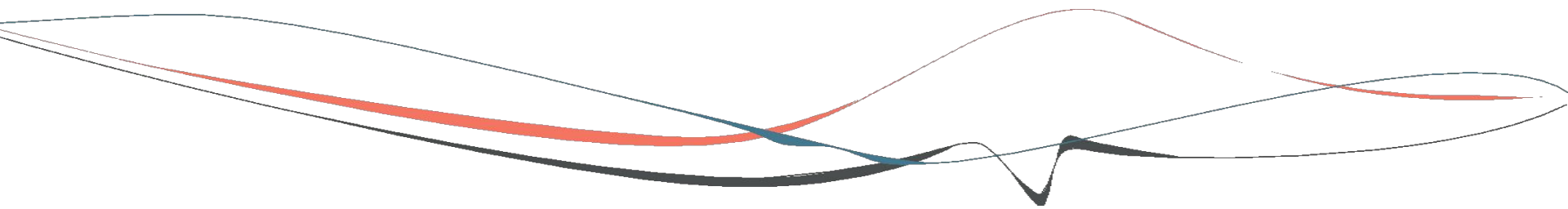
Peer Review Panel Members

- **Dr. E.J. Dick**, NOAA Southwest Fisheries Science Center (panel Chair)
- **Dr. Kiva Oken**, University of California Davis
- **Dr. David Sampson**, Oregon State University
- **Dr. Chantel Wetzel**, NOAA Northwest Fisheries Science Center

Overview: Peer Review Process

- Responsibility to make sure the underlying assessment uses the best available science to inform management approaches
 - 4 remote meetings for discussion and report drafting
 - Regular coordination and communications with peer review panel and CDFW
 - Looked to PFMC STAR review process as a guide
 - Finalized peer review report available soon
- START – May 2020
- Today's webinar concludes the peer review process

Peer Review Panel Findings



Summary of the 2020 California Halibut Assessment Review Panel Report

Review Panel:

E.J. Dick (NMFS/SWFSC, Panel Chair)

David Sampson (Oregon State University)

Chantel Wetzel (NMFS/NWFSC)

Kiva Oken (University of California, Davis)

Review Organization and Workflow

- Assessment review conducted over four days via webinar
 - Stock Assessment Team (“STAT”)
 - Stock Assessment Review Panel (“Panel”)
 - Panel received draft assessment materials two weeks in advance
 - Day 1
 - STAT presentations on halibut biology, fishery, data, and models
 - Panel submits first round of requests to STAT
 - Days 2-4: STAT presentations of results, discussion, and additional requests
- Assessment Review Panel Report submitted to OST (9/30/2020)

Overview of Panel Requests

- Report describes 30 requests, including rationale and responses
- Major topics of discussion included:
 - Treatment of discard data in the models
 - Estimation of growth (Halibut length at age) within the models
 - Estimation of initial conditions (uncommon approach for West Coast flatfish)
- New discard treatment better reflects the amount of available data
- Growth estimation within the model is preferred approach for models with both length and age structure
- Panel agreed that models with “fixed” initial conditions were unacceptable for management, i.e., population size could not be pre-determined in the starting year

Northern (“Central”) Model

- Modeled time period: 1980 – 2019
- Roughly Point Conception to Point Arena
- Progress made during review:
 - Improved treatment of discard data
 - All available age data included in the model
 - Partial estimation of female growth (2 of 5 parameters)
 - Refined gear selectivity for SF Bay Trawl Survey
- Some issues unresolved, including:
 - Initial conditions could not be estimated
 - Male growth fixed, some female growth parameters fixed
 - Model sensitive to assumptions about recruitment and data weights

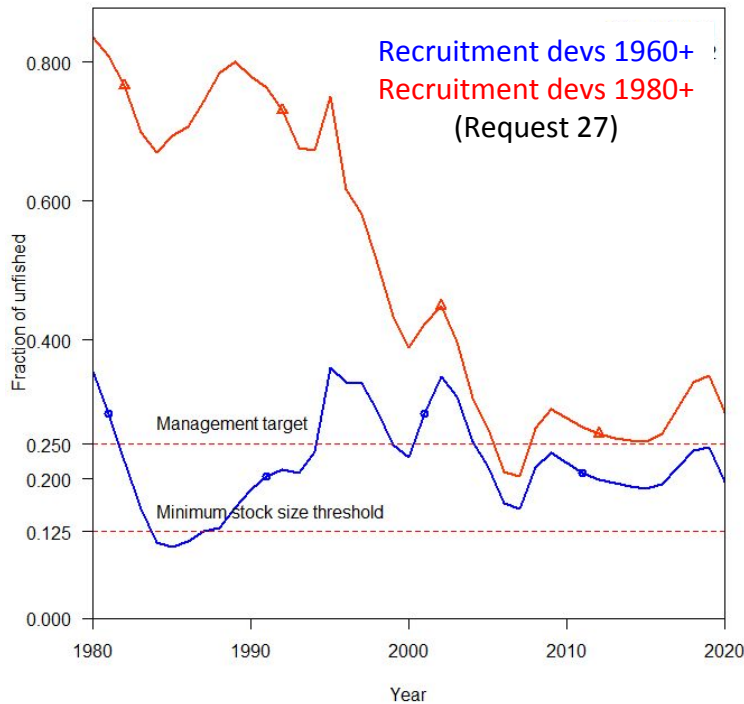


Modified map of northern/central stock from draft assessment (Figure 1)

Northern (“Central”) Model

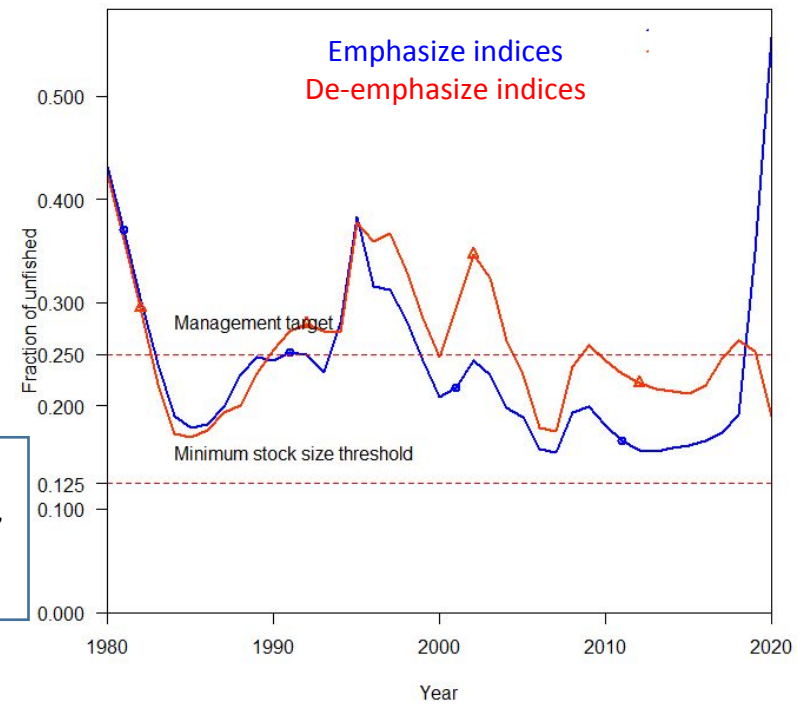
- Uncertainty in stock status (relative spawning output)

Effect of changing the start year for annual recruitment deviations (“devs”); unresolved during the review



Target and threshold are PFMC references, and do not apply to California halibut

Effect of adding variance (down-weighting) the northern abundance indices; suggests data conflict



Southern Model



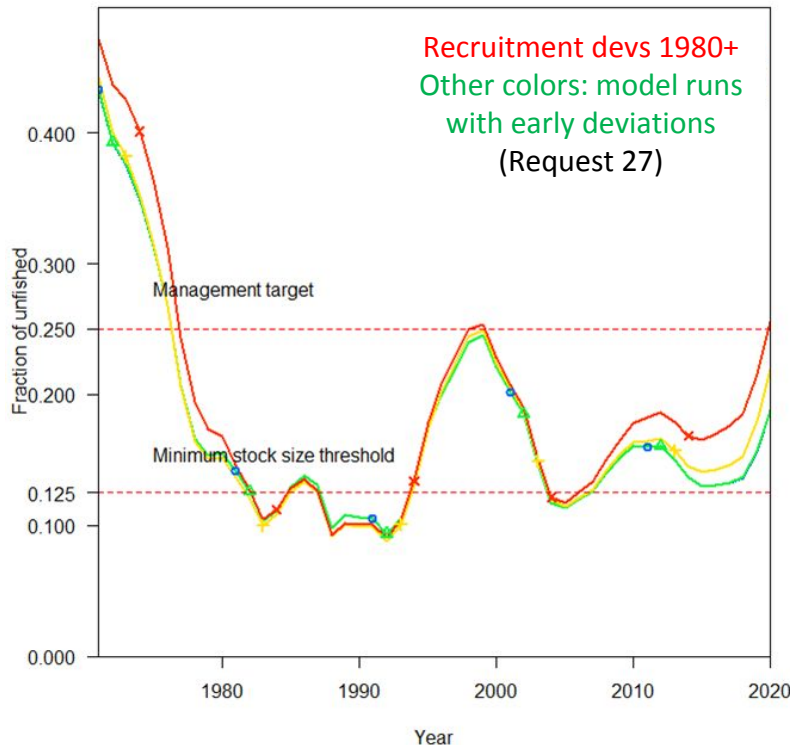
Modified map of southern stock from draft assessment
(Figure 1)

- Modeled time period: 1971 – 2019
- Roughly US-Mexico border to Point Conception
- Progress made during review:
 - Improved treatment of discard data
 - All available age data included in the model
 - Initial conditions estimated
- Some issues unresolved, including:
 - Data weighting methodology
 - Treatment of the CalCOFI index
 - Calculation of initial equilibrium catches

Southern Model

- Greater stability in estimates of relative stock status

Effect of changing the start year for annual recruitment deviations (“devs”)



- Estimates of population scale (“absolute abundance”) were sensitive to assumptions about reproductive biology (fecundity)
- Stability in estimates of relative stock status does not imply stability in estimates of absolute abundance (see technical deficiencies section)

Target and threshold are PFMC references, and do not apply to California halibut

Conclusions of the Review Panel

Northern Model

- The Panel does not consider the northern area base model for Halibut to be adequate for use in management
- Panel report describes rationale, including:
 - Initial conditions could not be estimated
 - Initial stock status was highly sensitive to recruitment assumptions
 - Current stock status depended on which data sources were emphasized (suggests a conflict between data types)
 - Errors were identified with the treatment (weighting) of age and length data

Conclusions of the Review Panel

Southern Model

- Although the southern model estimates initial conditions, the Panel identified technical issues and recommends further analysis prior to using the model for management
- Panel report identifies issues and provides recommendations, including:
 - Revision of data weighting method
 - CalCOFI index (include complete time series, 1951-present; check variance estimates)
 - Verify and document calculations for assumed equilibrium catches

Recommendations for Future Research

- Panel categorized recommendations according to data availability
 - Analyses that can use existing data
 - Analyses that require additional data collection
 - Analyses that can use existing data include:
 - Reconstruct historical catch data
 - Eliminates the need to estimate initial conditions (greater model stability)
 - Northern fisheries developed later than southern
 - Extend and revise CalCOFI index for southern model (1951-present)
 - Compare size distributions of aged fish from research fleet to other fleets
 - Evaluate model sensitivity to magnitude of recruitment variability (“sigma-r”)
 - Evaluate the effect of CPFV boat limits on index of abundance
- (See Review Panel report for complete list)

Recommendations for Future Research

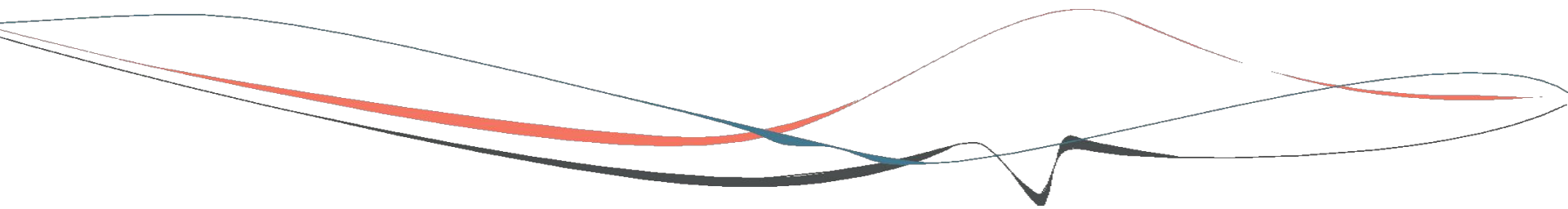
- Analyses that require additional data collection include:
 - Increased sampling of age structures (improve growth estimates)
 - Collect additional information on discards (rates, size/age composition)
 - Further studies of halibut reproductive biology (e.g. size/age-dependent batch fecundity, multiple brooding, maturity)
 - Data collection north and south of the assessed areas

(See Review Panel report for complete list)

Review Process Recommendations

- Create a Terms of Reference for the stock assessment document (in addition to Terms of Reference for Peer Review Process)
- Specify management goals or targets for California Halibut
 - Examples: criteria for overfished/overfishing status, harvest control rules, target biomass, relative stock status, and/or fishing mortality rate
 - Clearly defined reference points would allow the Panel to better determine whether an assessment is adequate for its intended use
- Invite advisors to the review panel (e.g. industry representatives)
- Increase the number of STAT representatives during the review

Looking Ahead: Building a Roadmap for California Halibut Fishery Management



Kirsten Ramey

Environmental Program Manager, Marine Region
California Department of Fish and Wildlife

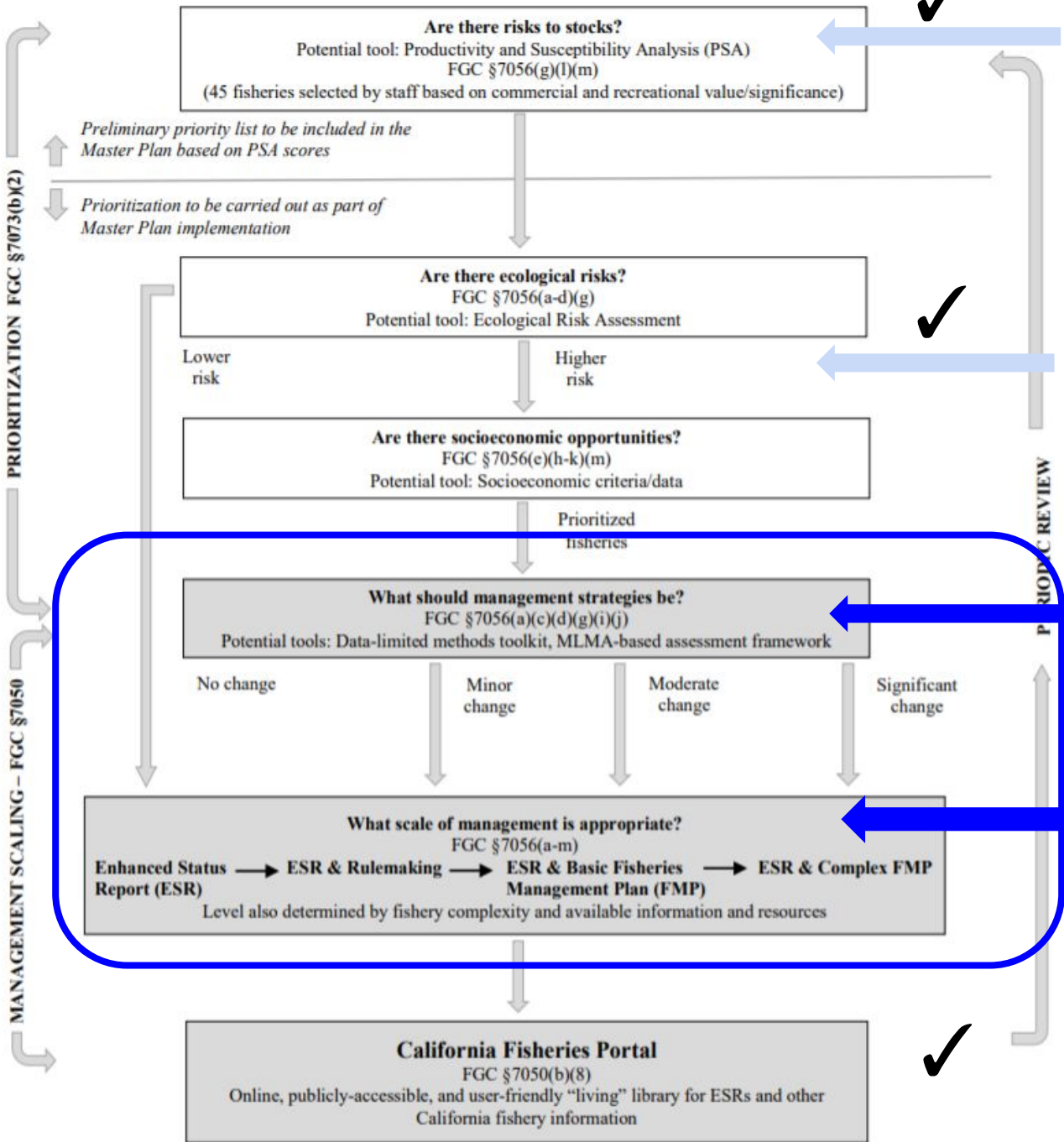


Building a Roadmap for California Halibut Fishery Management

Kirsten Ramey, California Department of Fish and Wildlife



Framework for MLMA-based Management



Prioritization Process: PSA
Interim list of priority species

Prioritization Process: PSA + ERA

Scaling: Stock Assessment, MSE, Ecosystem, Habitat and Bycatch Studies, Public Scoping

Scaled Management Continuum

PRIORITIZATION FGC §7073(b)(2)

MANAGEMENT SCALING – FGC §7050

PROPOSED REVIEW

Scaled Management Development Process





Key Aspects of Scaled Management Development Process- Information Gathering

- Complete
 - Ecological Risk Assessment and Prioritization Process
 - Stock Assessment and Peer Review
- In Progress
 - Multi-fleet Management Strategy Evaluation
 - Ecosystem Considerations and Bycatch Evaluation
 - Habitat Relationships
 - Enhanced Status Report



Key Aspects of Scaled Management Development Process- Exploration

- Exploration, Scoping and Consideration of Management Concerns
 - Tribal and stakeholder engagement
 - Engage Fish and Game Commission
- Identify goals and objectives based on MLMA and available science
 - Develop vision and roadmap for management
 - Evaluate potential management measures



Initial Steps in Building a Roadmap Through Scoping

- “Scoping phase” to explore opportunities, challenges, priorities, and concerns
 - Build community knowledge base of status of resource
 - Understand communications and engagement options
 - Inform development of roadmap for scaling management process
- Potential to have webinar series next year with targeted discussions by fleet and stakeholder interests

Scaled Management Development Process

Information Gathering

Projects and partnerships
 Guidance from 2018 Master Plan
 Assessment of status of California Halibut resource

We are here!

Exploration

Scoping phase, assessment of community's management priorities and concerns
 Tribal and stakeholder engagement
 CDFW vision and timeline

Scaled Management Development

Enhanced Status Report, rulemaking or Fishery Management Plan
 Guidance and feedback from Fish and Game Commission, Tribes, and stakeholders

Implementation

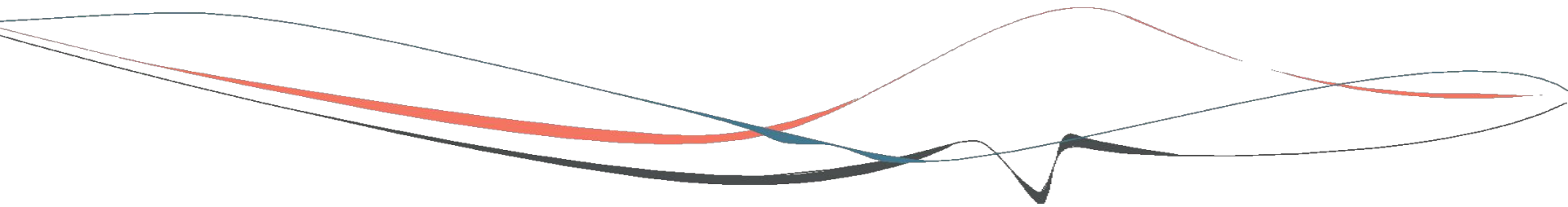
Review and potential adoption by Fish and Game Commission
 Scaled management implementation
 Ongoing Tribal and stakeholder communications

What should management strategies be?



What scale of management is appropriate?

Next Steps and Participant Feedback



Next Steps

- Webinar presentations, recording, transcript, and Q&A/comment transcript, November 2020
 - Transcript anonymous unless specified
- A summary highlighting key themes from the webinar, November 2020
 - Questions, comments, perspectives, poll/survey results anonymous
- Webinar participant feedback survey by Wednesday, November 11, 2020
 - <http://bit.ly/Halibut2020Webinar>

Next Steps, Continued

- CDFW to develop community and stakeholder contact list for California Halibut scaled management process updates
 - Email kirsten.ramey@wildlife.ca.gov to join this contact list
- Final 2020 stock assessment and peer review panel reports to be shared publicly, November 2020
- Continued updates at the California Fish and Game Commission and Committee public meetings
 - Visit <https://fgc.ca.gov/> for meeting schedule

Stay Informed

Ocean Science Trust- Peer Review & Webinar

Webpage: <https://www.oceansciencetrust.org/projects/2020halibutreview/>

Email: Anthony Rogers, anthony.rogers@oceansciencetrust.org

California Department of Fish and Wildlife- Halibut & Community Engagement

Webpage: <https://wildlife.ca.gov/Conservation/Marine/CA-Halibut-FMP>

Email: Kirsten Ramey, Kirsten.Ramey@wildlife.ca.gov



CALIFORNIA
OCEAN
SCIENCE
TRUST

Thank you!

On behalf of the California Ocean Science Trust and California Department of Fish and Wildlife, we appreciate your time and contributions.

Q&A Guidance

- Click on “raise hand” within Zoom
 - Phone, enter *9
- Facilitator will track queue and state your name when it is your time to speak
- Unmute yourself to speak within Zoom
 - Phone, enter *6
- Please abide by meeting agreements, keep question/comment concise
- Mute yourself within Zoom
 - Phone, enter *6