# Purpose

This project creates seasonal detection-corrected abundance maps for use in OPP planning and response activities. The data includes all observations from ECSAS (regardless of DistMeth, InTransect, etc.). Detections functions are fitted and adjusted abundances aggretated on a per sample (ie. watch) basis. Watch abundances are then aggregated to a 1 x 1 km grid. Having a 1 km grid makes interpretation easy – abundance and density (birds/km^2) are the same thing.

# Notes

* Aerial data was generated by clicking each of “Query on-effort data” and “Query off-effort data” under the Aerial Switchboard.
* One layer will be “all seabirds and waterfowl” combined – could just do an omnibus ddf with Alpha & FlySwim for covars
  + Also need to think about ship vs plane – maybe just stick with the approach I’ve been using so far in Atlantic DSM project.
* Not sure how to structure other output most efficiently:
  + One raster per species code is easiest but makes for a lot of rasters (and need to think about combining unidentified taxa with identified (UNMU, TBMU, COMU in murres).
  + IF output is a shapefile, it could have a text field like: TBMU: 10, GLGU: 24, etc.
  + Consult with Lena after doing ddfs??

# TODO

* DONE Figure out how to combine all species into a single shapefile – 1 each for each season and 1 for year round
* DONE Create a new rmd document that builds a table showing every species, its membership in Seabirds and Waterbirds, and how many obs and in what years. Should this use raw data or aggregated??
* DONE April 4th: Figure out why shapefile now has **ALL** zero entries for Sbrd and Wbrd for all points. Soln: I changed the capitalization of Sbrd and Wbrd but didn’t fix it in the code.
* Add aerial data
* Do distance sampling
* Add Quebec data
* Do summary by IMRP Atlantic region

# Progress

2025-04-01: Got create\_grid working and first try at aggregating all seabirds and all waterbirds but without any distance sampling.

2025-04-03: finish aggregating all species into a single seasonal shapefiles with 3 fields per species giving total, n\_obs, and years.

2025-04-09: working on integrating aerial