Dendroecological Database Metadata

Creators: Alexandra Kosiba and James Duncan, Forest Ecosystem Monitoring Cooperative, https://www.uvm.edu/femc

Last Updated: 1/31/2018

About the Dendroecological Database

The Dendroecological Database, founded in 2017, is a collaborative effort among the U.S.D.A. Forest Service Northern Research Station, the University of Vermont (College of Arts and Sciences and the Rubenstein School of the Environment and Natural Resources) and the Forest Ecosystem Monitoring Cooperative. The goal of the database is to provide a central archive for data derived from dendroecological studies, including tree-ring-based chronologies and their associated forest ecology data. At present, there is no such database in existence and many dendroecological collections are not readily available to the greater research community for comparative and larger-scale analyses.

This database, intended for the free and public use by the dendroecology, forest ecology and natural resource management communities, allows for the investigation, integration, synthesis and understanding of our forests in the past, present and future. The Dendrochronological Database fully supports information sharing, collaboration and discovery, and implements the best available standards for data archive, documentation and interoperability, including the Tree Ring Data Standard and Ecological Metadata Language.

Metadata for Individual Data Tables

The files downloaded from the Dendroecological Database are in CSV format, with column headers and data ordered in rows. The column definitions of each table available from the database are described below.

Plot Data

PlotID

Text: Alphanumeric text string to uniquely identify the plot within the project.

DateCollected

Text: Date when tree cores were collected (YYYY-MM-DD).

Crew

Text: List of names/initials of people who collected the samples.

Latitude

Decimal: Plot center latitude, in the units defined by the spatial reference system (see "Projection" field description), often decimal degrees.

Longitude

Decimal: Plot center longitude, in the units defined by the spatial reference system (see "Projection" field description), often decimal degrees.

Projection

Text: Spatial reference system for the plot location coordinates. Typical coordinate projections are EPSG:4326 (WGS84) and EPSG:2953 (NAD83), with the former being common on hand-held GPS devices. For other projections, see http://spatialreference.org.

SiteDescription

Text: Visual description of the plot, possibly describing (but not limited to): the density and composition of understory plants, notable topographic characteristics (slope, aspect, etc.), tree species composition and density, size class distribution, and disturbance evidence.

StandDensity

Decimal: Basal area density of plot, in m^2/hectare. Typically collected using a 10BAF prism, or similar tool.

Notes

Text: Any additional information about the plot.

Tree Data

PlotID

Text: Alphanumeric text string to uniquely identify the plot within the project.

TreeID

Text: Alphanumeric text string to uniquely denote the tree within the plot.

Species

Text: Species code as recorded in the data. This should match to a definition in the taxonomic standard defined for the project, such as the USDA Plants Database.

Status

Text: Indicates if tree is live or dead at time of sampling.

Diameter

Decimal: Diameter, typically measured at breast height (4.5 ft/1.37m above ground).

Units

Text: Units of the diameter measurement, typically inches or centimeters.

CrownPosition

Text: Visual assessment of the position of the tree's crown: dominant, codominant, intermediate, or suppressed.

Crown position	Description
Dominant	Crown extends above the main canopy; receives full light from above and partial light from the sides.
Codominant	Crown forms the main canopy; receives full light from above and relatively little light from the sides.
Intermediate	Crown lower than or just entering the main canopy; receives little direct light from above and none from the sides.
Suppressed	Crown is fully below the main canopy; receives no direct light from above or sides.

Source: Vermont North American Maple Project. 2006. Manual. Available at:
http://www.esf.edu/for/yanai/research_class/06VTNAMPmanual.pdf

Vigor

Integer: Visual assessment of the vigor class of the tree's crown from 1-5.

Vigor	Description
1	Healthy, no major branch mortality; less than 10% branch or twig/foliage mortality or foliage discoloration.
2	Light decline; branch mortality, twig dieback, or foliage discoloration present in 10-25% of the crown.
3	Moderate decline; branch mortality, twig dieback, or foliage discoloration present in 26-50% of the crown.
4	Severe decline; branch mortality, twig dieback, or foliage discoloration present in more than 50% of the crown.
5	Dead

Source: Vermont North American Maple Project. 2006. Manual. Available at:
http://www.esf.edu/for/yanai/research_class/06VTNAMPmanual.pdf

Dieback

Integer: Visual assessment of the proportion of the tree's crown with dieback. Dieback begins at branch terminal and progresses in- and downward. To be considered dieback, the branch must be ≤1" diameter at the point of attachment to another branch or bole. Branch mortality at the base of the crown and large, dead branches without fine branches present are excluded from the assessment. Crown dieback are rated in 5% classes following the table below.

Class	Range
1	0
5	1-5

10	6-10
15	11-15
20	16-20
25	21-25
30	26-30
35	31-35
40	36-40
45	41-45
50	46-50
55	51-55
60	56-60
65	61-65
70	66-70
75	71-75
80	76-80
85	81-85
90	86-90
95	91-95
99	96-99

Source: USDA Forest Service Forest Inventory and Analysis
https://www.fia.fs.fed.us/library/database-
documentation/current/ver611/FIADB_User_Guide_P2_6-1-1_final.pdf

InjuryStatus

Text: Indicates if tree has visible stem injury. Options are Present or Absent.

Latitude

Decimal: Tree location latitude, in the units defined by the spatial reference system (see "Projection" field description), often decimal degrees.

Longitude

Decimal: Tree location longitude, in the units defined by the spatial reference system (see "Projection" field description), often decimal degrees. *Projection*
Spatial reference system for the tree location coordinates. Typical coordinate projections are EPSG:4326 (WGS84) and EPSG:2953 (NAD83), with the former being common on hand-held GPS devices. For other projections, see http://spatialreference.org.

TreeTagNumber

Text: Alphanumeric text string of the tree tag number; can be blank if it does not differ from TreeID.

Notes

Text: Any additional information about the individual tree.

Increment Core Data

Project

Text: Alphanumeric text string to uniquely identify the project.

PlotID

    Text: Alphanumeric text string to uniquely identify the plot within the project.

TreeID

    Text: Alphanumeric text string to uniquely identify the tree within the plot.

Species

    Text: Species code as recorded in the data. This should match to a definition in the taxonomic standard defined for the project, such as the USDA Plants Database.

DBH

    Decimal: Diameter at breast height, typically 4.5 ft/1.37 m above ground.

DBH_Units

    Decimal: Units of the diameter measurement, typically inches, millimeters, or centimeters.

Increment_Units

    Text: Units of the annual increment measurement, typically inches, millimeters, or centimeters.

CoreID

    Text: Alphanumeric text string to uniquely identify the core within the plot. Typically, this is TreeID with A or B to designate different cores from the same tree.

MeasurementMethod

    Text: Method used to measure tree core. Options are: measuring platform, hand lens and graticule, on-screen measuring, or visual estimate.

RingCount

    Integer: The total number of rings measured before correction.

AverageRingWidth

    Decimal: Mean width of all rings in the core, reported in units given in Increment_Units field.

BarkPresence

    Text: Indicates if bark was present on core. Options are Present or Absent.

BarkWidth

    Decimal: Width of the bark on core if present, reported in units given in Increment_Units field.

PithPresence

    Text: Indicates if the pith of the tree was present in the core. Options are Present or Absent.

CorrectedYears

    Integer: The total number of rings after correction. If there was no correction, CorrectedYears will be the same as RingCount.

EstimatedYears

    Integer: The estimated total number of years of tree core, based on presence of pith, or if pith is not present, by using a ring estimator.

Analyst

    Text: Name of person who measured and crossdated the core (can include multiple names if applicable).

Dendrochronologist

Text: Lead researcher of the project and/or resulting manuscript; or Principal Investigator.