Package 'standrecon'

April 8, 2026

Title Reconstruct Historical Forest Stand Conditions

Version 0.1.0

Description Reconstructs forest stand basal area and stem density at user-specified reference years using tree-level inventory data. The method estimates missing tree ages, back-calculates diameters using species-specific growth rates, and incorporates decay-class-based decomposition to infer mortality timing for dead trees. Results are returned in a tidy long format suitable for analysis and visualization.

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Encoding UTF-8

RoxygenNote 7.3.3

URL https://github.com/kriggithub/standrecon

BugReports https://github.com/kriggithub/standrecon/issues

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

Imports stats, utils

Depends R (>= 3.5)

LazyData true

NeedsCompilation no

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Repository CRAN

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Contents

`standrecon` *Reconstruct stand conditions from a given reference year*

Description

Reconstruct stand conditions from a given reference year

Usage

```
standrecon(
  data,
  meas_year,
  ref_year,
  avg_inc_vec,
  plot_size,
  n_plots = 1,
  bark_eq_list = list(),
  species_col = "Species",
  age_col = "Age",
  dbh_col = "DBH",
  status_col = "Status",
  decay_col = "Decay",
  percentiles = c(0.25, 0.5, 0.75),
  min_dbh = 5
)
```

Arguments

`data`	Data with species, age, DBH, tree status, and tree decay columns.
`meas_year`	Year that data was measured.
`ref_year`	Reference years to reconstruct stand conditions.
`avg_inc_vec`	Vector of average increment growth per species with units mm/year. (PIEN = 0.5, ABBI = 0.3)
`plot_size`	Size of plots in m².
`n_plots`	Number of plots with plot_size.
`bark_eq_list`	List of bark correction equations. Default bark corrections for species codes used otherwise. list(PIPO = function(x) x*1.1029 + 0.7162)
`species_col`	Species column name in data as a string.
`age_col`	Species column name in data as a string.
`dbh_col`	DBH column name in data as a string.
`status_col`	Species status column name in data as a string.
`decay_col`	Species decay column name in data as a string.
`percentiles`	Percentiles to be calculated for sensitivity analysis.
`min_dbh`	Minimum DBH threshold for stand calculations in cm.

Value

A data frame with one row per species, reference year, and percentile. Columns include output type (reconstructed or measured), reference year, percentile, species code, basal area per hectare, and stem density per hectare.

Examples

```
data(standrecon_example_data)

out <- standrecon(
  data = standrecon_example_data,
  meas_year = 2025,
  ref_year = c(1950, 1975),
  avg_inc_vec = c(PIEN = 0.5, ABBI = 0.3, PIPO = 0.4),
  plot_size = 1000)

out
```

---

standrecon_example_data

Example field collected tree data for stand reconstruction

Description

A small synthetic data set for examples and tests.

Usage

```
standrecon_example_data
```

Format

A data frame with 200 rows and 5 variables:

Species Species code.

Age Tree age in years. Values that are known typically come from cored trees.

Status Tree status code.

Decay Decay class for dead trees.

DBH Diameter at breast height in cm.

Source

Simulated data set.

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