FIA Data Review

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9/13/2020

Observing Unique Species

Conifer species we are focusing on for our GP:

| Scientific Name	Common Name	Code
Pinus ponderosa	Ponderosa pine	PIPO
Pinus jeffreyi	Jeffery pine	PIJE
Pinus coulteri	Coulter pine	PICO3
Pinus lambertiana	Sugar pine	PILA
Pseudotsuga macrocarpa	Big cone douglas fir	PSMA
Abies concolor	White fir	ABCO
Calocedrus decurrens	Incense cedar	CADE
Pinus contorta ssp. murrayana	Lodgepole pine	PICO/PICOM

Tree Size Classes

Diameter base height in cm; classes determined from Figure 19 (pg 106 hard-copy and 116 digital) in Safford and Stevens 2017

Use variable DBHI and convert from inches to cm

- 5 - 20 cm
- 20 - 40 cm
- 40 - 60 cm
- 60 - 80 cm
- 80 - 100 cm
- 100 - 120 cm
- 120 - 140 cm
- > 140 cm

ANF Data Analysis

ANF Data Collection Dates
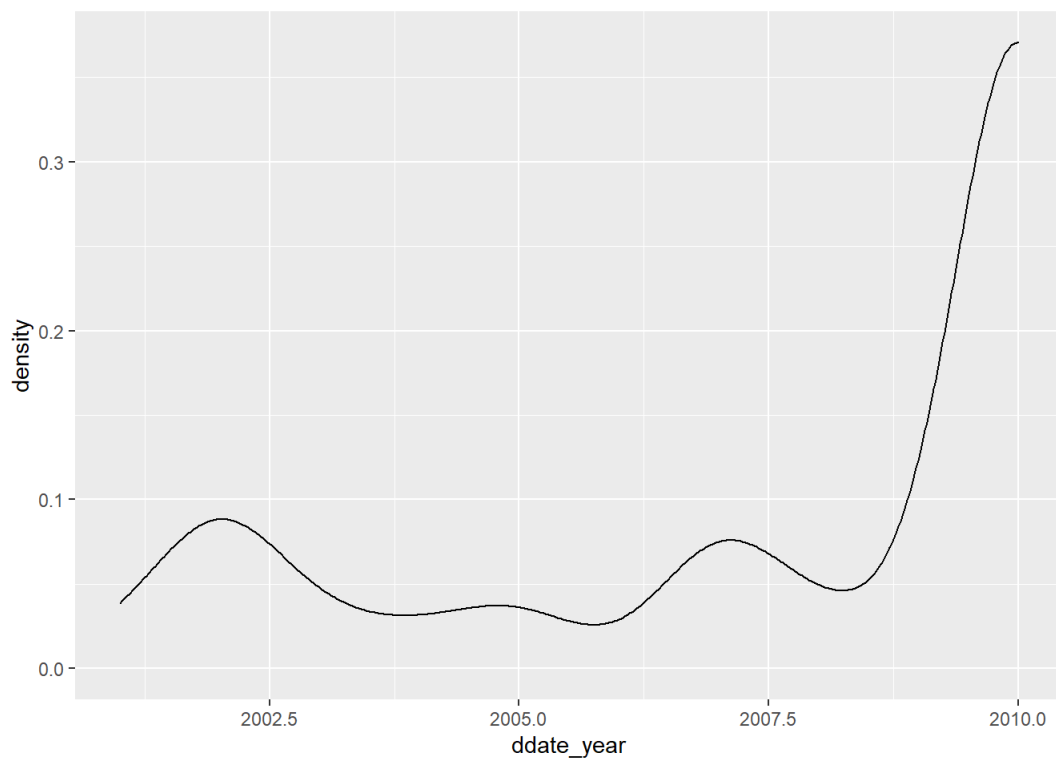
ANF Conifer Count

species	n
ABCO	108
CADE27	21
PICO	24
PICO3	10
PIJE	152
PILA	59
PIPO	2
PSMA	90

ANF Trees per Plot

plot	n
001	51
013	2
017	10
018	8
020	1
030	11
033	8
034	16
040	1

plot	n
041	2
044	3
052	2
105	14
106	28
114	2
116	3
118	3
119	14
121	21
124	12
125	20
126	5
128	5
129	6
131	15
134	1
136	1
142	1
152	27
153	30
154	11
158	15
173	17
183	12
189	1
192	33
195	6
196	19
197	28
615	1

ANF by Tree size class

Size Class (cm)	Count

Size Class (cm)	Count
0-5	11
5-20	32
20-40	82
40-60	61
60-80	157
80-100	90
100-120	27
120-140	4
>140	2

Size Class (cm)	Species	Count
0-5	ABCO	3
0-5	PICO	2
0-5	PIJE	4
0-5	PILA	2
5-20	ABCO	10
5-20	CADE27	3
5-20	PICO	4
5-20	PIJE	12
5-20	PILA	1
5-20	PSMA	2
20-40	ABCO	18
20-40	CADE27	3
20-40	PICO	4
20-40	PICO3	1
20-40	PIJE	26
20-40	PILA	6
20-40	PIPO	1
20-40	PSMA	23
40-60	ABCO	21
40-60	PICO	2
40-60	PICO3	4
40-60	PIJE	20
40-60	PILA	3

Size Class (cm)	Species	Count
40-60	PSMA	11
60-80	ABCO	36
60-80	CADE27	8
60-80	PICO	6
60-80	PICO3	4
60-80	PIJE	50
60-80	PILA	17
60-80	PSMA	36
80-100	ABCO	13
80-100	CADE27	2
80-100	PICO	5
80-100	PICO3	1
80-100	PIJE	31
80-100	PILA	21
80-100	PIPO	1
80-100	PSMA	16
100-120	ABCO	5
100-120	CADE27	3
100-120	PICO	1
100-120	PIJE	8
100-120	PILA	8
100-120	PSMA	2
120-140	ABCO	1
120-140	CADE27	1
120-140	PIJE	1
120-140	PILA	1
>140	ABCO	1
>140	CADE27	1

ANF Missing Data

variable	n_miss	pct_miss
dist	1812	100.00
comp	1812	100.00
stan	1812	100.00

variable	n_miss	pct_miss
hist	1812	100.00
hsdt	1812	100.00
dacc	1812	100.00
ctcd	1812	100.00
agcd	1812	100.00
srcd	1812	100.00
tpcd	1812	100.00
mrfl	1812	100.00
optc	1812	100.00
ldcl	1701	93.87
mist	1670	92.16
strc	1665	91.89
sdcl	1544	85.21
defe	1433	79.08
trid	1326	73.18
posi	769	42.44
ecot	503	27.76
ftyp	434	23.95
r5tc	390	21.52
species	323	17.83
gfrm	323	17.83
lfrm	323	17.83
lvdd	323	17.83
forest	0	0.00
plan	0	0.00
stra	0	0.00
splt	0	0.00
plot	0	0.00
ddate_month	0	0.00
ddate_year	0	0.00
invt	0	0.00
site	0	0.00
aspc	0	0.00
slop	0	0.00

| variable	n_miss	pct_miss
elev	0	0.00
poin	0	0.00
tree	0	0.00
tcnt	0	0.00
fact	0	0.00
crow	0	0.00
dbhi	0	0.00
diht	0	0.00
heig	0	0.00
ages	0	0.00
gro1	0	0.00
gro2	0	0.00
hgro	0	0.00
dbhp	0	0.00
paht	0	0.00
prht	0	0.00
basa	0	0.00
ntpa	0	0.00
bag2	0	0.00
pclu	0	0.00
psta	0	0.00
pstr	0	0.00
cstr	0	0.00
meas	0	0.00
inds	0	0.00
crwi	0	0.00
crln	0	0.00
cullrough	0	0.00
cullfld	0	0.00
gis_link	0	0.00
project_name	0	0.00
fld_id	0	0.00

ANF FIA Data Summary

- The total number of data points recorded in the FIA data for ANF is 1812.

- There are 139 plots in ANF. 40 contain conifer trees.
- A total of 27 unique plant species are recorded in this FIA dataset. Only 8 of these are our conifer species of interest.
- 466 trees are recorded as conifer trees.
- 1023 are recorded as other plant species.
- There are 323 missing values in the species column.

CNF Data Analysis

CNF Data Collection Dates
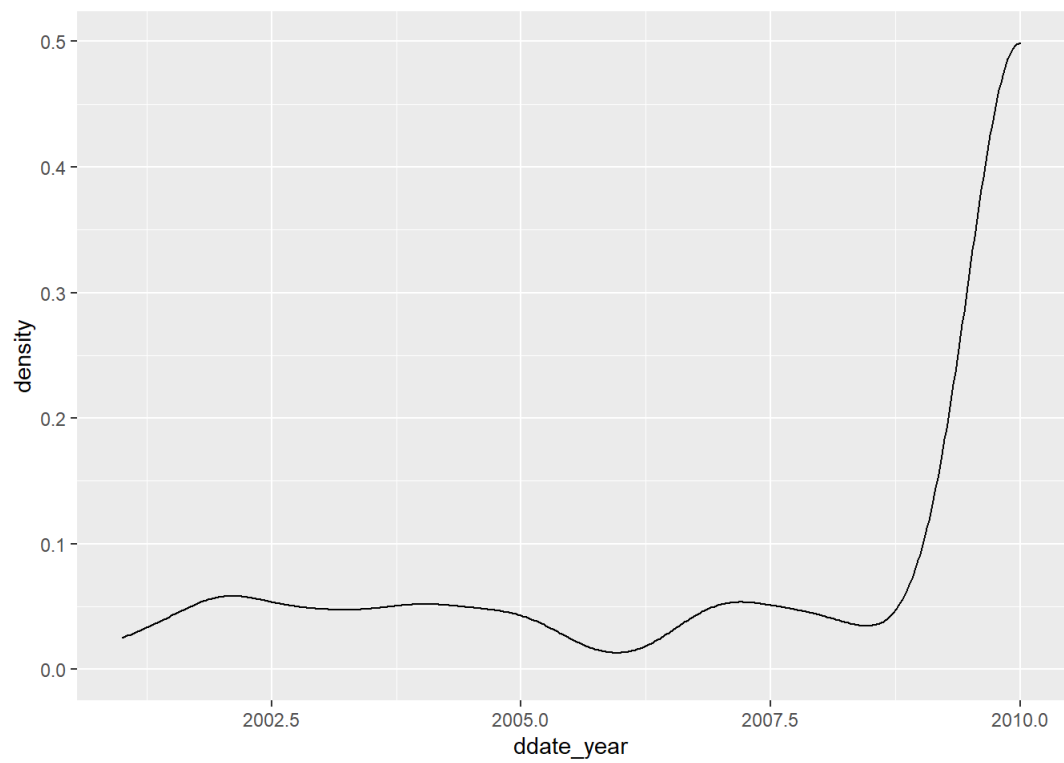
CNF Conifer Count

species	n
ABCO	1
CADE27	6
PICO3	13
PIJE	41
PSMA	19

CNF Trees per Plot

plot	n
057	1
069	9
073	4
075	7
085	6
086	6
090	12
091	1

plot	n
110	1
113	13
120	5
122	3
128	12

CNF by Tree size class

Size Class (cm)	Count
0-5	1
5-20	4
20-40	22
40-60	22
60-80	18
80-100	9
100-120	3
120-140	1

Size Class (cm)	Species	Count
0-5	PIJE	1
5-20	PICO3	2
5-20	PIJE	2
20-40	CADE27	3
20-40	PICO3	2
20-40	PIJE	15
20-40	PSMA	2
40-60	ABCO	1
40-60	CADE27	1
40-60	PICO3	7
40-60	PIJE	8
40-60	PSMA	5
60-80	CADE27	1
60-80	PICO3	1
60-80	PIJE	12
60-80	PSMA	4
80-100	CADE27	1
80-100	PICO3	1

Size Class (cm)	Species	Count
80-100	PIJE	3
80-100	PSMA	4
100-120	PSMA	3
120-140	PSMA	1

CNF Missing Data

variable	n_miss	pct_miss
dist	843	100.00
comp	843	100.00
stan	843	100.00
hist	843	100.00
hsdt	843	100.00
dacc	843	100.00
ctcd	843	100.00
agcd	843	100.00
srcd	843	100.00
tpcd	843	100.00
mrfl	843	100.00
optc	843	100.00
strc	801	95.02
ldcl	786	93.24
mist	785	93.12
sdcl	760	90.15
defe	703	83.39
trid	624	74.02
posi	435	51.60
ftyp	318	37.72
r5tc	295	34.99
ecot	280	33.21
species	261	30.96
gfrm	261	30.96
lfrm	261	30.96
lvdd	261	30.96
forest	0	0.00

variable	n_miss	pct_miss
plan	0	0.00
stra	0	0.00
splt	0	0.00
plot	0	0.00
ddate_month	0	0.00
ddate_year	0	0.00
invt	0	0.00
site	0	0.00
aspc	0	0.00
slop	0	0.00
elev	0	0.00
poin	0	0.00
tree	0	0.00
tcnt	0	0.00
fact	0	0.00
crow	0	0.00
dbhi	0	0.00
diht	0	0.00
heig	0	0.00
ages	0	0.00
gro1	0	0.00
gro2	0	0.00
hgro	0	0.00
dbhp	0	0.00
paht	0	0.00
prht	0	0.00
basa	0	0.00
ntpa	0	0.00
bag2	0	0.00
pclu	0	0.00
psta	0	0.00
pstr	0	0.00
cstr	0	0.00
meas	0	0.00

variable	n_miss	pct_miss
inds	0	0.00
crwi	0	0.00
crln	0	0.00
cullrough	0	0.00
cullfld	0	0.00
gis_link	0	0.00
project_name	0	0.00
fld_id	0	0.00

CNF FIA Data Summary

- The total number of data points recorded in the FIA data for CNF is 843.
- There are 91 plots in ANF. 13 contain conifer trees.
- A total of 14 unique plant species are recorded in this FIA dataset. Only 8 of these are our conifer species of interest.
- 80 trees are recorded as conifer trees.
- 502 are recorded as other plant species.
- There are 261 missing values in the species column.

LPF Data Analysis

LPF Data Collection Dates
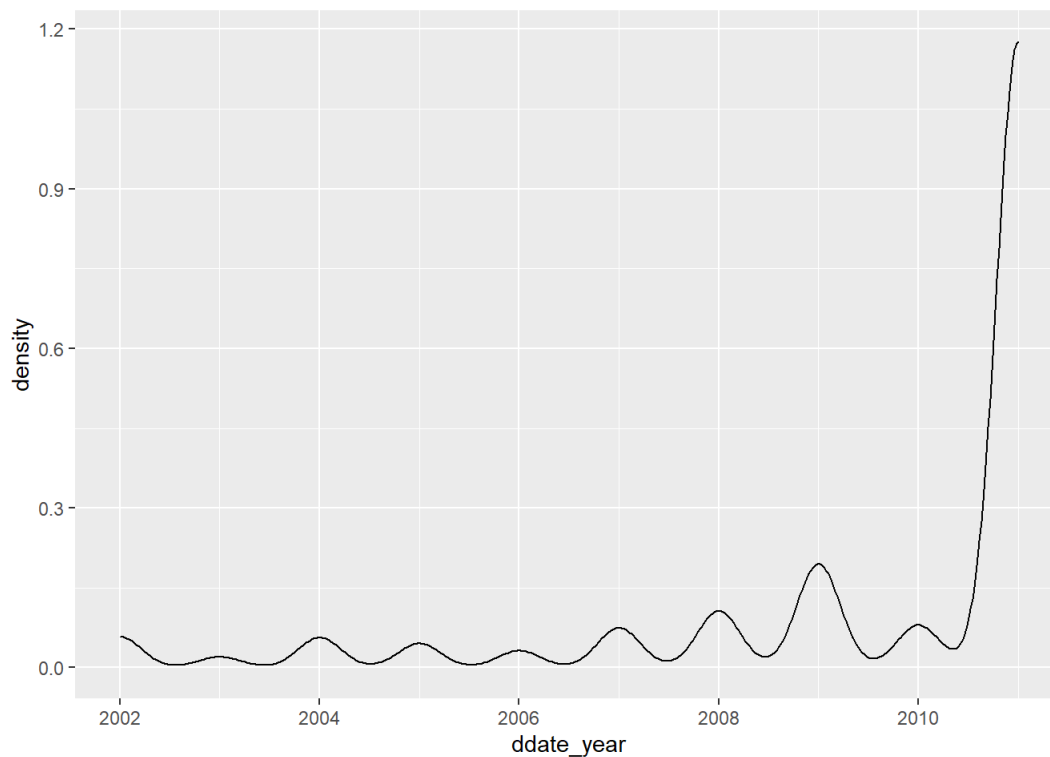
LPF Conifer Count

species	n
ABCO	135
CADE27	32
PICO3	80

species	n
PIJE	548
PILA	73
PIPO	23
PSMA	243

LPF Trees per Plot

plot	n
3	1
34	1
36	5
39	3
74	1
108	39
115	10
134	1
136	4
137	22
138	3
142	7
145	5
148	1
149	2
162	9
163	5
164	5
165	14
167	1
169	1
171	3
232	3
234	1
235	16
236	6
237	32

plot	n
239	6
245	1
248	9
251	1
270	3
273	3
275	21
276	3
277	15
278	3
279	9
280	4
281	9
283	4
285	34
287	1
288	21
289	33
291	42
292	12
296	12
302	20
303	24
309	21
310	24
311	9
313	10
317	3
320	14
336	5
346	2
350	1
361	2
391	4

plot	n
399	3
400	7
402	3
405	1
406	2
417	17
418	23
419	4
432	6
433	19
434	26
439	2
440	2
444	9
448	3
451	27
459	6
460	7
602	1
615	1
640	9
645	57
651	20
660	9
670	2
707	1
710	12
719	4
721	23
722	13
723	14
725	24
726	12
731	1

plot	n
732	14
734	11
737	13
740	5
742	1
749	2
751	13
753	3
757	6
759	2
760	7
761	2
767	2
772	3
777	2
779	9
782	15
793	31
794	11
797	10
801	1
803	1
804	3
809	4
817	1
835	5
844	1

LPF Tree Size Class

Size Class (cm)	Count
0-5	28
5-20	115
20-40	254
40-60	163

Size Class (cm)	Count
60-80	307
80-100	185
100-120	60
120-140	14
>140	8

Size Class (cm)	Species	Count
0-5	ABCO	5
0-5	PICO3	5
0-5	PIJE	13
0-5	PILA	3
0-5	PSMA	2
5-20	ABCO	14
5-20	CADE27	2
5-20	PICO3	11
5-20	PIJE	58
5-20	PILA	15
5-20	PIPO	1
5-20	PSMA	14
20-40	ABCO	31
20-40	CADE27	3
20-40	PICO3	20
20-40	PIJE	146
20-40	PILA	19
20-40	PIPO	1
20-40	PSMA	34
40-60	ABCO	18
40-60	CADE27	7
40-60	PICO3	19
40-60	PIJE	82
40-60	PILA	9
40-60	PSMA	28
60-80	ABCO	37
60-80	CADE27	12

Size Class (cm)	Species	Count
60-80	PICO3	20
60-80	PIJE	143
60-80	PILA	10
60-80	PIPO	8
60-80	PSMA	77
80-100	ABCO	18
80-100	CADE27	8
80-100	PICO3	5
80-100	PIJE	76
80-100	PILA	10
80-100	PIPO	6
80-100	PSMA	62
100-120	ABCO	7
100-120	PIJE	27
100-120	PILA	5
100-120	PIPO	4
100-120	PSMA	17
120-140	ABCO	4
120-140	PIJE	2
120-140	PILA	1
120-140	PIPO	3
120-140	PSMA	4
>140	ABCO	1
>140	PIJE	1
>140	PILA	1
>140	PSMA	5

LPF Missing Data

variable	n_miss	pct_miss
dist	9285	100.00
comp	9285	100.00
stan	9285	100.00
hist	9285	100.00
hsdt	9285	100.00

variable	n_miss	pct_miss
dacc	9285	100.00
ctcd	9285	100.00
agcd	9285	100.00
srcd	9285	100.00
tpcd	9285	100.00
mrfl	9285	100.00
optc	9285	100.00
trid	9104	98.05
ldcl	9032	97.28
strc	8862	95.44
mist	8817	94.96
sdcl	7760	83.58
defe	7507	80.85
ecot	7286	78.47
posi	3128	33.69
r5tc	1350	14.54
ftyp	1095	11.79
species	842	9.07
gfrm	842	9.07
lfrm	842	9.07
lvdd	842	9.07
forest	0	0.00
plan	0	0.00
stra	0	0.00
splt	0	0.00
plot	0	0.00
ddate_month	0	0.00
ddate_year	0	0.00
invt	0	0.00
site	0	0.00
aspc	0	0.00
slop	0	0.00
elev	0	0.00
poin	0	0.00

variable	n_miss	pct_miss
tree	0	0.00
tcnt	0	0.00
fact	0	0.00
crow	0	0.00
dbhi	0	0.00
diht	0	0.00
heig	0	0.00
ages	0	0.00
gro1	0	0.00
gro2	0	0.00
hgro	0	0.00
dbhp	0	0.00
paht	0	0.00
prht	0	0.00
basa	0	0.00
ntpa	0	0.00
bag2	0	0.00
pclu	0	0.00
psta	0	0.00
pstr	0	0.00
cstr	0	0.00
meas	0	0.00
inds	0	0.00
crwi	0	0.00
crln	0	0.00
cullrough	0	0.00
cullfld	0	0.00
gis_link	0	0.00
project_name	0	0.00
fld_id	0	0.00

LPF FIA Data Summary

- The total number of data points recorded in the FIA data for LPF is 9285.
- There are 558 plots in ANF. 122 contain conifer trees.
- A total of 42 unique plant species are recorded in this FIA dataset. Only 8 of these are our conifer species of interest.
- 1134 trees are recorded as conifer trees.
- 7309 are recorded as other plant species.

- There are 842 missing values in the species column.

BDF Data Analysis
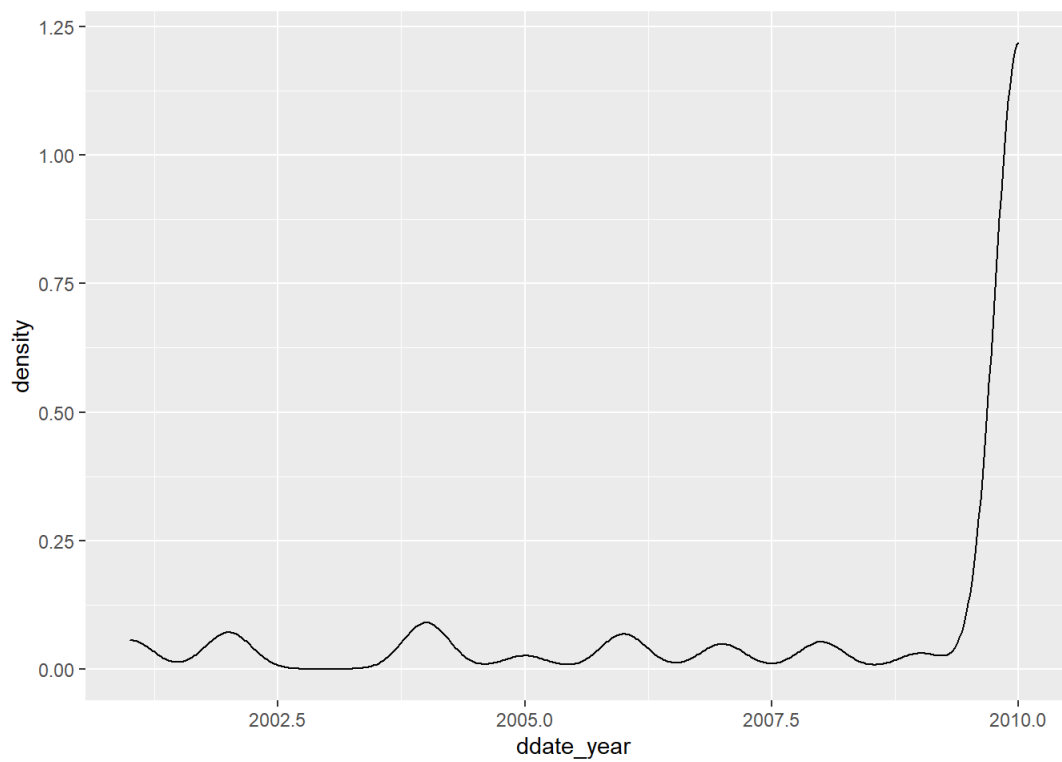
BDF Conifer Count

species	n
ABCO	910
CADE27	171
PICO	207
PICO3	137
PIJE	579
PILA	187
PIPO	59
PSMA	62

BDF Trees per Plot

plot	n
006	11
011	5
018	4
021	7
024	23
025	1
027	18

plot	n
028	16
029	48
030	27
033	62
034	39
036	30
038	1
039	28
040	17
041	8
045	15
046	21
050	3
060	43
061	14
065	14
070	8
071	1
078	5
080	13
082	11
083	3
085	2
087	1
088	10
090	12
092	11
093	53
094	24
095	6
097	76
099	28
101	13
102	10

plot	n
103	38
105	31
107	23
109	31
110	21
111	22
113	59
114	10
115	18
118	8
120	46
121	35
123	8
124	7
125	26
128	29
129	11
132	2
133	39
134	16
136	18
137	7
138	36
139	29
141	13
144	7
146	16
147	34
148	28
155	24
157	7
158	7
159	1
160	16

plot	n
161	10
162	8
164	20
165	3
169	11
170	6
172	17
174	2
177	5
179	6
180	14
186	2
189	3
190	6
191	1
202	3
203	3
208	6
211	9
213	14
215	2
301	35
302	7
304	19
305	1
306	18
308	14
309	36
310	17
312	30
313	44
314	5
315	7
316	10

plot	n
317	11
318	35
319	38
320	60
321	15
322	16
323	10
324	31
325	5
327	21
330	40
331	15
332	19
333	19
334	12
609	32
619	22
620	10
621	38
624	4

BDF Tree Size Class

Size Class (cm)	Count
0-5	80
5-20	322
20-40	535
40-60	325
60-80	621
80-100	297
100-120	94
120-140	30
>140	8

Size Class (cm)	Species	Count
0-5	ABCO	42

Size Class (cm)	Species	Count
0-5	CADE27	10
0-5	PICO	5
0-5	PICO3	3
0-5	PIJE	7
0-5	PILA	12
0-5	PIPO	1
5-20	ABCO	166
5-20	CADE27	29
5-20	PICO	12
5-20	PICO3	13
5-20	PIJE	74
5-20	PILA	16
5-20	PIPO	4
5-20	PSMA	8
20-40	ABCO	255
20-40	CADE27	39
20-40	PICO	27
20-40	PICO3	36
20-40	PIJE	116
20-40	PILA	37
20-40	PIPO	17
20-40	PSMA	8
40-60	ABCO	114
40-60	CADE27	21
40-60	PICO	38
40-60	PICO3	33
40-60	PIJE	84
40-60	PILA	23
40-60	PIPO	2
40-60	PSMA	10
60-80	ABCO	199
60-80	CADE27	31
60-80	PICO	93
60-80	PICO3	37

Size Class (cm)	Species	Count
60-80	PIJE	172
60-80	PILA	48
60-80	PIPO	22
60-80	PSMA	19
80-100	ABCO	90
80-100	CADE27	21
80-100	PICO	24
80-100	PICO3	15
80-100	PIJE	96
80-100	PILA	33
80-100	PIPO	9
80-100	PSMA	9
100-120	ABCO	31
100-120	CADE27	12
100-120	PICO	5
100-120	PIJE	23
100-120	PILA	12
100-120	PIPO	3
100-120	PSMA	8
120-140	ABCO	12
120-140	CADE27	4
120-140	PICO	2
120-140	PIJE	6
120-140	PILA	5
120-140	PIPO	1
>140	ABCO	1
>140	CADE27	4
>140	PICO	1
>140	PIJE	1
>140	PILA	1

BDF Missing Data

variable	n_miss	pct_miss
dist	5662	100.00

variable	n_miss	pct_miss
comp	5662	100.00
stan	5662	100.00
strc	5662	100.00
hist	5662	100.00
hsdt	5662	100.00
dacc	5662	100.00
ctcd	5662	100.00
agcd	5662	100.00
srcd	5662	100.00
tpcd	5662	100.00
mrfl	5662	100.00
optc	5662	100.00
ldcl	5199	91.82
mist	4995	88.22
trid	4829	85.29
sdcl	4614	81.49
defe	4151	73.31
ecot	3762	66.44
posi	1991	35.16
ftyp	705	12.45
r5tc	480	8.48
species	242	4.27
gfrm	242	4.27
lfrm	242	4.27
lvdd	242	4.27
forest	0	0.00
plan	0	0.00
stra	0	0.00
splt	0	0.00
plot	0	0.00
ddate_month	0	0.00
ddate_year	0	0.00
invt	0	0.00

variable	n_miss	pct_miss
site	0	0.00
aspc	0	0.00
slop	0	0.00
elev	0	0.00
poin	0	0.00
tree	0	0.00
tcnt	0	0.00
fact	0	0.00
crow	0	0.00
dbhi	0	0.00
diht	0	0.00
heig	0	0.00
ages	0	0.00
gro1	0	0.00
gro2	0	0.00
hgro	0	0.00
dbhp	0	0.00
paht	0	0.00
prht	0	0.00
basa	0	0.00
ntpa	0	0.00
bag2	0	0.00
pclu	0	0.00
psta	0	0.00
pstr	0	0.00
cstr	0	0.00
meas	0	0.00
inds	0	0.00
crwi	0	0.00
crln	0	0.00
cullrough	0	0.00
cullfld	0	0.00
gis_link	0	0.00
project_name	0	0.00

variable	n_miss	pct_miss
fld_id	0	0.00

BDF FIA Data Summary

- The total number of data points recorded in the FIA data for BDF is 5662.
- There are 234 plots in BDF. 129 contain conifer trees.
- A total of 27 unique plant species are recorded in this FIA dataset. Only 8 of these are our conifer species of interest.
- 2312 trees are recorded as conifer trees.
- 3108 are recorded as other plant species.
- There are 242 missing values in the species column.

Summary of NA Statistics

nf_name	nf_na	nf_complete	nf_na_pct
ANF	34471	90557	27.57
CNF	16947	41220	29.14
LPF	178729	461936	27.90
BDF	105300	285378	26.95