A close-up photograph of a red snapper's head, showing its large, prominent eye with a dark pupil and orange-yellow iris. The fish's scales are a vibrant red color, and its mouth is slightly open, revealing a pinkish interior. The background is dark and out of focus.

Tab B, No. 8

An Update on Estimating Absolute Abundance of Red Snapper in the Gulf of Mexico

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1. Mississippi State University, Coastal Research and Extension Center

2. Harte Research Institute, Texas A&M University-Corpus Christi

Photo by Mike Kittrell

A close-up photograph of a fish's head, likely a sea bream, with a fine grid pattern overlaid. The fish has reddish-brown scales and a prominent eye. The background is dark.

Award Period: August 1, 2017 – July 31, 2019

Five Milestones:

1. Data Mining and Habitat Mapping
2. Calibration and Validation
3. Sampling
4. Results
5. Conclusion

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Five Milestones:

1. Data Mining and Habitat Mapping

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3. Sampling

4. Results

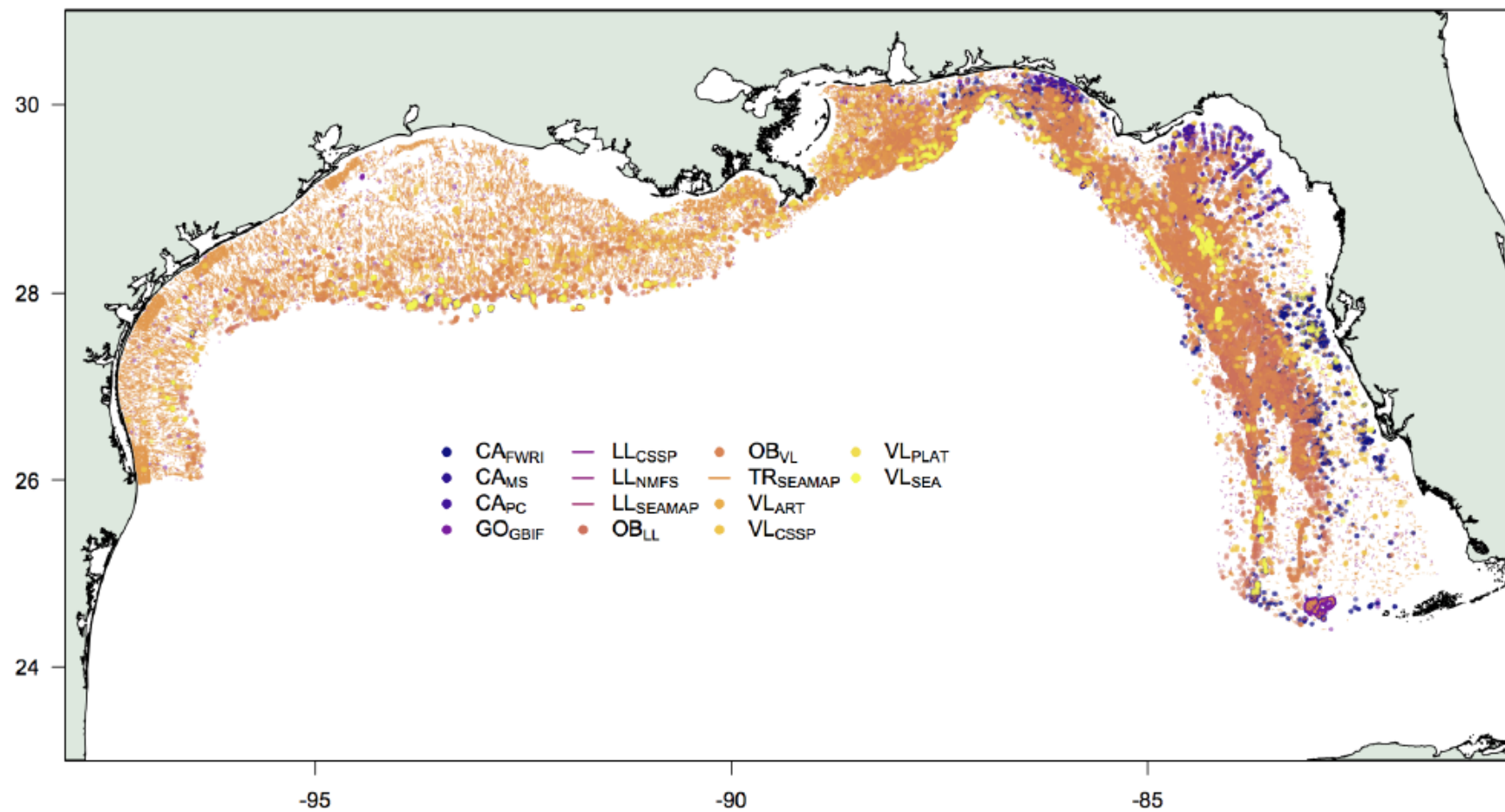
5. Conclusion



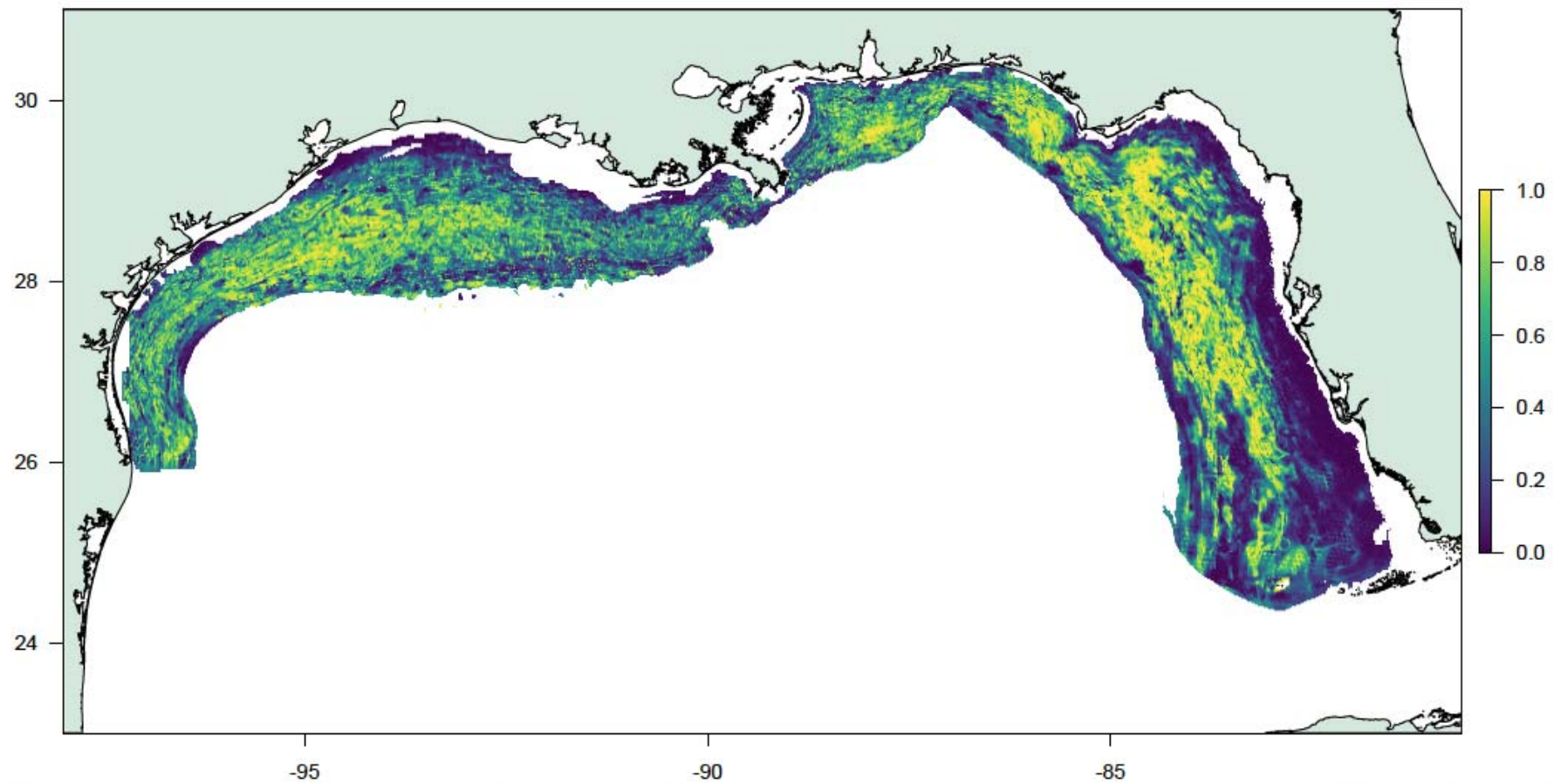
1. Data Mining and Habitat Mapping (Ahrens and Siders) - **COMPLETED**

Goal: chose stratified random sampling locations

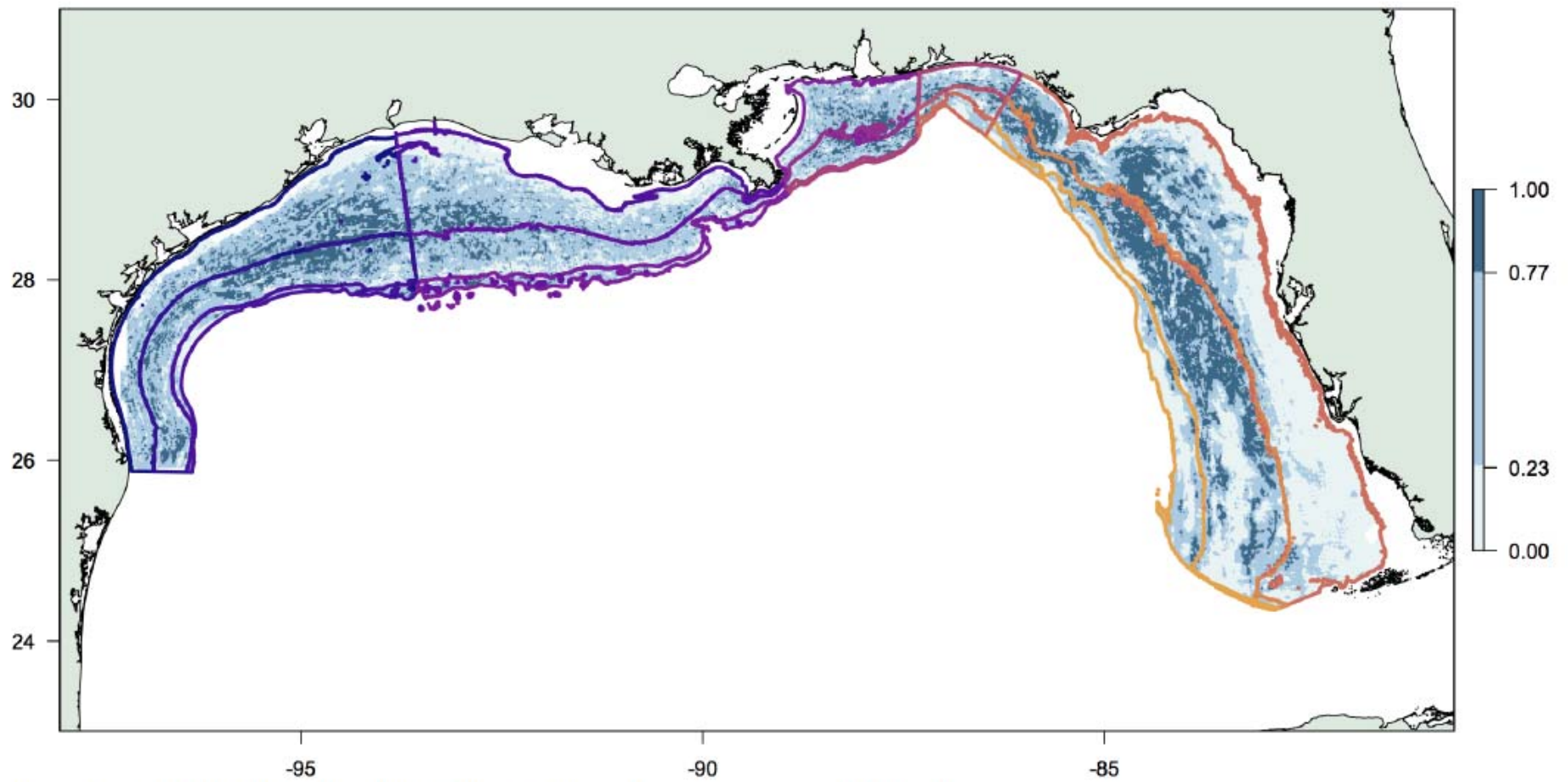
Accomplished by: Combining known red snapper locations from fisheries-independent and fisheries-dependent data sources with environmental covariates to predict probability of presence (high, medium, low) using a random forest model. Stratified random sampling locations were then chosen from this prediction grid.



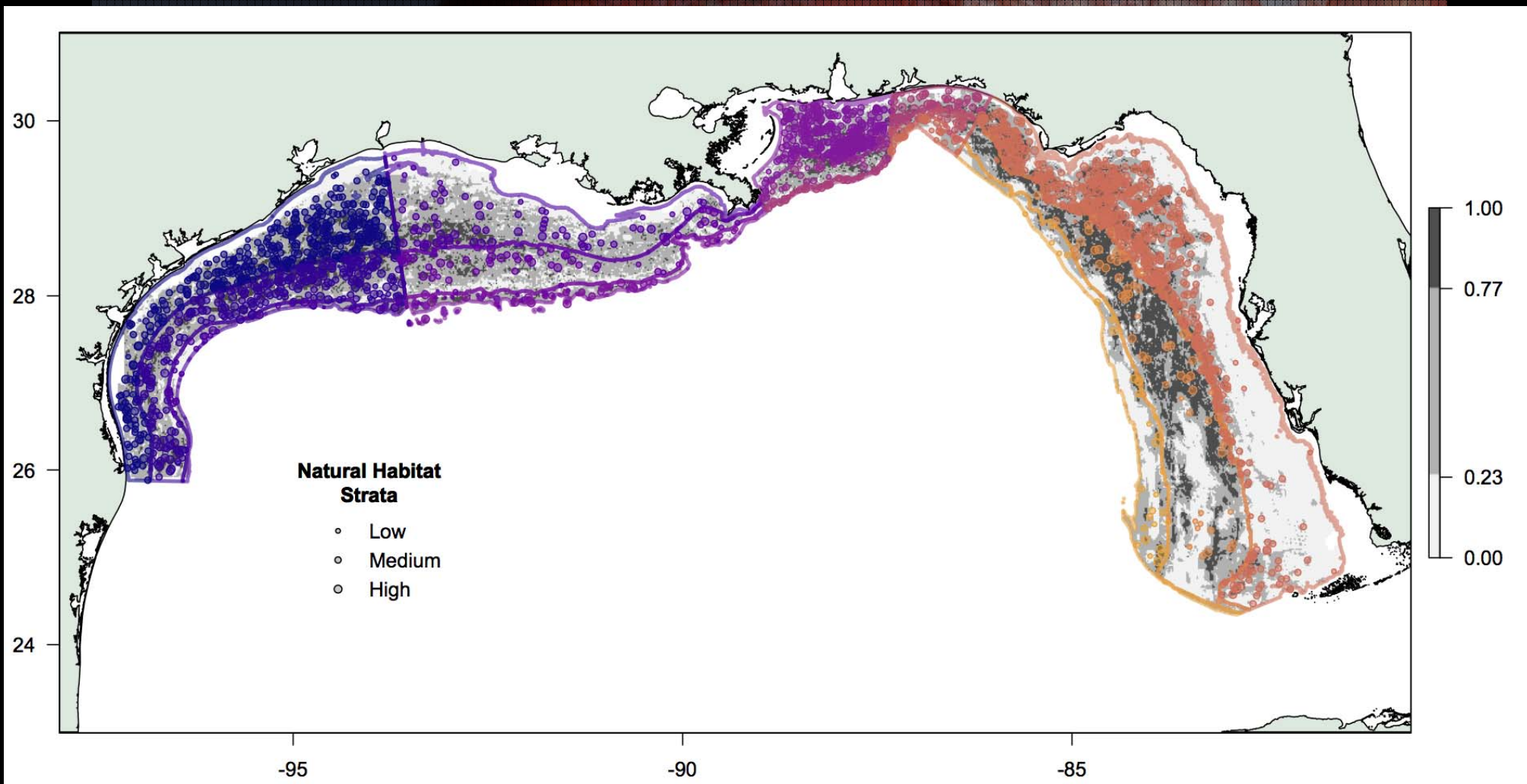
(Above) All sampling gears used as presence-only or presence-absence points in modeling probability of presence

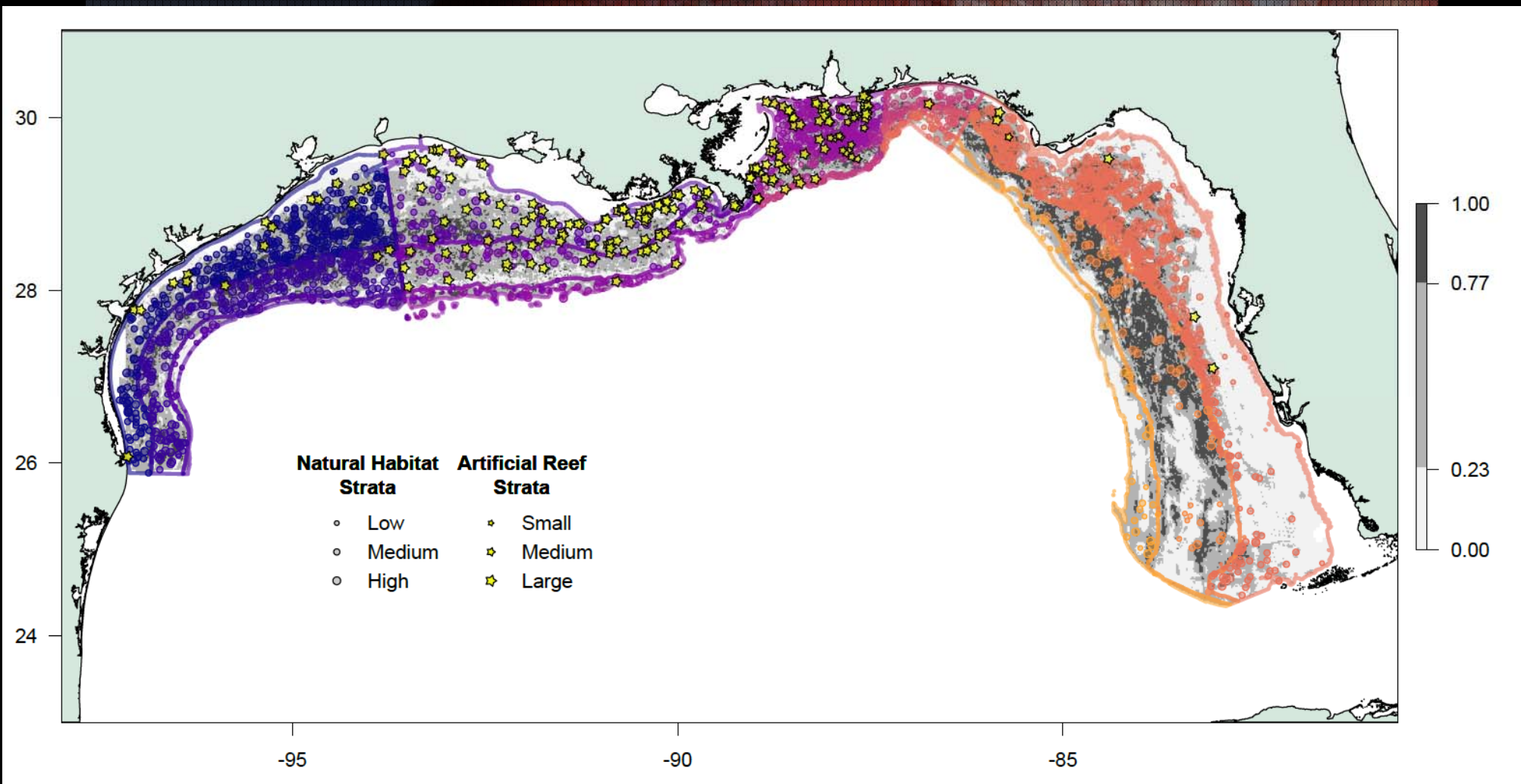


(Above) The predicted probability of presence of Red Snapper from a Random Forest model. Probability of presence is the probability of at least one Red Snapper being located in the cell.



(Above) Applying the high/low threshold to the probability of presence map to create three levels.





A close-up photograph of a fish's head, likely a snapper or similar species, with a prominent eye and scales. The image is overlaid with a dark grid pattern. The text is positioned on the left side of the image.

2. Calibration and Validation (All PIs) - ONGOING

Goal: Ensure accurate estimates of fish density and abundance

Direct Count Calibration

Patterson and Boswell – completed trials in Florida to calibrate bioacoustics with visual surveys from ROV.

Murawski and Patterson – completed eastern GOM cruise which included C-BASS/ROV calibration

Rooker and Stunz – completed western GOM cruise to calibrate TARAS/ROV

Western GOM

ROV: VideoRay Defender (Stunz, TAMU-CC)

Towed Camera: TARAS Phantom (Rooker, TAMUG)



Eastern GOM

ROV: Outland Technologies (Powers, USA)

Towed Camera: C-BASS (Murawski, USF)



A close-up photograph of a fish's head, likely a snapper or similar species, with a prominent eye and scales. The image is overlaid with a dark grid pattern, which serves as a background for the text.

2. Calibration and Validation (All PIs) - ONGOING

Goal: Ensure accurate estimates of fish density and abundance

Mark-recapture Tagging

Patterson – 900 fish in Florida (2018)

Catalano, Powers, Drymon – 750 and 500 fish in Alabama (2016 and 2017, respectively)

Catalano et al. – given the EFPs for the 5 Gulf States, the bulk of the Gulf-wide effort will take place in 2019

A close-up photograph of a red snapper fish, showing its eye and scales. The image is overlaid with a dark grid pattern. The text is white and positioned on the left side of the image.

3. Sampling (All PIs) - ONGOING

Goal: Data collection

Data collected during spring and summer 2018 are currently being analyzed to determine red snapper densities at habitat types surveyed and checked for QA/QC.

Eastern GOM (*Patterson, Murawski, Boswell*): multiday cruises completed off Florida, Alabama, Mississippi using ROV, C-BASS and bioacoustics.

Eastern GOM (*Powers, Hoenig, Drymon*): vertical longline depletion using Index Removal, bottom longline depletion using C3 in Alabama.



3. Sampling (All PIs) - **ONGOING**

Goal: Data collection

Data collected during spring and summer 2018 are currently being analyzed to determine red snapper densities at habitat types surveyed and checked for QA/QC.

Western GOM (*Cowan*): completed bioacoustics cruise off Louisiana.

Western GOM (*Rooker, Wells, Stunz*): multiday cruises with TARAS, ROV and bioacoustics off Texas.

Stakeholder Engagement

June 13th: 18 newspapers, 5 Sea Grant Offices, 6 state agencies, 11 universities, 14 key partners, 6 fishing magazines/forums/newsletters

GREAT RED SNAPPER COUNT



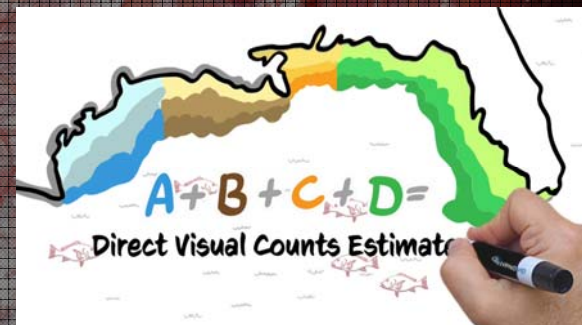
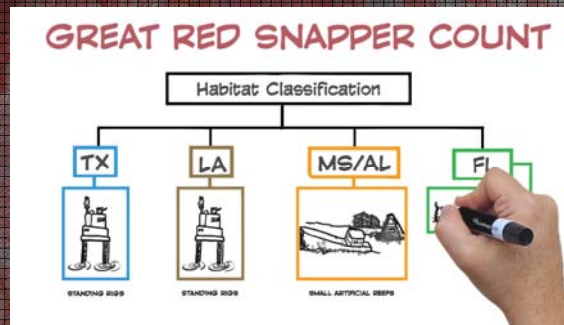
HABITAT CLASSIFICATION

DIRECT VISUAL COUNTS

DEPLETION SURVEYS

TAGGING STUDY

Questions or comments?
SnapperCount@



The Great Red Snapper Count - PROJECT OVERVIEW

Why is this study important?

- The study is a critical component of the Gulf of Mexico snapper management plan.
- The study will provide the first comprehensive assessment of the status of the Gulf of Mexico snapper fishery.
- The study will provide the first comprehensive assessment of the status of the Gulf of Mexico snapper fishery.

Who is funding this study?

• The study is funded by the National Science Foundation (NSF) and the National Oceanic and Atmospheric Administration (NOAA).

What is the goal of the study?

• The goal of the study is to provide a comprehensive assessment of the status of the Gulf of Mexico snapper fishery.

Who is involved in the study?

• The study is a collaborative effort involving scientists, managers, and the fishing community.

Questions or comments? Contact the project team at snappercount@noaa.gov for more information and comments.

The Great Red Snapper Count - HABITAT CLASSIFICATION

What is habitat classification?

Habitat classification is the process of identifying and categorizing the different types of habitats that support Great Red Snapper.

How do scientists approach the habitat classification process?

- Scientists use a variety of methods to identify and categorize habitats, including aerial photography, satellite imagery, and ground-based surveys.
- Scientists use a variety of methods to identify and categorize habitats, including aerial photography, satellite imagery, and ground-based surveys.

What types of habitats are included in the study?

- Standing ridges
- Artificial reefs
- Seagrass beds
- Mangroves

Questions or comments? Contact the project team at snappercount@noaa.gov for more information and comments.

The Great Red Snapper Count - DIRECT VISUAL COUNTS

What are direct visual counts?

Direct visual counts are a method of estimating the number of snapper in a given area by counting the number of fish seen from a boat or aircraft.

How do scientists collect fish count data from the video footage?

Scientists use video footage to collect fish count data by counting the number of fish seen in the video.

What types of equipment will scientists use to collect fish count data?

- Video cameras
- GPS
- Boat
- Aircraft

Questions or comments? Contact the project team at snappercount@noaa.gov for more information and comments.



Moving Forward

2018

November 15-16: Regional leadership and Quantitative Team meeting, Texas A&M Corpus Christi

2019

Spring: Gulf-wide high reward tagging study (\$250/\$500)
15,000 Hallprint PDAT dart tags

Sackett DK, Catalano MJ. 2017. Spatial heterogeneity, variable rewards, tag loss and tagging mortality affect the performance of mark-recapture designs to estimate exploitation: an example using Red Snapper in the northern Gulf of Mexico. *North American Journal of Fisheries Management* 37: 558-573.

Sackett DK, Catalano M, Drymon JM, Powers SP. *In Press*. Estimating exploitation rates in the Alabama Red Snapper fishery using a high-reward tag-recapture approach. *Marine and Coastal Fisheries*.

Discussion/Questions

