Saracco, J. F., Pyle, P., Kaschube, D. R., Kohler, M. Godwin, C. M., and K. R. Foster. Demographic declines over time and variable responses of breeding bird populations to human footprint in the Athabasca Oil Sands Region, Alberta, Canada. *Ornithological Applications*

Data S1. R script and data files to model demographic trends and responses to disturbance for an assemblage of 31 bird species in the Athabasca Oil Sands Region of Alberta, Canada.

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File list

`BMAPS_fp_trends.R`

`HF_class_proportions_1kmBuffer_2018.csv`

`HF_class_proportions_5kmBuffer_2018.csv`

`lookup-hf-class.csv`

`capdat.rds`

ch.rds

stadat.rds

tc.csv

File descriptions

BMAPS_fp_trends.R. R script that loads and describes datasets, formats data for JAGS models, writes JAGS models to files, and runs models. Also includes code for summarizing the posterior distributions and recreating tables and figures included in the paper.

HF_class_proportions_1kmBuffer_2018.csv. Human footprint proportion for each of 20 disturbance classes within 1 km of the centers of 38 Monitoring Avian Productivity and Survivorship (MAPS) stations included in analyses. Values were based on 2018 data (see https://www.abmi.ca/home/data-analytics/da-top/da-product-overview/Human-Footprint-Products/HF-inventory.html for more detail).

HF_class_proportions_5kmBuffer_2018.csv. Human footprint proportion for each of 20 disturbance classes within 5 km of the centers of 38 MAPS stations included in analyses. Values were based on 2018 data (see https://www.abmi.ca/home/data-analytics/da-top/da-product-overview/Human-Footprint-Products/HF-inventory.html for more detail).

lookup-fp-class.csv. Metadata for disturbance classes in the 2 files above. Note that all analyses included in the paper were based on proportions summed across all classes.

capdat.rds. R data set used for analyses of adult population index and productivity at MAPS stations. Column definitions are as follows:

STA: numeric station identifier

SPEC: 4-letter species code (see https://www.birdpop.org/pages/birdSpeciesCodes.php)

YEAR: year of operation

ad.ecov: adult effort covariate

yg.ecov: young effort covariate

RIcov: productivity effort covariate

AD: number of adult captures

YG: number of young captures

ch.rds. R data set with adult capture histories used for Cormack-Jolly Seber models of adult apparent survival and residency probabilities. Column definitions are as follows:

NUMB: unique species numeric code

SPEC: 4-letter species code (see https://www.birdpop.org/pages/birdSpeciesCodes.php)

STA: numeric station identifier

BAND: band number

AGE: 1 = after hatching year; 5 = second year; 6 = after second year; 7 = third year; 8 = after third year

SEX: M = male; F = female; U = unknown

Y1-Y10: Year indicators 1 = captured; 0 = not captured; NA = station not operated

MARKED: pre-determined residency indicator (1 = captured 2 or more times >= 6 days apart in year of marking; 0 = captured once or more than once but < 6 days apart in year of marking)

first: year first captured

last: year last captured

`stadat.rds`. Station location and covariate data. Column definitions are as follows:

STATION: 4-character station identifier

STA: numeric station identifier

NAME: station name

DECLAT: latitude of approximate station center in decimal degrees

DECLNG: longitude of approximate station center in decimal degrees

YRSOP: number of years of station operation

tc: MODIS tree cover percentage

fp1.2018: 1-km radius human footprint proportion in 2018

fp5.2018: 5-km radius human footprint proportion in 2018

fp5.2010: 5-km radius human footprint proportion in 2010

fpdif: change in footprint between 2010 and 2018 (fp5.2018 - fp5.2010)

`tc.csv`. Moderate Resolution Imaging Spectroradiometer (MODIS) treecover data at MAPS stations averaged across adult captures for each bird species. Data were derived from the Vegetation Continuous Fields data product (MOD44B; https://lpdaac.usgs.gov/products/mod44bv006/). Column definitions are as follows:

SPEC: 4-letter species code

NUMB: unique species number

tc: average station MODIS tree cover value for adult captures