Cone production of upper slope conifers in the Cascade Range of Oregon and Washington, 1959 to present

Abstract:

Seed supply is a key feature of tree population dynamics, and seed production may be indicative of environmental and biological drivers. This study examines cone production in upper-slope, true fir-hemlock forests of the Pacific Northwest, starting in 1959 to the present. Annual surveys of cone counts of Abies spp. (A. amabilis, A. concolor, A. grandis, A. lasiocarpa, A. magnifica, A. procera), Pinus spp. (P. engelmannii, P. lamberti, P. monticola), and Tsuga spp. (T mertsiana) have been conducted at sixty-one plots in 37 locations in nine national forests in Washington and Oregon (originally 10 national forests, but Mt. Baker and Snoqualimie were combined). At each site, a visual count is made of cone production in each of a number (20-30) trees in a stand of one tree species. At some plots, additional trees were added in the 1980s. Primary data include numbers of counts per tree per year, periodic measurements of tree diameter, and the names of the sites. These data illustrate the periodicity of cone production cycles, as well as longer trends associated with climate change and variability in the region.

Keywords: Cone count; Cone production; Cones; Plant populations; Plant reproduction; Primary production; Populations; Seed production; Primary production; Reproduction; Plants; Cones;

Date data commenced: 1959-06-01

Date data terminated: 2019-09-22

Principal Investigator: Mark D Schulze

List of Entities:

1. Plots and species
2. Cone Counts
3. Tree Diameters
4. Directions to plots

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### 1. Plots and species

**Attribute List:**

- **DBCODE**: N N char(10) enum
- **ENTITY**: N N numeric(1,0) range 1.0000 1.0000 number
- **STATE**: N N char(10) place
- **NATIONAL_FOREST**: N N char(40) place
- **LOC_NAME**: N Y varchar(40) freetext
- **LOC_CODE**: N Y char(6) freetext
- **SPECIES**: N N char(6) taxa
- **PLOT**: Y N char(7) place

### 2. Cone Counts

**Attribute List:**

- **DBCODE**: N N char(10) enum
- **ENTITY**: N N numeric(1,0) range 2.0000 2.0000 number
- **LOC_NAME**: N Y varchar(40) freetext
- **LOC_CODE**: N Y char(6) freetext
- **SPECIES**: N Y char(6) taxa
- **PLOT**: Y N char(7) place 1.0000 62.0000
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### 3. Tree Diameters

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### 4. Directions to plots

**Attribute List:**

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Attributes Definitions:

- **COMMENT**: Comments
- **CONECOUNT**: Number of cones
- **CROWN_PCT**:
Percent of a tree's live crown volume that is still intact along the stem; record for living trees begins in 2019

CROWN_RATIO
Percent of a tree's height with live branches around one third or more of the bole's circumference; record for living trees begins in 2019

DBCODE
FSDB Database Code

DBH
Diameter at breast height

DIRECTIONS
Directions for reaching the plots

ENTITY
Data table entity number

LOC_CODE
Location code

LOC_NAME
Location name

NATIONAL_FOREST
National Forest in which plot resides

PLOT
Unique plot number

SAMPLEDATE
Date of remeasurement; record for living trees begins in 2019

SPECIES
Species code

STATE
State in which the plot resides

STATUS
Status of tree (live, dead, missing)

TAG
Tag number (alternative method of tree identification)

TREE_VIGOR
Overall tree vigor code; record for living trees begins in 2019

TREENR
Tree number, unique for plot

WEATHER_VISIBILITY
additional comments on weather conditions and visibility to give some perspective on how these conditions may have influenced count quality; record for living trees begins in 2019

YEAR
Year of count
Enumerated Domains:

Enumerated Domain for Attribute: DBCODE
TV019  FSDB Database code TV019

Enumerated Domain for Attribute: STATUS
G  Normal count
D  Dead, cut or broken; tree abandoned
M  Missing data; not counted because tree was not found or road access closed

Enumerated Domain for Attribute: DBCODE
TV019  FSDB Database code TV019

Enumerated Domain for Attribute: TREE_VIGOR
1  Good vigor: no apparent signs of distress
2  Fair vigor: some signs of distress apparent (e.g., discolored foliage, paucity of leaves or needles, broken stem with few live branches)
3  Poor vigor: extreme distress apparent (i.e., death imminent)
M  Vigor is not recorded for dead or missing trees
U  Unknown vigor of a living tree - vigor is not recorded

Enumerated Domain for Attribute: DBCODE
TV019  FSDB Database code TV019

Enumerated Domain for Attribute: DBCODE
TV019  FSDB Database code TV019