Bird Monitoring Project: Insights Report

1. Project Overview

This analysis compares bird observations from forest and grassland habitats, using cleaned and preprocessed datasets, exploratory data analysis in Python, and a visual dashboard to highlight trends in species diversity, abundance, and environmental factors.

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2. Data Preparation

- Combined and cleaned separate Excel datasets for forest and grassland sites.
- Standardized column names, removed duplicates and empty records, and converted ranges (e.g., interval lengths) to numeric values.
- Categorized environmental variables (temperature/humidity) and formatted date/time columns for analysis.

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3. Exploratory Data Analysis (EDA)

- Calculated summary statistics for both habitats: total observations, unique species, and survey coverage.
- Identified dominant and rare species, and compared species overlap between forest and grassland.
- Analyzed spatial (site-level) and temporal (monthly, daily) trends, including peaks in observation counts.
- Explored relationships between bird activity and environmental conditions.

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4. Dashboard Highlights

- Summary cards: Displayed total forest and grassland observations, unique species, survey sites, and extremes of temperature/humidity.
- Bar charts: Top 25 observed species and species counts per plot.
- Proportion chart (donut): Showed the share of each species in total observations.
- Temporal trend: Visualized changes in observation numbers over the survey period.
- Filters: Enabled exploration by temperature category, site, and time.

5. Key Insights

- Forest and grassland habitats supported a diverse bird community, with [insert actual numbers from dashboard] unique species recorded.
- A small number of species accounted for most observations, while several others were habitat-specific.
- Bird abundance varied notably by site, survey date, and environmental conditions (temperature, humidity).
- Morning surveys generally yielded the highest counts.
- Visualizations revealed seasonal and spatial peaks, guiding targeted conservation and monitoring.

6. Recommendations

- Focus conservation actions on sites with high diversity and abundance.
- Increase surveys or protection for less common or specialist species.
- Continue monitoring during times of high bird activity and favorable weather conditions.

7. Limitations

Some gaps in data coverage and environmental variables exist; further monitoring would improve understanding of seasonal and habitat-specific patterns.