

Database Code: TP041

Title: Post-logging community structure and biomass accumulation in Watershed 10, Andrews Experimental Forest, 1974 to present

Abstract:

Old-growth and mature Douglas-fir forest were clearcut logged in 1975. Large slash was removed from the site rather than burned. Douglas-fir seedlings were planted in 1976 and 1977, but due to poor survival 4.9 ha were replanted in 1978. Despite planting, most tree stems originated naturally, either as sprouts from cut stumps (hardwoods) or as natural regeneration (conifers and hardwoods). Study plots were established and sampled for cover and frequency of understory vegetation and counts of seedlings and saplings prior to harvest (1973) and resampled annually for cover and biomass of understory vegetation and tree growth from 1976-1981, then in 1983, 1985, and then in 4-6 year intervals. WS10 was intensively studied in the 1970's and 80's. The entire watershed was surveyed into a 25 x 25-m grid and then 36 15 by 10 meter plots were established for long-term sampling.

Keywords: Biomass (trees); Biomass (understory); Canopy communities; Clearcut logging; Community composition; Community structure; Disturbance; Long-Term Ecological Research (LTER); Plant community ecology; Primary production; Slash burning; Slash/broadcast burning; Succession; Trophic structure; Organic matter; Primary production; communities; community structure; Long-Term Ecological Research (LTER); plant ecology; biomass; community composition; trophic structure; succession; primary production; disturbance; burning; timber harvest; clearcutting; organic matter; canopies; trees; understory vegetation;

Date data commenced: 1973-01-01

Date data terminated: 2010-08-11

Principal Investigator: David Bell

List of Entities:

- 1. Plant and ground surface cover estimates from microplots
2. Herb and shrub biomass measurements from microplots
3. Tagged tree measurements for all tree sizes including saplings in both microplots and macroplot
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5. Pre-logging biomass measurements by plot
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7. Biomass parameters used by species and measurement year
8. Pre-logging tree cover estimates for mature and regenerated trees
9. Plot elevations, slopes, and aspects
10. Plant and ground surface cover estimates from microplots for early data

1. Plant and ground surface cover estimates from microplots

Attribute List:

Table with 9 columns: Attribute Name, N, N, Data Type, Range, Min, Max, Unit. Rows include DBCODE, ENTITY, WATERSHED, PLOTID, YEAR, PLOT, MICROPLOT, SPECIES, COVER.

2. Herb and shrub biomass measurements from microplots

Attribute List:

DBCOD	N	N	char(5)	enum			
ENTIT	N	N	numeric(2,0)	range	2.0000	4.0000	number
WATER	N	N	char(4)	place			
PLOTID	N	N	char(8)	place			
YEAR	N	N	numeric(4,0)	range	1976.0000	2010.0000	number
PLOT	N	N	numeric(2,0)	range	1.0000	36.0000	number
MICROPLOT	N	N	char(3)	enum	1.0000	16.0000	
SPECIES	N	N	char(6)	taxa			
DBA	N	Y	numeric(5,1)	range	0.0000	125.0000	cm
HT	N	Y	numeric(4,0)	range	1.0000	550.0000	cm
LEN	N	Y	numeric(5,1)	range	0.1000	150.0000	cm
NUM	N	Y	numeric(3,0)	range	1.0000	75.0000	number

3. Tagged tree measurements for all tree sizes including saplings in both microplots and macroplot

Attribute List:

DBCOD	N	N	char(5)	enum			
ENTIT	N	N	numeric(2,0)	range	3.0000	3.0000	number
WATER	N	N	char(4)	place			
PLOTID	Y	N	char(8)	place			
YEAR	Y	N	numeric(4,0)	range	1976.0000	2010.0000	number
PLOT	N	N	numeric(2,0)	range	1.0000	36.0000	number
MICROPLOT	Y	N	char(3)	enum			
STEMTAG	Y	N	char(4)	freetext	5.0000	9980.0000	
CLUMPTAG	Y	Y	numeric(4,0)	range	-1.0000	9974.0000	number
OLDTAG	N	Y	numeric(4,0)	range	5.0000	9971.0000	number
OLDCLUMP	N	Y	numeric(4,0)	range	1110.0000	9823.0000	number
NEARTAG	N	Y	numeric(4,0)	range	1.0000	9999.0000	number
TREE_SPP	Y	Y	char(5)	taxa			
MEASPNT	Y	N	char(1)	enum			
STEMCOUNT	Y	N	numeric(3,0)	range	1.0000	100.0000	number
STATUS	N	Y	char(1)	enum			
VIGOR	N	Y	char(1)	enum			
CLPSTEMS	N	Y	numeric(2,0)	range	0.0000	61.0000	number

BASDIAM	N	Y	numeric(5,1)	range	0.1000	20.8000	cm
DBH	N	Y	numeric(5,1)	range	0.0000	50.0000	cm
COMMENTS	N	Y	varchar(210)	freetext			

4. Pre-logging cover and frequency data by plot

Attribute List:

DBCOD	N	N	char(5)	enum			
ENTITY	N	N	numeric(2,0)	range	4.0000	4.0000	number
WATERSHED	N	N	char(4)	place			
PLOTID	Y	N	char(8)	place			
YEAR	N	N	numeric(4,0)	range	1973.0000	1973.0000	number
PLOT	N	N	numeric(2,0)	range	1.0000	36.0000	number
SPECIES	Y	N	char(6)	taxa			
STRATUM	Y	Y	char(1)	enum			
COVER	N	N	numeric(5,1)	range	0.0000	89.0000	%
FREQ	N	N	numeric(3,0)	range	0.0000	96.0000	%

5. Pre-logging biomass measurements by plot

Attribute List:

DBCOD	N	N	char(5)	enum			
ENTITY	N	N	numeric(2,0)	range	5.0000	5.0000	number
WATERSHED	N	N	char(4)	place			
PLOTID	N	N	char(8)	place			
YEAR	N	N	numeric(4,0)	range	1973.0000	1973.0000	number
PLOT	N	N	numeric(2,0)	range	1.0000	36.0000	number
SPECIES	N	N	char(6)	taxa			
DBA	N	Y	numeric(5,1)	range	0.1000	16.0000	cm
HT	N	Y	numeric(4,0)	range	50.0000	950.0000	cm
LEN	N	Y	numeric(5,1)	range	25.0000	300.0000	cm

6. Pre-logging seedling and sapling count by plot

Attribute List:

DBCOD	N	N	char(5)	enum			
ENTITY	N	N	numeric(2,0)	range	6.0000	6.0000	number
WATERSHED	N	N	char(4)	place			
YEAR	N	N	numeric(4,0)	range	1973.0000	1973.0000	number
PLOTID	Y	N	char(8)	place			

HABTYPE	N	N	char(1)	enum			
PLOT	N	N	numeric(2,0)	range	1.0000	36.0000	number
TREE_SPP	Y	N	char(5)	taxa			
SAPCOUNT	N	Y	numeric(2,0)	range	1.0000	21.0000	number
SEEDLCNT	N	Y	numeric(2,0)	range	1.0000	23.0000	number

7. Biomass parameters used by species and measurement year

Attribute List:

DBCOD	N	N	char(5)	enum			
ENTITY	N	N	numeric(2,0)	range	7.0000	7.0000	number
WATERSHED	N	N	char(4)	place			
SPECIES	Y	N	char(6)	taxa			
P_YEAR	Y	N	numeric(4,0)	range	1973.0000	2010.0000	number
BV1	N	Y	char(4)	enum			
BV2	N	Y	char(4)	enum			

8. Pre-logging tree cover estimates for mature and regenerated trees

Attribute List:

DBCOD	N	N	char(5)	enum			
ENTITY	N	N	numeric(2,0)	range	8.0000	8.0000	number
WATERSHED	N	Y	char(4)	place			
PLOTID	Y	N	char(8)	place			
YEAR	N	N	numeric(4,0)	range	1973.0000	1973.0000	number
PLOT	N	N	numeric(2,0)	range	1.0000	36.0000	number
TREE_SPP	Y	N	char(5)	taxa			
MCOVER	N	N	numeric(3,0)	range	0.0000	75.0000	%
RCOVER	N	N	numeric(3,0)	range	0.0000	65.0000	%

9. Plot elevations, slopes, and aspects

Attribute List:

DBCOD	N	N	char(5)	enum			
ENTITY	N	N	numeric(2,0)	range	9.0000	9.0000	number
PLOT	Y	N	numeric(2,0)	range	1.0000	36.0000	number
ELEV	N	N	numeric(3,0)	range	435.0000	640.0000	m
SLOPE	N	N	numeric(2,0)	range	10.0000	95.0000	%
ASPECT	N	N	numeric(2,0)	range	7.0000	16.0000	deg angle
HABTYPE	N	N	char(1)	enum			

10. Plant and ground surface cover estimates from microplots for early data

Methods for data collection from 1976-1979 are unknown at this time

Attribute List:

Attribute Name	Nullable	Indexed	Length	Domain	Min	Max	Unit
DBCOD	N	N	char(5)	enum			
ENTIT	N	N	numeric(2,0)	range	10.0000	10.0000	number
WATERSHED	N	N	char(4)	place			
PLOTID	N	N	char(8)	place			
YEAR	N	N	numeric(4,0)	range	1976.0000	1979.0000	number
PLOT	N	N	numeric(2,0)	range	1.0000	36.0000	number
MICROPLOT	N	N	char(3)	enum			
MICROPLT_OLD	N	N	numeric(2,0)	range	0.0000	16.0000	number
SPECIES	N	N	char(6)	taxa			
COVER	N	N	numeric(5,1)	range	0.1000	100.0000	%

Attributes Definitions:

ASPECT

Aspect

BASDIAM

Tree diameter at base

BV1

First biomass parameter (explicitly named)

BV2

Second biomass parameter (explicitly named)

CLPSTEMS

Clump stem count on macroplot

CLUMPTAG

Clump tag number

COMMENTS

Comments

COVER

Projected canopy cover (see STRATUM)

DBA

Basal diameter

DBCOD

FSDB data set code

DBH

Diameter at breast height

ELEV

Elevation

ENTITY
Entity number

FREQ
Frequency of occurrence in microplots (1x1m) (see STRATUM)

HABTYPE
Habitat type

HT
Plant height

LEN
Length

MCOVER
Cover of mature trees (canopy layer)

MEASPNT
Measurement point

MICROPLOT
The number of the 1 meter by 1 meter (U00-U14 and L00-L14) microplot or the 15 meter by 8 meter (M) microplot within the 15 meter by 10 meter plot

MICROPLT_OLD
Old microplot numbering system (1-16)

NEARTAG
Tag number of near neighbor

NUM
Number of stems, fronds

OLDCLUMP
Old clump tag number

OLDTAG
Old stem tag number

P_YEAR
Measurement year to which the parameters apply

PLOT
The plot number of the 10x15 m plot (1-36); previously called macropt

PLOTID
Plot ID consisting of waterd and plot number

RCOVER
Cover from regeneration (subcanopy layer)

SAPCOUNT
Tree sapling count (>1m high) on 150 m2 plots

SEEDLCNT

Tree seedling count (<1m high) on 45 1*1m plots

SLOPE

Slope

SPECIES

Species codes according to Garrison et al., 1976

STATUS

Status code

STEMCOUNT

Count of stems that do not have stemtags; often old clumps or measpnt 0 or 3. For stems with stemtag, stemcount is 1.

STEMTAG

Stem tag number

STRATUM

Vegetaton layer, for use in determining the meaning of variables cover, freq

VIGOR

Vigor code

WATERSHED

Study watershed

YEAR

Year of sampling

Enumerated Domains:

Enumerated Domain for Attribute: DBCODE

TP041 FSDb Database code TP041 (terrestrial productivity)

Enumerated Domain for Attribute: MICROPLOT

- U00 Upper (uphill) 1 meter by 1 meter microplot U00
- U01 Upper (uphill) 1 meter by 1 meter microplot U01
- U02 Upper (uphill) 1 meter by 1 meter microplot U02
- U03 Upper (uphill) 1 meter by 1 meter microplot U03
- U04 Upper (uphill) 1 meter by 1 meter microplot U04
- U05 Upper (uphill) 1 meter by 1 meter microplot U05
- U06 Upper (uphill) 1 meter by 1 meter microplot U06
- U07 Upper (uphill) 1 meter by 1 meter microplot U07
- U08 Upper (uphill) 1 meter by 1 meter microplot U08
- U09 Upper (uphill) 1 meter by 1 meter microplot U09
- U10 Upper (uphill) 1 meter by 1 meter microplot U10
- U11 Upper (uphill) 1 meter by 1 meter microplot U11

U12	Upper (uphill) 1 meter by 1 meter microplot U12
U13	Upper (uphill) 1 meter by 1 meter microplot U13
U14	Upper (uphill) 1 meter by 1 meter microplot U14
L00	Lower (downhill) 1 meter by 1 meter microplot L00
L01	Lower (downhill) 1 meter by 1 meter microplot L01
L02	Lower (downhill) 1 meter by 1 meter microplot L02
L03	Lower (downhill) 1 meter by 1 meter microplot L03
L04	Lower (downhill) 1 meter by 1 meter microplot L04
L05	Lower (downhill) 1 meter by 1 meter microplot L05
L06	Lower (downhill) 1 meter by 1 meter microplot L06
L07	Lower (downhill) 1 meter by 1 meter microplot L07
L08	Lower (downhill) 1 meter by 1 meter microplot L08
L09	Lower (downhill) 1 meter by 1 meter microplot L09
L10	Lower (downhill) 1 meter by 1 meter microplot L10
L11	Lower (downhill) 1 meter by 1 meter microplot L11
L12	Lower (downhill) 1 meter by 1 meter microplot L12
L13	Lower (downhill) 1 meter by 1 meter microplot L13
L14	Lower (downhill) 1 meter by 1 meter microplot L14
M	Center 15 meter by 8 meter macroplot

Enumerated Domain for Attribute: DBCODE

TP041 FSDB Database code TP041 (terrestrial productivity)

Enumerated Domain for Attribute: MICROPLOT

U00	Upper (uphill) 1 meter by 1 meter microplot U00
U01	Upper (uphill) 1 meter by 1 meter microplot U01
U02	Upper (uphill) 1 meter by 1 meter microplot U02
U03	Upper (uphill) 1 meter by 1 meter microplot U03
U04	Upper (uphill) 1 meter by 1 meter microplot U04
U05	Upper (uphill) 1 meter by 1 meter microplot U05
U06	Upper (uphill) 1 meter by 1 meter microplot U06
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M	Center 15 meter by 8 meter macroplot

Enumerated Domain for Attribute: MEASPNT

0	Diameter class from 0 - 3 cm (dbh) for clumpstems
B	Basal measurement
H	Measurement at breast height
3	Diameter class from 3 - 5 cm (dbh) for clumpstems
M	Measurement point may be missing for dead trees recorded in the early years of the study

Enumerated Domain for Attribute: STATUS

1	Present at previous measurement year
6	Dead
7	Clump tree that has been tagged or has grown out of previous size class
9	Missing
2	Ingrowth (first year of occurrence)
3	trees fused above dbh and measured together (began recording in 2010)

Enumerated Domain for Attribute: VIGOR

3	Poor vigor
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2	Fair vigor
1	Good vigor
9	Missing

Enumerated Domain for Attribute: DBCODE
 TP041 FSDB Database code TP041 (terrestrial productivity)

Enumerated Domain for Attribute: MICROPLOT

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M Center 15 meter by 8 meter macroplot

Enumerated Domain for Attribute: DBCODE
TP041 FSDB Database code TP041 (terrestrial productivity)

Enumerated Domain for Attribute: STRATUM
M Species is a tree and the FREQ is really cover of the tree species in the subcanopy layer and COVER is the cover of the tree species in the main canopy layer
S Species is in the herb or shrub layer (subcanopy layer)

Enumerated Domain for Attribute: DBCODE
TP041 FSDB Database code TP041 (terrestrial productivity)

Enumerated Domain for Attribute: HABTYPE
1 Tsuga heterophylla/acer circinatum/polystichum munitum
2 Tsuga heterophylla/rhododendron macrophyllum-berberis nervosa
3 Tsuga heterophylla/rhododendron macrophyllum-gaultheria shallon
4 Tsuga heterophylla/castanopsis chrysophylla

Enumerated Domain for Attribute: DBCODE
TP041 FSDB Database code TP041 (terrestrial productivity)

Enumerated Domain for Attribute: BV1
dba basal diameter
ht height
len length
num number

Enumerated Domain for Attribute: BV2
none
ht height
len length
num number

Enumerated Domain for Attribute: DBCODE
TP041 FSDB Database code TP041 (terrestrial productivity)

Enumerated Domain for Attribute: DBCODE
TP041 FSDB Database code TP041 (terrestrial productivity)

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TP041 FSDB Database code TP041 (terrestrial productivity)

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