Overview of files to run matlab code for the paper, "A generalizable energetics-based model of avian migration to facilitate continental-scale waterbird conservation"

Six files are needed to run the model described in the article.

The main code (**File #1**), either "FULL_NA_mig_BIRD_sens_fall.m" or "FULL_NA_mig_BIRD_sens_spring.m". Either of these contains the main matlab code to run either a fall southwards migration or spring northwards migration. To run the code, one needs the mapping toolbox and some functions called from a toolbox created by Richard Strauss of the Texas Tech University (http://www.faculty.biol.ttu.edu/Strauss/Matlab/matlab.htm - I used the Res6 toolbox). In the code, the term "node" describes a 32km x 32km stopover site.

The main code reads input data on the land cover ("NA_NODE.xlsx" – **file #2**) as well as the breeding and non-breeding locations of mallards and the breeding population survey data from USFWS all summarized at the stopover site scale as described in the manuscript ("NorthAmeerica_20mi_grid_wAK_BPOP_NSmallard_join.shp" – **file #3**). Because we ran sensitivity analysis on mallard life-history parameters, there is also an excel file that has 500 different parameter sets used to run the model ("parameter_scenarios.xlsx" – **file #4**).

Using the input data, the main code calls the movement function ("runflywaymodel_sens.m" – **file #5**) and within the movement function is sub-function ("simpleMarkovMigrationModel.m" – **file #6**) which together perform the quantitative model described in the manuscript.