

Crown Class & Status Code Reference

Connecticut Blue Ribbon Forest Inventory - West & East datasets

Generated by `ctbr_west_dataprocessing.py` / `ctbr_east_dataprocessing.py`

Description

This document is the code dictionary for the harmonized Connecticut Blue Ribbon forest-plot database. It defines the standardized **crown-class** codes (`cc_std` / `cc_desc`) and **tree-status** codes (`status` / `status_detail`) used across all plots and survey years, maps the original recorded values (`cc_raw`) to the standardized scheme, and documents how status is inferred. It also records null/unmapped value handling and network-wide code frequencies. Use it alongside `key_crown_class.csv`, `key_status.csv`, and `key_data_dictionary.csv` (machine-readable forms) when interpreting the `cc_*` and `status` fields in `treeData`.

Data owner: Connecticut Agricultural Experiment Station (CAES), primary; Forest Ecosystem Monitoring Cooperative (FEMC), secondary. **Authors:** Soren Donisvitch (FEMC); Joseph Barsky (CAES).

Crown Class Codes (`cc_std` / `cc_desc`)

`cc_raw` - the value as recorded in the original data file

`cc_std` - standardised single-letter code used throughout the pipeline

`cc_desc` - human-readable description (also in `cc_desc` column)

Live Crown Position

<code>cc_std</code>	<code>cc_desc</code>	Numeric equivalent	Source plots	Notes
D	Dominant	2	All plots	Crown extends above general canopy level
C	Co-dominant	3	All plots	Crown forms part of main canopy
I	Intermediate	4	All plots	Crown below main canopy, some light from above
S	Suppressed	5	All plots	Crown in full shade below canopy
G	Gap/subcanopy	-	Sharon (all), GoldsPines	Growing into a canopy gap
R	Rainbow	-	GoldsPines, Sharon	Canopy position bridging two crown classes
E	Emergent	-	GoldsPines	Crown extends above the main canopy layer

cc_std	cc_desc	Numeric equivalent	Source plots	Notes
F	Free-to-grow / Open-grown	1	GoldsPines	Dawkins class 1; released or open-grown tree

Numeric mapping (Dawkins 1–5 convention used in some plot records):

Raw numeric	→ cc_std
1	F
2	D
3	C
4	I
5	S

Declining / Mortality

cc_std	cc_desc	Status implication	Source plots	Notes
P	Poor / pre-dying	Live (declining)	SharonA–E, pikes	Observed in S→P→X trajectory; treated same as Z for status purposes
Z	Dying	Live (declining)	All plots	Crown dieback visible; tree alive but declining
X	Dead	Dead	All plots	No live foliage; confirmed dead

Note: Both P and Z produce `status = "Live"` with `status_detail = "Declining (...)"`. They are in `DYING_CROWN_CODES` and are not treated as confirmed mortality.

Special States

cc_std	cc_desc	Status implication	Source plots	Notes
H	Harvested	Dead / removed	pikes, pinblu (East)	Final recorded crown state before tree removed from plot
N	Not found / status unknown	Unknown	ashford (East)	Tree could not be located at survey; sits between live and dead records

cc_std	cc_desc	Status implication	Source plots	Notes
Y	Pre-ingrowth	Not yet recorded	GoldsPines (West)	Pipeline-assigned. Tree present in plot but had not yet crossed the measurement threshold before <code>IngrowYr</code> . No field observation exists for these rows.

Null / Unmapped

cc_raw	Occurrence	Disposition
∅	84 rows, Perry 1995 initial measurement only	"Not assessed" (confirmed by FEMC QAQC) - crown class not evaluated at the 1995 initial survey; <code>cc_std</code> left null
(blank)	Many rows	No crown class recorded that survey year

Status Codes (`status`)

Assigned by `infer_status_per_row()` and refined by `infer_mortality_per_tree()`.

status	When assigned	status_detail pattern
Live	DBH present and > 0, or crown class is a live code	"Live by DBH (X.X mm)" or "Dying (...)"
Dead	<code>cc_std == "X"</code> , or <code>MortYr ≤ year</code> , or propagated forward from first confirmed dead year	"Dead by crown code X", "Dead by <code>MortYr=YYYY</code> ", "Persistently dead after <code>YYYY</code> ", "Inferred prior death (context)"
Unknown	No DBH, crown class, or mortality evidence for that survey year	"Survey gap: no measurement this period"
Not yet recorded	Year is before tree's <code>IngrowYr</code> (pipeline-assigned)	"Pre-ingrowth: below measurement threshold before <code>YYYY</code> "

Propagation passes (applied per-tree in chronological order)

Pass	Action
0 - Pre-ingrowth	Rows before <code>IngrowYr</code> with <code>Unknown</code> → <code>Not yet recorded</code> ; <code>cc_std = "Y"</code>
A - Sandwich inference	<code>Unknown</code> rows sandwiched between <code>Dead</code> records (no later <code>Live</code>) → <code>Dead</code>
B - Forward propagation	All rows after first confirmed <code>Dead</code> → <code>Dead</code> ; <code>cc_std</code> forward-filled from last observed value
C - Gap labelling	Remaining <code>Unknown</code> → <code>status_detail = "Survey gap: no measurement this period"</code>

Code frequency (West + East combined, 14,848 tree-year rows)

cc_std	Count
C	3,097
S	2,977
X	2,882
(null)	2,274
I	1,473
D	1,333
G	336
Y	173
Z	140
F	125
H	14
R	13
P	7
E	4