**METHODS**

Assumptions

* The data for all metrics is accurate and complete to the extent possible (i.e. relocations weren’t missed)
* 100% of the birds that occurred were present for 100% of their stay within a given home range
* All days and sites provide an equal number of opportunities to detect birds
* The orientation, timing and distance of migrations in a population of a given species are normally distributed

***Group-Focused***

* Build and optimise model of occurrence for each group where applicable (Nearctic landbirds, Nearctic waterbirds, wildfowl, seabirds, northern & eastern Europe, Mediterranean and southern Europe, East Asia, Balkans and Central Asia, Pacific waterbirds, Arctic species)
* Discuss potential mechanisms of arrival after modelling

***Species-Focused***

**At A Glance**

* Number of records – terminal numerical record ID **or** BBRC value
* Trend – regression analysis (linear/polynomial/other) of occurrence data and/or the rolling average dependent on evidence of cyclicality. Categorisation determined by significance level of the regression model.
  + Decreasing – negative, p<0.05
  + Probably decreasing – negative, 0.05<p<0.2
  + Uncertain, possibly decreasing – negative, 0.2<p<0.4
  + Stable – linear, p<0.05
  + Probably stable – linear, 0.05<p<0.2
  + Uncertain, possibly stable – linear, 0.2<p<0.4
  + Increasing – positive, p<0.05
  + Probably increasing – positive, 0.05<p<0.2
  + Uncertain, possibly increasing – positive, 0.2<p<0.4
  + None– p>0.4
* Relocation coefficient (CR) – the probability of a given bird being relocated a tangible distance away from the home range it initially occupies – involves total number of records, proportion of birds relocating at least once, and the mean number of relocations performed **by birds undergoing relocation**; excludes birds repeatedly returning to the same home range, and birds tracked on active migration (in this instance a relocation is counted per “migratory journey” it makes; the 2011 Sandhill Crane would have 3 relocations – Aberdeenshire to Lothian, Lothian to Norfolk and Norfolk to Suffolk); includes birds which relocate to a different home range in a subsequent season or year (e.g. 1981/82 Hudsonian Godwit, 2021-23 Elegant Tern)
* Fidelity coefficient (CF) – the probability of a given bird returning to the same home range in which it was initially discovered **in a year or season subsequent to the one it was discovered in**; involves total number of birds, the proportion which return, the number of years they return for and the duration for which they return each time.
* Stay length coefficient (CD) – mean stay length in a given home range weighted against the number of records and the relocation coefficient (CR)
* Irruption coefficient (CI) – Shannon index value of records by year
* Variability coefficient (CV) – standard deviation of yearly occurrence data divided by the mean
* Sex ratio – male:female ratio of birds successfully sexed (report total and ratio of predominant sex as a percentage)
* Mortality coefficient (CM) – the probability that a given bird will be found dead over the course of its stay; involves total number of birds and an indeterminate metric accounting for whether birds are found dead, dying/moribund, or birds that die after a period of stay (which is itself accounted for); **only includes birds killed by natural causes**.
* Regional occurrence heterogeneity (HR) – Shannon index of records by recording area
* Site-specific occurrence heterogeneity (HS) – Shannon index of records by site/local area
* Temporal occurrence heterogeneity (HT) – Shannon index of records by date

**Analysis by Location**

***Records Maps***

* **Interactive map of all records**
* **Cluster map of records by recording area**
* **Records List**

***Graphs***

* Changes in latitude over time
* Changes in longitude over time
* Forecasting (for obvious trends)

**Analysis by Time**

* Year graph Tableau
* Arrival date graph Tableau
* Change in seasonal and/or universal arrival date over time R
* Change in arrival date by location
* Change in arrival date by age
* Change in arrival date by sex
* **Forecasting**

**Length of Stay**

* **Length of stay graph Tableau**
* Change in length of stay over time Tableau
* Change in length of stay by location (Tableau on map, R on graph)
* Change in length of stay by age
* Change in length of stay by sex
* Forecasting Python

**Other**

* **Graph by age Tableau**
* **Graph by sex Tableau**

**Discussion**

* Give cool back stories/facts to the records
* Ringing recoveries
* Discuss potential causes/underlying explanations for the trends

**Tasks Tomorrow**

* Calculate remaining statistics
* Length of stay analysis