**Survey\_desgign.r**

**Purpose**  This is the proposed workhouse function for getting the tow locations for the offshore survey. This works for all banks (except Banquerou).

**Version Control**  This is a DK original, there are scripts this is based upon that do similar things, but this is better, just ask me I’ll tell ya…

**Required packages** PBSmapping (the locally derived functions have their own package needs as well)

**Locally Derived Functions**

1. alloc.poly.r
2. Relief.plots.r
3. genran.r
4. ScallopMap.r

**Section 1**

The initial bit of script is loading in the function and various csv files which include the survey polygons, seedbox information, and details about any extra tows. Runs through each bank, the banks with survey strata use alloc.poly to get the current years allocation of tows. The allocation settings for each bank is unique so if you need to tweak these you’d need to do this by hand in the alloc.poly call. The generated towlist can be saved as flat files for each bank and the resulting survey design can be plotted either to screen or to a file (png or pdf) using ScallopMap. For Middle and Georges Bank Spring survey the station allocation is fixed, the station locations are called in from a flat file and these can be plotted as needed.

For German Bank life is more complex as we have repeated tows on the bank. The pool of last years tows are pulled from the start location of the tows in the previous year (these are generated when you run SurveySummary\_data.r so should exist by the time you are designing the survey). Alloc.poly is used to get 60 new stations and pull out 20 repeated stations from last years pool of stations. The new station design can be saved to a csv file and plotted as needed. For German Bank only, once the stations are set you can also make relief plots which show the location of the proposed tow location with the bathymetry of the bank. These relief plots take a long time to produce so only run this if you are sure you want to create these.

***Argument(s)***

1. yr The year of interest for making survey design. Default is the current year

as.numeric(format(Sys.time(), "%Y"))

1. direct The directory to load/save all the data, Default is the network offshore

scallop "Y:/Offshore scallop/Assessment\_fns/"

1. export Do you want to export the survey design locations. T/F Default is F
2. seed If you want to reproduce results you can specify the random seed used

for allocating these. Default = NULL which will use R's internal random number generator functions to generate a seed.

1. plot Do you want to plot the results. T/F Default is T
2. fig Where do you want to plot the figures. Three options, includes the

default print to your "screen" optionally can do "pdf" or "png".

1. legend Add a legend to the figure. T/F Default is T
2. zoom Do you want to produce magnified maps for GBa tow locations. T/F

default is T

1. banks What banks do you want to run this on. Default banks are

"BBs","BBn","GBa","GBb","Sab","Mid","GB","Ger" (no option for Ban yet)

1. relief.plots For German bank do you want to make the "relief plots", note these take

a long time to make!!. T/F and default is F

1. digits For the relief plots this controls the smoothing of the surface. Basically

this says how many digits to retain in the X and Y locations. Default is 4 (which is very detailed, using 3 makes a very smooth surface.)