Package 'TrackTrap'

August 20, 2026

Title Model Cumulative Growing Degree-Days for Pest Monitoring

Version 1.0.1

Description Pest monitoring is crucial, especially during the early season, to understand the distribution and the proliferation of the target pest. Raw count data from pest monitoring/traps can be coupled with derived environmental variables such as growing degree-day ('GDD') to get useful insights about the pest phenology. This package pulls temperature data from the 'Daymet' application programming interface ('API', <https://daymet.ornl.gov>), or 'Open-Meteo' ('API', <https://open-meteo.com/>) or manual user-supplied CSV file from the California Irrigation Management Information System ('CIMIS', <https://cimis.water.ca.gov>), for a user-specified time period and calculates cumulative growing degree-days. Users provide intended date range, pest of concern, and the geographic coordinates of the trap location to track pest emergence and phenology throughout the growing season.

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Encoding UTF-8

Depends R (>= 3.5)

LazyData true

Imports daymetr, dplyr, degday, ggplot2, httr, magrittr, utils, rlang

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`calc_pest_phenology` *Calculate pest phenology from trap and weather data*

Description

Calculate pest phenology from trap and weather data

Usage

```
calc_pest_phenology(
  trap_data,
  pest = NULL,
  lat = NULL,
  lon = NULL,
  weather_source = "open_meteo",
  cimis_csv_path = NULL,
  custom_lower = NULL,
  custom_upper = NULL,
  custom_flight_interval = NULL,
  custom_pest_label = NULL
)
```

Arguments

`trap_data`	Data frame with `date` and `trap_counts` columns.
`pest`	Pest code (e.g. "FAW"). Optional if custom_lower/custom_upper given.
`lat`	Latitude (required for open_meteo/daymet).
`lon`	Longitude (required for open_meteo/daymet).
`weather_source`	"open_meteo", "daymet", or "cimis_csv".
`cimis_csv_path`	Path to CIMIS CSV (required if weather_source = "cimis_csv").
`custom_lower`	Optional override for lower threshold (°F).
`custom_upper`	Optional override for upper threshold (°F).
`custom_flight_interval`	Optional override for flight interval (DD).
`custom_pest_label`	Optional label display if pest is not listed in the database.

Value

Data frame with cumulative DD columns and lat/lon/year/flight_interval_dd/pest_label attributes.

---

fetch_open_meteo *Fetch Open-Meteo Data*

Description

Fetch Open-Meteo Data

Usage

```
fetch_open_meteo(lat, lon, start_date, end_date = as.character(Sys.Date()))
```

Arguments

lat	Latitude.
lon	Longitude.
start_date	Start date, "YYYY-MM-DD".
end_date	End date, "YYYY-MM-DD". Defaults to today.

Value

A data frame with Date, tmax, tmin (Fahrenheit).

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pest_thresholds *Pest Developmental Thresholds*

Description

Pest Developmental Thresholds

Usage

```
pest_thresholds
```

Format

A data frame with 90 rows and 5 columns:

pest_code Short abbreviation for the pest (e.g., OLFF, NOW).

pest_name Common name of the pest.

lower_thresh Lower developmental temperature threshold (°F).

upper_thresh Upper developmental temperature threshold (°F).

flight_interval_dd Cumulative degree-days between successive flight peaks, used by `calc_pest_phenology()` to project subsequent flight generations.

`plot_trap_phenology` *Plot trap phenology against accumulated degree-days*

Description

Plot trap phenology against accumulated degree-days

Usage

```
plot_trap_phenology(
  pheno_data,
  pest = NULL,
  year = NULL,
  lat = NULL,
  lon = NULL,
  custom_flight_interval = NULL,
  custom_pest_label = NULL
)
```

Arguments

`pheno_data`	Output of calc_pest_phenology().
`pest`	Optional pest code for database lookup (title, flight interval).
`year`	Optional year label; defaults to pheno_data's "year" attribute.
`lat`	Optional latitude for subtitle; defaults to pheno_data's "lat" attribute.
`lon`	Optional longitude for subtitle; defaults to pheno_data's "lon" attribute.
`custom_flight_interval`	Optional override for flight-line spacing (DD).
`custom_pest_label`	Optional title label if pest is not listed in the database.

Value

A ggplot object.

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