Seagrant: Understanding climate impacts on the Maine coastal fish and invertebrate community through synthesis of the Maine-New Hampshire Inshore Trawl Survey

Project Description

From the proposal:

> The overarching goal of this research is to synthesize data collected through the Maine-New Hampshire Inshore Trawl Survey to understand how climate change, fishing, and other environmental drivers are impacting key fish and invertebrate communities in coastal Maine waters.

Objective 1

- Analyze changes in biodiversity in space and time and evaluate associations with environmental factors and fishing
- To be rerun with updated Maine DMR data

Analysis

- biodiversity metrics/ maps
- GAMMs

Data

- Will double check that all necessary data is available in data folder

Scripts

- See Ashley's code folder for scripts
- pulled relevant scripts from original Seagrant directory

Objective 2

- Identify species groups and assess changes in habitat suitability if functional groups and communities in space and time

Analysis

- removed shrimp and other unimportant invertebrates from top 50 species analysis
- feeding guilds from NOAA IEA definitions (https://noaa-edab.github.io/tech-doc/aggroups.html)
- stratified mean for NMDS convergence and simplified plotting using NOAA IEA procedure (https://noaa-edab.github.io/tech-doc/inshoresurvdat.html#data-analysis-29)
- Bray-Curtis dissimilarity matrix for NMDS and anosim/adonis

Data

- raw data from Maine DMR portal (https://mainedmr.shinyapps.io/MaineDMR_Trawl_Survey_Portal/) (MaineDMR_Trawl_Survey_Catch_Data_2021-05-14.csv)
- old data (full-me-dmr-expcatch.csv)
- species with feeding guild designation (species_groups.csv)
- 4 community matrices for top 50 species and functional groups (biomass and abundance) - output from ME_trawl_NMDS_species_7.21.R and ME_trawl_NMDS_groups_7.21.R saved for future use in Rmarkdowns or NMDS so you don't have to run beginning cleaning code

Scripts

- set up with here function, so directory paths should work on any computer
- Scripts located in code subfolder of objective 2 folder
- Scripts that end in 7.21 are updated scripts from July 2021, the older versions are saved and have more versions of plots but are pretty messy
- basic plotting that is not for NMDS in ME_trawl_plots.R
- old script (ME_trawl_NMDS.R) went with the old data and trying out different NMDS plots
- Pretty self explanatory anosim_adonis_analysis_7.21.R
- NEFSC_NMDS_groups.R putting science center data into functional groups- not needed anymore
- All Rmarkdowns in subfolder

Objective 3

- Analyze joint distribution of key predator-prey species within the community, with a particular focus on lobster and cod
- contact Andrew Allyn (aallyn@gmri.org (mailto:aallyn@gmri.org)) for questions or code

Objective 4

- Evaluate how ecosystem changes align with shifts in diversity and composition of fishery landings over time in ports along Maine's coastline

Analysis

Data

- Landings data from DMR portal (https://mainedmr.shinyapps.io/Landings_Portal/)
- In data folder MaineDMR_Modern_Landings_Data_All.csv
- County and species specific landings 2008-2020
- 2006-2007 data from Rob Watts excel sheet JerelleJesse_06-07_Non-ConfidentialSpeciesByCounty_8-20-2021
- reformatted for csv MaineDMR_2006_2007_Landings.csv (rob.watts@maine.gov (mailto:rob.watts@maine.gov))

Scripts

- leverage objective 1 code to start

Contact

Jerelle Jesse (jjesse@gmri.org (mailto:jjesse@gmri.org))