**Data Files for Trawl data.**

AFSC trawl data: **“goa\_data.csv”**

Downloaded the Alaska Fisheries Science Center trawl data from an online portal (downloaded February 2015 by E. Ward)

<http://oceanadapt.rutgers.edu/download/>

We selected all years of data from the Gulf of Alaska (the “Raw Data” option). In this raw data file each row corresponds to the catch of a single species (or species group) in a standardized trawl tow. The location of the center of the tow is noted in latitude and longitude and other identifiers are provided (Station number, etc) as well as directly observed covariates (temperature, bottom depth, etc.). Note that because each line is the catch for a single species, a single tow will be noted on multiple rows of the data set.

We processed this file to create a data file with single tows as rows and columns representing the catch of individual species. The description of file processing can be found in “\_Processing GOA trawl survey data.doc”

# Points for making prediction in the Gulf of Alaska:

# “goa\_projection\_points+temp.csv”. This data is derived from the shapefiles found in the folder: “Gulf of Alaska 2 km grid shapefile” and from a script written by Ole Shelton “Temperature Map create.r”. The shapefile provides the regular grid for the gulf of Alaska and for the depth of the center of each shapefile. The script “Temperature Map create.r” generates a projected bottom temperature for each of these grid cell centers. It does this by fitting a GAM to the observed temperature during the trawl survey (using a spline on log(depth) and tensor spline on the interaction of latitude and longitude. Each year has a unique temperature map and so it has a distinct temperature column for each observed years.

This characteristics of the shape file are a derived product created by Blake Feist (NWFSC). Every row represents the center point of a 2x2km grid that spans the entirety of the Gulf of Alaska ecosystem from 0m depth to 1000m depth (>100,000 points in total). All of the observed trawl locations are covered by this grid. This is a description of the generation of the grid (modified from appendix in Shelton et al. CJFAS 2014).

We first generated a gridded (2x2 km) coast-wide map of the model spatial domain. The north/south extents of the domain approximated the U.S. border, while the shoreline and seaward boundaries were defined by a vector shoreline geospatial datalayer (NOAA 2001), and the 1,000 m isobath (3-arcsecond grain, [~86 m] NOAA 2003), respectively. We created the 2x2 km gridded polygon datalayer using “Generate Regular Points in ArcMap”, which is a Hawth’s Tools ArcGIS tool that runs in ArcMap (v. 9.3.1). We overlaid this gridded domain with the depth data habitat covariate datalayers and calculated the corresponding values for each of the grid cells. Since depth is were continuous variables, each was expressed as an area weighted mean (AWM) for each of the grid cells.

References:

NOAA (National Oceanic and Atmospheric Administration). 2001. U.S. Vector Shoreline Derived from NOAA Nautical Charts. NOAA's Ocean Service, Office of Coast Survey (OCS), Silver Spring, MD.

NOAA (National Oceanic and Atmospheric Administration). 2003. U.S. Coastal Relief Model - Northwest Pacific. National Geophysical Data Center, NESDIS, NOAA, U.S. Department of Commerce, Boulder, CO.