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---
title: "PUC Weekly Bird Report"
author: "BirdWeather / PUC"
output:
  pdf_document:
    toc: false
    number_sections: false
fontsize: 11pt
geometry: margin=1in
---

``` r
knitr::opts_chunk$set(echo = FALSE, message = FALSE, warning = FALSE)

library(readr)
library(dplyr)

```

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##
Attaching package: 'dplyr'

The following objects are masked from 'package:stats':
##
filter, lag

The following objects are masked from 'package:base':
##
intersect, setdiff, setequal, union

```

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library(lubridate)
library(ggplot2)
library(forcats)

tz_local <- "Europe/Amsterdam" # adjust if needed

no_data <- FALSE
reason <- NULL

--- Robust path lookup for master_detections.csv ---

We try both from repo root and from scripts/ (one level below)
candidate_paths <- c(
 "data/master_detections.csv",
 "../data/master_detections.csv"
)

path_master <- NULL
for (p in candidate_paths) {
 if (file.exists(p) && file.info(p)$size > 0) {
 path_master <- p
 break
 }
}

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}

if (is.null(path_master)) {
 no_data <- TRUE
 reason <- paste(
 "Master file missing or empty. Tried paths:",
 paste(candidate_paths, collapse = ", ")
)
} else {
 df_raw <- read_csv(path_master, show_col_types = FALSE)

 # auto-detect species + time columns
 if (!all(c("timestamp", "species.commonName") %in% names(df_raw))) {
 no_data <- TRUE
 reason <- paste(
 "Expected columns 'timestamp' and 'species.commonName' not found. Columns present:",
 paste(names(df_raw), collapse = ", ")
)
 } else {
 df <- df_raw %>%
 mutate(
 species = .data[["species.commonName"]],
 ts_utc = ymd_hms(.data[["timestamp"]], quiet = TRUE),
 ts_local = with_tz(ts_utc, tz_local),
 date = as_date(ts_local),
 hour = hour(ts_local)
) %>%
 filter(!is.na(species), !is.na(ts_local))

 if (nrow(df) == 0) {
 no_data <- TRUE
 reason <- "No valid detections after parsing timestamps and species."
 } else {
 # define 7-day window based on latest date in data
 last_date <- max(df$date, na.rm = TRUE)
 start_date <- last_date - days(6)
 end_date <- last_date

 df7 <- df %>% filter(date >= start_date & date <= end_date)

 if (nrow(df7) == 0) {
 no_data <- TRUE
 reason <- paste(
 "No detections in the last 7 days of data (",
 as.character(start_date), "-", as.character(end_date), ")."
)
 } else {
 # global weekly metrics
 total_detections <- nrow(df7)
 unique_species <- n_distinct(df7$species)

 most_common <- df7 %>%
 count(species, sort = TRUE) %>%

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slice(1)

confidence if present
conf_col <- intersect(c("confidence", "score", "probability"), names(df7))[1]
avg_conf <- if (!is.na(conf_col)) {
 mean(df7[[conf_col]], na.rm = TRUE)
} else NA_real_

top 10 species
top10 <- df7 %>%
 count(species, sort = TRUE) %>%
 slice_head(n = 10)

BirdNET-style palette
birdnet_colors <- c(
 "#4e79a7", "#59a14f", "#f28e2c", "#e15759", "#76b7b2",
 "#edc949", "#af7aa1", "#ff9da7", "#9c755f", "#bab0ab"
)

order species for plotting
top10 <- top10 %>%
 arrange(n) %>%
 mutate(species = factor(species, levels = species))

time-of-day categories
df7_periods <- df7 %>%
 mutate(period = case_when(
 hour >= 0 & hour <= 4 ~ "Night (0-4)",
 hour >= 5 & hour <= 8 ~ "Dawn (5-8)",
 hour >= 9 & hour <= 11 ~ "Morning (9-11)",
 hour >= 12 & hour <= 16 ~ "Afternoon (12-16)",
 hour >= 17 & hour <= 19 ~ "Evening (17-19)",
 hour >= 20 & hour <= 23 ~ "Night (20-23)"
))

tod <- df7_periods %>%
 count(period) %>%
 mutate(period = factor(period, levels = c(
 "Night (0-4)", "Dawn (5-8)", "Morning (9-11)",
 "Afternoon (12-16)", "Evening (17-19)", "Night (20-23)"
)))

daily detection trends
daily_trend <- df7 %>%
 count(date) %>%
 arrange(date)

new species in this 7-day window
first_all <- df %>%
 group_by(species) %>%
 summarise(first_date = min(date), .groups = "drop")

new_this_week <- first_all %>%

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 filter(first_date >= start_date & first_date <= end_date) %>%
 left_join(
 df7 %>% count(species, name = "detections_this_week"),
 by = "species"
) %>%
 arrange(first_date)
 }
}

}
}
if (no_data) {
 cat("No data available for this weekly report.\n\nReason:\n", reason)
} else {
 summary_tbl <- tibble::tibble(
 Metric = c(
 "Total detections",
 "Unique species",
 "Most common species",
 "Detections of most common",
 "Average confidence"
),
 Value = c(
 total_detections,
 unique_species,
 most_common$species,
 most_common$n,
 if (!is.na(avg_conf)) sprintf("%.1f%%", avg_conf * 100) else "n/a"
)
)

 cat(
 "Period: ",
 as.character(start_date), " - ", as.character(end_date), "\n\n",
 sep = ""
)

 knitr::kable(summary_tbl, align = c("l", "r"))
}

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## Period: 2025-12-03 - 2025-12-09

Metric	Value
Total detections	2518
Unique species	44
Most common species	European Robin
Detections of most common	1827
Average confidence	79.1%

```

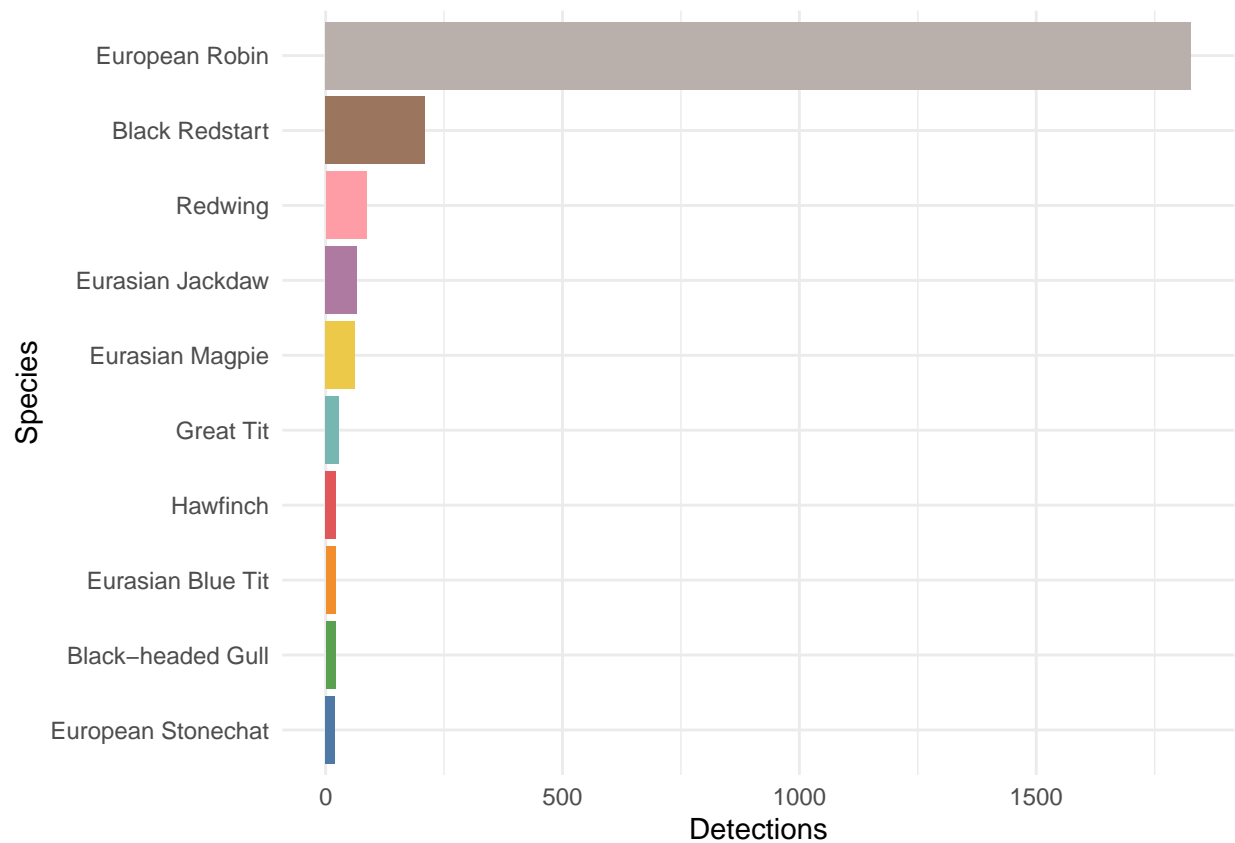
if (!no_data) {
 ggplot(top10, aes(x = species, y = n, fill = species)) +

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geom_col() +
scale_fill_manual(values = birdnet_colors) +
coord_flip() +
labs(
 x = "Species",
 y = "Detections"
) +
theme_minimal(base_size = 11) +
theme(legend.position = "none")
}

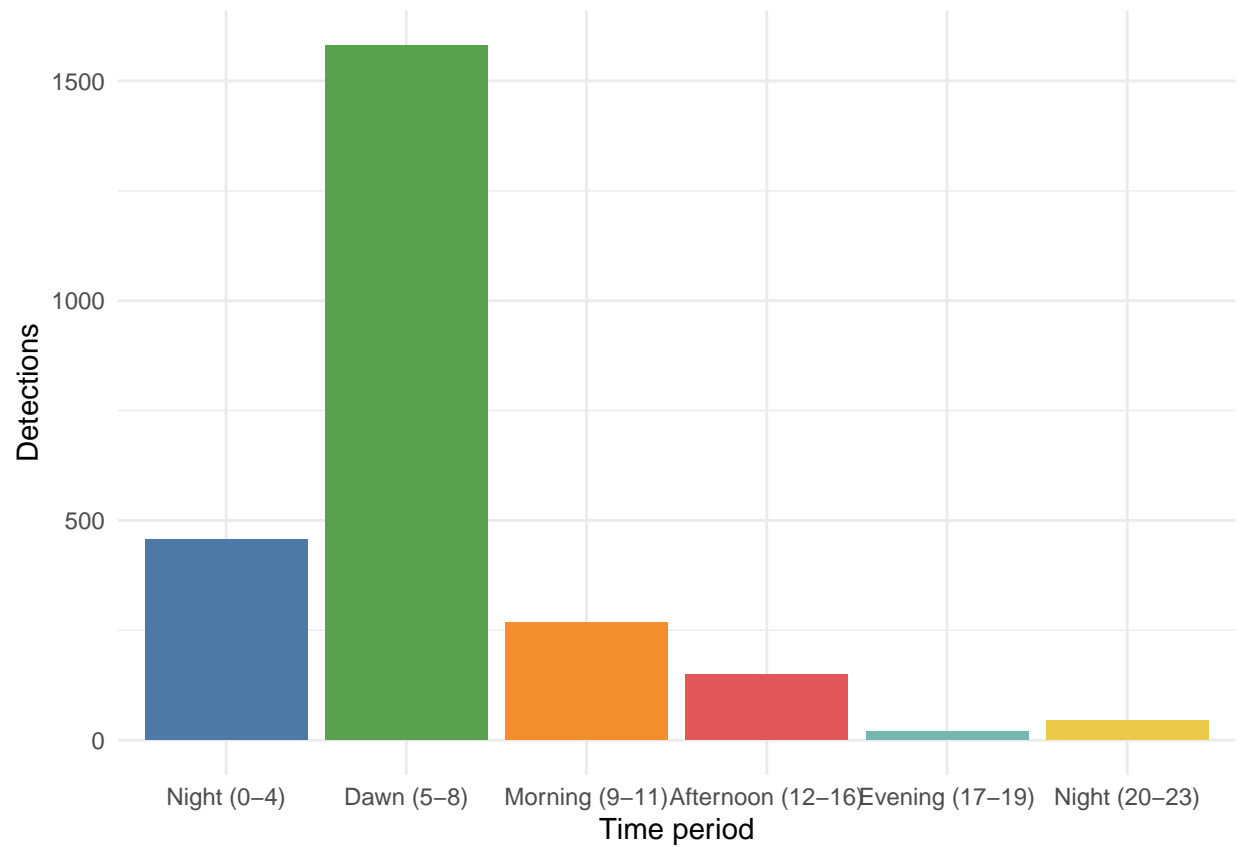
```



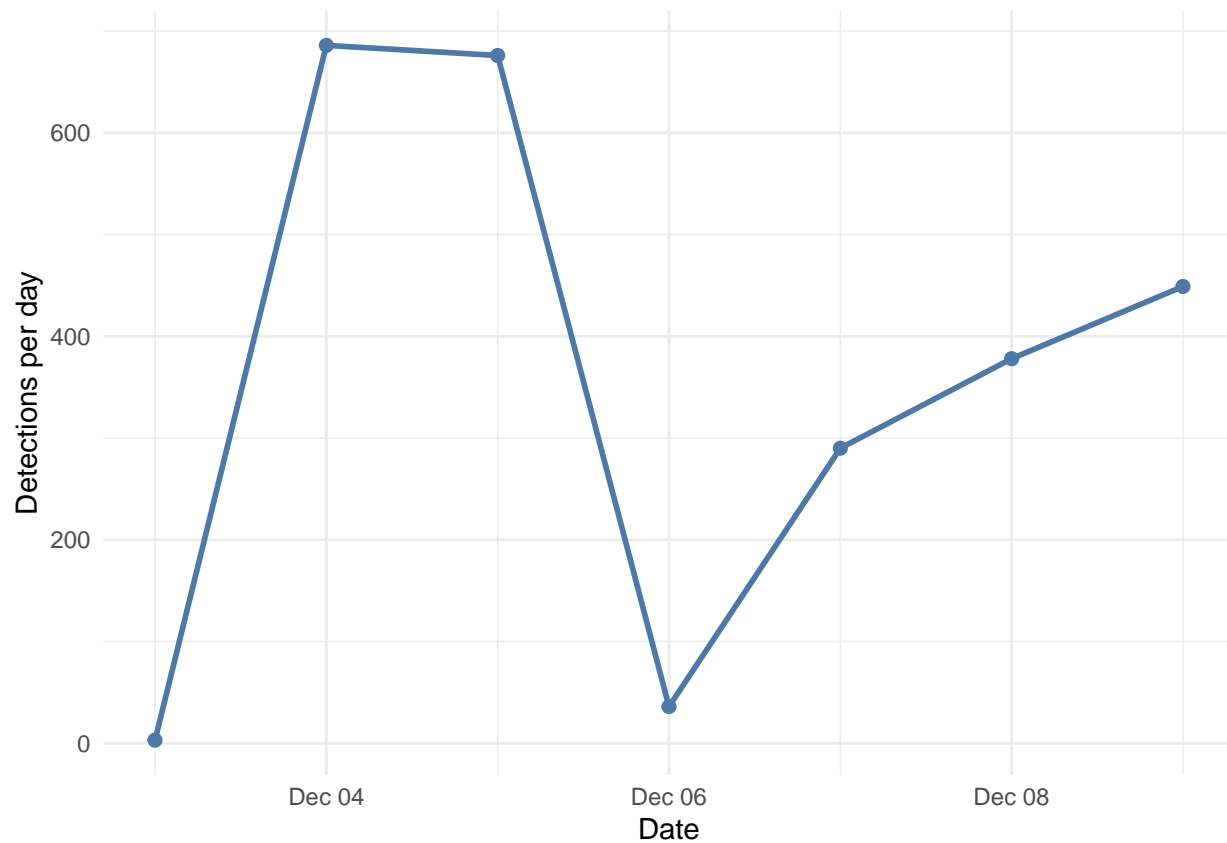
```

if (!no_data) {
 ggplot(tod, aes(x = period, y = n, fill = period)) +
 geom_col() +
 scale_fill_manual(values = birdnet_colors) +
 labs(
 x = "Time period",
 y = "Detections"
) +
 theme_minimal(base_size = 11) +
 theme(legend.position = "none")
}

```



```
if (!no_data) {
 ggplot(daily_trend, aes(x = date, y = n)) +
 geom_line(color = "#4e79a7", linewidth = 1) +
 geom_point(color = "#4e79a7", size = 2) +
 labs(
 x = "Date",
 y = "Detections per day"
) +
 theme_minimal(base_size = 11)
}
```



```

if (no_data) {
 cat("No data available.")
} else {
 if (nrow(new_this_week) == 0) {
 cat("No new species detected in this 7-day period.")
 } else {
 knitr::kable(
 new_this_week %>%
 select(species, first_date, detections_this_week),
 col.names = c("Species", "First detection", "Detections this week"),
 align = c("l", "c", "r")
)
 }
}

```

Species	First detection	Detections this week
Common Firecrest	2025-12-03	6
Redwing	2025-12-03	86
Black Redstart	2025-12-04	209
Black-headed Gull	2025-12-04	21
Common Greenshank	2025-12-04	1
Common Sandpiper	2025-12-04	2
Eurasian Blackbird	2025-12-04	7
Eurasian Blue Tit	2025-12-04	21

Species	First detection	Detections this week
Eurasian Curlew	2025-12-04	5
Eurasian Jackdaw	2025-12-04	66
Eurasian Magpie	2025-12-04	62
Eurasian Woodcock	2025-12-04	13
European Robin	2025-12-04	1827
European Stonechat	2025-12-04	19
Goldcrest	2025-12-04	7
Greater White-fronted Goose	2025-12-04	17
Hawfinch	2025-12-04	22
Hooded Crow	2025-12-04	1
Long-eared Owl	2025-12-04	2
Long-tailed Tit	2025-12-04	18
Short-toed Treecreeper	2025-12-04	5
Song Thrush	2025-12-04	14
Tawny Owl	2025-12-04	8
White Wagtail	2025-12-04	1
Crested Tit	2025-12-05	7
Eurasian Coot	2025-12-05	4
Eurasian Treecreeper	2025-12-05	2
Great Tit	2025-12-05	28
Green-winged Teal	2025-12-05	1
Pink-footed Goose	2025-12-05	1
Rook	2025-12-05	2
Carriion Crow	2025-12-06	1
Eurasian Siskin	2025-12-06	2
Great Bittern	2025-12-06	1
Eurasian Moorhen	2025-12-07	7
European Goldfinch	2025-12-07	4
Green Sandpiper	2025-12-07	9
Marsh Tit	2025-12-07	1
Dunnoek	2025-12-08	3
Gray Heron	2025-12-08	1
Reed Bunting	2025-12-08	1
Eurasian Wren	2025-12-09	1
European Greenfinch	2025-12-09	1
Ring-necked Pheasant	2025-12-09	1