

Contrasting high and low relief fishery habitats of the northeastern Gulf: habitat delineation, food web components and spatial demographics

**Doug DeVries¹ Chris Gardner¹, Gary Fitzhugh¹,
and Thomas Harrah²**

**¹NOAA Fisheries Service
Southeast Fisheries Science Center
Panama City Laboratory**

²Florida State University

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Goals

- Provide spatially-explicit demographic and biological information linked to habitat parameters for important reef fishes in N. Gulf, to improve understanding of structure, function, and linkages of the various fishery ecosystems in the region and enhance fishery ecosystem model development and management.
- Delineate and quantify hard bottom habitat on the inner- and mid-shelf in the NE Gulf
- Expands community survey and mapping efforts to very different, much higher relief (10 m) habitat and to Apalachee Bay – provides increased spatial and habitat contrasts

Objectives

- Compare community structure, demographics, and trophic patterns between high- and low-relief habitats
- Compare growth and condition of fishes between high- and low-relief habitats, and examine effect of scale of a species' movements (or site fidelity) on these parameters
- Map and characterize hard bottom habitats in 10 - 30 m in the Big Bend, focusing on our FSU collaborators' study area, and in an area of very high relief known as the "3x5's" about 40 nm S. of Panama City

Species composition, abundance, and size data

- Video data using ROV with parallel scaling lasers
 - 2-4, 25-40m transects
 - 20-30 min random search for cryptic species and additional size data

Age, food habits, and stable isotope samples

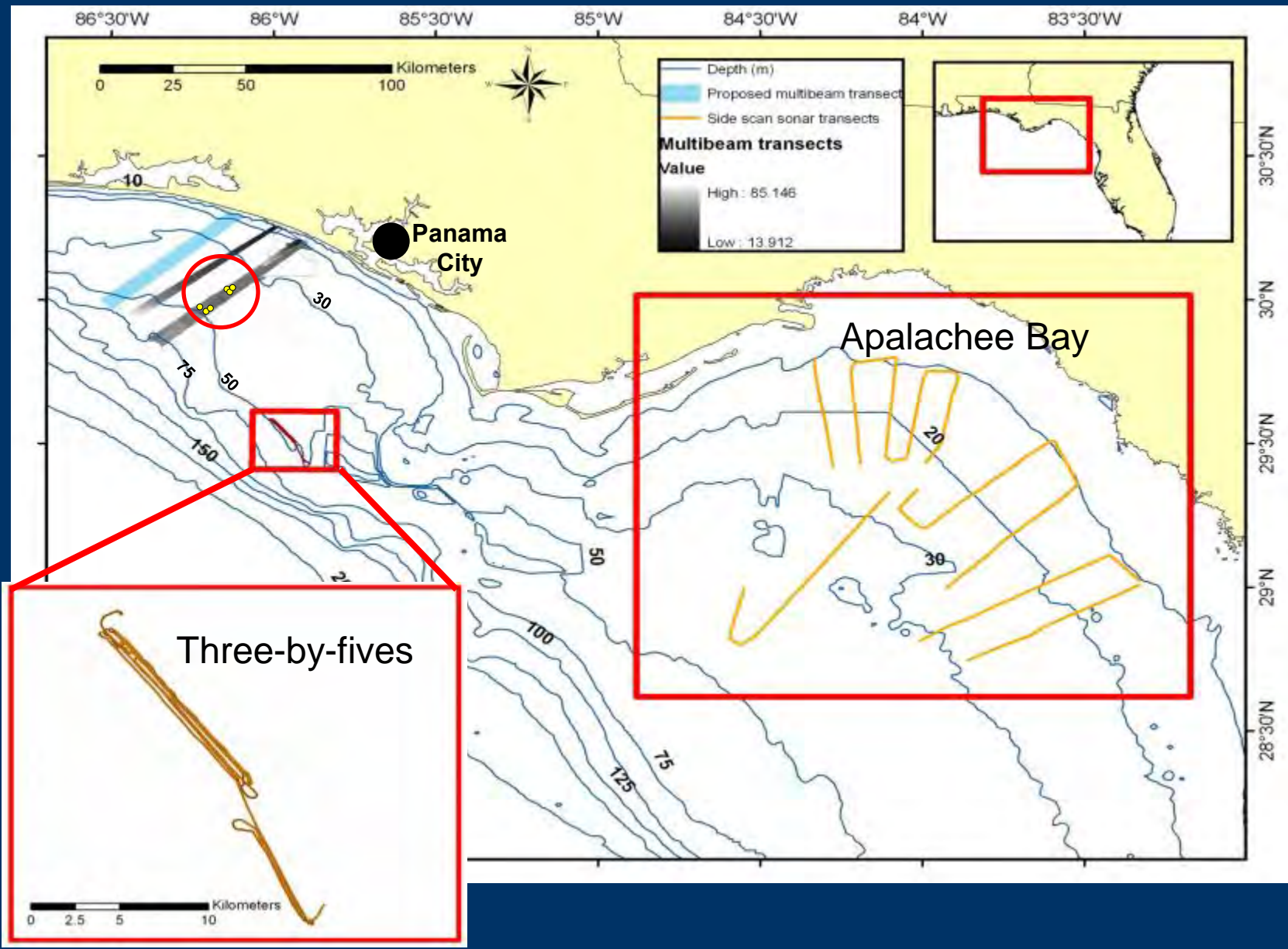
- standardized hook-and-line sampling at nearby sites

Growth and condition comparisons

- Standard age and growth studies, bioelectrical impedance analysis (BIA)





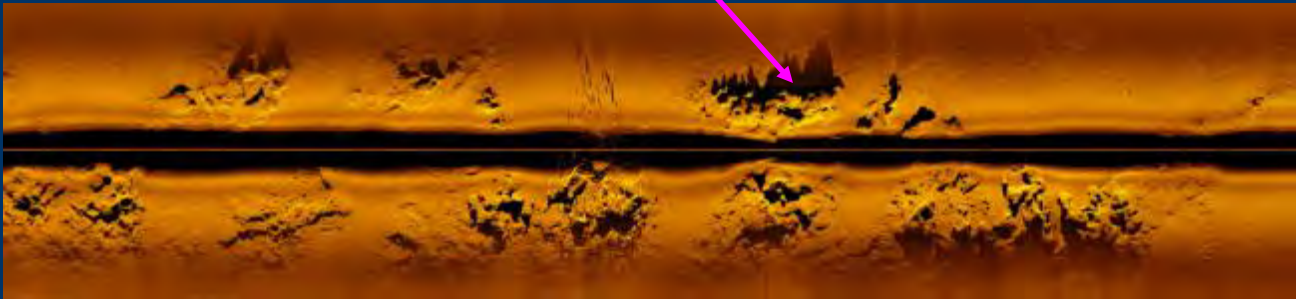
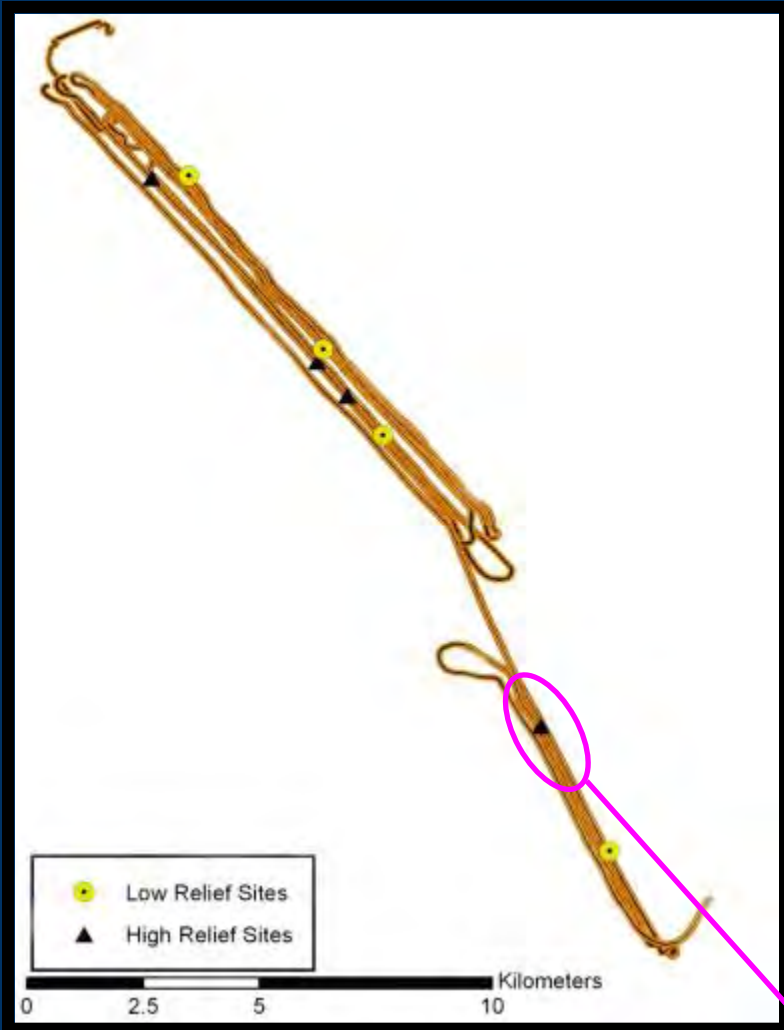


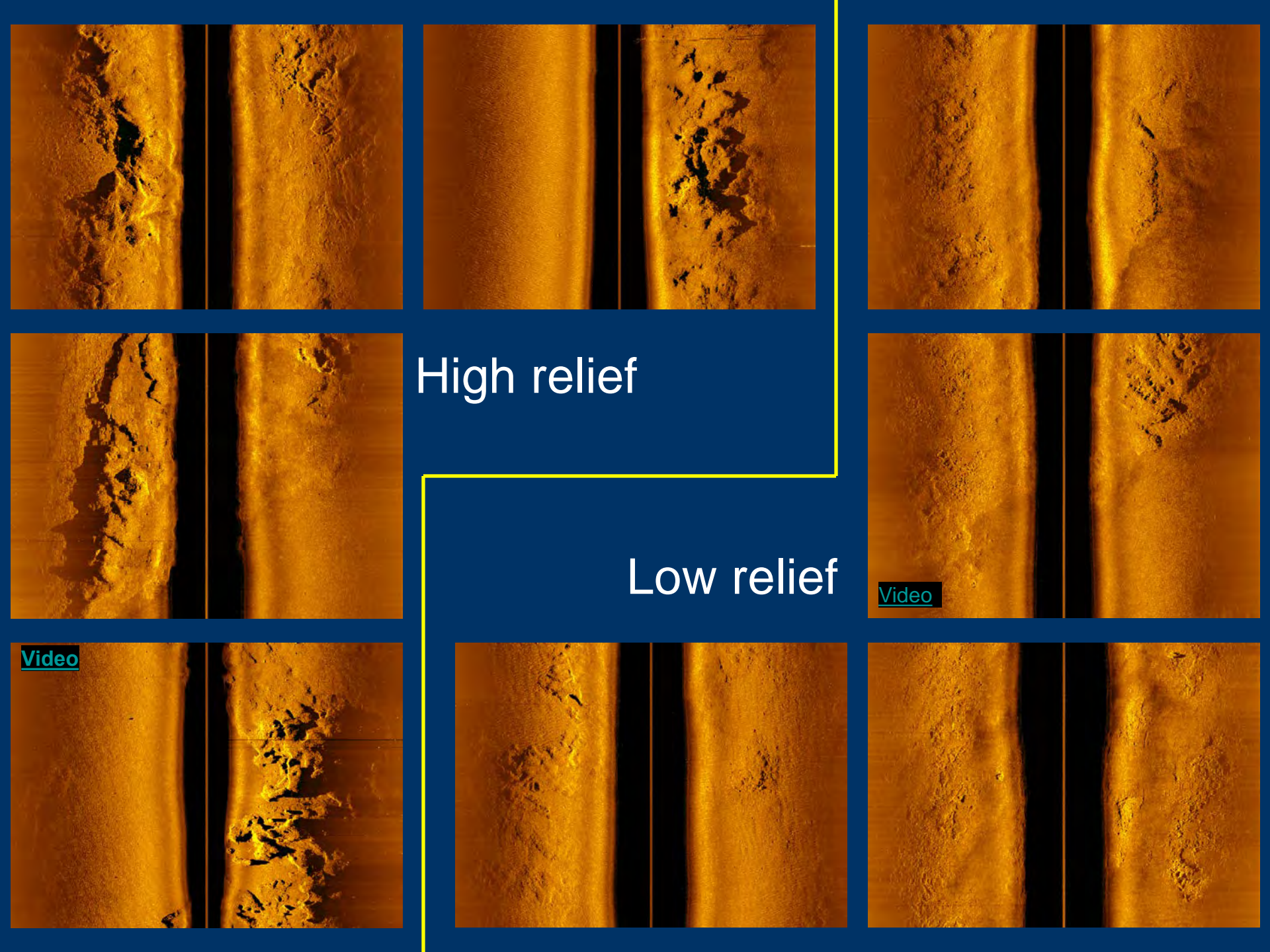
Three-by-fives

Apalachee Bay

Panama City

Three-by-fives





High relief

Low relief

Video

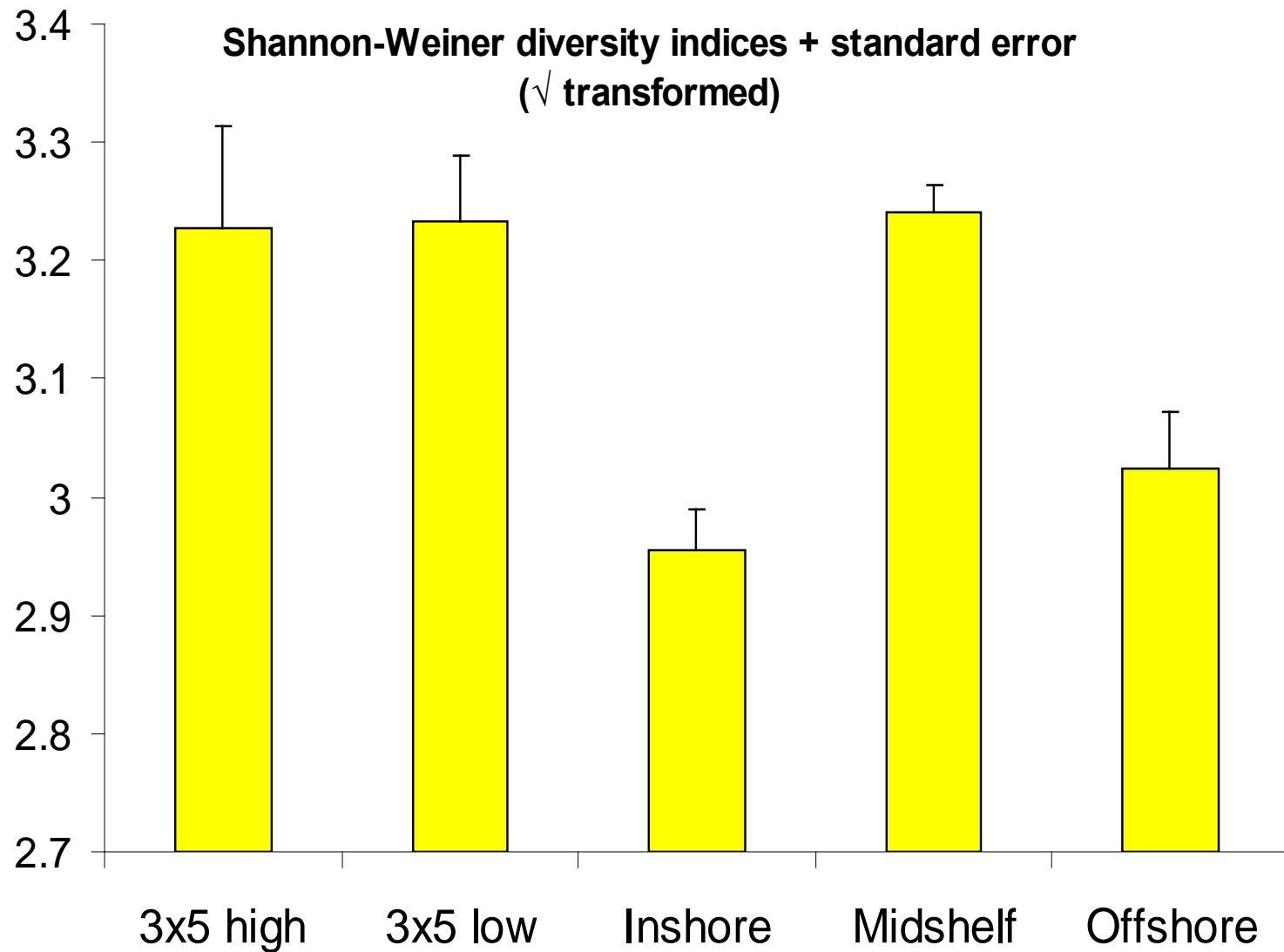
Video

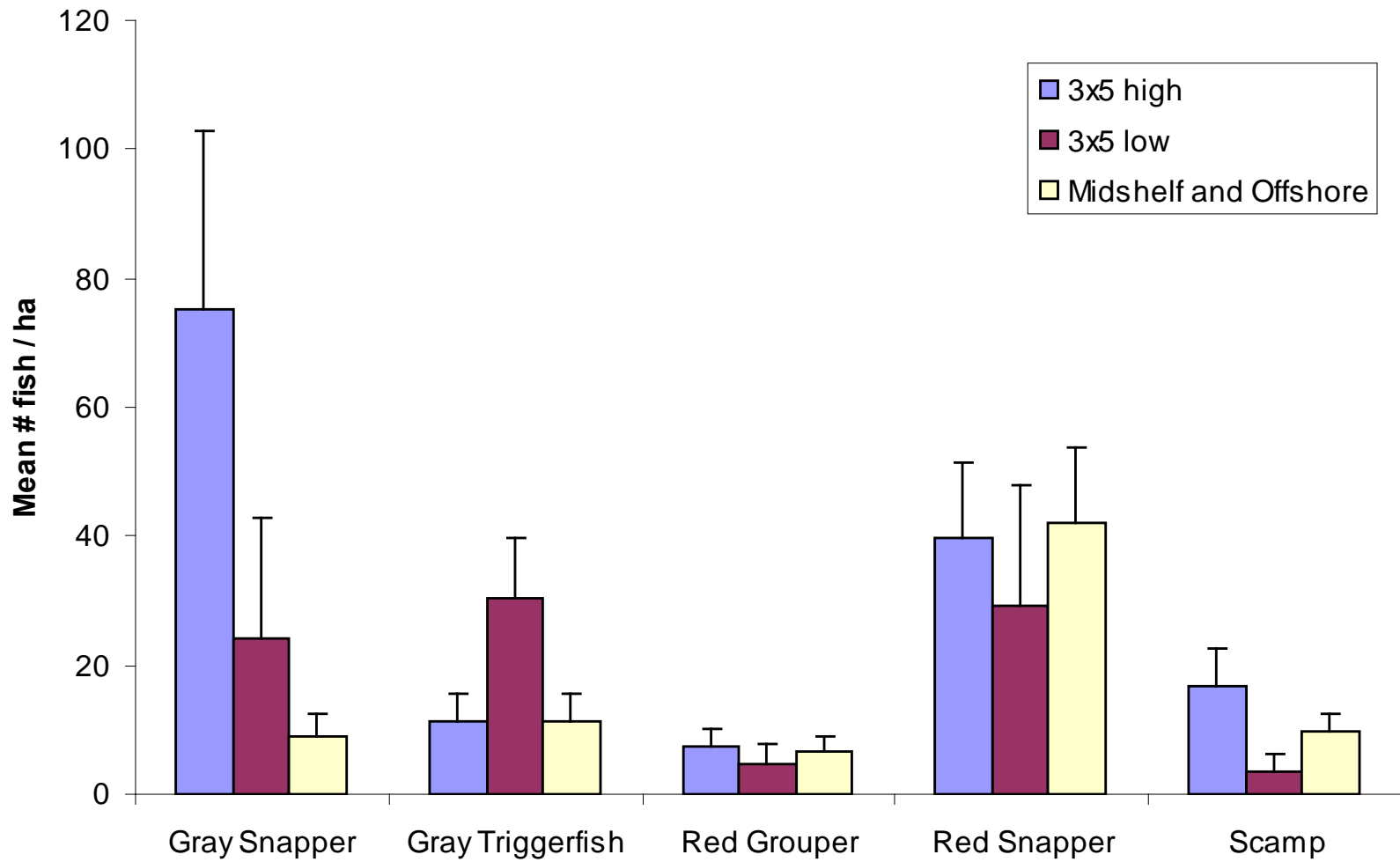


High relief



Low relief





ROV transect counts



Bigeye



Spottin hogfish



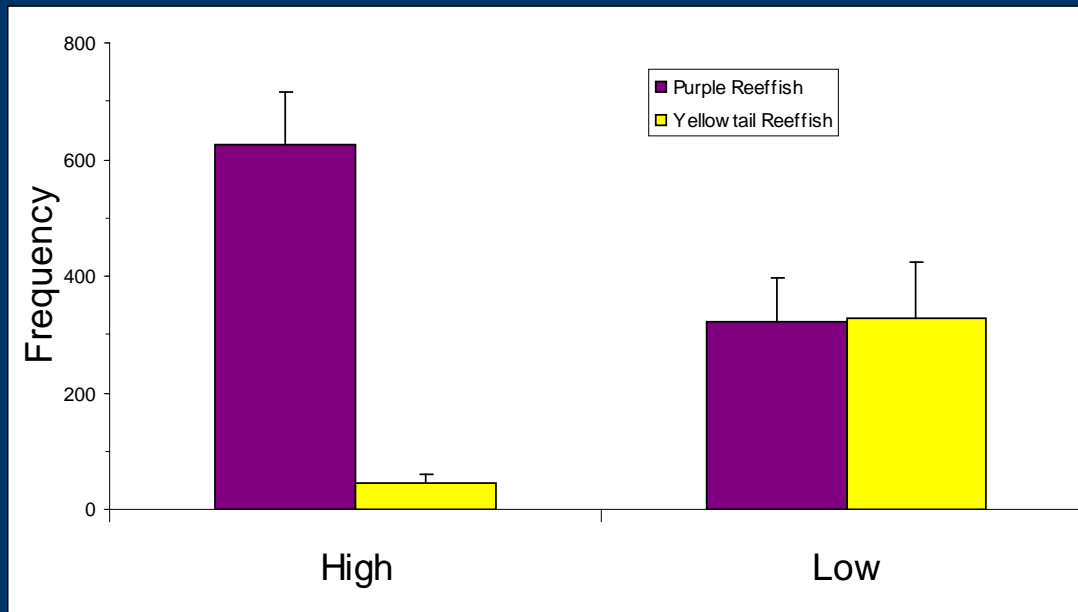
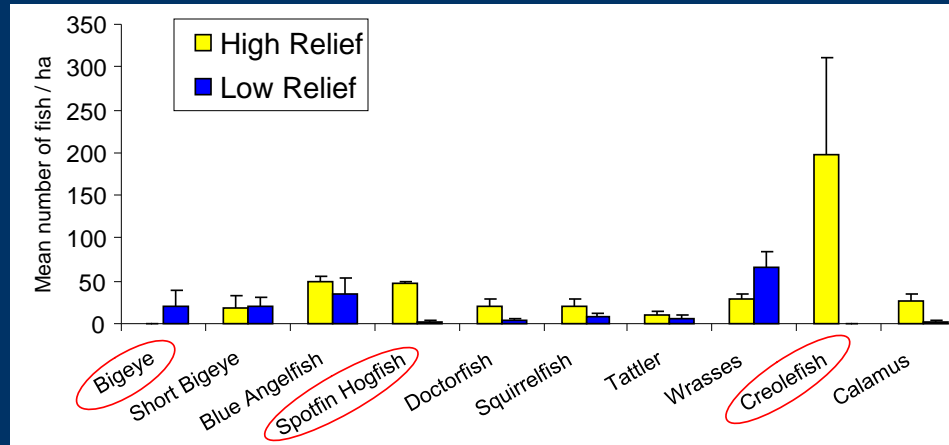
Purple reefish



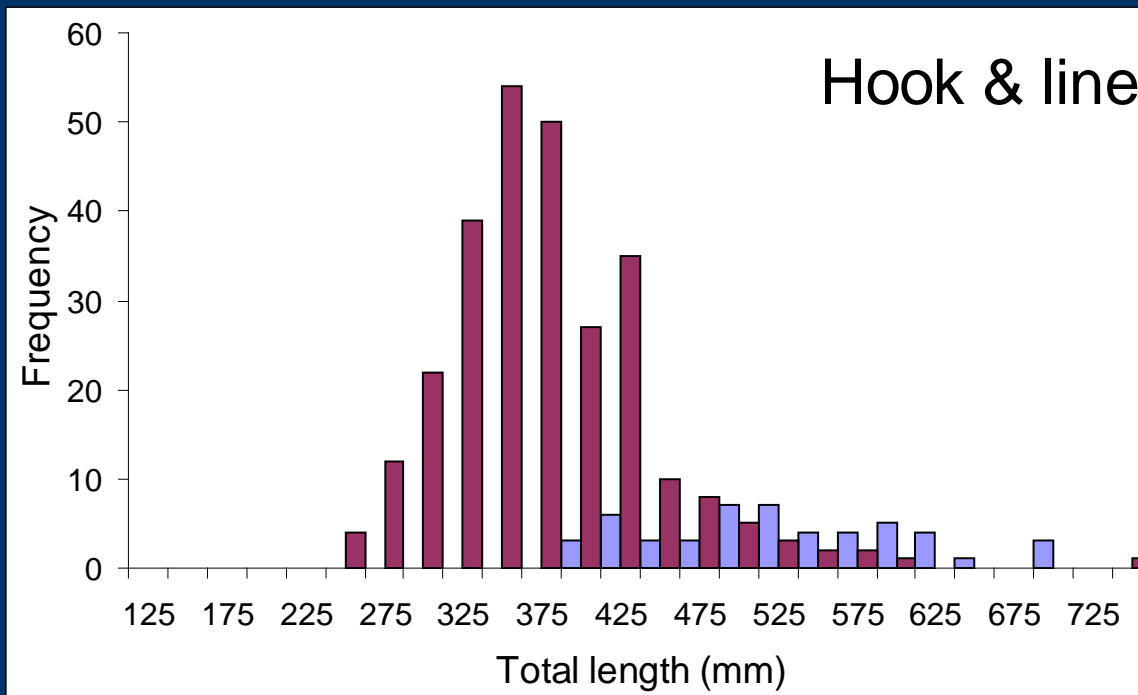
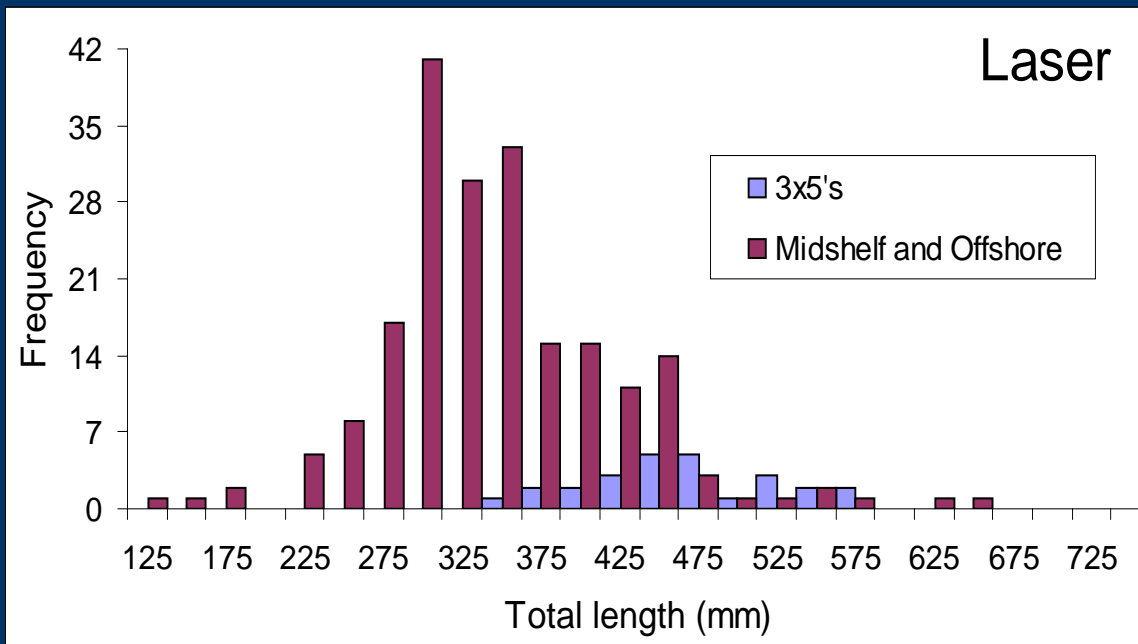
Creolefish



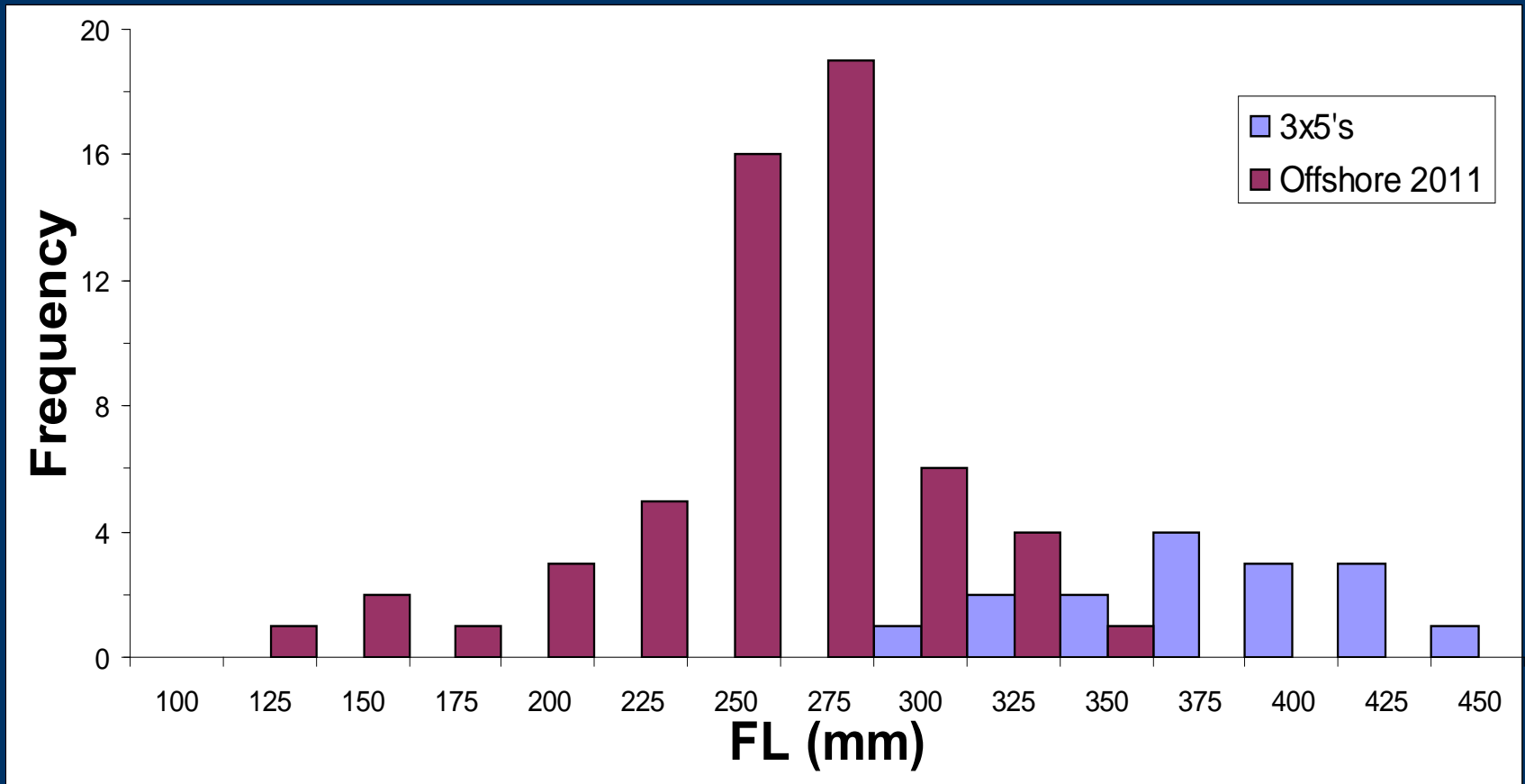
Yellowtail reefish



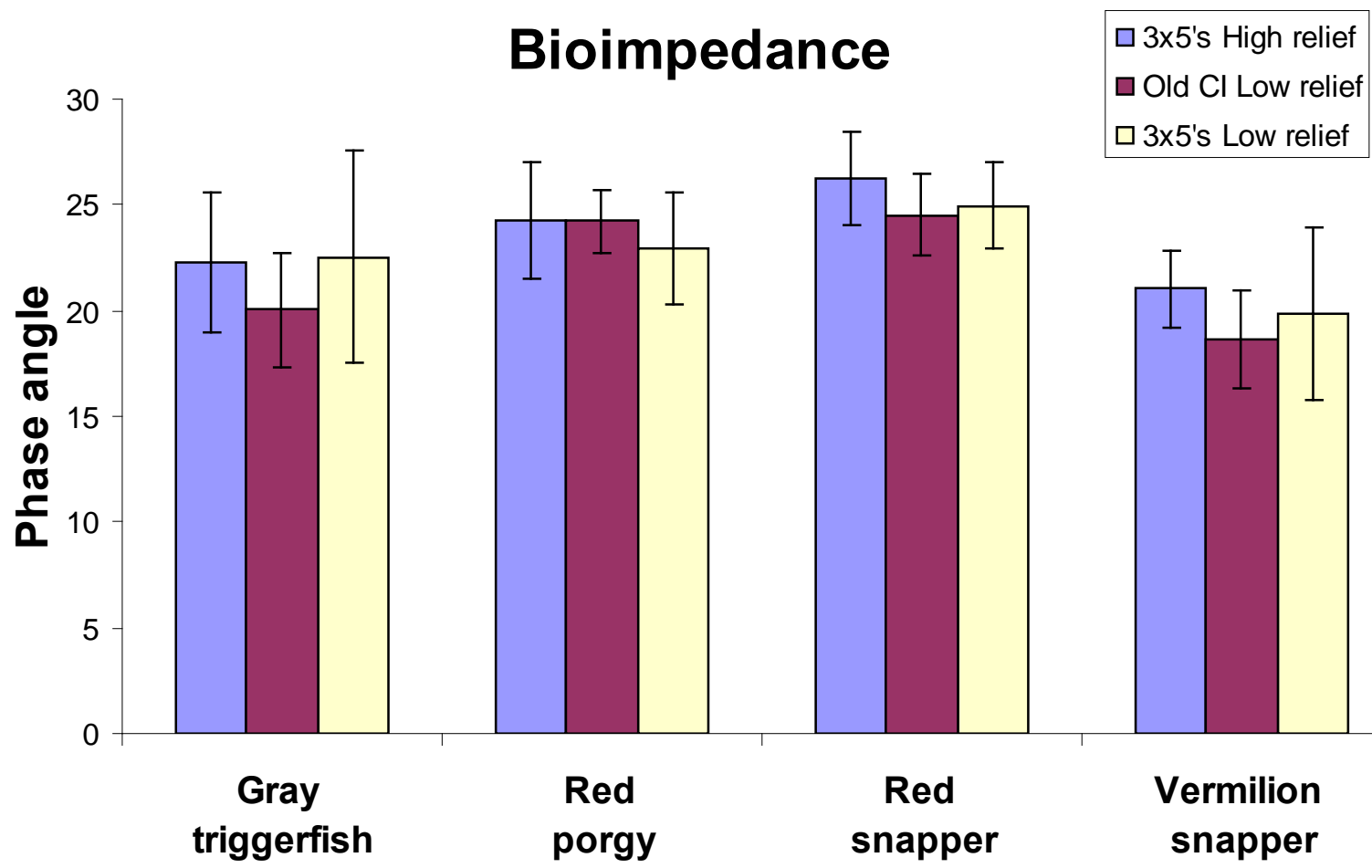
Red snapper

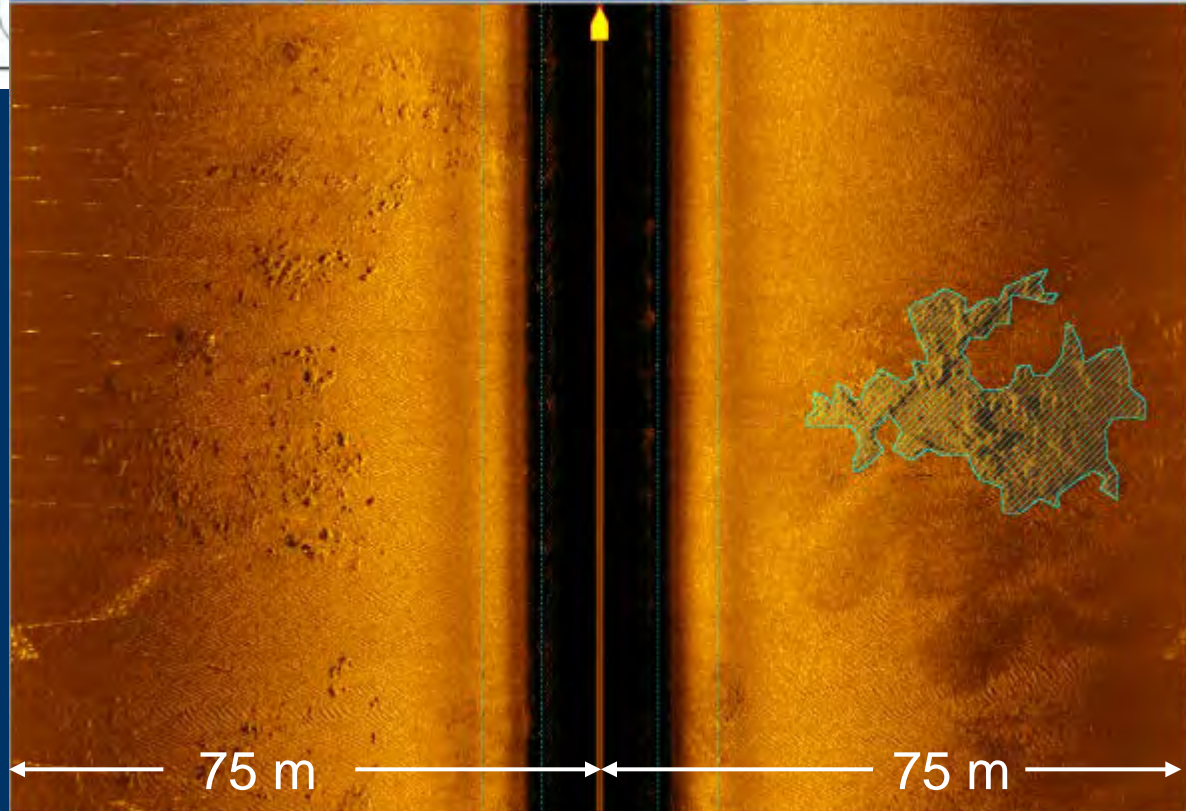
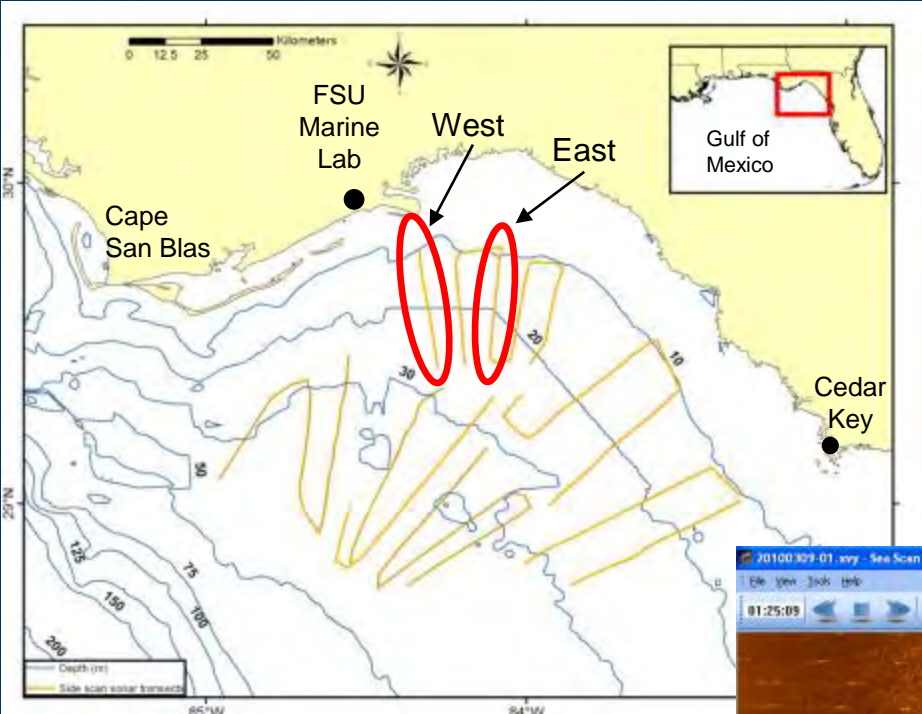


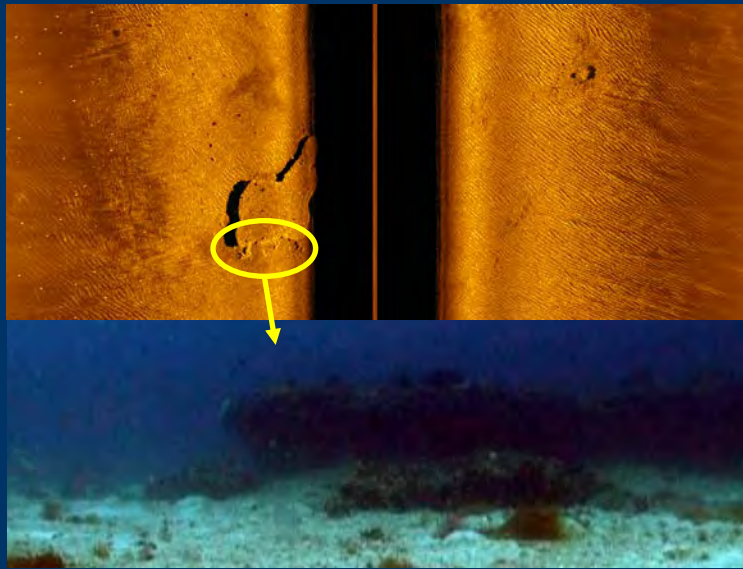
Vermilion snapper hook & line



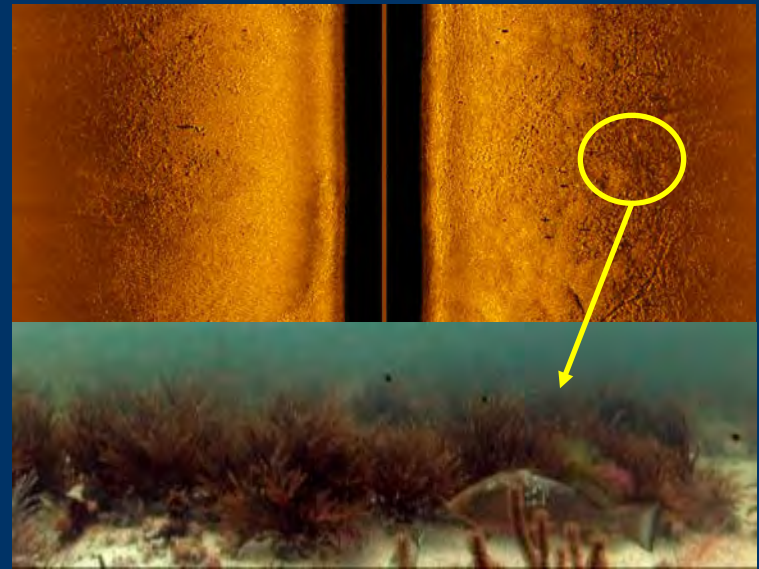
Bioimpedance



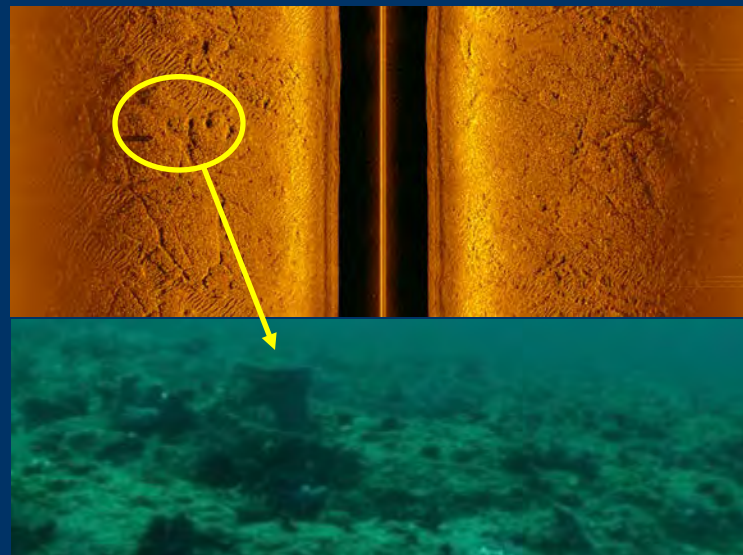




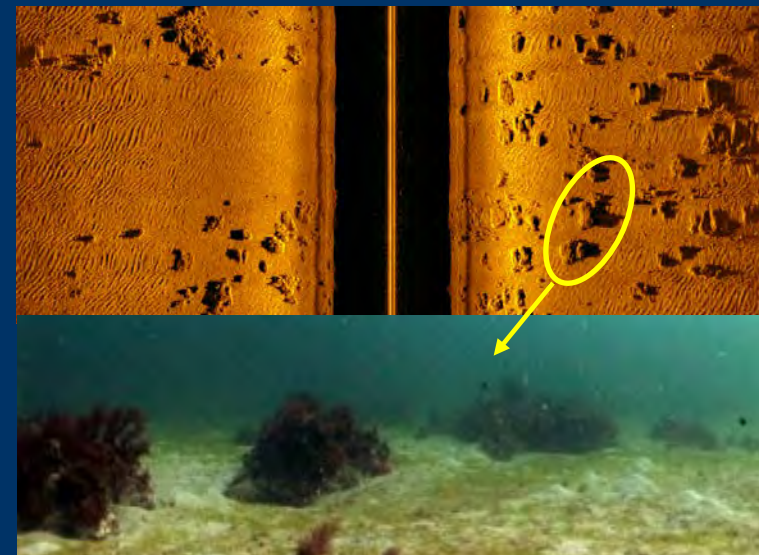
Ledge



Sponge/gorgonian



Pavement

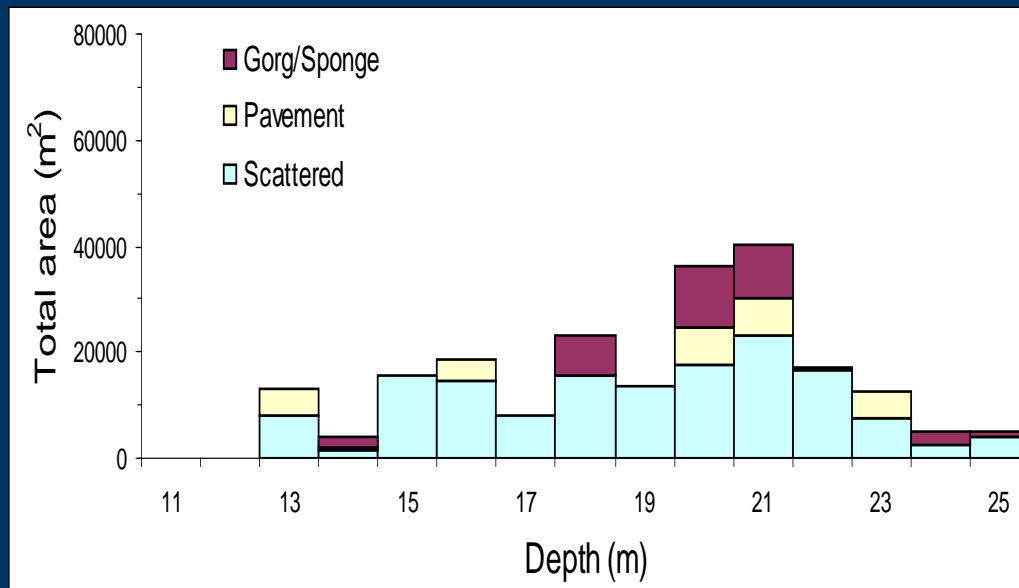
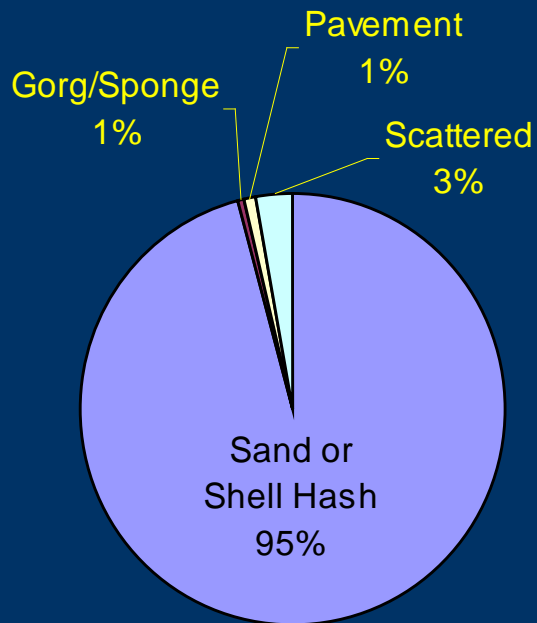


Scattered

Western

Total area : $1.9 \times 10^6 \text{ m}^2$

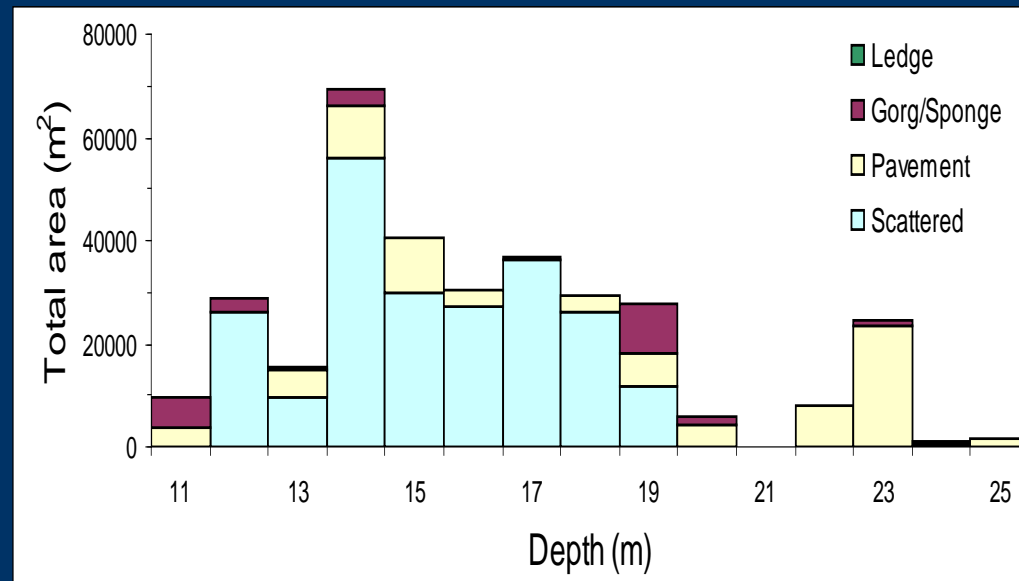
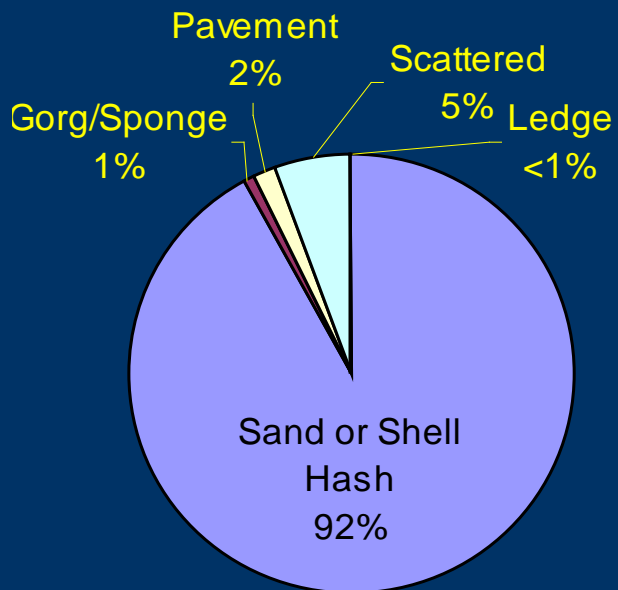
Mean patch: 2200 m^2



Eastern

Total area : $3.3 \times 10^6 \text{ m}^2$

Mean patch: 1400 m^2



Key Points

- Fish diversity was similar on high and low relief reefs within the 3x5's and between those and low relief midshelf reefs ~50 km NW.
- Community structure did differ noticeably between the high and low relief reefs within the 3x5's area.
- Modal sizes of red snapper and vermilion snapper were ~100 mm larger on 3x5's reefs than on the earlier NGI study low relief reefs.
- Preliminary BIA analyses hinted at higher condition in fishes on high relief 3x5's reefs than on the earlier NGI study low relief reefs.
- About 5% of 2 cross-shelf (11-25 m) transects in central Apalachee Bay was hard bottom reef habitat, but distribution varied between the two.

Acknowledgements

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