eBird Status & Trends Metadata

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Upon annual update of the eBird Status and Trends web visualizations, three data products are available for download immediately from the eBird Status & Trends download page: 1) Regional range and abundance as tabular data (.csv); 2) Range map (raw) as spatial data (.gpkg); 3) Range map (smoothed) as spatial data at both 9km and 27km resolutions (.gpkg). Six months after the annual update of the eBird Status and Trends web visualizations, the latest version of the more detailed data products behind the web visualizations are made available via a data access request on the eBird Status & Trends download page and downloaded through the *ebirdst* R package.

The eBird Status & Trends FAQ page will be helpful for understanding the modeling and statistics behind these analyses and the Technical Report. Please also read that page to understand how the seasons were defined for each species.

Please see our Recommended Citation for the best way to cite these products.

Below we provide information on the species taxonomy, a guide for using and understanding each of these products, and a Terms of Use.

TAXONOMY – We use the eBird/Clements taxonomy for the species-level taxonomy and nomenclature for eBird. The eBird/Clements taxonomy page has more information, including downloadable versions.

REGIONAL RANGE AND ABUNDANCE AS TABULAR DATA

Range and abundance stats can be downloaded for all selected species as tabular data. This CSV file includes a number of statistics related to range and abundance calculated within countries, territories, dependencies, and their subregions.

Tabular data can be viewed on the eBird Status & Trends pages under Regional Stats and is available for download from the eBird Status & Trends download page.

The tabular output is available for two types of regions: countries, territories, and dependencies and their subregions. The tabular data file is downloadable as a CSV file

and includes a distinct row for each species and region and season combination. The columns are as follows:

species_code – Unique alphanumeric code, usually six-letters, used to identify the species in the eBird database. These codes are used in most URLs from eBird, including eBird Status & Trends products.

taxon_order – The numeric value assigned to this taxon in the eBird/Clements taxonomy to arrange the species in the latest taxonomic sequence.

common_name – The primary English common name of the species in the eBird/Clements taxonomy.

scientific_name – The scientific name of the species in the eBird/Clements taxonomy.

version_year – The version year for the eBird Status & Trends products.

region_type – Two possible values: country or state (subregion).

region_code – The alphanumeric code of the country or state.

region_name – The name of the country or state.

region_area_km2 – The area of the region in square kilometers.

season_name – The name of the season with the following possible values: breeding, nonbreeding, postbreeding_migration, prebreeding_migration, or year_round. Note that in the Northern Hemisphere these correspond roughly to summer, winter, fall migration, and spring migration. Each season definition is unique to the species and defined through expert review. Breeding and nonbreeding are primarily stationary periods, prebreeding migration is the period of migratory movement as birds return to the breeding grounds, and postbreeding migration is the period of migratory movement as birds depart the breeding grounds.

start_dt – The start date for the season in ISO format (i.e. YYYY-MM-DD).

end_dt – The end date for the season in ISO format (i.e. YYYY-MM-DD).

abundance_mean – The average (mean) estimated relative abundance within the selected region for a given season.

total_pop_percent – This percentage is calculated as the sum of the estimated relative abundance within the selected region divided by the sum of the estimated relative

abundance, given that a majority of a species' entire range has been modeled for a particular season.

range_percent_occupied – The percentage of the selected region within the range boundary of a species for a given season.

range_total_percent – This percentage is calculated as the fraction of a species' total range that falls within the selected region, given that a majority of that species' range has been modeled for a particular season.

range_days_occupation – Days of occupation is calculated as the number of days that a species occupies the selected region, with occupation being defined as spatially covering the selected region by at least 10% based on estimated relative abundances averaged across the given season.

RANGE MAP AS SPATIAL DATA

Range maps are provided as spatial data and are available for download from the eBird Status & Trends download page. Two types of range maps are provided with each download: Range Map (raw) and Range Map (smoothed). The smoothed versions are provided at both medium resolution ("mr" or 9km) and low resolution ("lr" or 27km).

Range boundaries are defined by statistically analyzing model estimates for how many times, at a given location, a species is expected to occur on a Traveling Count starting at the optimal time of day with the optimal search duration and distance that maximizes detection of the species in a region. We have set a range boundary threshold such that a species is estimated to occur at a rate of 10% or more for at least one week within each season. With a threshold defined, we use the 2.96km x 2.96km grid cell data at which the predictions are made, aggregate to 8.89km x 8.89km ("mr") or 26.7km x 26.7km ("lr") grid cells and then use a smoothing algorithm to create aesthetic, easy-to-read boundaries. **Range Map (smoothed)** gives these smoothed, aggregated boundaries while **Range Map (raw)** gives the original, unsmoothed 8.89km grid cell boundaries. For more detail about range boundary definition, please read the supplementary material in https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/eap.2056 .

Each GeoPackage file includes vector data of each species' range and has two layers: "range" shows the range boundary and "prediction_area" shows the area within which predictions were made. Each layer has up to four multipolygon features, one for each season (breeding, nonbreeding, prebreeding migration, postbreeding migration, or year round). Seasons that did not pass expert review are not included.
Each layer has the following attribute data:

species_code – Unique alphanumeric code, usually six-letters, used to identify the species in the eBird database. These codes are used in most URLs from eBird, including eBird Status & Trends products.

scientific_name – The scientific name of the species in the eBird/Clements taxonomy.

common_name – The primary English common name of the species in the eBird/Clements taxonomy.

version_year – The version year for the eBird Status & Trends products.

layer – The name of the layer, either "range" or "prediction_area".

season_name – The name of the season with the following possible values: breeding, nonbreeding, postbreeding_migration, prebreeding_migration, or year_round. Note that in the Northern Hemisphere these correspond roughly to summer, winter, fall migration, and spring migration.

start_dt – The start date for the season.

end_dt – The end date for the season.

area_km2 – The total area of the range polygon is square kilometers.

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   b. **eBird Status Data Products**: Data Products underlying the visualizations are available through the R package *ebirdst*. These data products, which are generated by a team of data scientists and statisticians at the Cornell Lab of Ornithology, describe estimates of seasonal species ranges, seasonal relative abundance, weekly relative abundance, and habitat associations.

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Email: ebird@cornell.edu
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