

# SHELFZ project: benthic invertebrates from nearshore to offshore in and around Barrow Canyon in the northeastern Chukchi Sea

Kimberly Rand<sup>1</sup>, Elizabeth Logerwell<sup>1</sup>, Seth Danielson<sup>2</sup>, and Leandra Sousa<sup>3</sup>

<sup>1</sup>NOAA Fisheries, Alaska Fisheries Science Center, Seattle, WA

<sup>2</sup>University of Alaska Fairbanks School of Fisheries and Ocean Sciences, Institute of Marine Science, Fairbanks, AK

<sup>3</sup>North Slope Borough Department of Wildlife Management, Barrow, AK

## Why

The SHELFZ survey was the first nearshore (< 20 m) to offshore (> 20 m) comprehensive sampling effort in the northeast Chukchi sea (fish, zooplankton, oceanography, and invertebrates).

## How

Bottom sampling offshore used an 83-112 otter trawl net (34 m footrope). Bottom sampling nearshore used a plumb staff beam trawl (5 m footrope) (beach seine data not shown). CTD casts were taken at all stations. Data exploration: ArcGIS was used for species composition, correspondence analysis on pre/abs, cluster analysis, and basic site oceanography.



Offshore vessel



Inshore vessel

## What

Offshore: 17 species of invertebrates made up 90% of the biomass (kg/ha) and was dominated by sea stars (*Gorgonocephalus arcticus*) and sea cucumbers (*Psolus peroni*) (Fig A). Clustering was done on the first 2 comp from the CA analysis for pre/abs of inverts reveals some species (or groups) were not present in Barrow Canyon (Figs B and C). The 3 species furthest on the axis in the CA analysis were plotted by CPUE (Fig D). In general, the greatest portion of biomass for all 3 species occurs less than 80 m (*Psolus* doesn't occur >60m). The spatial distribution of all 3 species does not overlap in space (Figs B and E). The temperature and salinity profiles for the western most transect shows a stable bottom temp and salinity during this time period (Fig F). The nearshore invertebrates were dominated by shrimps and sea stars (Fig G).

## Next

Continuing to explore the offshore invertebrate community (CPUE) and begin analysis on the nearshore community (distribution, CPUE?) along with oceanographic variables.

### Acknowledgements

CIAP-USFWS, R/V *Ukpik* Captain Mike Fleming and F/V *Alaska Knight* Captain Vidar Ljung and crew, Brian Person, Todd Sformo, Hugh Olemaun, Andy Whitehouse, Troy Buckley, Darcie Neff, Roger Clark, Bill Koplin, Arnold Arey, NSB-DWM, AFSC RACE Groundfish Assessment Program

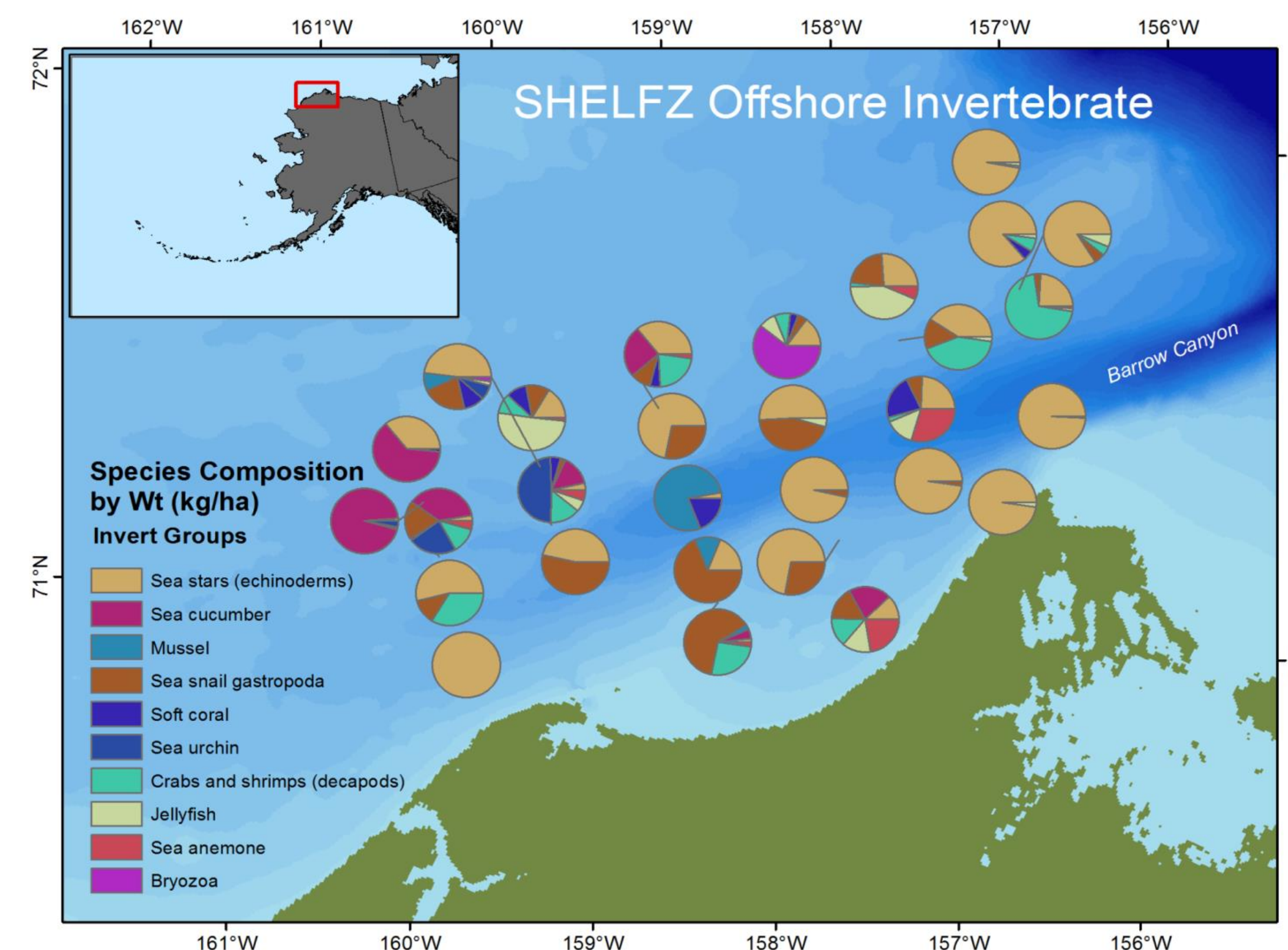


Fig A Species composition for the offshore bottom trawls.

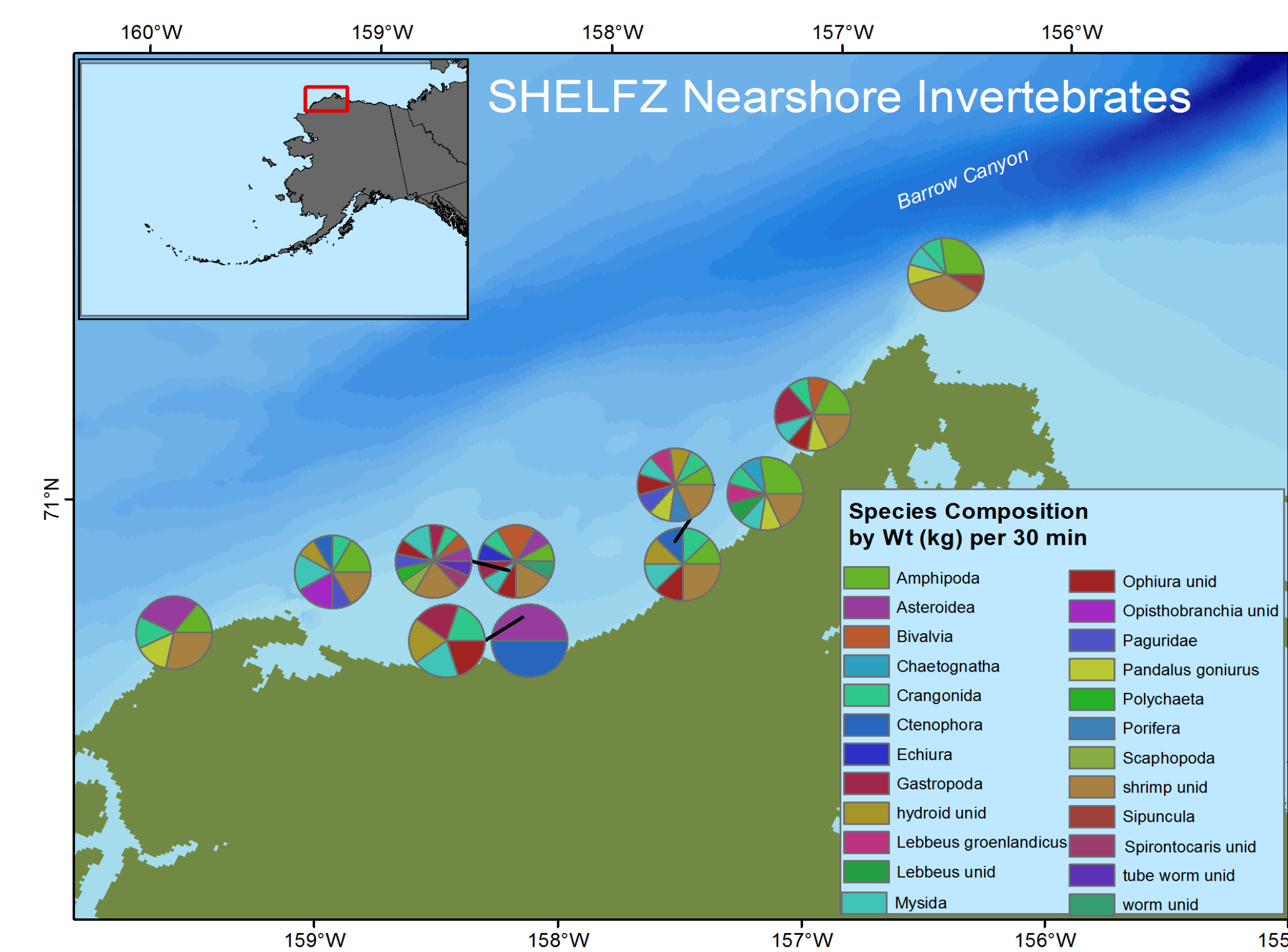


Fig G Species composition for the nearshore invertebrates, purse seine only.

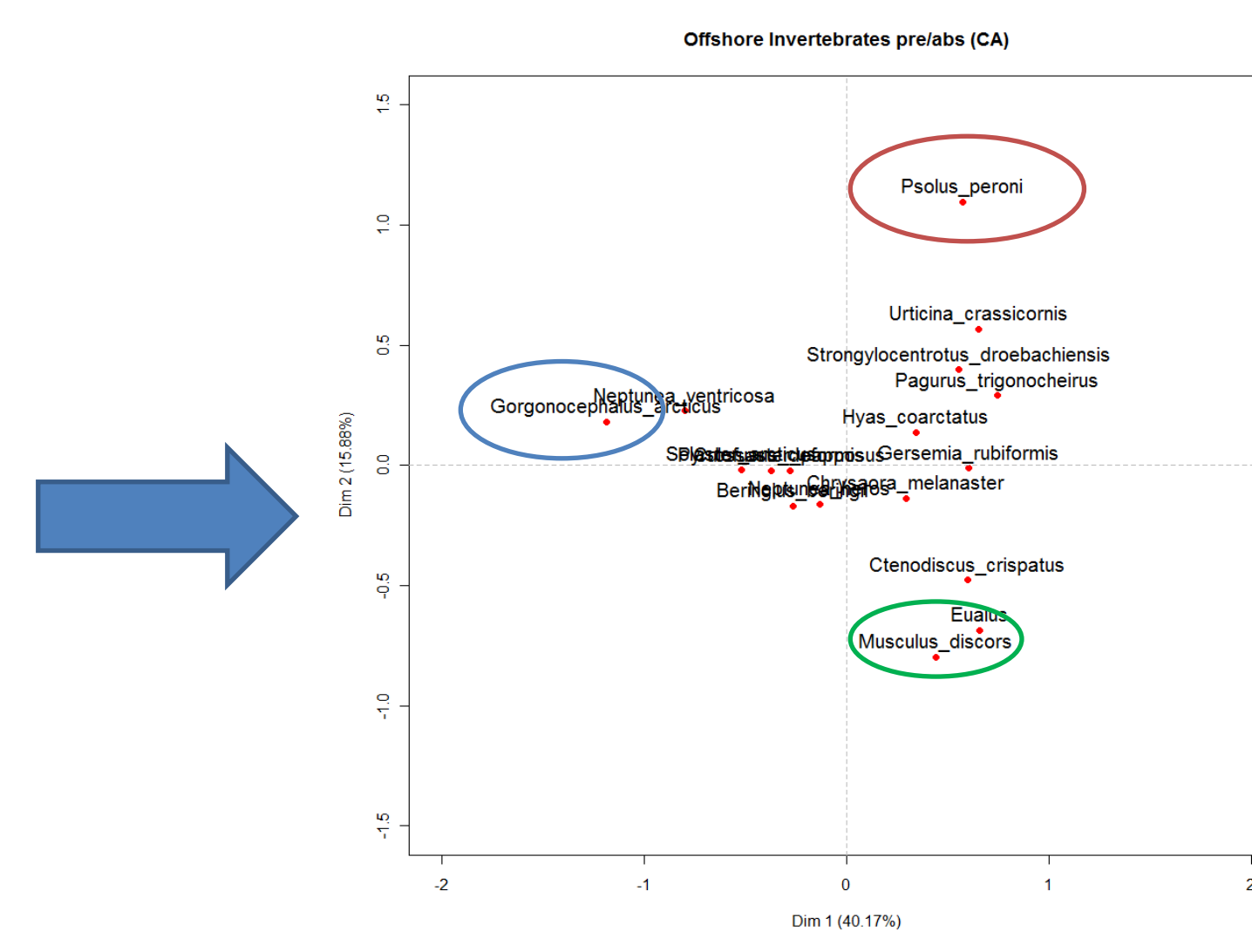


Fig B CA analysis results for the offshore presence/absence of the dominant 17 species groups.

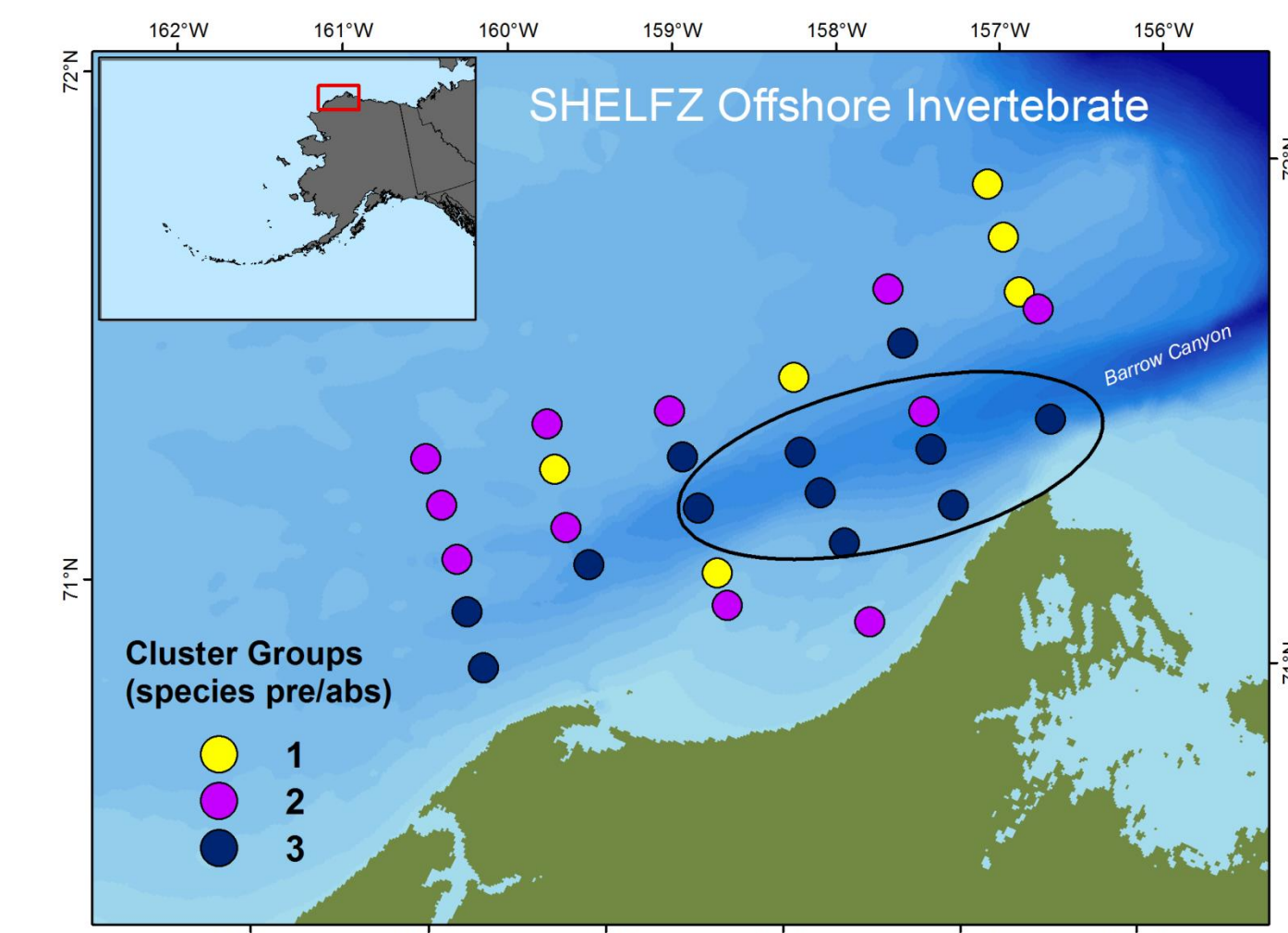


Fig C Results of the clustering on the 2 comp from the CA analysis. Cluster's 1 and 2, in general, are not found in the canyon.

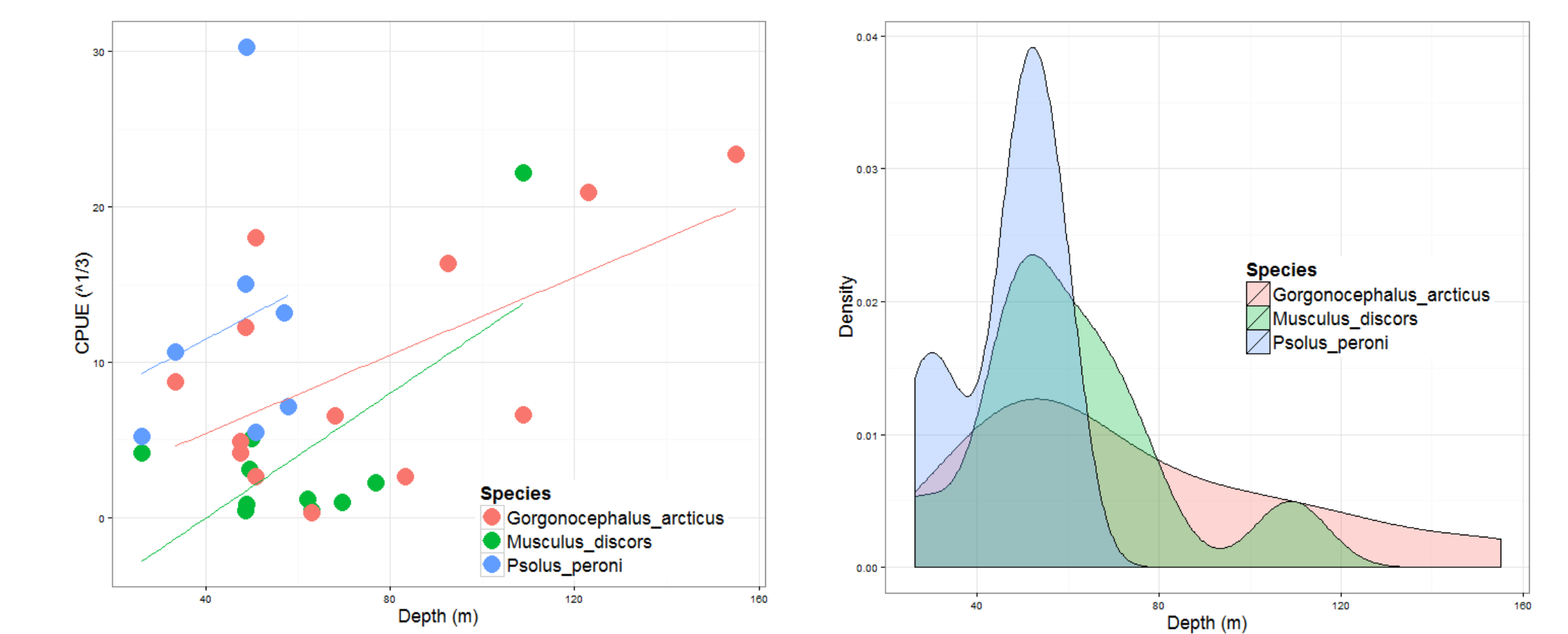


Fig D Scatter and density plot for CPUE of 3 species from the CA analysis. The highest CPUE occurring at depths less than 80 m.

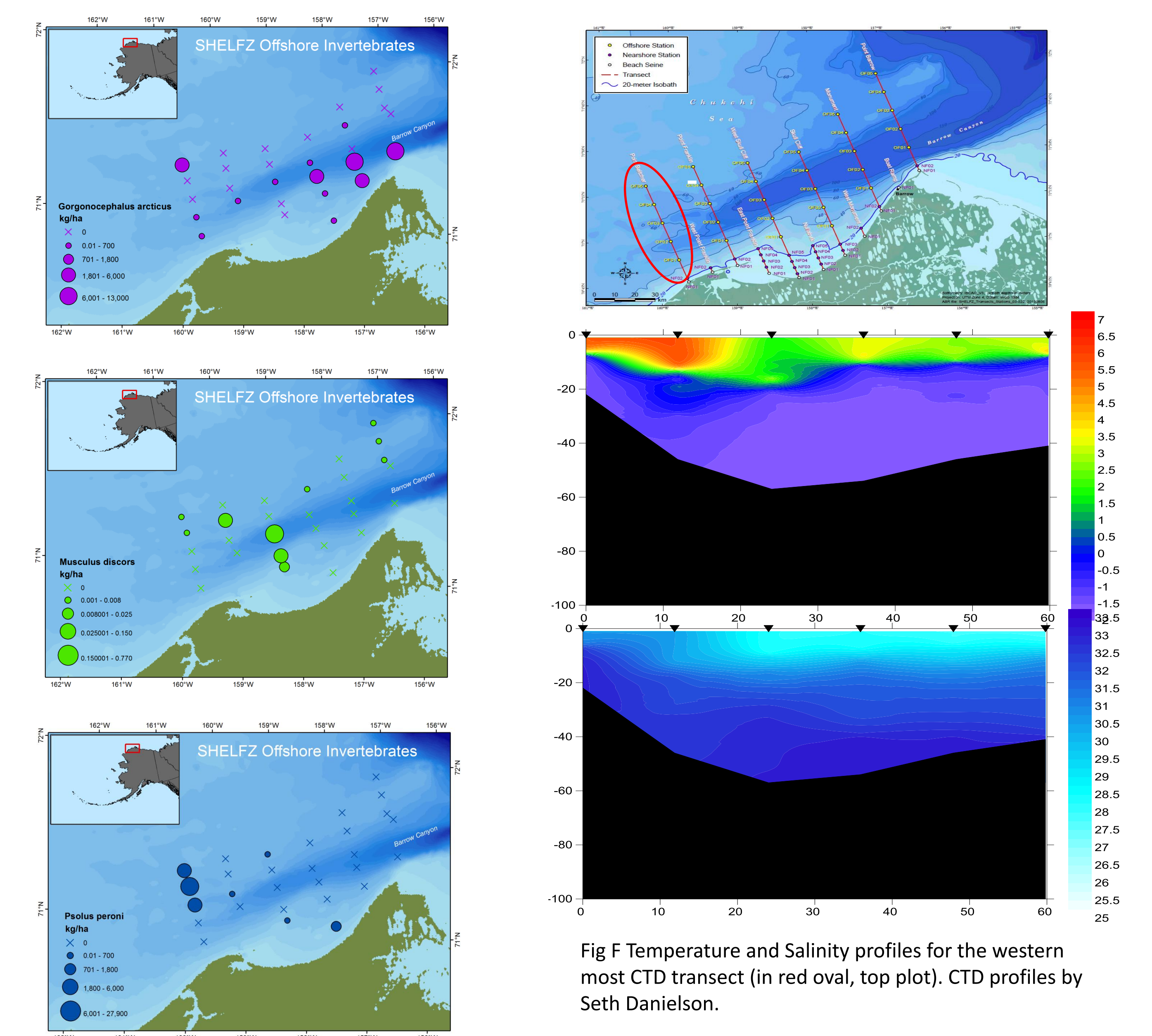


Fig E CPUE distribution maps of the 3 species from the CA analysis. In general, all 3 species only occur at depths less than 80 m, on the shelf.

The recommendations and general content presented in this poster do not necessarily represent the views or official position of the Department of Commerce, the National Oceanic and Atmospheric Administration, or the National Marine Fisheries