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# Update on Shrimp Working Groups

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Shrimp Advisory Panel Meeting  
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# Working Groups Progress Report

## Similar to 2021 Report

SEAMAP Shrimp Indices WG



Shrimp Catch Estimation WG



Shrimp Bycatch Estimation WG



Shrimp Fishery Effort Estimation WG



Shrimp Life History & Envir. Data WG



# SEAMAP Shrimp Indices WG Objectives

- i. Review the history of the SEAMAP survey, as well as the current shrimp abundance indices, including methodology, data exclusions & survey area utilized.
- ii. Verify SEAMAP survey is operating along similar spatial & temporal scales as the shrimp fishery.
- iii. Explore alternative methods for deriving SEAMAP indices for shrimp.
- iv. Determine if SEAMAP is a representative index, and provide best practice & research recommendations.

# SEAMAP Shrimp Indices WG

## Key Findings

- i. SEAMAP WG agreed that overall the SEAMAP Groundfish Survey is representative of the shrimp fishery given it reliably tracks changes in stock abundance at the population level.
- ii. Vector autoregressive spatio-temporal model (VAST) and empirical dynamic modeling (EDM) approaches were reviewed and examples of abundance indices were presented. Both the VAST and EDM methods require additional research prior to adoption.

# SEAMAP Shrimp Indices WG

## Key Findings

### iii. Best Practices

- a. Recommend delta-lognormal model to construct the abundance indices.
- b. Recommend 2008/2009 index split for brown and white shrimp to account for SEAMAP survey design change.
- c. Use both Summer and Fall SEAMAP based indices to account for different portions of shrimp life history with specific recommendations for each shrimp species.

# SEAMAP Shrimp Indices WG Membership

Name	Affiliation
Adam Pollack (Co-lead)	NMFS/SEFSC
Michelle Masi (Co-lead)	NMFS/SEFSC
David Hanisko	NMFS/SEFSC
Kevin Craig	NMFS/SEFSC
Jo Anne Williams	NMFS/SEFSC
Matthew Smith	NMFS/SEFSC
Steve Munch	NMFS/SWFSC
Benny Gallaway	GMFMC SSC
Jim Nance	GMFMC SSC
Doug Gregory	GMFMC SSC
Jeff Rester	GSMFC
Carly Somerset	GMFMC Staff
Leann Bosarge	GMFMC

# Shrimp Catch Estimation WG

## Objectives

- i. Revisit Value Stream Mapping process for shrimp data (i.e., an outline of data processing at SEFSC for trip tickets and Gulf Shrimp data).
- ii. Work with NMFS Office of Science & Technology to alter due date for the Fisheries of the US publication.
- iii. Update Commission participants about need for more timely shrimp landings information.
- iv. Hold data workshop to assess the best source of landings information for use in management.

# Shrimp Catch Estimation WG

## Key Findings

- i. Port agent data collection was deemed duplicative to the mandatory state trip ticket data collection.
- ii. Trip tickets are the most complete source of landings data.
- iii. NMFS will continue to work with Gulf States to improve data quality and timeliness issues



# Shrimp Catch Estimation WG Membership

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James Primrose	NMFS/SEFSC
Matt Freeman	GMFMC Staff

# Shrimp Bycatch Estimation WG Objectives

- i. Review the draft report from the 2017 Workshop to evaluate data inputs and methods for estimating reef fish bycatch in the Gulf of Mexico shrimp fishery.
- ii. Develop best-practice guidance, documenting & justifying any revisions to the previous working groups' recommendations and conclusions, as needed.

# Shrimp Bycatch Estimation WG

## Key Findings

Major issues with the current bycatch estimation model and data inputs:

- i. The quality of catch data for species like gray triggerfish may not be sufficient to generate bycatch estimates because observers are recording them as “finfish” rather than by species.
- ii. It may be desirable to divide the time series into two or three periods (e.g. historical, voluntary observer and mandatory observer) so that the time periods could be treated differently based on data quality and observer coverage.

# Shrimp Bycatch Estimation WG

## Key Findings

- iii. Using SEAMAP data may introduce potential bias in years adequately covered by observer data due to different shrimping practices.
- iv. The model could be modified to estimate multi-year average bycatches instead of trying to estimate annual bycatches in the historical period due to data gaps (i.e. missing observer coverage for 1983-1991 and 1995-2000).
- v. The model appears to be sensitive to parameter priors for rare and data-limited species.
  - It may be that the model is trying to estimate too many parameters for rare and data poor species.

# Shrimp Bycatch Estimation WG

## Key Findings

- v. The model stratification should probably be simplified (e.g. reduced from current 36 strata: 3 seasons, 4 areas, 3 depth zones), especially for rare and data-limited species.
  - This would reduce the number of strata with zero observations, and make the model less sensitive to the assumed priors.

# Shrimp Bycatch Estimation WG Initial Recommendations

Data experts and statisticians at the SEFSC (Bycatch Estimation Development Team) will evaluate primary data streams (Observer CPUE, Effort, and Landings) with respect to data processing.

- i. Evaluate existing code (LGL) used to estimate shrimp effort, documenting processes, assumptions, and modernize the code base.
- ii. Evaluate processing code for observer CPUE and trip-level landings documenting processes, assumptions, and modernize the code base.

# Shrimp Bycatch Estimation WG Longer-term Recommendations

- i. Once datasets/types and assumptions are evaluated and processes documented, the SEFSC Bycatch Estimation Development Team will consult with experts in bycatch modeling to work towards modernizing the bycatch model based on the “best available data”.
- ii. SEFSC conduct a comprehensive peer-review of the revised model and development processes.
- iii. Review to take place in time to use the revised bycatch estimation approaches for the upcoming red snapper assessment (SEDAR74).

# Shrimp Bycatch Estimation WG Membership

Name	Affiliation
Shannon Cass-Calay (Co-Chair)	NMFS/SEFSC
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<u>Yuying Zhang</u>	Florida Inter. Univ.
Hui Lin	Texas A&M



# Shrimp Effort Estimation WG Concluded

- i. Effort estimation procedures currently undergoing evaluation and potential revision from SEFSC Bycatch Estimation Development Team.
- ii. Some Shrimp Effort Estimation WG members will potentially be recalled to participate in the bycatch estimation development/review (e.g., Gallaway).
- iii. Ongoing discussion of how location and trip data are collected (VMS vs. P-Sea Windplot) may affect analysis of data, depending on data fields.

# Shrimp Fishery Effort Estimation Membership

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Steven Smith	NMFS/SEFSC/Affiliate
James Primrose	NMFS/SEFSC

# Shrimp Life Hist. & Env. Data WG

## Objectives

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- i. Collate Gulf state inshore survey data to (attempt to) update life history parameter estimates (e.g. length freq. -> growth & natural mortality).
- ii. Collate in situ and/or literature-based environmental data for future SA improvements.
- iii. Attempt to update stock assessment growth parameters, while simultaneously evaluating the spatial & temporal distributions of the stocks (to better represent any variability in catchability).

# Shrimp Life Hist. & Env. Data WG Progress

- i. Several WG meetings were convened to discuss plan.
- ii. Inshore survey and length composition data received from multiple gulf states.
  - Limited progress made towards estimating growth and mortality due primarily to staff changes.

# Shrimp Life Hist. & Env. Data WG

## Next Steps

- i. Reconsider and modify WG objectives as necessary since future shrimp assessments (i.e., Empirical Dynamic Models) may have different data needs than past assessments.
- ii. Continue to evaluate the spatial and temporal extent of length composition data to evaluate information content available to inform growth models.
- iii. Consider contemporary methods to recover growth information from length composition data.

# Shrimp Life Hist. & Env. Data WG

## Membership

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Thank You



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