



# Groundfish Science Report

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Northwest Fisheries Science Center

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# Overview

- Survey and Assessment Updates
- Quota Share Owner Survey
- 5-year Catch Share Review Publications
- Other Recent Publications

# Survey and Assessment Updates

## Bottom-Trawl Survey

- Only two vessels will be used in 2019.
- Survey will start on May 23<sup>rd</sup> in Newport.

## Acoustic-Trawl Hake Survey

- Survey will begin on June 13th.

## Assessment & Reviews

- A successful pre-assessment workshop review of data and methods for most 2019 assessments was hosted at the PFMC office
- Cabezon STAR in Newport, May 6-10
- Longnose and Big Skate STAR in Seattle (NWFSC), June 3-7



# Quota Share Owner Survey

## Overview

- In response to concerns raised during the 5-year review:
  - Incomplete knowledge of who is receiving quota payments
  - Incomplete knowledge of the magnitude of quota payments
- Council adopted the following:
  - “Collect QS owner information through the most efficient and effective means, as determined by NMFS.” as their FPA (November 2018).

## Timeline

- June 2019: Erin Steiner will present a draft survey instrument to GAP and GMT
- Summer/Fall 2019: Conduct focus groups
- Summer 2020: Field first survey



# 5-Year Catch Share Review Research Published

Special issue of *Coastal Management*, 2018, Vol. 46, No. 6

**Outcomes of the West Coast Groundfish Trawl Catch Share Program: The First Five Years.** Pfeiffer L.

**Shorebased Processor Outcomes Under Catch Shares.** Guldin, M., A. Warlick, M. Errend, L. Pfeiffer, E. Steiner.

**Economic Outcomes for Harvesters under the West Coast Groundfish Trawl Catch Share Program: Have Goals and Objectives Been Met?** Errend, M., L. Pfeiffer, E. Steiner, M. Guldin, and A. Warlick. E

**Implementation Challenges for Quota Set-Asides: Policy Analysis to Inform Fisheries Management Decision-Making.** Naranyi S. and A. Warlick.

**Crew in the West Coast Groundfish Catch Share Program: Changes in Compensation and Job Satisfaction.** Steiner, E., S. Russell, A. Vizek.

**Adapting to Catch Shares: Perspectives of West Coast Trawl Participants.** Russell, S., M. Van Oostenburg, A. Vizek.

**Using Incentives to Reduce Bycatch and Discarding: Results Under the West Coast Catch Share Program.** Somers, K., L. Pfeiffer, S. Miller, W. Morrison.



# Other Recent Publications

“Character of temporal variability in stock productivity influences the utility of dynamic reference points”

Aaron M. Berger

Fisheries Resource and Monitoring Division, NWFSC,  
NMFS-NOAA, 2032 S.E. OSU Drive, Newport, OR,  
97365

*Fisheries Research* (Accepted 27 November 2018)



# “Character of temporal variability in stock productivity influences the utility of dynamic reference points”

- Comparison of stock status estimates using traditional unfished biomass (Static  $B_0$ ) and Dynamic-  $B_0$  approaches
- Empirical Results:
  - Generally small differences (< 10%) between alternative indicators of stock status, but a few exceptions:
    - Bocaccio status: 37% (static), 77% (dynamic)
    - Pacific hake status: 80% (static), 61% (dynamic)
- Simulation Results:
  - Productivity trends, paired with large changes in catch, produced the largest differences between approaches.
  - Uncertainty from incorrectly identifying changes in stock productivity generally outweighed that from initial equilibrium conditions



# Other Recent Publications

“Unraveling the recruitment problem: A review of environmentally-informed forecasting and management strategy evaluation”

M.A. Haltuch<sup>a</sup>, E.N Brooks<sup>b</sup>, J. Brodziak<sup>c</sup>, J.A. Devine<sup>d</sup>,  
K.F. Johnson<sup>a,e</sup>, N. Klibansky<sup>f</sup>, R.D.M. Nash<sup>d</sup>,  
M.R. Payne<sup>g</sup>, K.W. Shertzer<sup>f</sup>, S. Subbey<sup>d</sup>, B.K. Wells<sup>h</sup>

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<sup>b</sup> Northeast Fisheries Science Center, NMFS, NOAA, Woods Hole, MA, United States

<sup>c</sup> Pacific Islands Fisheries Science Center, NMFS, NOAA, Honolulu, HI, United States

<sup>d</sup> Institute for Marine Research, Bergen, Norway

<sup>e</sup> School of Aquatic and Fishery Science, University of Washington, Seattle, WA, United States

<sup>f</sup> Southeast Fisheries Science Center, NMFS, NOAA, Beaufort, NC, United States

<sup>g</sup> National Institute of Aquatic Resources, Kgs. Lyngby, Denmark

<sup>h</sup> Southwest Fisheries Science Center, NMFS, NOAA, Santa Cruz, CA, United States





## **Haltuch, et al., is:**

A review evaluating progress towards implementing environmental factors in stock-recruitment projections and Management Strategy Evaluations

Factors affecting analytical success in identifying environmental drivers of recruitment:

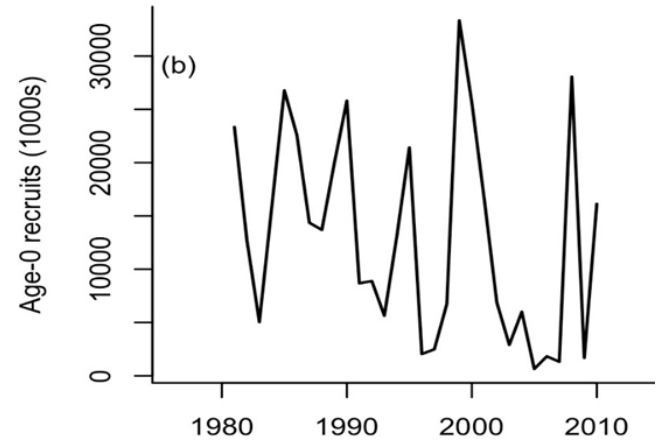
- Species with a short pre-recruit survival window (e.g., opportunistic life-history strategy).
- Species with life history bottlenecks during which the environment can exert a well-defined pressure (e.g., anadromous fishes, those reliant on nursery areas).

Future research recommendations are provided.



## Other Recent Publications

# “Oceanographic drivers sablefish recruitment in the Northern California Current ”



Tolimieri N.<sup>1</sup>, Haltuch M.A.<sup>1</sup>, Lee Q.<sup>3</sup>, Jacox, M.G.<sup>4,5</sup>, Bograd, S.<sup>4</sup>

<sup>1</sup>Fishery Resource Analysis and Monitoring Division, Northwest Fisheries Science Center, National Marine Fisheries Service

<sup>2</sup>Conservation Biology Division, Northwest Fisheries Science Center, National Marine Fisheries Service

<sup>3</sup>University of Washington, School of Aquatic and Fishery Sciences, Seattle, WA, 98195, USA

<sup>4</sup>Environmental Research Division, Southwest Fisheries Science Center, National Marine Fisheries Service

<sup>5</sup>Institute of Marine Sciences, University of California Santa Cruz



# Oceanographic drivers explain ~57% of the variability in sablefish recruitment

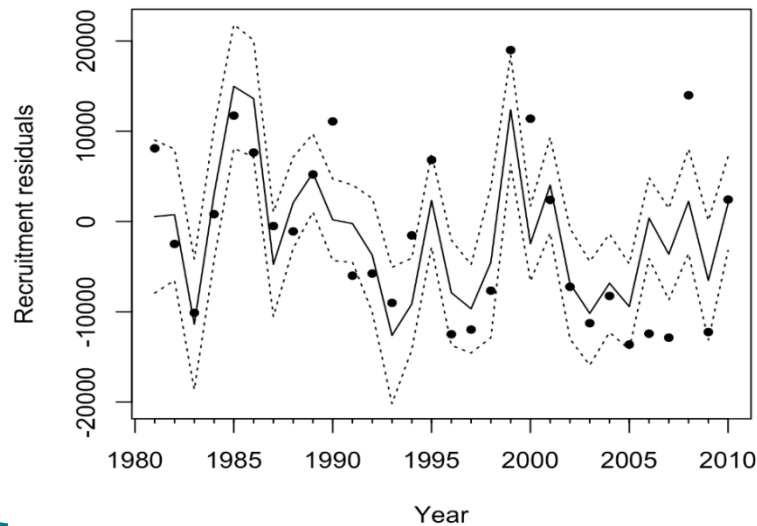
The estimated relationship can be used to:

**Hindcast** - recruitment during periods lacking age and length data

**Nowcast** - recruitment in the current assessment year where survey data are not available

**Short-term forecast** of recruitment ~ 1 year ahead if oceanographic covariates can be forecasted using ocean models

**Long-term forecast** of recruitment using Global Climate Models



## Female preconditioning (50-1200 m)

$$(-) DD_{pre}$$

Cold water is associated with higher system productivity and lower metabolic costs making more energy available for reproduction

## Eggs (300-825 m)

$$(+) CST_{egg}$$

Onshore transport maintains larvae near settlement habitat

$$(+) DD_{egg}$$

Faster development in warm water

## Pelagic larvae (surface waters)

$$(-) DD_{larv}$$

Cold water is associated with higher system productivity and lower chance of starvation

## Pelagic larvae (surface waters)

$$(-) DD_{larv}$$

Cold water is associated with higher system productivity and lower chance of starvation

# Partial residual plots

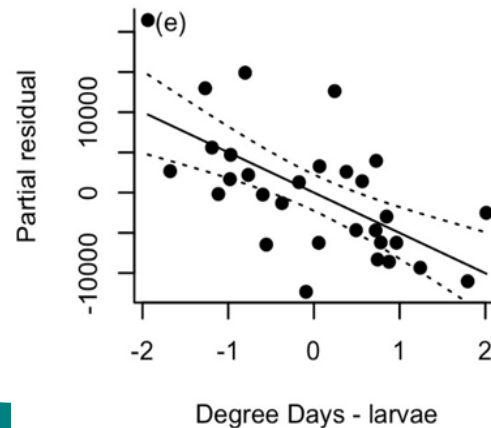
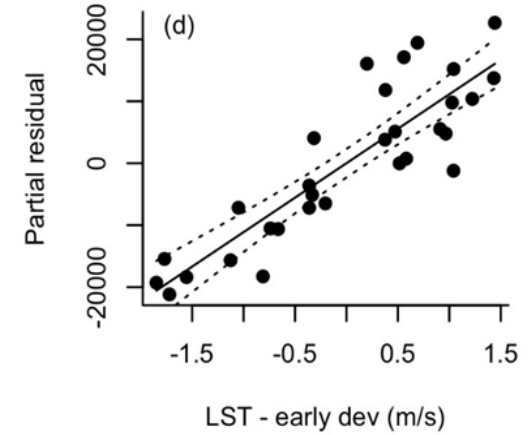
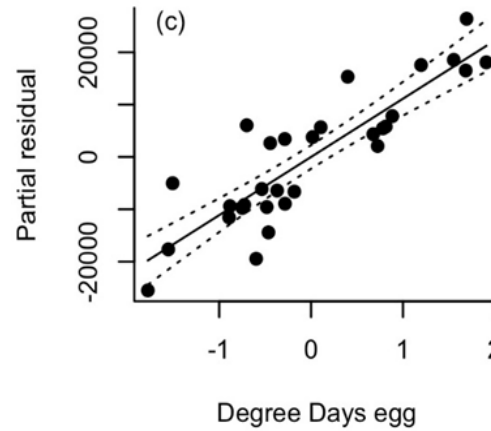
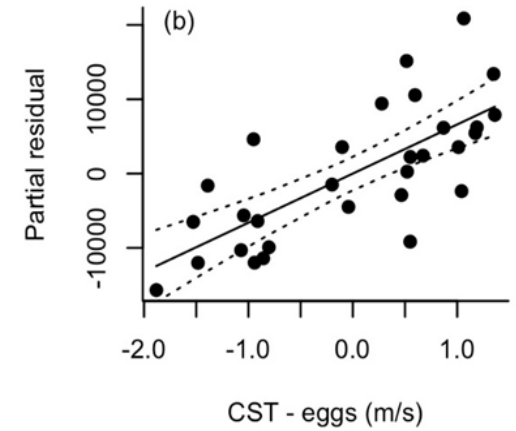
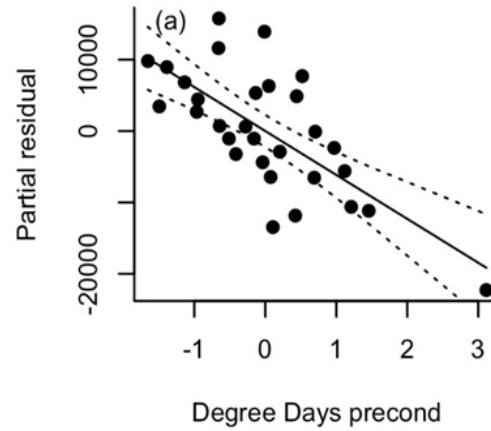
(-)  $DD_{pre}$  – cold water = more food;  
lower metabolic costs and  
more energy for  
reproduction

(+)  $CST_{edev}$  – onshore transport =  
retention near settlement  
habitat

(+)  $DD_{egg}$  – warm water = faster  
development

(+)  $LST_{edev}$  – northerly transport =  
transported north to food

(-)  $DD_{larv}$  – warm water =  
starvation overcomes faster  
growth rate



# “Closing the feedback loop: On stakeholder participation in management strategy evaluation”

Daniel Goethel<sup>1</sup>, Sean Lucy<sup>2</sup>, Aaron Berger<sup>3</sup>, Sarah Gaichas<sup>2</sup>, Melissa Karp<sup>4</sup>, Patrick Lynch<sup>4</sup>, John Walter<sup>1</sup>, Jonathan Deroba<sup>2</sup>, Shana Miller<sup>5</sup>, Michael Wilberg<sup>6</sup>

<sup>1</sup> NOAA-Southeast Fisheries Science Center; <sup>2</sup> NOAA-Northeast Fisheries Science Center; <sup>3</sup> NOAA-Northwest Fisheries Science Center; <sup>4</sup> NOAA-Office of Science and Technology; <sup>5</sup> The Ocean Foundation; <sup>6</sup> University of Maryland Center for Environmental Science

Canadian Journal of Fisheries and Aquatic Sciences  
(Accepted 18 November 2018)



# The role of each of the main participant groups in an MSE, at each stage

- Lessons learned from three recent MSE processes that explicitly involved stakeholders (Atlantic tunas, Atlantic herring, and eastern oysters)
- Suggestions for improving stakeholder engagement
- Communication tactics and responsibilities
- Use of hierarchical communicative structures (e.g., councils and fishing representatives/coops)

| MSE Steps  |  | Participant Roles   |  |
|------------|--|---|--|
| CATEGORY   |  | SCIENTISTS  | MANAGERS & STAKEHOLDERS  |
| scoping    | 1 Identify the participants  | Select modeling and subject matter experts to serve as the technical team for the course of the MSE.                                      | Work with outreach coordinators to ensure a diverse and representative group of participants.                                      |
|            | 2 Identify management objectives and quantitative performance statistics | Help facilitate workshops and describe process and candidate performance statistics.  | Participate in workshops to provide feedback on objectives and performance statistics.   |
|            | 3 Identify uncertainties to be evaluated in robustness testing           | Present axes of uncertainty that will be considered to managers and stakeholders.   | Provide feedback on uncertainties to be considered and make recommendations if key factors are missing.                            |
| technical  | 4 Develop operating and implementation models                            | Develop analytical tools (operating and implementation models) and be prepared to provide plain language descriptions of general details. | Evaluate general configuration of operating and implementation models and participate in general discussion / Q&A with scientists. |
|            | 5 Parameterize / condition operating models                              | Provide the technical expertise to parameterize models in accordance with the system and strategies being evaluated.                      |  |
| scoping    | 6 Identify candidate management strategies                               | Provide guidance on the range of options that can be tested given the time and resources available.                                       | Propose a set of realistic management strategies to be evaluated.  |
| technical  | 7 Simulation test each management strategy                               | Conduct analyses and provide status updates periodically.   | Provide feedback when scientists encounter challenges or need to make changes to the methods or assumptions.                       |
| evaluation | 8 Summarize performance evaluation and revisit prior steps as needed     | Develop summaries and graphics in collaboration with managers and stakeholders.   | Collaborate with scientists in generating useful and relevant formats for presenting results.                                      |
|            | 9 Adopt desired management approach                                      | Answer questions and re-evaluate results as needed to inform quantitative trade-offs among competing management actions.                  | Weigh trade-offs and implement the desired management action which meets performance criteria and satisfies all parties.           |



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# Questions?

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