



United States Department of Agriculture
US Forest Service
Natural Resource Manager (NRM)



FSVeg Common Stand Exam User Guide Region 3 Appendices

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APPENDIX A: ADMINISTRATIVE AND PROCLAIMED FOREST CODES

Table 1: Region 3 codes

Admin Number	Administrative Forest Name	Proclaimed Number	Proclaimed Forest Name
01	Apache – Sitgreaves	01	Apache
01	Apache – Sitgreaves	11	Sitgreaves
02	Carson	02	Carson
03	Cibola	03	Cibola
04	Coconino	04	Coconino
05	Coronado	05	Coronado
06	Gila	06	Gila
07	Kaibab	07	Kaibab
08	Lincoln	08	Lincoln
09	Prescott	09	Prescott
10	Santa Fe	10	Santa Fe
12	Tonto	12	Tonto
19	Valles Caldera National Preserve	19	Valles Caldera National Preserve

APPENDIX B: DISTRICT CODES

Table 2: Region 3 codes

Forest	Code	District
Apache – Sitgreaves	1	Alpine
Apache – Sitgreaves	2	Black Mesa
Apache – Sitgreaves	3	Clifton
Apache – Sitgreaves	6	Springerville

Forest	Code	District
Apache – Sitgreaves	7	Lakeside
Carson	1	Canjilon
Carson	2	El Rito
Carson	3	Jacarilla
Carson	4	Camino Real
Carson	6	Tres Piedras
Carson	7	Questa
Cibola	2	Mt. Taylor
Cibola	3	Magdalena
Cibola	4	Mountainair
Cibola	5	Sandia
Cibola	6	Black Kettle
Cibola	7	Kiowa
Cibola	8	Rita Blanca
Coconino	2	Peaks
Coconino	5	Mormon Lake
Coconino	6	Red Rock
Coconino	7	Mogollon
Coronado	1	Douglas
Coronado	2	Nogales
Coronado	3	Sierra Vista
Coronado	4	Stafford
Coronado	5	Santa Catalina
Gila	2	Black Range
Gila	3	Luna

Forest	Code	District
Gila	4	Glenwood
Gila	5	Mimbres
Gila	6	Reserve
Gila	7	Silver City
Gila	8	Wilderness
Gila	9	Quemado
Kaibab	1	Williams
Kaibab	2	Chalander
Kaibab	3	North Kaibab
Kaibab	4	Tusayan
Lincoln	1	Smokey Bear
Lincoln	2	Sacramento
Lincoln	3	Guadalupe
Prescott	1	Chino Valley
Prescott	3	Bradshaw
Prescott	5	Verde
Santa Fe	1	Coyote
Santa Fe	2	Cuba
Santa Fe	3	Jemez
Santa Fe	4	Las Vegas
Santa Fe	5	Pecos
Santa Fe	6	Espanola
Tonto	1	Cave Creek
Tonto	2	Globe
Tonto	3	Mesa

Forest	Code	District
Tonto	4	Payson
Tonto	5	Pleasant Valley
Tonto	6	Tonto Basin
Valles Caldera National Preserve	1	Valles Caldera NP

APPENDIX C: STATE CODES

Table 3: Region 3 codes

Code	State
AZ	Arizona
NM	New Mexico

APPENDIX D: COUNTY CODES

Table 4: Arizona County codes

Code	County
1	Apache
3	Cochise
5	Coconino
7	Gila
9	Graham
11	Greenlee
12	LaPaz
13	Maricopa
15	Mohave

Code	County
17	Navajo
19	Pima
21	Pinal
23	Santa Cruz
25	Yavapai

Table 5: New Mexico County codes

Code	County
1	Bernalillo
3	Catron
5	Chaves
6	Cibola
7	Colfax
9	Curry
11	De Baca
13	Dona Ana
15	Eddy
17	Grant
19	Guadalupe
21	Harding
23	Hidalgo
25	Lea
27	Lincoln
28	Los Alamos
29	Luna
31	McKinley

Code	County
33	Mora
35	Otero
37	Quay
39	Rio Arriba
41	Roosevelt
43	Sandoval
45	San Juan
47	San Miguel
49	Santa Fe
51	Sierra
53	Socorro
55	Taos
57	Torrance
59	Union
61	Valencia

APPENDIX E: EXISTING VEGETATION REFERENCES & CODES

Table 6: Existing Vegetation References

Code	Name	Author
SAF	Forest Cover Types of the United States and Canada.	F.H. Eyre, Editor. Society of American Foresters (1980)
SRM	Society for Range Management	Society of Range Management

Table 7: Existing SAF Vegetation codes (Forest Cover Type of the Society of American Foresters – SAF)

Code	Description
000	Non Forest Types
206	Englemann spruce-subalpine fir
209	Bristlecone pine
210	Interior Douglas-fir
211	White fir
216	Blue spruce
217	Aspen – Western forests – Middle elevation – Interior
219	Limber pine
220	Rocky Mountain juniper
235	Cottonwood – willow
237	Interior ponderosa pine
239	Pinyon – juniper
240	Arizona cypress
241	Western live oak
242	Mesquite

Table 8: Existing SRM Vegetation codes (Rangeland Cover Types of Society of Range Management – SRM)

Code	Description
001	Urban
002	Agriculture
004	Forest Land
005	Water
007	Barren Land

Code	Description
000	Non-vegetated
109	Ponderosa pine – shrubland
110	Ponderosa pine – grassland
201	Blue oak woodland
203	Riparian woodland
207	Scrub oak mixed chaparral
208	Ceanothus mixed chaparral
209	Montane shrubland
210	Bitterbrush
211	Creosote bush scrub
212	Blackbush
213	Alpine grassland
215	Valley grassland
216	Montane meadows
217	Wetlands
301	Bluebunch wheatgrass – blue grama
303	Bluebunch wheatgrass – western wheatgrass
310	Needle-and-thread – blue grama
313	Tufted hairgrass – sedge
317	Bitterbrush – bluebunch wheatgrass
320	Black sagebrush – bluebunch wheatgrass
322	Curleat mountain mahogany – bluebunch wheatgrass
401	Basin big sagebrush
402	Mountain big sagebrush
403	Wyoming big sagebrush

Code	Description
405	Black sagebrush
408	Other sagebrush types
409	Tall forb
410	Alpine rangeland
411	Aspen woodland
412	Juniper – pinyon woodland
413	Gambel oak
414	Salt desert shrub
415	Curleaf mountain-mahogany
416	True mountain-mahogany
417	Littleleaf mountain-mahogany
418	Bigtooth maple
419	Bittercherry
420	Snowbrush
421	Chokecherry - serviceberry - rose
422	Riparian
501	Saltbush – greasewood
502	Grama - galleta
503	Arizona chapparal
504	Juniper – pinyon pine woodland
505	Grama – tobosa shrub
506	Creosotebush – bursage
507	Palo Verde – cactus
508	Creosotebush – tarbush
509	Oak – juniper woodland and mahogany-oak

Code	Description
601	Bluestem prairie
604	Bluestem – grama prairie
605	Sage prairie
606	Wheatgrass – bluestem – needlegrass
607	Wheatgrass – needlegrass
608	Wheatgrass – gama – needlegrass
609	Wheatgrass – gama
610	Wheatgrass
611	Blue grama – buffalograss
612	Sagebrush – grass
613	Fescue grassland
614	Crested wheatgrass
615	Wheatgrass – saltgrass – grama
701	Alkali sacaton – tobosagrass
702	Black grama – alkali sacaton
703	Black grama – sideoats grama
704	Blue grama – western wheatgrass
705	Blue grama – galleta
706	Blue grama – sideoats grama
707	Blue grama – sideoats grama – black grama
708	Bluestem – dropseed
709	Bluestem – grama
710	Bluestem prairie
711	Bluestem – sacahuista prairie
712	Galleta – alkali sacaton

Code	Description
713	Grama – muhly – threeawn
714	Grama - bluestem
715	Grama – buffalograss
716	Grama – feathergrass
717	Little bluestem – Indiangrass – Texas wintergrass
718	Mesquite – grama
722	Sand sagebrush – mixed prairie
724	Sideoats grama – New Mexico feathergrass – winterfat
725	Vine mesquite – alkali sacaton
727	Mesquite – buffalograss
728	Mesquite – franjeno – acacia
729	Mesquite
730	Sand shinnery oak
733	Juniper – oak
734	Mesquite – oak
735	Sideoats grama – sumac – juniper
801	Savanna
805	Riparian
809	Mixed hardwood and pine
916	Sedge – shrub tundra
917	Tall shrub swamp
919	Wet meadow tundra
921	Willow

APPENDIX F: POTENTIAL VEGETATION REFERENCES

Table 9: Region 3 references

Code	Name
301	Plant Associations of Arizona and New Mexico. Edition 3. July 1997. Volume 1: Forests and Volume 2: Woodlands

APPENDIX G: POTENTIAL VEGETATION CODES

Table 10: Reference Code 301

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
001010	White fir/Rocky Mountain maple	ABCO/ACGL
001011	White fir/Rocky Mountain maple/creeping barberry	ABCO/ACGL/MARE11
001012	White fir/Rocky Mountain maple/rockspirea	ABCO/ACGL/HODU
001013	White fir/Rocky Mountain maple (riparian)	ABCO/ACGL
001020	White fir/creeping barberry	ABCO/MARE11
001021	White fir/creeping barberry/New Mexico locust	ABCO/MARE11/RONE
001022	White fir/creeping barberry/common juniper	ABCO/MARE/JUCO6
001030	White fir/sprucefir fleabane	ABCO/QUGA
001040	White fir/Arizona fescue	ABCO/FEAR2
001041	White fir/Arizona fescue/muttongrass	ABCO/FEAR2/POFE
001042	White fir/Arizona fescue/Gambel oak	ABCO/FEAR2/QUGA
001050	White fir/Gambel oak	ABCO/QUGA
001051	White fir/Gambel oak/screwleaf muhly	ABCO/QUGA/MUVI2
001052	White fir/Gambel oak/Arizona fescue	ABCO/QUGA/FEAR2
001053	White fir/Gambel oak/pine muhly	ABCO/QUGA/MUDU
001054	White fir/Gambel oak/rockspirea	ABCO/QUGA/HODU

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
001060	White fir/screwleaf muhly	ABCO/MUVI2
001070	White fir/Nevada pea	ABCO/LALAL3
001080	White fir/bigtooth maple	ABCO/ACGR3
001081	White fir/bigtooth maple/rockspirea	ABCO/ACGR3/HODU
001090	White fir/kinnikinnick	ABCO/ARUV
001100	White fir/whortleberry	ABCO/VAMY2
001110	White fir/New Mexico locust	ABCO/RONE
001111	White fir/New Mexico locust/dryspike sedge	ABCO/RONE/CAFO3
001120	White fir/beardless wildrye	ABCO/LETR5
001130	White fir/Arizona walnut	ABCO/JUMA
001140	White fir/mountain snowberry/ponderosa pine	ABCO/SYOR2/PIPO
001141	White fir/mountain snowberry/limber pine	ABCO/SYOR2/PIFL2
001150	White fir/dryspike sedge	ABCO/CAFO3
001160	White fir/burnet ragwort	ABCO/PASA12
003	Subalpine fir (riparian)	ABLAL
003060	Subalpine fir/tall fringed bluebells	ABLAL/MECI3
003080	Subalpine fir/sprucefir fleabane	ABLAL/EREX4
003090	Subalpine fir/common juniper	ABLAL/JUCO6
003110	Subalpine fir/moss	ABLAL/2MOSS
003111	Subalpine fir/moss/Engelmann spruce	ABLAL/2MOSS/PIEN
003112	Subalpine fir/moss/Douglas-fir	ABLAL/2MOSS/PSME
003200	Subalpine fir/whortleberry	ABLAL/VAMY2
003201	Subalpine fir/whortleberry/twinflower	ABLAL/VAMY2/LIBO3
003202	Subalpine fir/whortleberry/thimbleberry	ABLAL/VAMY2/RUPA
003203	Subalpine fir/whortleberry/fivepetal cliffbush	ABLAL/VAMY2/JAAM

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
003231	Subalpine fir/thimbleberry/Rocky Mountain maple	ABLAL/RUPA/ACGL
003240	Subalpine fir/thimbleberry	ABLAL/RUPA
003300	Subalpine fir/burnet ragwort	ABLAL/PASA12
003301	Subalpine fir/burnet ragwort/Douglas-fir	ABLAL/PASA12/PSME
003310	Subalpine fir/Nevada pea	ABLAL/LALAL3
003320	Subalpine fir/fivepetal cliffbush	ABLAL/JAAM
003350	Subalpine fir (scree)	ABLAL
003370	Subalpine fir/dryspike sedge	ABLAL/CAFO3
004060	Engelmann spruce/moss	PIEN/2MOSS
004061	Engelmann spruce/moss/Engelmann spruce	PIEN/2MOSS/PIEN
004062	Engelmann spruce/moss/Douglas-fir	PIEN/2MOSS/PSME
00415	Engelmann spruce/whortleberry/Jacob's ladder	PIEN/VAMY2/POPUD3
004151	Engelmann spruce/whortleberry/Jacob's ladder/Engelmann spruce	PIEN/VAMY2/POPUD3/PIEN
004152	Engelmann spruce/whortleberry/Jacob's ladder/subalpine fir	PIEN/VAMY2/POPU2/ABLA
004300	Engelmann spruce/Rocky Mountain maple	PIEN/ACGL
004310	Engelmann spruce/sprucefir fleabane	PIEN/EREX4
004320	Engelmann spruce/beardless wildrye	PIEN/LETR5
004330	Engelmann spruce/Ross' avens	PIEN/GERO2
004340	Engelmann spruce/gooseberry currant	PIEN/RIMO2
00435	Engelmann spruce/bittercress ragwort	PIEN/PACA34
004350	Engelmann spruce/bittercress ragwort/subalpine fir	PIEN/PACA34/ABLAL
004351	Engelmann spruce/bittercress ragwort/white fir	PIEN/PACA34/ABCO
004360	Engelmann spruce/whortleberry	PIEN/VAMY2

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
006010	Blue spruce/redosier dogwood	PIPU/COSES
00604	Blue spruce/twinflower	PIPU/LINO3
006060	Blue spruce/dryspike sedge	PIPU/CAFO3
006070	Blue spruce/sprucefir fleabane	PIPU/EREX4
006071	Blue spruce/sprucefir fleabane/ponderosa pine	PIPU/EREX4/PIPO
006080	Blue spruce/kinnikinnick	PIPU/ARUV
006090	Blue spruce/Arizona fescue	PIPU/FEAR2
006130	Blue spruce/bittercress ragwort	PIPU/PACA34
011	Blue spruce (riparian)	PIPU
011030	Ponderosa pine/blue grama	PIPO/BOGR2
011031	Ponderosa pine/blue grama/little bluestem	PIPO/BOGR2/SCSC
011032	Ponderosa pine/blue grama/sand bluestem	PIPO/BOGR2/ANHA
011033	Ponderosa pine/blue grama/big sagebrush	PIPO/BOGR2/ARTR2
011034	Ponderosa pine/blue grama/gray oak	PIPO/BOGR2/QUGR2
011035	Ponderosa pine/blue grama/Gambel oak	PIPO/BOGR2/QUGA
011090	Ponderosa pine/Arizona fescue	PIPO/FEAR2
011091	Ponderosa pine/Arizona fescue/Parry's oatgrass	PIPO/FEAR2/DAPA2
011092	Ponderosa pine/Arizona fescue/blue grama	PIPO/FEAR2/BOGR2
011093	Ponderosa pine/Arizona fescue/Gambel oak	PIPO/FEAR2/QUGA
011130	White fir (scree)	ABCO
011210	Ponderosa pine/Gambel oak	PIPO/QUGA
011211	Ponderosa pine/Gambel oak/Arizona fescue	PIPO/QUGA/FEAR2
011212	Ponderosa pine/Gambel oak/longtongue muhly	PIPO/QUGA/MULO
011213	Ponderosa pine/Gambel oak/twoneedle pinyon	PIPO/QUGA/PIED
011214	Ponderosa pine/Gambel oak/mountain muhly	PIPO/QUGA/MUMO

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
011215	Ponderosa pine/Gambel oak/blue grama	PIPO/QUGA/BOGR2
011216	Ponderosa pine/Gambel oak/New Mexico locust	PIPO/QUGA/RONE
011220	Ponderosa pine/silverleaf oak	PIPO/QUHY
011320	Ponderosa pine/Stansbury cliffrose	PIPO/PUST
011330	Ponderosa pine/mountain muhly	PIPO/MUMO
011340	Ponderosa pine/screwleaf muhly	PIPO/MUVI2
011341	Ponderosa pine/screwleaf muhly/Gambel oak	PIPO/MUVI2/QUGA
011350	Ponderosa pine/Indian ricegrass	PIPO/ACHY
011360	Ponderosa pine/gray oak/mountain muhly	PIPO/QUGR3/MUMO
011361	Ponderosa pine/gray oak/mountain muhly	PIPO/QUGR3/MUMO
011370	Ponderosa pine/wavyleaf oak	PIPO/QUPA4
011380	Ponderosa pine/black sagebrush	PIPO/ARNO4
011390	Ponderosa pine/screwleaf muhly-Arizona fescue	PIPO/MUVI2-FEAR2
011391	Ponderosa pine/screwleaf muhly-Arizona fescue/blue grama	PIPO/MUVI2-FEAR2/BOGR2
011392	Ponderosa pine/screwleaf muhly-Arizona fescue/Gambel oak	PIPO/MUVI2-FEAR2/QUGA
011400	Ponderosa pine/kinnikinnick	PIPO/ARUV
011410	Ponderosa pine/Arizona white oak	PIPO/QUAR
011411	Ponderosa pine/Arizona white oak/blue grama	PIPO/QUAR/BOGR2
011420	Ponderosa pine/pointleaf manzanita	PIPO/ARPU5
011430	Ponderosa pine/netleaf oak	PIPO/QURU4
011440	Ponderosa pine/Emory oak	PIPO/QUEM
011460	Ponderosa pine (scree)	PIPO
011470	Ponderosa pine/Arizona walnut	PIPO/JUMA
011500	Ponderosa pine/rockland	PIPO

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
01203	Douglas-fir/creeping barberry	PSME/MARE11
01213	Douglas-fir/mountain ninebark	PSME/PHMO4
012140	Douglas-fir/Gambel oak	PSME/QUGA
012141	Douglas-fir/Gambel oak/Arizona fescue	PSME/QUGA/FEAR2
012142	Douglas-fir/Gambel oak/screwleaf muhly	PSME/QUGA/MUVI2
012143	Douglas-fir/Gambel oak/rockspirea	PSME/QUGA/HODU
01231	Douglas-fir/kinnikinnick	PSME/ARUV
012320	Douglas-fir/fringed brome	PSME/BRCI2
012330	Douglas-fir/Arizona fescue	PSME/FEAR2
012331	Douglas-fir/Arizona fescue/bristlecone pine	PSME/FEAR2/PIAR
012332	Douglas-fir/Arizona fescue/limber pine	PSME/FEAR2/PIFL2
012333	Douglas-fir/Arizona fescue/quaking aspen	PSME/FEAR2/POTR5
012340	Douglas-fir/mountain muhly/twoneedle pinyon	PSME/MUMO/PIED
012341	Douglas-fir/mountain muhly/limber pine	PSME/MUMO/PIFL2
012350	Douglas-fir/screwleaf muhly	PSME/MUVI2
012360	Douglas-fir/silverleaf oak/ponderosa pine	PSME/QUHY/PIPO
012361	Douglas-fir/silverleaf oak/Chihuahuan pine	PSME/QUHY/PILE
012362	Douglas-fir/silverleaf oak/netleaf oak	PSME/QUHY/QURU4
012380	Douglas-fir (scree)	PSME
01239	Douglas-fir/bigtooth maple	PSME/ACGR3
01241	Douglas-fir/rockspirea	PSME/HODU
01242	Douglas-fir/wavyleaf oak	PSME/QUPA4
012420	Douglas-fir/wavyleaf oak	PSME/QUPA4
012430	Douglas-fir/Arizona white oak	PSME/QUAR
03101	Arizona cypress/silverleaf oak	CUAR/QUHY

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
03102	Arizona cypress/Sonoran scrub oak	CUAR/QUTU2
032010	Apache pine/longtongue muhly	PIEN2/MULO
032030	Apache pine/silverleaf oak	PIEN2/QUHY
033010	Chihuahuan pine/pinyon ricegrass	PILE/PIFI
033020	Chihuahuan pine/Arizona white oak	PILE/QUAR
033030	Chihuahuan pine/silverleaf oak	PILE/QUHY
103	Narrowleaf cottonwood (riparian)	POAN3
104	Rio grande cottonwood (riparian)	PODEW
123	Thinleaf alder (riparian)	ALINT
130	Arizona sycamore (riparian)	PLWR2
201010	Oneseed juniper/sideoats grama	JUMO/BOCU
201011	Oneseed juniper/sideoats grama/sacahuista	JUMO/BOCU/NOMI
201020	Oneseed juniper/blue grama	JUMO/BOGR2
201040	Oneseed juniper/big sagebrush	JUMO/ARTR2
201331	Oneseed juniper/rubber rabbitbrush-Apache plume	JUMO/ERNAN5-FAPA
201332	Oneseed juniper/rubber rabbitbrush-Apache plume/gray oak	JUMO/ERNAN5-FAPA/ARTR2
201333	Oneseed juniper/rubber rabbitbrush-Apache plume/big sagebrush	JUMO/ERNAN5-FAPA/QUGR
201340	Oneseed juniper/sand bluestem	JUMO/ANHA
201350	Oneseed juniper/Bigelow sage	JUMO/ARBI3
20140	Oneseed juniper/winterfat	JUMO/KRLA2
201400	Oneseed juniper/wavyleaf oak	JUMO/QUPA4
201410	Oneseed juniper/sacahuista lechuguilla	JUMO/NOMI-AGLE
201420	Oneseed juniper/lechuguilla	JUMO/AGLE
201430	Pinchot's juniper/creosote bush	JUPI/LATR2

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
202020	Utah juniper/big sagebrush	JUOS/ARTR2
202320	Utah juniper/blue grama	JUOS/BOGR2
202321	Utah juniper/blue grama/Stansbury cliffrose	JUOS/BOGR2/PUST
202330	Utah juniper/tobosagrass/mesquite	JUOS/PLMU3/PROSO
202331	Utah juniper/tobosagrass/singleleaf pinyon	JUOS/PLMU3/PIMOF
202500	Utah juniper-oneseed juniper/sparse	JUOS-JUMO
204010	Twoneedle pinyon/big sagebrush/Utah juniper	PIED/ARTR2/JUOS
204011	Twoneedle pinyon/big sagebrush/oneseed juniper	PIED/ARTR2/JUSC2
204012	Twoneedle pinyon/big sagebrush/Rocky Mountain juniper	PIED/ARTR2/JUSC2
204021	Twoneedle pinyon/blue grama/Utah juniper	PIED/BOGR2/JUOS
204022	Twoneedle pinyon/blue grama/oneseed juniper	PIED/BOGR2/JUMO
204023	Twoneedle pinyon/blue grama/alligator juniper	PIED/BOGR2/JUDE2
204024	Twoneedle pinyon/blue grama (hillslope)	PIED/BOGR2
2040301	Twoneedle pinyon/alderleaf mountain mahogany/wavyleaf oak	PIED/CEMO2/QUPA4
2040302	Twoneedle pinyon/alderleaf mountain mahogany/gray oak	PIED/CEMO2/QUGR3
2040303	Twoneedled pinyon/alderleaf mountain mahogany/Gambel oak	PIED/CEMO2/QUGA
20404	Twoneedle pinyon/Gambel oak	PIED/QUGA
204050	Twoneedle pinyon/antelope bitterbrush	PIED/PUTR2
20406	Twoneedle pinyon/muttongrass	PIED/POFE
20410	Twoneedle pinyon/pine muhly	PIED/MUDU
20411	Twoneedle pinyon/New Mexico muhly	PIED/MUPA2
204300	Twoneedle pinyon/sand bluestem	PIED/ANHA
20431	Twoneedle pinyon/Arizona fescue	PIED/FEAR2

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
204320	Twoneedle pinyon/Stansbury cliffrose	PIED/PUST
204321	Twoneedle pinyon/Stansbury cliffrose/big sagebrush	PIED/PUST/ARTR2
204330	Twoneedle pinyon/rubber rabbitbrush-Apache plume	PIED/ERNAN5-FAPA
204350	Twoneedle pinyon/rockland	PIED
204360	Twoneedle pinyon/wavyleaf oak	PIED/QUPA4
204370	Twoneedle pinyon/Dore's needlegrass	PIED/ACNED
204400	Twoneedle pinyon/pointleaf manzanita	PIED/ARPU5
20441	Twoneedle pinyon/blackbrush	PIED/CORA
204500	Twoneedle pinyon/sparse	PIED
230030	Redberry juniper/crucifixion thorn	JUCO11/CAHO3
230040	Redberry juniper/Sonoran scrub oak	JUCO11/QUTU2
230041	Redberry juniper/Sonoran scrub oak/mesquite	JUCO11/QUTU2/PROSO
230042	Redberry juniper/Sonoran scrub oak/blue grama	JUCO11/QUTU2/BOGR2
231010	Alligator juniper/pointleaf manzanita	JUDE2/ARPU5
231020	Alligator juniper/blue grama	JUDE2/BOGR2
231021	Alligator juniper/blue grama/honey mesquite	JUDE2/BOGR2/PRGL2
231030	Alligator juniper/desert ceanothus	JUDE2/CEGR
231040	Alligator juniper/skunkbush sumac	JUDE2/RHTR
231050	Alligator juniper/bullgrass	JUDE2/MUEM
232020	Border pinyon/Arizona orange	PIDI3/CHDUA
232030	Border pinyon/bullgrass	PIDI3/MUEM
23204	Border pinyon/pinyon ricegrass	PIDI3/PIFI
232050	Border pinyon/Toumey oak	PIDI3/QUTO2
232060	Border pinyon/silverleaf oak	PIDI3/QUHY

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
232070	Border pinyon/evergreen sumac	PIDI3/RHVIC
232330	Border pinyon/rubber rabbitbrush-Apache plume	PIDI3/ERNAN5-FAPA
233010	Singleleaf pinyon/pointleaf manzanita	PIMOF/ARPU5
233020	Singleleaf pinyon/blue grama/alligator juniper	PIMOF/BOGR2/JUDE2
233021	Singleleaf pinyon/blue grama/Utah juniper	PIMOF/BOGR2/JUDE2
233022	Singleleaf pinyon/blue grama/Stansbury cliffrose	PIMOF/BOGR2/PUST
233030	Singleleaf pinyon/crucifixion thorn	PIMOF/CAHO3
233040	Singleleaf pinyon/Sonoran scrub oak (vegetation)	PIMOF/QUTU2
233041	Singleleaf pinyon/Sonoran scrub oak (typic phase)	PIMOF/QUTU2
233042	Singleleaf pinyon/Sonoran scrub oak/Stansbury cliffrose	PIMOF/QUTU2/PUST
233050	Singleleaf pinyon/banana yucca	PIMOF/YUBA
233333	Singleleaf pinyon/rubber rabbitbrush-Apache plume	PIMOF/ERNAN5-FAPA
238040	Bristlecone pine/gooseberry currant	PIAR/RIMO2
238300	Bristlecone pine/Arizona fescue	PIAR/FEAR2
238310	Bristlecone pine/Thurber's fescue	PIAR/FETH
240300	Limber pine/kinnikinnick	PIFL2/ARUV
25000	Woodland (scarp)	2TD
335	Bebb willow (riparian)	SABE2
610010	Mexican blue oak/mixed grama	QUOB/BOUTE
610020	Mexican blue oak/common stool	QUOB/DAWH2
620010	Emory oak/pointleaf manzanita	QUEM/ARPU5
620020	Emory oak/sideoats grama	QUEM/BOCU

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
620021	Emory oak/sideoats grama/sacahuista	QUEM/BOCU/NOMI
620030	Emory oak/common stool	QUEM/DAWH2
620040	Emory oak/Arizona walnut	QUEM/JUMA
630010	Gray oak/sideoats grama	QUGR3/BOCU
630020	Gray oak/alderleaf mountain mahogany	QUGR3/CEMO2
630030	Arizona white oak/bullgrass	QUAR/MUEM
630040	Arizona white oak/skunkbush sumac	QUAR/RHTR
630041	Arizona white oak/skunkbush sumac/alligator juniper	QUAR/RHTR/JUDE2
630042	Arizona white oak/skunkbush sumac/oneseed juniper	QUAR/RHTR/JUMO
630043	Arizona white oak/skunkbush sumac/pinyon ricegrass	QUAR/RHTR/PIFI
630050	Arizona white oak/pinyon ricegrass	QUAR/PIFI
650010	Silverleaf oak/longtongue muhly	QUHY/MULO

Table 11: Reference Code 302

PV_CODE	COMMON NAME	SCIENTIFIC_NAME
250000	Scarp	SCARP

APPENDIX H: FUEL PHOTO REFERENCES & CODES

Table 12: Fuel Photo References

Code	Reference
6	Maxwell, Wayne G. and Franklin R. Ward. 1976. Photo Series for Quantifying Forest Residues in the: Ponderosa Pine Type, Ponderosa Pine and Associated Species Types, Lodgepole Pine Type. USDA Forest Service Gen. Tech. Rep. PNW-52, 74 p. Pacific Northwest Range Exp. Stn., Portland, OR 97208.
10	Mackay, Douglas H. and Everett M. Stiger, Delman Goss, Byron Bonney. Photo Series for Quantifying Forest Residues in: Douglas-fir, Englemann Spruce Type, Limber Pine Type, Lodgepole Pine Type, Ponderosa Pine Type, Subalpine Fir Type for Eastern Montana. USDA Forest Service Northern Region. 162 p.
12	Anonymous. Photo Series for Quantifying Forest Residues in the Southwestern Region. USDA Forest Service, Southwest Region, Albuquerque, NM. Date Unknown. 227 p.
17	Ottmar, Roger D., R.E. Vihnanek, and S.C. Wright. 2000. Stereo Photo Series for Quantifying Natural Fuels in Lodgepole Pine, Quaking Aspen, and Gambel Oak Types in the Rocky Mountains.
21	Ottmar, Roger D.; Robert E. Vihnanek, and Jon C. Regelbrugge. 2000. Stereo Photo Series for Quantifying Natural Fuels. Volume IV: Pinyon-Juniper, Sagebrush, and Chaparral Types in the Southwestern United States. PMS 833. Boise, ID: National Wildfire Coordinating Group, National Interagency Fire Center. 97 p.

FUEL PHOTO CODES

Table 13: Fuel Photo Codes for Reference 6

Code
1PP4CC
2PP4CC
1PP4PC
2PP4PC
3PP4PC
4PP4PC

Code
5PP4PC
1PP1TH
2PP1TH
3PP1TH
4PP1TH
5PP1TH
6PP1TH
1PP&ASSOC4PC
2PP&ASSOC4PC
3PP&ASSOC4PC
4PP&ASSOC4PC
5PP&ASSOC4PC
6PP&ASSOC4PC
7PP&ASSOC4PC
8PP&ASSOC4PC
1LP3PC
2LP3PC
3LP3PC
4LP3PC
5LP3P

Table 14: Fuel Photo Codes for Reference 12

Code
1AZPPSPPRE01
1AZPPSPPRE02
1AZPPSPPRE03

Code
1AZPPSPRE04
1JU2
1MC2
1MC3
1PP&ASSOC3
1PP&ASSOC4
1PP1
1PP1(BH)
1PP1TH
1PP1TH(BH)
1PP2
1PP2(BH)
1PP2(PNW-105)
1PP2PC
1PP3
1PP3(BH)
1PP3(PNW-105)
1PP3CC
1PP3PC
1PP4
1PP4PC
1PP4(PNW-105)
1PPSPEPC
1SP3PC
2JU2

Code
2MC2
2MC3
2PP&ASSOC3
2PP&ASSOC4
2PP1
2PP1TH
2PP1TH(BH)
2PP2
2PP2(BH)
2PP2(PNW-105)
2PP2PC
2PP3CC
2PP3PC
2PP3
2PP3(PNW-105)
2PP4
2PP4PC
2PP4(PNW-105)
2PPSP3PC
2SP3PC
3MC2
3MC3
3PP&ASSOC3
3PP&ASSOC4
3PP1

Code
3PP1TH
3PP2
3PP2(PNW-105)
3PP2PC
3PP3PC
3PP3
3PP3(PNW-105)
3PP4
3PP4PC
3PP4(PNW-105)
3PPSP3PC
3WF2
3WF3
4PP&ASSOC3
4PP1TH
4PP1TH(BH)
4PP2
4PP2(PNW-105)
4PP2PC
4PP3
4PP3(PNW-105)
4PP4
4PP4PC
4WF3
5PP&ASSOC3

Code
5PP1TH
5PP1TH(BH)
5PP2PC
5PP3
5PP4PC
6PP1TH
6PP1TH(BH)
6PP3
7PP1TH
7PP1TH(BH)
7PP3
8PP3

Table 15: Fuel Photo Codes for Reference 17

Code
GO01
GO02
GO03
GO04
GO05
GO06
GO07
GO08
GO09
LP01
LP02

Code
LP03
LP03
LP04
LP05
LP06
LP07
LP08
LP09
LP10
LP11
LP12
LP13
QA01
QA02
QA03
QA04
QA05
QA06
QA07
QA08
QA09
QA10
QA11
QA12
QA13

Table 16: Fuel Photo Codes for Reference 21

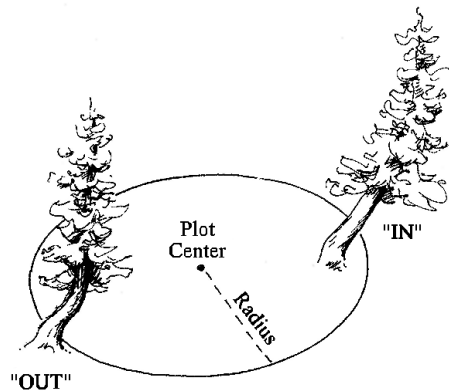
Code
CH01
CH02
CH03
CH04
CH05
CH06
CH07
CH08
CH09
CH10
CH11
CH12
CH13
CH14
CH15
CH16
PJ01
PJ02
PJ03
PJ04
PJ05
PJ06
PJ07
PJ08

Code
PJ09
PJ10
PJ11
PJ12
PJ13
PJ14
SWSB01
SWSB02
SWSB03
SWSB04
SWSB05
SWSB06
SWSB07
SWSB08
SWSB09
SWSB10
SWSB11

APPENDIX I: FIXED RADIUS PLOT

A fixed radius plot is used to sample trees that are less than the specified breakpoint diameter. These sample trees are determined to be “in” or “out” at ground line. If the measured distance from plot center to the central axis of the tree at ground line is equal to or less than the fixed plot radius the tree is tallied as a sample tree. If this distance is greater than the fixed plot radius, the tree is not tallied.

Figure 1: Trees “in” and “out” of fixed radius plot



On level ground, the fixed plot radius is determined by holding the measuring tape or pole in a horizontal position from plot center to the central axis of the sample tree. On slopes greater than 9 percent, if a measuring tape or pole cannot be horizontally from plot center to the central axis of the sample tree, the fixed plot radius is corrected for the slope percent by using one of the following methods.

METHOD 1

Correct the fixed plot radius for slope percent using the “Circular Plot Radii Corrected for Slope” table and then measuring distances parallel to the ground line. This method always results in a circular plot on the slope. Example – 1/300 acre fixed plot on 50 percent slope. Corrected fixed plot radius is 7.2 feet.

Figure 2: Correcting the fixed plot radius for slope percent

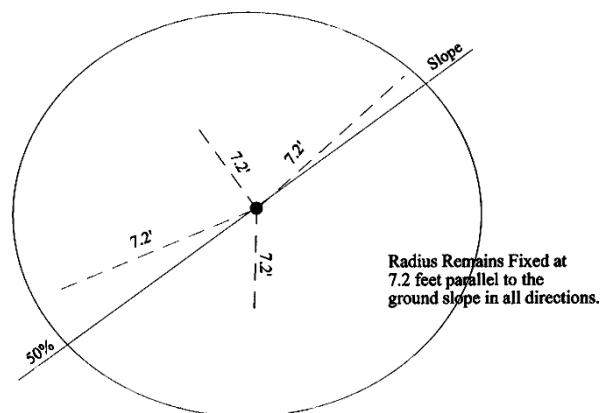


Table 17: Circular Plot Radii Corrected for Slope; plot size in acres

Slope %	1 / 300	1 / 100	1 / 50	1 / 20	1 / 10	1 / 5
0-9	6.8	11.8	16.7	26.3	37.2	52.7
10-17	6.8	11.8	16.7	26.5	37.4	52.9

Slope %	1 / 300	1 / 100	1 / 50	1 / 20	1 / 10	1 / 5
18-22	6.9	11.9	16.8	26.6	37.6	53.2
23-26	6.9	12.0	16.9	26.7	37.8	53.4
27-30	6.9	12.0	17.0	26.9	38.0	53.7
31-33	7.0	12.1	17.1	27.0	38.2	54.0
34-36	7.0	12.1	17.1	27.1	38.3	54.2
37-39	7.0	12.2	17.2	27.2	38.5	54.5
40-42	7.1	12.2	17.3	27.4	38.7	54.7
43-44	7.1	12.3	17.4	27.5	38.9	55.0
45-47	7.1	12.3	17.5	27.6	39.1	55.2
48-49	7.2	12.4	17.5	27.7	39.2	55.5
50-51	7.2	12.5	17.6	27.9	39.4	55.7
52-53	7.2	12.5	17.7	28.0	39.6	56.0
54-55	7.3	12.6	17.8	28.1	39.8	56.2
56-57	7.3	12.6	17.9	28.2	39.9	56.5
58-59	7.3	12.7	17.9	28.4	40.1	56.7
60-61	7.4	12.7	18.0	28.5	40.3	57.0
62-63	7.4	12.8	18.1	28.6	40.4	57.2
64-65	7.4	12.8	18.2	28.7	40.6	57.4
66-67	7.4	12.9	18.2	28.8	40.8	57.7
68-69	7.5	13.0	18.3	29.0	41.0	57.9
70	7.5	13.0	18.4	29.1	41.1	58.2
71-72	7.5	13.1	18.5	29.2	41.3	58.4
73-74	7.6	13.1	18.5	29.3	41.5	58.6
75	7.6	13.2	18.6	29.4	41.6	58.7
76-77	7.6	13.2	18.7	29.6	41.8	59.1

Slope %	1 / 300	1 / 100	1 / 50	1 / 20	1 / 10	1 / 5
78-79	7.7	13.3	18.8	29.7	42.0	59.3
80	7.7	13.3	18.8	29.8	42.1	59.6
81-82	7.7	13.4	18.9	29.9	42.3	59.8
83	7.8	13.4	19.0	30.0	42.5	60.0
84-85	7.8	13.5	19.1	30.1	42.6	60.3
86	7.8	13.5	19.1	30.3	42.8	60.5
87-88	7.8	13.6	19.2	30.4	42.9	60.7
89	7.9	13.6	19.3	30.5	43.1	61.0
90-91	7.9	13.7	19.3	30.6	43.3	61.2
92	7.9	13.7	19.4	30.7	43.4	61.4
93-94	8.0	13.8	19.5	30.8	43.6	61.6
95	8.0	13.8	19.6	30.9	43.7	61.9
96-97	8.0	13.9	19.6	31.0	43.9	62.1
98	8.0	13.9	19.7	31.2	44.1	62.3
99-100	8.1	14.0	19.8	31.3	44.2	62.5
101	8.1	14.0	19.8	31.4	44.4	62.8
102	8.1	14.1	19.9	31.5	44.5	63.0
103-104	8.2	14.1	20.0	31.6	44.7	63.2
105	8.2	14.2	20.1	31.7	44.8	63.4
106-107	8.2	14.2	20.1	31.8	45.0	63.6
108	8.2	14.3	20.2	31.9	45.1	63.8
109	8.3	14.3	20.3	32.0	45.3	64.1
110-111	8.3	14.4	20.3	32.1	45.5	64.3
112	8.3	14.4	20.4	32.2	45.6	64.5
113	8.4	14.5	20.5	32.4	45.8	64.7

Slope %	1 / 300	1 / 100	1 / 50	1 / 20	1 / 10	1 / 5
114-115	8.4	14.5	20.5	32.5	45.9	64.9
116	8.4	14.6	20.6	32.6	46.1	65.1
117	8.4	14.6	20.7	32.7	46.2	65.3
118-119	8.5	14.7	20.7	32.8	46.4	65.6
120	8.5	14.7	20.8	32.9	46.5	65.8
121	8.5	14.8	20.9	33.0	46.7	66.0
122	8.5	14.8	20.9	33.1	46.8	66.2
123-124	8.6	14.8	21.0	33.2	47.0	66.4
125	8.6	14.9	21.1	33.3	47.1	66.6
130	8.7	15.1	21.3	33.7	47.7	67.4
135	8.8	15.3	21.6	34.1	48.3	68.3
140	8.9	15.4	21.8	34.5	48.8	69.1
145	9.0	15.6	22.1	34.9	49.4	69.9
150	9.1	15.8	22.3	35.3	50.0	70.0

METHOD 2

Determine the slope limiting distance to borderline trees by using the "Slope Correction Table" (the slope being corrected is the slope from plot center to the tree, not the overall plot slope). Measure the distance parallel to the ground line to the borderline tree. This method always results in an oval on the slope. Following is a list of fixed plot sizes and the specific radius for each.

Table 18: Method 2 plot size/radius slope

Plot Size	Plot Radius
1/1000	3.7 feet
1/500	5.3 feet
1/400	5.9 feet
1/300	6.8 feet

Plot Size	Plot Radius
1/250	7.4 feet
1/200	8.3 feet
1/150	9.6 feet
1/100	11.8 feet
1/50	16.7 feet
1/20	26.3 feet
1/10	37.2 feet
1/5	52.7 feet
1/4	58.9 feet
1/3	68.0 feet
1/2	83.3 feet
1	117.8 feet

To determine the slope limiting distance, multiply the plot radius for the appropriate plot size by the appropriate slope correction factor.

Example 1

1/300 acre fixed plot with a borderline tree on a 45 percent slope. A 1/300-acre plot equals a 6.8-foot radius and the slope correction factor for a 45 percent slope is 1.10. $6.8 \times 1.10 = 7.48$; thus, a tree on a 1/300 acre fixed plot at a 45 percent slope can be 7.5 feet from plot center.

Example 2

The same plot has another borderline tree on a 25 percent slope. The slope correction factor for a 25 percent slope is 1.03. $6.8 \times 1.03 = 7.0$; thus, a tree on a 1/300 acre fixed plot at a 25 percent slope can be 7.0 feet from plot center.

Figure 3: Plot size radius slope

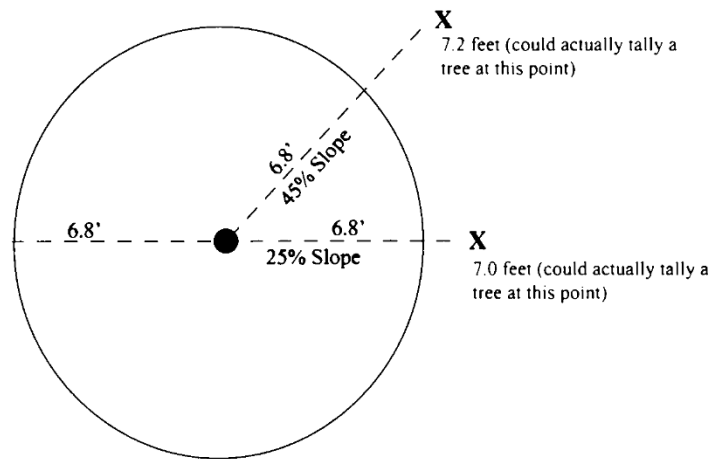


Table 19: Slope Correction Table

Percent of Slope	Degree of Slope	Correction Factor
0 to 9	0-6	1.00
10 to 17	7-10	1.01
18 to 22	11-12	1.02
23 to 26	13-14	1.03
27 to 30	15-17	1.04
31 to 33	18	1.05
34 to 36	19-20	1.06
37 to 39	21	1.07
40 to 42	22	1.08
43 to 44	23	1.09
45 to 47	24	1.10
48 to 49	25-26	1.11
50 to 51	27	1.12
52 to 53	28	1.13
54 to 55	29	1.14

Percent of Slope	Degree of Slope	Correction Factor
56 to 57	29	1.15
58 to 59	30	1.16
60 to 61	31	1.17
62 to 63	32	1.18
64 to 65	33	1.19
66 to 67	34	1.20
68 to 69	34	1.21
70	35	1.22
71 to 72	36	1.23
73 to 74	37	1.24
75	37	1.25
76 to 77	38	1.26
78 to 79	38	1.27
80	39	1.28
81 to 82	39	1.29
83	40	1.30
84 to 85	40	1.31
86	41	1.32
87 to 88	41	1.33
89	42	1.34
90 to 91	42	1.35
92	43	1.36
93 to 94	43	1.37
95	44	1.38
96 to 97	44	1.39

Percent of Slope	Degree of Slope	Correction Factor
98	44	1.40
99 to 100	45	1.41
101	45	1.42
102	46	1.43
103 to 104	46	1.44
105	46	1.45
106 to 107	47	1.46
108	47	1.47
109	47	1.48
110 to 111	48	1.49
112	48	1.50
113	48	1.51
114 to 115	49	1.52
116	49	1.53
117	49	1.54
118 to 119	50	1.55
120	50	1.56
121	50	1.57
122	51	1.58
123 to 124	51	1.59
125	51	1.60
126	52	1.61
127 to 128	52	1.62
129	52	1.63
130	52	1.64

Percent of Slope	Degree of Slope	Correction Factor
131	53	1.65
132 to 133	53	1.66
134	53	1.67
135	53	1.68
136	54	1.69
137 to 138	54	1.70
139	54	1.71
140	54	1.72
141	55	1.73
142 to 143	55	1.74
144	55	1.75
145	55	1.76
146	56	1.77
147	56	1.78
148 to 149	56	1.79
150	56	1.80

APPENDIX J: VARIABLE RADIUS PLOT

INTRODUCTION

In our determination is made at the DBH or DRC of each tree. For information on the theory and mathematics of variable plot cruising, and formulas for determining the plot radius factor for any given BAF, the reader is referred to Log Scaling and Timber Cruising, 1973, J.R. Dilworth. OSU Book Stores, Inc., Corvallis, Oregon.

The experienced field person using a wedge prism, angle gauge, or relaskop can quickly tell in which case trees are "in" or "out" on the variable plot. However, there are certain trees that are questionable (borderline) for tally because they are located at the outer limits of the variable plot radius. This narrative deals with the procedures needed to ascertain if these borderline trees should be tallied: the mechanics of using plot radius tables in the field, the associated measurements, and corrections of variable plot radii for slope.

MEASUREMENT OF BORDERLINE TREES TO DETERMINE “IN OR OUT” STATUS

In variable plot sampling, the plot radius varies according to the DBH or DRC of each tree. To determine whether a tree is to be sampled requires measurement of its DBH or DRC and its distance from plot center. [Table 20](#), _____

[Table 21](#), [Table 22](#), [Table 23](#), [Table 24](#), [Table 25](#), and [Table 26](#) display limiting distances (the maximum horizontal distance from plot center to the face of the tree at breast height for a tree to be considered "in") for various tree diameters and commonly used basal area factors (BAF).

Once the DBH or DRC of the borderline tree is taken, the limiting distance is found by entering the table appropriate for the specified BAF. This limiting distance is then compared to the horizontal distance between plot center and the nearest face of the tree at breast height. If the measured horizontal distance from plot center is *less than or equal to* the limiting distance from the table, the tree in question is "in" and is tallied as a sample tree. However, if measured horizontal distance from plot center is greater than the limiting distance, then the tree in question is "out" and is not tallied.

1. Measure the diameter to the nearest tenth of an inch
2. Measure the percent slope from the face of the tree at DBH or DRC to plot center

If the slope is less than ten percent look up limiting distance in Tables 1 through 5 or use the BAF correction factors listed in Table 26 below.

Table 20: BAF correction factors

Type	Correction Factors								
BAF	10	15	20	25	30	35	40	50	60
Plot Radius Factor*	27.08	2.203	1.902	1.697	1.546	1.428	1.333	1.188	1.081

** This is a corrected plot radius factor, corrected for determining the limiting distance to the face of the tree. A standard plot radius factor was used to determine limiting distance to the center of a tree, and is computed by $8.696/\text{SQR}(\text{BAF})$. A corrected PRF subtracts $1/24$ (0.041666) from the standard plot radius factor.*

Example:

BAF = 40; DBH = 20.9 inches; Slope = 5%

Limiting Distance = Plot Radius Factor * DBH, $1.333 * 20.9 = 27.9$ feet

3. If the slope is greater than ten percent, first determine the slope correction factor. The slope correction factor and the slope corrected plot radius factor can be obtained by using the formula below or by referring to [Table 25](#). Then, multiply the slope correction factor by the plot radius factor identified in step #3 above to obtain the slope corrected plot radius factor. Finally, multiply the slope corrected plot radius factor by the diameter to obtain the limiting distance.

Example:

BAF = 40; DBH = 20.9 inches; Slope = 20%

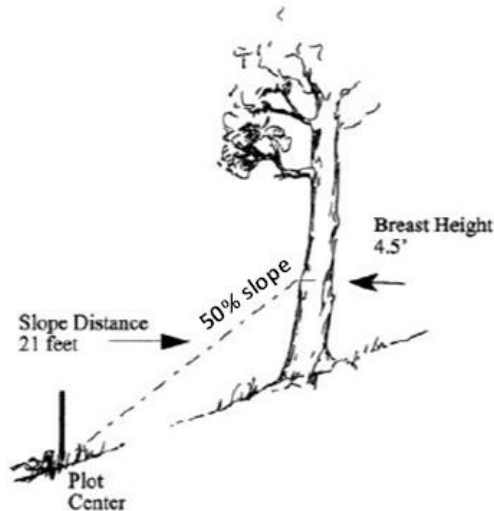
Slope Correction Factor = $\text{SQR}(1 + (\text{slope}/100)^2) = \text{SQR}(1 + (20/100)^2) = 1.0198$

Slope Corrected Plot Radius Factor = Slope Correction Factor * Plot Radius Factor = $1.0198 * 1.333 = 1.359$

Limiting Distance = Slope Corrected Plot Radius Factor * DBH = 1.359 * 20.9 = 28.4 feet

4. Measure the distance from plot center to the face of the tree, nearest plot center, at DBH or DRC. Both the slope measurement and distance measurement must be taken at plot center. If the measured distance is less than the limiting distance, the tree is "in."

Figure 4: Determining limiting distance on a slope



Example:

BAF = 40; DBH = 15.0; Slope = 50%; Slope Distance = 21.0 feet

Referring to [Table 25](#), the Combined Factor for a slope of 50% with a 4- BAF is 1.490.

Limiting Distance = DBH * Combined Factor = 15.0 * 1.490 = 22.35

Since 21.0 is less than or equal to the limiting distance of 22.35 feet, the tree is "in" and is tallied as a sample tree.

Measuring "In" or "Out" Down Trees

Down trees are "in" or "out" of the variable plot radius based on where the DBH or DRC now lies, not on where the tree once stood. The distance measurement is taken from plot center to the nearest face of the tree at breast height.

Table 21: BAF 10 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	13.5	13.8	14.1	14.4	14.6	14.9	15.2	15.4	15.7	16.0
6	16.2	16.5	16.8	17.1	17.3	17.6	17.9	18.1	18.4	18.7
7	19.0	19.2	19.5	19.8	20.0	20.3	20.6	20.9	21.1	21.4
8	21.7	21.9	22.2	22.5	22.7	23.0	23.3	23.6	23.8	24.1
9	24.4	24.6	24.9	25.2	25.5	25.7	26.0	26.3	26.5	26.8
10	27.1	27.4	27.6	27.9	28.2	28.4	28.7	29.0	29.2	29.5
11	29.8	30.1	30.3	30.6	30.9	31.1	31.4	31.7	32.0	32.2
12	32.5	32.8	38.5	38.7	39.0	39.3	39.5	39.8	40.1	40.3
13	35.2	35.5	35.7	36.0	36.3	36.6	36.8	37.1	37.4	37.6
14	37.9	38.2	38.5	38.7	39.0	39.3	39.5	39.8	40.1	40.3
15	40.6	40.9	41.2	41.4	41.7	42.0	42.2	42.5	42.8	43.1
16	43.3	43.6	43.9	44.1	44.4	44.7	45.0	45.2	45.5	45.8
17	46.0	46.3	46.6	46.8	47.1	47.4	47.7	47.9	48.2	48.5
18	48.7	49.0	49.3	49.6	49.8	50.1	50.4	50.6	50.9	51.2
19	51.5	51.7	52.0	52.3	52.5	52.8	53.1	53.3	53.6	53.9
20	54.2	54.4	54.7	55.0	55.2	55.5	55.8	56.1	56.3	56.6
21	56.9	57.1	57.4	57.7	58.0	58.2	58.5	58.8	59.0	59.3
22	59.6	57.1	57.4	57.7	58.0	58.2	58.5	58.8	59.0	59.3
23	62.3	62.6	62.8	63.1	63.4	63.6	63.9	64.2	64.5	64.7
24	65.0	65.3	65.5	65.8	66.1	66.3	66.6	66.9	67.2	67.4
25	67.7	68.0	68.2	63.1	63.4	63.6	63.9	64.2	64.5	64.7
26	70.4	70.7	70.9	71.2	71.5	71.8	72.0	72.3	72.6	72.8
27	73.1	73.4	73.7	73.9	74.2	74.5	74.7	75.0	75.3	75.6
28	75.8	76.1	76.4	76.6	76.9	77.2	77.4	77.7	78.00	78.3

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	78.5	78.8	79.1	79.3	79.6	79.9	80.2	80.4	80.7	81.0
30	81.2	81.5	81.8	82.1	82.3	82.6	82.9	83.1	83.4	83.7
31	83.9	84.2	84.5	84.8	85.0	85.3	85.6	85.8	86.1	86.4
32	86.7	86.9	87.2	87.5	87.7	88.0	88.3	88.6	88.8	89.1
33	89.4	89.6	89.9	90.2	90.4	90.7	91.0	91.3	91.5	91.8
34	92.1	92.3	92.6	92.9	93.2	93.4	93.7	94.0	94.2	94.5
35	94.8	95.1	95.3	95.6	95.9	96.1	96.4	96.7	96.9	97.2
36	97.5	97.8	98.0	98.3	98.6	98.8	99.1	99.4	99.7	99.9
37	100.2	100.5	100.7	101.0	101.3	101.6	101.8	102.1	102.4	102.6
38	102.9	103.2	103.4	103.7	104.0	104.3	104.5	104.8	105.1	105.3
39	105.6	105.9	106.2	106.4	106.7	107.0	107.2	107.5	107.8	108.0
40	108.3	108.6	108.9	109.1	109.4	109.7	109.9	110.2	110.5	110.8
41	111.0	111.3	111.6	111.8	112.1	112.4	112.7	112.9	113.2	113.5
42	113.7	114.0	114.3	114.5	114.8	115.1	115.4	115.6	115.9	116.2
43	116.4	116.7	117.0	117.3	117.5	117.8	118.1	118.3	118.6	118.9
44	119.2	119.4	119.7	120.0	120.2	120.5	120.8	121.0	121.3	121.6
45	121.9	122.1	122.4	122.7	122.9	120.2	123.5	123.8	124.0	124.3
46	124.6	124.8	125.1	125.4	125.7	125.9	126.2	126.5	126.7	127.0
47	127.3	127.5	127.8	128.1	128.4	128.6	128.9	129.2	129.4	129.7
48	130.0	130.3	130.5	130.8	131.1	131.3	131.6	131.9	132.2	132.4
49	132.7	133.0	133.2	133.5	133.8	134.0	134.3	134.6	134.9	135.1
50	135.4	135.7	135.9	136.2	136.5	136.8	137.0	137.3	137.6	137.8

Prepared by multiplying the BAF 10 Plot Radius Factor 2.708 * DBH. For example, if DBH = 14.3 inches, then $14.3 * 2.708 = 38$.

Table 22: BAF 20 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	9.5	9.7	9.9	10.1	10.3	10.5	10.7	10.8	11.0	11.2
6	11.4	11.6	11.8	12.0	12.2	12.4	12.6	12.8	12.9	13.1
7	13.3	13.5	13.7	13.9	14.1	14.3	14.5	14.7	14.8	15.0
8	15.2	15.4	15.6	15.8	16.0	16.2	16.4	16.6	16.8	16.9
9	17.1	17.3	17.5	17.7	17.9	18.1	18.3	18.5	18.6	18.8
10	19.0	19.2	19.4	19.6	19.8	20.0	20.2	20.4	20.6	20.7
11	20.9	21.1	21.3	21.5	21.7	21.9	22.1	22.3	22.5	22.6
12	22.8	23.0	23.2	23.4	23.6	23.8	24.0	24.2	24.4	24.5
13	24.7	24.9	25.1	25.3	25.5	25.7	25.9	26.1	26.3	26.5
14	26.6	26.8	27.0	27.2	27.4	27.6	27.8	28.0	28.2	28.4
15	28.5	28.7	28.9	29.1	29.3	29.5	29.7	29.9	30.1	30.3
16	30.4	30.6	30.8	31.0	31.2	31.4	31.6	31.8	32.0	32.2
17	32.4	32.5	32.7	32.9	33.1	33.3	33.5	33.7	33.9	34.1
18	34.3	34.4	34.6	34.8	35.0	35.2	35.4	35.6	35.8	36.0
19	36.2	36.3	36.5	36.7	36.9	37.1	37.3	37.5	37.7	37.9
20	38.1	38.3	38.4	38.6	38.8	39.0	39.2	39.4	39.6	39.8
21	40.0	40.2	40.3	40.5	40.7	40.9	41.1	41.3	41.5	41.7
22	41.9	42.1	42.2	42.4	42.6	42.8	43.0	43.2	43.4	43.6
23	43.8	44.0	44.1	44.3	44.5	44.7	44.9	45.1	45.3	45.5
24	45.7	45.9	46.1	46.2	46.4	46.6	46.8	47.0	47.2	47.4
25	47.6	47.8	48.0	48.1	48.3	48.5	48.7	48.9	49.1	49.3
26	49.5	49.7	49.9	50.0	50.2	50.4	50.6	50.8	51.0	51.2
27	51.4	51.6	51.8	52.0	52.1	52.3	52.5	52.7	52.9	53.1
28	53.3	53.5	53.7	53.9	54.0	54.2	54.4	54.6	54.8	55.0

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	55.2	55.4	55.6	55.8	55.9	56.1	56.3	56.5	56.7	56.9
30	57.1	57.3	57.5	57.7	57.9	58.0	58.2	58.4	58.6	58.8
31	59.0	59.2	59.4	59.6	59.8	59.9	60.1	60.3	60.5	60.7
32	60.9	61.1	61.3	61.5	61.7	61.8	62.0	62.2	62.4	62.6
33	62.8	63.0	63.2	63.4	63.6	63.8	63.9	64.1	64.3	64.5
34	64.7	64.9	65.1	65.3	65.5	65.7	65.8	6.0	66.2	66.4
35	66.6	66.8	67.0	67.2	67.4	67.6	67.7	67.9	68.1	68.3
36	68.5	68.7	68.9	69.1	69.3	69.5	69.6	69.8	70.0	70.2
37	70.4	70.6	70.8	71.0	71.2	71.4	71.6	71.7	71.9	72.1
38	72.3	72.5	72.7	72.9	73.1	73.3	73.5	73.6	73.8	74.0
39	74.2	74.4	74.6	74.8	75.0	75.2	75.4	75.5	75.7	75.9
40	76.1	76.3	76.5	76.7	76.9	77.1	77.3	77.5	77.6	77.8
41	78.0	78.2	78.4	78.6	78.8	79.0	79.2	79.4	79.5	79.7
42	79.9	80.1	80.3	80.5	80.7	80.9	81.1	81.3	81.4	81.6
43	81.8	82.0	82.2	82.4	82.6	82.8	83.0	83.2	83.4	83.5
44	83.7	83.9	84.1	84.3	84.5	84.7	84.9	85.1	85.3	85.4
45	85.6	85.8	86.0	86.2	86.4	86.6	86.8	87.0	87.2	87.3
46	87.5	87.7	87.9	88.1	88.3	88.5	88.7	88.9	89.1	89.3
47	89.4	89.6	89.8	90.0	90.2	90.4	90.6	90.8	91.0	91.2
48	91.3	91.5	91.7	91.9	92.1	92.3	92.5	92.7	92.9	93.1
49	93.2	93.4	93.6	93.8	94.0	94.2	94.4	94.6	94.8	95.0
50	95.2	95.3	95.5	95.7	95.9	96.1	96.3	96.5	96.7	96.9

Prepared by multiplying the BAF 20 Plot Radius Factor 1.902 * DBH. For example, if DBH = 14.3 inches, then $14.3 * 1.903 = 27$.

Table 23: BAF 30 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	7.7	7.9	8.0	8.2	8.3	8.5	8.7	8.8	9.0	9.1
6	9.3	9.4	9.6	9.7	9.9	10.0	10.2	10.4	10.5	10.7
7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	12.1	12.2
8	12.4	12.5	12.7	12.8	13.0	13.1	13.3	13.5	13.6	13.8
9	13.9	14.1	14.2	14.4	14.5	14.7	14.8	15.0	15.2	15.3
10	15.5	15.6	15.8	15.9	16.1	16.2	16.4	16.5	16.7	16.9
11	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4
12	18.6	18.7	18.9	19.0	19.2	19.3	19.5	19.6	19.8	19.9
13	20.1	20.3	20.4	20.6	20.7	20.9	21.0	21.2	21.3	21.5
14	21.6	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	23.0
15	23.2	23.3	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6
16	24.7	24.9	25.0	25.2	25.4	25.5	25.7	25.8	26.0	26.1
17	26.3	26.4	26.6	26.7	26.9	27.1	27.2	27.4	27.5	27.7
18	27.8	28.0	28.1	28.3	28.4	28.6	28.8	28.9	29.1	29.2
19	29.4	29.5	29.7	29.8	30.0	30.1	30.3	30.5	30.6	30.8
20	30.9	31.1	31.2	31.4	31.5	31.7	31.8	32.0	32.2	32.3
21	32.5	32.6	32.8	32.9	33.1	33.2	33.4	33.5	33.7	33.9
22	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4
23	35.6	35.7	35.9	36.0	36.2	36.3	36.5	36.6	36.8	36.9
24	37.1	37.3	37.4	37.6	37.7	37.9	38.0	38.2	38.3	38.5
25	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	40.00
26	40.2	40.4	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6
27	41.7	41.9	42.1	42.2	42.4	42.5	42.7	42.8	43.0	43.1
28	43.3	43.4	43.6	43.8	43.9	44.1	44.2	44.4	44.5	44.7

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	44.8	45.0	45.1	45.3	45.5	45.6	45.8	45.9	46.1	46.2
30	46.4	46.5	46.7	46.8	47.0	47.2	47.3	47.5	47.6	47.8
31	47.9	48.1	48.2	48.4	48.5	48.7	48.9	49.0	49.2	49.3
32	49.5	49.6	49.8	49.9	50.1	50.2	50.4	50.6	50.7	50.9
33	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.3	52.4
34	52.6	52.7	52.9	53.0	53.2	53.3	53.5	53.6	53.8	54.0
35	54.1	54.3	54.4	54.6	54.7	54.9	55.0	55.2	55.3	55.5
36	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	57.0
37	57.2	57.4	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6
38	58.7	58.9	59.1	59.2	59.4	59.5	59.7	59.8	60.0	60.1
39	60.3	60.4	60.6	60.8	60.9	61.1	61.2	61.4	61.5	61.7
40	61.8	62.0	62.1	62.3	62.5	62.6	62.8	62.9	63.1	63.2
41	63.4	63.5	63.7	63.8	64.0	64.2	64.3	64.5	64.3	64.8
42	64.9	65.1	65.2	65.4	65.6	65.7	65.9	66.0	66.2	66.3
43	66.5	66.6	66.8	66.9	67.1	67.3	67.4	67.6	67.7	67.9
44	68.0	68.2	68.3	68.5	68.6	68.8	69.0	69.1	69.3	69.4
45	69.6	69.7	69.9	70.0	70.2	70.3	70.5	70.7	70.8	71.0
46	71.1	71.3	71.4	71.6	71.7	71.9	72.0	72.2	72.4	72.5
47	72.7	72.8	73.0	73.1	73.3	73.4	73.6	73.7	73.9	74.1
48	74.2	74.4	74.5	74.7	74.8	75.0	75.1	75.3	75.4	75.6
49	75.8	75.9	76.1	76.2	76.4	76.5	76.7	76.8	77.0	77.1
50	77.3	77.5	77.6	77.8	77.9	78.1	78.2	78.4	78.5	78.7

Prepared by multiplying the BAF 30 Plot Radius Factor 1.546 * DBH. For example, if DBH = 14.3 inches, then $14.3 * 1.546 = 22$.

Table 24: BAF 40 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	6.7	6.8	6.9	7.1	7.2	7.3	7.5	7.6	7.7	7.9
6	8.0	8.1	8.3	8.4	8.5	8.7	8.8	8.9	9.1	9.2
7	9.3	9.5	9.6	9.7	9.9	10.0	10.1	10.3	10.4	10.5
8	10.7	10.8	10.9	11.1	11.2	11.3	11.5	11.6	11.7	11.9
9	12.0	12.1	12.3	12.4	12.5	12.7	12.8	12.9	13.1	13.2
10	13.3	13.5	13.6	13.7	13.9	14.0	14.1	14.3	14.4	14.5
11	14.7	14.8	14.9	15.1	15.2	15.3	15.5	15.6	15.7	15.9
12	16.0	16.1	16.3	16.4	16.5	16.7	16.8	16.9	17.1	17.2
13	17.3	17.5	17.6	17.7	17.9	18.0	18.1	18.3	18.4	18.5
14	18.7	18.8	18.9	19.1	19.2	19.3	19.5	19.6	19.7	19.9
15	20.0	20.1	20.3	20.4	20.5	20.7	20.8	20.9	21.1	21.2
16	21.3	21.5	21.6	21.7	21.9	22.0	22.1	22.3	22.4	22.5
17	22.7	22.8	22.9	23.1	23.2	23.3	23.5	23.6	23.7	23.9
18	24.0	24.1	24.3	24.4	24.5	24.7	24.8	24.9	25.1	25.2
19	25.3	25.5	25.6	25.7	25.9	26.0	26.1	26.3	26.4	26.5
20	26.7	26.8	26.9	27.1	27.2	27.3	27.5	27.6	27.7	27.9
21	28.0	28.1	28.3	28.4	28.5	28.7	28.8	28.9	29.1	29.2
22	29.3	29.5	29.6	29.7	29.9	30.0	30.1	30.3	30.4	30.5
23	30.7	30.8	30.9	31.1	31.2	31.3	31.5	31.6	31.7	31.9
24	32.0	32.1	32.3	32.4	32.5	32.7	32.8	32.9	33.1	33.2
25	33.3	33.5	33.6	33.7	33.9	34.0	34.1	34.3	34.4	34.5
26	34.7	34.8	34.9	35.1	35.2	35.3	35.5	35.6	35.7	35.9
27	36.0	36.1	36.3	36.4	36.5	36.7	36.8	36.9	37.1	37.2
28	37.3	37.5	37.6	37.7	37.9	38.0	38.1	38.3	38.4	38.5

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	38.7	34.8	34.9	35.1	35.2	35.3	35.5	35.6	35.7	35.9
30	40.0	40.1	40.3	40.4	40.5	40.7	40.8	40.9	41.1	41.2
31	41.3	41.5	41.6	41.7	41.9	42.0	42.1	42.3	42.4	42.5
32	42.7	42.8	42.9	43.1	43.2	43.3	43.5	43.6	43.7	43.9
33	44.0	44.1	44.3	44.4	44.5	44.7	44.8	44.9	45.1	45.2
34	45.3	45.5	45.6	45.7	45.9	46.0	46.1	46.3	46.4	46.5
35	46.7	46.8	46.9	47.1	47.2	47.3	47.5	47.6	47.7	47.9
36	48.0	48.1	48.2	48.4	48.5	48.7	48.	48.9	49.1	49.2
37	49.3	49.5	49.6	49.7	49.9	50.0	50.1	50.3	50.4	50.5
38	50.7	50.8	50.9	51.1	51.2	51.3	51.5	51.6	51.7	51.9
39	52.0	52.1	52.2	52.4	52.5	52.7	52.8	52.9	53.1	53.2
40	53.3	53.5	53.6	53.7	53.9	54.0	54.1	54.3	54.4	54.5
41	54.7	54.8	54.9	55.1	55.2	55.3	55.5	55.6	55.7	55.9
42	56.0	56.1	56.2	56.4	56.5	56.7	56.8	56.9	57.1	57.2
43	57.3	57.5	57.6	57.7	57.9	58.0	58.1	58.3	58.4	58.5
44	58.7	58.8	58.9	59.1	59.2	59.3	59.5	59.6	59.7	59.9
45	60.0	60.1	60.2	60.4	60.5	60.7	60.8	60.9	61.1	61.2
46	61.3	61.5	61.6	61.7	61.9	62.0	62.1	62.3	62.4	62.5
47	62.7	62.8	62.9	63.1	63.2	63.3	63.5	63.6	63.7	63.9
48	64.0	64.1	64.2	64.4	64.5	64.7	64.8	64.9	65.1	65.2
49	65.3	65.5	65.6	65.7	65.9	66.0	66.1	66.3	66.4	66.5
50	66.7	66.8	66.9	67.0	67.2	67.3	67.4	67.6	67.7	67.8

*Prepared by multiplying the BAF 40 Plot Radius Factor 1.333 * DBH. For example, if DBH = 14.3 inches, then 14.3 * 1.333 = 19.1 feet.*

Table 25: BAF 60 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	5.4	5.5	5.6	5.7	5.8	5.9	6.1	6.2	6.3	6.4
6	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.4	7.5
7	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5
8	8.6	8.8	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.6
9	9.7	9.8	9.9	10.1	10.2	10.3	10.4	10.5	10.6	10.7
10	10.8	10.9	11.0	11.1	11.2	11.4	11.5	11.6	11.7	11.8
11	11.9	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.8	12.9
12	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9
13	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	15.0
14	15.1	15.2	15.4	15.5	15.6	15.7	15.8	15.9	16.0	16.1
15	16.2	16.3	16.4	16.5	16.6	16.7	16.9	17.0	17.1	17.2
16	17.3	17.4	17.5	17.6	17.7	17.8	17.9	18.1	18.2	18.3
17	18.4	18.5	18.6	18.7	18.8	18.9	19.0	19.1	19.2	19.3
18	19.5	19.6	19.7	19.8	19.9	20.0	20.1	20.2	20.3	20.4
19	20.5	20.6	20.8	20.9	21.0	21.1	21.2	21.3	21.4	21.5
20	21.6	21.7	21.8	21.9	22.1	22.2	22.3	22.4	22.5	22.6
21	22.7	22.8	22.9	23.0	23.1	23.2	23.3	23.5	23.6	23.7
22	23.8	23.9	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.8
23	24.9	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8
24	25.9	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9
25	27.0	27.1	27.2	27.3	27.5	27.6	27.7	27.8	27.9	28.0
26	28.1	28.2	28.3	28.4	28.5	28.6	28.8	28.9	29.0	29.1
27	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	30.1	30.2
28	30.3	30.4	30.5	30.6	30.7	30.8	30.9	31.0	31.1	31.2

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	31.3	31.5	31.6	31.7	31.8	31.9	32.0	32.1	32.2	32.3
30	32.4	32.5	32.6	32.8	32.9	33.0	33.1	33.2	33.3	33.4
31	33.5	33.6	33.7	33.8	33.9	34.1	34.2	34.3	34.4	34.5
32	35.7	35.8	35.9	36.0	36.1	36.2	36.3	36.4	36.5	36.6
33	35.7	35.8	35.9	36.0	36.1	36.2	36.3	36.4	36.5	36.6
34	36.8	36.9	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7
35	37.8	37.9	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8
36	38.9	39.0	39.1	39.2	39.3	39.5	39.6	39.7	39.8	39.9
37	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.8	40.9	41.0
38	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	42.1
39	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	43.0	43.1
40	43.2	43.3	43.5	43.6	43.7	43.8	43.9	44.0	44.1	44.2
41	44.3	44.4	44.5	44.6	44.8	44.9	45.0	45.1	45.2	45.3
42	45.4	45.5	45.6	45.7	45.8	45.9	46.1	46.2	46.3	46.4
43	46.5	46.6	46.7	46.8	46.9	47.0	47.1	47.2	47.3	47.5
44	47.6	47.7	47.8	47.9	48.0	48.1	48.2	48.3	48.4	48.5
45	48.6	48.8	48.9	49.0	49.1	49.2	49.3	49.4	49.5	49.6
46	49.7	49.8	49.9	50.1	50.2	50.3	50.4	50.5	50.6	50.7
47	50.8	50.9	51.0	51.1	51.2	51.3	51.5	51.6	51.7	51.8
48	51.9	52.0	52.1	52.2	52.3	52.4	52.5	52.6	52.8	52.9
49	53.0	53.1	53.2	53.3	53.4	53.5	53.6	53.7	53.8	53.9
50	54.1	54.2	54.3	54.4	54.5	54.6	54.7	54.8	54.9	55.0

*Prepared by multiplying the BAF 60 Plot Radius Factor 1.081 * DBH. For example, if DBH = 14.3 inches, then 14.3 * 10.81 = 15.5 feet.*

Table 26: Limiting Distances to Face of Tree and Slope Correction Factors for Various Basal Area Factors

This table provides an expanded list of slope correction factors to the face of the tree for use with various basal area factors. To use the table, measure the slope and distance from plot-center to the face of the tree at DBH. To obtain the corrected limiting distance to a tree, multiply the tree's DBH by the "combined factor" shown under the appropriate BAF heading.

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
1	1.00000	3.847	2.708	2.203	1.902	1.546	1.333
2	1.00020	3.848	2.709	2.203	1.902	1.546	1.333
3	1.00045	3.489	2.709	2.204	1.903	1.547	1.334
4	1.00080	3.850	2.710	2.205	1.904	1.547	1.334
5	1.00125	3.852	2.711	2.206	1.904	1.548	1.335
6	1.00180	3.854	2.713	2.207	1.905	1.549	1.335
7	1.00245	2.856	2.715	2.208	1.907	1.550	1.336
8	1.00319	3.859	2.717	2.210	1.908	1.551	1.337
9	1.00404	3.863	2.719	2.212	1.910	1.552	1.338
10	1.00499	3.866	2.722	2.214	1.911	1.554	1.340
11	1.00603	3.870	2.724	2.216	1.912	1.555	1.341
12	1.00717	3.875	2.727	2.219	1.916	1.557	1.341
13	1.00841	3.879	2.731	2.222	1.918	1.559	1.344
14	1.00975	3.884	2.734	2.224	1.921	1.567	1.346
15	1.01119	3.890	2.738	2.228	1.923	1.563	1/348
16	1.01272	3.896	2.742	2.231	1.926	1.566	1.350
17	1.01435	3.902	2.747	2.235	1.921	1.568	1.352
18	1.01607	3.909	2.752	2.238	1.933	1.571	1.354
19	1.01789	3.916	2.756	2.245	1.936	1.574	1.357
20	1.01980	3.923	2.762	2.245	1.940	1.577	1.359
21	1.02181	3.931	2.767	2.251	1.943	1.580	1.362

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
22	1.02391	3.939	2.773	2.256	1.947	1.583	1.365
23	1.02611	3.947	2.779	2.261	1.952	1.586	1.368
24	1.02840	3.956	2.785	2.266	1.956	1.590	1.371
25	1.03078	3.965	2.791	2.271	1.967	1.594	1.374
26	1.03325	3.975	2.798	2.276	1.965	1.597	1.377
27	1.03581	3.985	2.805	2.282	1.970	1.601	1.381
28	1.03846	3.995	2.812	2.288	1.975	1.605	1.384
29	1.04120	4.005	2.820	2.294	1.980	1.610	1.388
30	1.04403	4.016	2.827	2.300	1.986	1.614	1.392
31	1.04695	4.028	2.835	2.306	1.991	1.619	1.396
32	1.04995	4.039	2.843	2.313	1.997	1.623	1.400
33	1.05304	4.051	2.852	2.320	2.003	1.628	1.404
34	1.05622	4.063	2.960	2.327	2.009	1.633	1.408
35	1.05948	4.076	2.869	2.334	2.015	1.638	1.412
36	1.06283	4.089	2.878	2.341	2.022	1.643	1.417
37	1.06626	4.102	2.887	2.349	2.028	1.648	4.421
38	1.06977	4.115	2.897	2.357	2.035	1.654	1.426
39	1.07336	4.129	2.907	2.365	2.042	1.659	1.431
40	1.07703	4.143	2.917	2.373	2.049	1.665	1.436
41	1.08079	4.158	2.927	2.381	2.056	1.671	1.441
42	1.08462	4.173	2.937	2.389	2.063	1.677	1.446
43	1.08853	4.188	2.948	2.398	2.070	1.683	1.451
44	1.09252	4.203	2.959	2.407	2.078	1.689	1.456
45	1.09659	4.219	2.970	2.416	2.086	1.695	1.462
46	1.10073	4.235	2.981	2.425	2.094	1.702	1.467

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
47	1.10494	4.251	2.992	2.434	2.102	1.708	1.473
48	1.10923	4.267	3.004	2.444	2.110	1.715	1.479
49	1.11360	4.284	3.016	2.453	2.118	1.723	1.484
50	1.11803	4.301	3.028	2.463	2.126	1.728	1.490
51	1.12254	4.318	3.040	2.473	2.135	1.735	1.496
52	1.12712	4.336	3.052	2.483	2.144	1.743	1.502
53	1.13177	4.354	3.065	2.493	2.153	1.750	1.509
54	1.13649	4.372	3.078	2.504	2.162	1.757	1.515
55	1.14127	4.390	3.091	2.514	2.171	1.764	1.521
56	1.14612	4.409	3.104	2.525	2.180	1.772	1.528
57	1.15104	4.428	3.117	2.536	2.189	1.780	1.534
58	1.15603	4.447	3.131	2.547	2.199	1.788	1.541
59	1.16108	4.467	3.144	2.558	2.208	1.795	1.548
60	1.16619	4.486	3.158	2.569	2.218	1.803	1.555
61	1.17137	4.506	3.172	2.581	2.228	1.811	1.561
62	1.17661	4.526	3.186	2.592	2.238	1.819	1.568
63	1.18191	4.547	3.201	2.604	2.248	1.827	1.575
64	1.18727	4.567	3.215	2.616	2.258	1.836	1.583
65	1.19269	4.588	3.230	2.627	2.268	1.844	1.590
66	1.19817	4.609	3.245	2.640	2.279	1.852	1.597
67	1.20370	4.631	3.260	2.652	2.289	1.861	1.605
68	1.20930	4.652	3.275	2.664	2.300	1.870	1.612
69	1.21499	4.691	3.302	2.687	2.319	1.885	1.626
70	1.22066	4.696	3.306	2.689	2.322	1.887	1.627
71	1.22642	4.718	3.321	2.702	2.333	1.896	1.635

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
72	1.23223	4.740	3.337	2.715	2.344	1.905	1.643
73	1.23810	4.763	3.353	2.728	2.355	1.914	1.650
74	1.24403	4.786	3.369	2.741	2.366	1.923	1.658
75	1.25000	4.809	3.385	2.754	2.378	1.933	1.666
76	1.25603	4.832	3.401	2.767	2.389	1.942	1.674
77	1.26210	4.855	3.418	2.780	2.401	1.951	1.682
78	1.26823	4.879	3.434	2.794	2.412	1.961	1.691
79	1.27440	4.903	3.451	2.808	2.424	1.970	1.699
80	1.28062	4.927	3.468	2.821	2.436	1.980	1.707
81	1.28690	4.951	3.485	2.835	2.448	1.990	1.715
82	1.29321	4.975	3.502	2.849	2.460	1.999	1.724
83	1.29958	4.999	3.519	2.863	2.472	2.009	1.732
84	1.30599	5.024	3.537	2.877	2.484	2.019	1.741
85	1.31244	5.049	3.554	2.891	2.496	2.029	1.749
86	1.31894	5.074	3.572	2.906	2.509	2.039	1.758
87	1.32548	5.099	3.589	2.920	2.521	2.049	1.767
88	1.33207	5.124	3.607	2.935	2.534	2.059	1.776
89	1.33870	5.150	3.625	2.949	2.546	2.070	1.784
90	1.34536	5.176	3.643	2.964	2.559	2.080	1.793
91	1.35207	5.201	3.661	2.979	2.572	2.090	1.802
92	1.35882	5.227	3.680	2.993	2.584	2.101	1.811
93	1.36561	5.254	3.698	3.008	2.597	2.111	1.820
94	1.37244	5.280	3.717	3.023	2.610	2.122	1.829
95	1.37931	5.306	3.735	3.039	2.623	2.132	1.839
96	1.38622	5.333	3.754	3.054	2.637	2.143	1.848

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
97	1.39316	5.359	3.773	3.069	2.650	2.154	1.875
98	1.40014	5.386	3.792	3.085	2.663	2.165	1.866
99	1.40716	5.413	3.811	3.100	2.676	2.175	1.876
100	1.41421	5.440	3.830	3.116	2.690	2.186	1.885
102	1.42843	5.495	3.868	3.147	2.717	2.208	1.904
103	1.43558	5.523	3.888	3.163	5.730	2.219	1.914
104	1.44278	5.550	3.907	3.178	2.744	2.231	1.923
105	1.45000	5.578	3.927	3.194	2.758	2.242	1.933
106	1.45726	5.606	3.946	3.210	2.772	2.253	1.943
107	1.46455	5.634	3.966	3.226	2.876	2.264	1.952
108	1.47187	5.662	3.986	3.243	2.799	2.276	1.962
109	1.47922	5.691	4.006	3.259	2.813	2.287	1.972
110	1.48661	5.719	4.026	3.275	2.828	2.298	1.982
111	1.49402	5.747	4.046	3.291	2.842	2.310	1.992
112	1.50147	5.776	4.066	3.308	2.856	2.321	2.001
113	1.50894	5.805	4.086	3.324	2.870	2.333	2.011
114	1.51644	5.834	4.107	3.341	2.884	2.344	2.021
115	1.52498	5.863	4.127	3.357	2.899	2.356	2.031
116	1.53154	5.892	4.147	3.374	2.913	2.368	2.042
117	1.53912	5.921	4.168	3.391	2.927	2.379	2.052
118	1.54674	5.950	4.189	3.407	2.942	2.391	2.062
119	1.55438	5.980	4.209	3.424	2.956	2.403	2.072
120	1.56205	6.000	4.230	3.441	2.971	2.415	2.082
121	1.56975	6.039	4.251	3.458	2.985	2.427	2.092
122	1.57747	6.069	4.272	3.475	3.000	2.439	2.103

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
123	1.58521	6.098	4.293	3.492	3.015	2.451	2.113
124	1.59298	6.128	4.314	3.509	3.030	2.463	2.123
125	1.60078	6.158	4.335	3.527	3.045	2.475	2.134
126	1.60860	6.188	4.356	3.544	3.060	2.487	2.144
127	1.61645	6.218	4.377	3.561	3.074	2.499	2.155
128	1.62432	6.249	4.399	3.578	3.089	2.511	2.165
129	1.63221	6.279	4.420	3.595	3.104	2.523	2.176
130	1.64012	6.310	4.441	3.613	3.120	2.536	2/186
131	1.64806	6.340	4.463	3.631	3.135	2.546	2.197
132	1.65602	6.370	4.485	3.648	3.150	2.560	2.207
133	1.66400	6.401	4.506	3.666	3.165	2.573	2.218
134	1.67200	6.432	4.528	3.683	3.180	2.585	2.229
135	1.68003	6.463	4.550	3.701	3.195	2.597	2.239
136	1.68808	6.494	4.571	3.719	3.211	2.261	2.250
137	1.69614	6.525	4.593	3.737	3.226	2.622	2.261
138	1.70423	6.556	4.615	3.754	3.241	2.635	2.272
139	1.71234	6.587	4.637	3.772	3.257	2.647	2.283
140	1.72047	6.619	4.659	3.790	3.272	2.660	2.293
141	1.72861	6.650	4.681	3.808	3.288	2.672	2.304
142	1.73678	6.681	4.703	3.826	3.303	2.685	2.315
143	1.74497	6.713	4.725	3.844	3.319	2.698	2.326
144	1.75317	6.744	4.748	3.862	3.335	2.710	2.337
145	1.76139	6.776	4.770	3.880	3.350	2.723	2.348
146	1.76963	6.808	4.792	3.898	3.366	2.736	2.359
147	1.77789	6.840	4.815	3.917	3.382	2.749	2.370

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
148	1.78617	6.871	4.837	3.935	3.397	2.761	2.381
149	1.79446	6.903	4.859	3.953	3.413	2.774	2.392

APPENDIX K: DAMAGE CATEGORIES, AGENTS, SEVERITY RATINGS, AND TREE PARTS

DAMAGE CATEGORIES

Detailed descriptions and examples of the content in these tables is available using the Insect & Disease Codes links on the [FSVeg Documentation web page](#).

Table 27: Damage category codes

Code	Description
10	General Insects
11	Bark Beetles
12	Defoliators
13	Chewing Insects
14	Sucking Insects
15	Boring Insects
16	Seed/Cone/Flower/Fruit Insects
17	Gallmaker Insects
18	Insect Predators
19	General Diseases
20	Biotic Damage
21	Root/Butt Diseases
22	Stem Decays/Cankers
23	Parasitic/Epiphytic Plants
24	Decline Complexes/Dieback/Wilts

Code	Description
25	Foliage Diseases
26	Stem Rusts
27	Broom Rusts
30	Fire
40	Animal Damage, Source Unknown
41	Wild Animals
42	Domestic Animals
50	Abiotic Damage
60	Competition
70	Human Activities
71	Harvest
80	Multi-Damage (Insect-Disease)
90	Unknown
99	Physical Effects

DAMAGE AGENTS

Detailed descriptions and examples of the content in these tables is available using the Insect & Disease Codes links on the [FSVeg Documentation web page](#).

Table 28: Damage agent codes

Category	Agent	Common Name	Scientific Name
10	000	General insects	n / a
10	001	Thrips	<i>n/a</i>
10	002	Tip moth	<i>n/a</i>
10	003	Wasp	<i>n/a</i>
10	004	Chinese rose beetle	<i>Adoretus sinicus</i>
10	005	Rose beetle	<i>Adoretus versutus</i>

Category	Agent	Common Name	Scientific Name
10	006	Coconut hispid beetle	<i>Brontispa longissima</i>
10	007	Clerid beetle	<i>Cleridae</i>
10	008	Weevil	<i>Curculionidae</i>
10	009	Green rose chafer	<i>Dichelonyx backi</i>
10	010	Allegheny mound ant	<i>Formica exsectoides</i>
10	011	Ant	<i>Formicidae</i>
10	012	Stick insect	<i>Graeffea crovanii</i>
10	013	Hulodes cranea	<i>Hulodes cranea</i>
10	014	Conifer swift moth	<i>Korsheltellus gracilis</i>
10	015	Caroline shortnosed weevil	<i>Lophothetes spp.</i>
10	016	Coconut rhinoceros beetle	<i>Oryctes rhinoceros</i>
10	017	Bagworm moth	<i>Psychidae</i>
10	018	Coconut palm weevil	<i>Thobdoscelus asperipennis</i>
10	019	Scarab	<i>Scarabaeidae</i>
10	020	Ash white fly	<i>Simphoninus phillyreae</i>
10	021	Unknown	<i>Steremnius carinatu</i>
10	022	Pyralid moth	<i>Thliptoceras octoquttale</i>
10	023	Wood wasps	<i>Siricidae spp.</i>
11	000	Bark beetles	n / a
11	001	Roundheaded pine beetle	<i>Dendroctonus adjunctus</i>
11	002	Western pine beetle	<i>Dendroctonus brevicomis</i>
11	003	Southern pine beetle	<i>Dendroctonus frontalis</i>
11	004	Jeffrey pine beetle	<i>Dendroctonus jeffreyi</i>
11	005	Lodgepole pine beetle	<i>Dendroctonus murrayanae</i>
11	006	Mountain pine beetle	<i>Dendroctonus ponderosae</i>

Category	Agent	Common Name	Scientific Name
11	007	Douglas-fir beetle	<i>Dendroctonus pseudotsugae</i>
11	008	Allegheny spruce beetle	<i>Dendroctonus punctatus</i>
11	009	Spruce beetle	<i>Dendroctonus rufipennis</i>
11	010	Eastern larch beetle	<i>Dendroctonus simplex</i>
11	011	Black turpentine beetle	<i>Dendroctonus terebrans</i>
11	012	Red turpentine beetle	<i>Dendroctonus valens</i>
11	013	Unknown	<i>Dryocoetes affaber</i>
11	014	Unknown	<i>Dryocoetes autographus</i>
11	015	Western balsam bark beetle	<i>Dryocoetes confuses</i>
11	016	Unknown	<i>Dryocoetes sechelti</i>
11	017	Ash bark beetle	<i>Hylesinus spp.</i>
11	018	Native elm bark beetle	<i>Hylurgopinus rufipes</i>
11	019	Pinon ips	<i>Ips confuses</i>
11	020	Small southern pine engraver	<i>Ips avulsus</i>
11	021	Sixspined ips	<i>Ips calligraphus</i>
11	022	Emarginated ips	<i>Ips emarginatus</i>
11	023	Southern pine engraver beetle	<i>Ips grandicollis</i>
11	024	Unknown	<i>Ips latidens</i>
11	025	Arizona five-spined ips	<i>Ips lecontei</i>
11	026	Monterey pine ips	<i>Ips mexicanus</i>
11	027	California five-spined ips	<i>Ips paraconfusus</i>
11	028	Northern spruce engraver beetle	<i>Ips perturbatus</i>
11	029	Pine engraver	<i>Ips pini</i>
11	030	Ips engraver beetles	<i>Ips spp/</i>
11	031	Unknown	<i>Ips tridens</i>

Category	Agent	Common Name	Scientific Name
11	032	Western ash bark beetle	<i>Leperisinus californicus</i>
11	033	Oregon ash bark beetle	<i>Leperisinus oregonus</i>
11	034	Unknown	<i>Orthotomicus caelatus</i>
11	035	Cedar bark beetle	<i>Phloeosinus spp.</i>
11	036	Western cedar bark beetle	<i>Phloeosinus punctatus</i>
11	037	Tip beetles	<i>Pityogenes spp.</i>
11	038	Douglas-fir twig beetle	<i>Pityophthorus pseudotsugae</i>
11	039	Twig beetles	<i>Pityophthorus spp.</i>
11	040	Four-eyed spruce beetle	<i>Polygraphus rufipennis</i>
11	041	Fir root bark beetle	<i>Pseudohylesinum granulates</i>
11	042	Unknown	<i>Pseudohylesinus dispar</i>
11	043	Douglas-fir pole beetle	<i>Pseudohylesinus nebulosus</i>
11	044	Silver fir beetle	<i>Pseudohylesinus sericeus</i>
11	045	Small European elm bark beetle	<i>Scolytus multistriatus</i>
11	046	Spruce engraver	<i>Scolytus piceae</i>
11	047	Hickory bark beetle	<i>Scolytus quadrispinosus</i>
11	048	True fir bark beetle	<i>Scolytus spp.</i>
11	049	Douglas-fir engraver	<i>Scolytus unispinosus</i>
11	050	Fir engraver	<i>Scolytus ventralis</i>
11	051	Striped ambrosia beetle	<i>Tryachykele lineatum</i>
11	052	Sitka spruce engraver beetle	<i>Ips conncinnus</i>
11	053	Four-eyed bark beetle	<i>Polygraphus spp.</i>
11	054	Hemlock beetle	<i>Pseudohylesinus tsugae</i>
11	055	Spruce ips	<i>Ips pilifrons</i>
11	056	Mexican pine beetle	<i>Dendroctonus mexicanus</i>

Category	Agent	Common Name	Scientific Name
12	000	Defoliators	n / a
12	001	Casebearer	n/a
12	002	Leaftier	n/a
12	003	Looper	n/a
12	004	Needleminer	n/a
12	005	Sawfly	n/a
12	006	Skeletonizer	n/a
12	007	Larger elm leaf beetle	<i>Monocesta coryli</i>
12	008	Spanworm	n/a
12	009	Webworm	n/a
12	010	Pine false webworm	<i>Acantholyda erythrocephala</i>
12	011	Western blackheaded budworm	<i>Acleris gloverana</i>
12	012	Eastern blackheaded budworm	<i>Acleris variana</i>
12	013	Whitefly	<i>Aleyrodoidae</i>
12	014	Fall cankerworm	<i>Alsophila pometaria</i>
12	015	Alder flea beetle	<i>Altica ambiens</i>
12	016	Mountain mahogany looper	<i>Anacamptodes clivinaria profanata</i>
12	017	Birch leaffolder	<i>Ancylis disigerana</i>
12	018	Oak worms	<i>Anisota spp.</i>
12	019	Orange-striped oakworm	<i>Anisota senatoria</i>
12	020	Western larch sawfly	<i>Anoplonyx occidens</i>
12	021	Fruit tree leafroller	<i>Archips argyrospila</i>
12	022	Uglynest caterpillar	<i>Archips cerasivorana</i>
12	023	Boxelder defoliator	<i>Archips negundanus</i>
12	024	Oak leafroller	<i>Archips semifera</i>

Category	Agent	Common Name	Scientific Name
12	025	Birch sawfly	<i>Arge pectoralis</i>
12	026	Arborvitae leafminer	<i>Argyresthia thuiella</i>
12	027	Coconut scale	<i>Aspidiotus destructor</i>
12	028	Texas leafcutting ant	<i>Atta texana</i>
12	029	Oak skeletonizer	<i>Bucculatrix ainsliella</i>
12	030	Pear sawfly	<i>Caliroa cerasi</i>
12	031	Scarlet oak sawfly	<i>Caliroa quercuscoccineae</i>
12	032	Elm calligrapha	<i>Calligrapha scalaris</i>
12	033	Boxelder leafroller	<i>Caloptilia negundella</i>
12	034	Maple petiole borer	<i>Caulocampus acericaulis</i>
12	035	Spruce web-spinning sawfly	<i>Cephalcia dascipennis</i>
12	036	Two-year budworm	<i>Choristoneura biennis</i>
12	037	Large aspen tortrix	<i>Choristoneura conflictana</i>
12	038	Spruce budworm	<i>Choristoneura fumiferana</i>
12	039	Sugar pine tortrix	<i>Choristoneura lambertiana</i>
12	040	Western spruce budworm	<i>Choristoneura occidentalis</i>
12	041	Jack pine budworm	<i>Choristoneura pinus</i>
12	042	Modoc budworm	<i>Choristoneura retiniana</i>
12	043	Aspen leaf beetle	<i>Chrysomela crotchii</i>
12	044	Cottonwood leaf beetle	<i>Chrysomela scripta</i>
12	045	Leafhopper	<i>Cicadellidae</i>
12	046	Poplar tentmaker	<i>Clostera inclusa</i>
12	047	Larch casebearer	<i>Coleophora laricella</i>
12	048	Birch casebearer	<i>Coleophora serratella</i>
12	049	Lodgepole needleminer	<i>Coleotechnites milleri</i>

Category	Agent	Common Name	Scientific Name
12	050	Ponderosa needleminer	<i>Coleotechnites spp.</i>
12	051	Black Hills pandora moth	<i>Coloradia doris</i>
12	052	Pandora moth	<i>Coloradia Pandora</i>
12	053	Sycamore lace bug	<i>Corythuca ciliate</i>
12	054	Lace bugs	<i>Corythuca spp.</i>
12	055	Oak leaftier	<i>Croesia semipurpurana</i>
12	056	Dusky birch sawfly	<i>Croesus latitarus</i>
12	057	Walnut caterpillar	<i>Datana integerrima</i>
12	058	Yellow-necked caterpillar	<i>Datana ministra</i>
12	059	Walkingstick	<i>Diapheromera femorata</i>
12	060	Spruce coneworm	<i>Dioryctria reniculelloides</i>
12	061	Introduced pine sawfly	<i>Diprion similis</i>
12	062	Green-striped mapleworm	<i>Dryocampa rubicunda</i>
12	063	Spruce needleminer (east)	<i>Endothenia albolineana</i>
12	064	Elm spanworm	<i>Ennomus subsignaris</i>
12	065	Maple trumpet skeletonizer	<i>Epinotia aceriella</i>
12	066	White fir needleminer	<i>Epinotia meritana</i>
12	067	Linden looper	<i>Erannis tiliaria</i>
12	068	Browntail moth	<i>Euproctis chrysorrhoea</i>
12	069	Pine needleminer	<i>Exoteleia pinifoliella</i>
12	070	Birch leafminer	<i>Fenusa pusilla</i>
12	071	Elm leafminer	<i>Fenusa ulmi</i>
12	072	Geometrid moth	<i>Geometridae</i>
12	073	Leafblotch miner	<i>Gracillariidae</i>
12	074	Spotted tussock moth	<i>Halisidota maculate</i>

Category	Agent	Common Name	Scientific Name
12	075	Pale tussock moth	<i>Halisidota tessellaris</i>
12	076	Hesperiid moth	<i>Hasora choromus</i>
12	077	Brown day moth	<i>Hemileuca eglanderina</i>
12	078	Buck moth	<i>Hemileuca maia</i>
12	079	Saddled prominent	<i>Hererocampa guttivita</i>
12	080	Variable oakleaf caterpillar	<i>Heterocampa manteo</i>
12	081	Cherry scallop shell moth	<i>Hydria prunivorata</i>
12	082	Fall webworm	<i>Hyphantria cunea</i>
12	083	Hemlock looper	<i>Lambdina fiscellaria</i>
12	084	Unknown	<i>Lambdina punctate</i>
12	085	Tent caterpillar moth	<i>Lasiocampidae</i>
12	086	Satin moth	<i>Leucoma salicis</i>
12	087	Willow leafblotch miner	<i>Lithocolletis spp.</i>
12	088	Aspen blotchminer	<i>Lithocolletis tremuloidiella</i>
12	089	Gypsy moth	<i>Lymantria dispar</i>
12	090	Cottonwood leafminers	<i>Lyonetia spp.</i>
12	091	Dogwood sawfly	<i>Macremphytus tarsatus</i>
12	092	Rose chafer	<i>Macroductylus subspinosus</i>
12	093	Eastern tent caterpillar	<i>Malasosoma americanum</i>
12	094	Western tent caterpillar	<i>Malacosoma californicum</i>
12	095	Pacific tent caterpillar	<i>Malacosoma constrictum</i>
12	096	Forest tent caterpillar	<i>Malacosoma disstria</i>
12	097	Southwestern tent caterpillar	<i>Malacosoma incurvum</i>
12	098	Leafcutting bee	<i>Megachilidae</i>
12	099	Blister beetle	<i>Meloidae</i>

Category	Agent	Common Name	Scientific Name
12	100	Early birch leaf edgeminer	<i>Messa nana</i>
12	101	Juniper sawfly	<i>Monoctenus fulvus</i>
12	102	Willow sawfly	<i>Nematus spp.</i>
12	103	Balsam fir sawfly	<i>Neodiprion abietis</i>
12	104	Lodgepole sawfly	<i>Neodiprion burkei</i>
12	105	Blackheaded pine sawfly	<i>Neodiprion</i>
12	106	Pine infesting sawfly	<i>Neodiprion fulviceps</i>
12	107	Redheaded pine sawfly	<i>Neodiprion lecontei</i>
12	109	Ponderosa pine sawfly	<i>Neodiprion mundus</i>
12	110	White pine sawfly	<i>Neodiprion pinetum</i>
12	111	Jack pine sawfly	<i>Neodiprion pratti banksianae</i>
12	112	Virginia pine sawfly	<i>Neodiprion pratti pratti</i>
12	113	European pine sawfly	<i>Neodiprion sertifer</i>
12	114	Loblolly pine sawfly	<i>Neodiprion taedae linearis</i>
12	115	Hemlock sawfly	<i>Neodiprion tsugae</i>
12	116	Pine butterfly	<i>Neophasia menapia</i>
12	117	False hemlock looper	<i>Nepytia canosaria</i>
12	118	California tortoiseshell	<i>Nymphalis California</i>
12	119	Locust leafminer	<i>Odontota dorsalis</i>
12	120	Bruce spanworm	<i>Operophtera bruceata</i>
12	121	Rusty tussock moth	<i>Orgyia antiqua</i>
12	122	Whitemarked tussock moth	<i>Orgyia leucostigma</i>
12	123	Douglas-fir tussock moth	<i>Orgyia pseudotsugata</i>
12	124	Western tussock moth	<i>Orgyia vetusta</i>
12	125	Spring cankerworm	<i>Paleacrita vernata</i>

Category	Agent	Common Name	Scientific Name
12	126	Black citrus swallowtail butterfly	<i>Papilio polytes</i>
12	127	Maple leafcutter	<i>Paraclemensia acerifoliella</i>
12	128	Pine tussock moth	<i>Parorygia grisefacta</i>
12	129	Poinciana looper	<i>Pericyma cruegeri</i>
12	130	Half-wing geometer	<i>Phigalia titea</i>
12	131	Phoberia moth	<i>Phoberia atomaris</i>
12	132	California oakworm	<i>Phryganidia californica</i>
12	133	European snout beetle	<i>Phyllobius oblongus</i>
12	134	Citrus leafminer	<i>Phyllocnistis citrella</i>
12	135	Aspen leafminer	<i>Phyllocnistis populiella</i>
12	136	Yellowheaded spruce sawfly	<i>Pikonema alaskensis</i>
12	137	Tenlined June beetle	<i>Polyphylla decemlineata</i>
12	138	Japanese beetle	<i>Popillia japonica</i>
12	139	Larch sawfly	<i>Pristiphora erichsonii</i>
12	140	Mountain-ash sawfly	<i>Pristiphora geniculate</i>
12	141	Elm leaf beetle	<i>Prrhalta luetola</i>
12	142	Spearmarked black moth	<i>Rheumaptera hastate</i>
12	143	Giant silkworm moth	<i>Saturniidae</i>
12	144	Redhumped caterpillar	<i>Schizura concinna</i>
12	145	Redbanded thrips	<i>Selenothrips rubocinctus</i>
12	146	Larch looper	<i>Semiothisa sexmaculata</i>
12	147	Maple leafroller	<i>Sparganothis acerivorana</i>
12	148	Redhumped oakworm	<i>Symmersita canicosta</i>
12	149	Orangehumped mapleworm	<i>Symmerista leucitys</i>
12	150	Spruce needleminer (west)	<i>Taniva albolineana</i>

Category	Agent	Common Name	Scientific Name
12	151	Maple webworm	<i>Tetralopha asperatella</i>
12	152	Pine webworm	<i>Tetralopha robustella</i>
12	153	Imported basswood thrips	<i>Thrips calcaratus</i>
12	154	Bagworm	<i>Thyridoteryx ephemeraeformis</i>
12	155	Leafroller/seed moth	<i>Tortricidae</i>
12	156	Willow defoliation	<i>Tortricidae</i>
12	157	Euonymus caterpillar	<i>Yponomeuta spp.</i>
12	158	Spruce bud moth	<i>Zeiraphera canadensis</i>
12	159	Larch bud moth	<i>Zieraphera improbana</i>
12	160	Pine needle sheathminer	<i>Zelleria haimbachi</i>
12	161	Cypress looper	<i>Anacamptodes pergrasilis</i>
12	162	Cottonwood leaf beetle	<i>Chrysomela spp.</i>
12	163	Pine colaspis	<i>Colaspis pini</i>
12	164	Saddle-backed looper	<i>Ectropis crepusularia</i>
12	165	Leafroller	<i>Epinotia solandriana</i>
12	166	New Mexico fir looper	<i>Gelenara cansimillis</i>
12	167	Striped alder sawfly	<i>Hemichroa crocea</i>
12	168	Green-striped looper	<i>Melanoplophia imitate</i>
12	169	Willow leaf blotchminer	<i>Micrurapteryx salicifoliella</i>
12	170	Unknown	<i>Neodiprion autmnalis</i>
12	171	Pinon sawfly	<i>Neodiprion edulicolus</i>
12	172	Unknown	<i>Neodiprion gilletti</i>
12	173	Unknown	<i>Neodiprion ventralis</i>
12	174	Pine looper	<i>Phaeoura mexicanaria</i>
12	175	Unknown	<i>Zadiprion ventralis</i>

Category	Agent	Common Name	Scientific Name
12	176	Unknown	<i>Zadiprion rohweri</i>
12	177	Douglas-fir budmoth	<i>Zeiraphera hesperiana</i>
12	178	Western oak looper	<i>Lambdina discellaria somniaria</i>
12	179	Phantom hemlock looper	<i>Nepytia phantasmaria</i>
12	180	Tent caterpillar	<i>Malasocoma spp.</i>
12	188	Elm sawfly	<i>Cimbex Americana</i>
12	189	June beetle	<i>Phyllophaga spp.</i>
12	190	Hickory tussock moth	<i>Halisidota caryae</i>
12	191	Pin oak sawfly	<i>Caliroa lineata</i>
12	192	Palmerworm	<i>Dichomeris ligulella</i>
12	193	Pitch pine looper	<i>Lambdina athasaria pellucidaria</i>
12	194	Red pine sawfly	<i>Neodiprion annulus annulus</i>
12	195	Pine tip moth	<i>Argyrotaenia pinatubana</i>
12	196	Baldcypress leafroller	<i>Archips goyerana</i>
12	197	Winter moth	<i>Operophtera</i>
12	198	Basswood thrip	<i>Neohydatothrips</i>
12	199	Noctuid moth	<i>Xylomyges simplex (walker)</i>
12	200	Pyralid moth	<i>Palpita magniferalis</i>
12	201	Pacific silver fir budmoth	<i>Zeiraphera sp. Destitutana</i>
13	000	Chewing insects	n / a
13	001	Grasshopper	n/a
13	002	Shorthorn grasshoppers	<i>Acrididae</i>
13	003	Black cutworm	<i>Agrotis ipsilon</i>
13	004	Palau coconut beetle	<i>Brontispa palauensis</i>
13	005	Clearwinged grasshopper	<i>Camnula pellucid</i>

Category	Agent	Common Name	Scientific Name
13	006	Cicadas	<i>Cicadidae</i>
13	007	Eurytomids	<i>Eurytoma spp.</i>
13	008	Cutworms	<i>Euxoa excellens</i>
13	009	Whitefringed beetles	<i>Graphognathus spp.</i>
13	010	Pales weevil	<i>Hylobius pales</i>
13	011	Vegetable weevil	<i>Listroderes difficilis</i>
13	012	Periodical cicada	<i>Magicicada septendecim</i>
13	013	Migratory grasshopper	<i>Melanoplus sanguinipes</i>
13	014	Valley grasshopper	<i>Oedaleonotus enigma</i>
13	015	Strawberry root weevil	<i>Otiorhynchus ovatus</i>
13	016	Black vine weevil	<i>Otiorhynchus sulcatus</i>
13	017	Pandanus beetle	<i>Oxycephala pandani</i>
13	018	Spaeth pandanus	<i>Oxycephala spaethi</i>
13	019	Agamemnon butterfly	<i>Papilio agememnon</i>
13	020	Northern pitch twig moth	<i>Petrova albicapitana</i>
13	021	Ponderosa pine tip moth	<i>Rhyacionia zozana</i>
13	022	Pine needle weevil	<i>Scythropus spp.</i>
13	023	Coconut longhorned grasshopper	<i>Segestes unicolor</i>
13	024	Clover root curculio	<i>Sitona hispidulus</i>
13	025	Unknown	<i>Thrips madronii</i>
13	026	Ash plant bug	<i>Tropidosteptes amoenus</i>
13	027	Shorthorned grasshopper	<i>Valanga nigricornis</i>
13	028	Pitch-eating weevil	<i>Pachylobius picivorus</i>
13	029	Deodar weevil	<i>Pissodes nemorensis</i>
13	030	Adana tip moth	<i>Rhyacionia adana</i>

Category	Agent	Common Name	Scientific Name
14	000	Sucking insects	n / a
14	001	Scale insect	n/a
14	002	Western larch wooly aphid	<i>Adelges oregonensis</i>
14	003	Balsam woolly adelgid	<i>Adelges piceae</i>
14	004	Hemlock wooly adelgid	<i>Adelges tsugae</i>
14	005	Spiraling whitefly	<i>Aleurodicus disperses</i>
14	006	Aphid	<i>Aphididae</i>
14	007	Pine spittlebug	<i>Aphrophora parallela</i>
14	008	Western pine spittlebug	<i>Aphrophora permutata</i>
14	009	Saratoga spittlebug	<i>Aphrophora saratogensis</i>
14	010	Spittlebug	<i>Cercopidae</i>
14	011	Wax scale	<i>Ceroplastes spp.</i>
14	012	Pine needle scale	<i>Chionaspis pinifoliae</i>
14	014	Giant conifer aphid	<i>Cinara spp.</i>
14	015	White pine aphid	<i>Cinara strobe</i>
14	016	Beech scale	<i>Cryptococcus fagisuga</i>
14	017	Spruce aphid	<i>Elatobium anatinum</i>
14	018	Woolly apple aphid	<i>Eriosoma lanigerum</i>
14	019	Striped mealybug	<i>Ferrisia vergata</i>
14	020	Elongate hemlock scale	<i>Fiorinia externa</i>
14	021	Coconut red scale	<i>Furcaspis oceanica</i>
14	022	Pine thrips	<i>Gnophothrips spp.</i>
14	023	Leucaena psyllid	<i>Heteropsylla cubana</i>
14	024	Honeysuckle aphid	<i>Hyadaphis tataricae</i>
14	025	Egyptian fluted scale	<i>Icerya aegyptiaca</i>

Category	Agent	Common Name	Scientific Name
14	026	Lecanium scale	<i>Lecanium spp.</i>
14	027	Common falsepit scale	<i>Lecanodiaspis prosopidis</i>
14	028	Oystershell scale	<i>Lepidosaphes ulmi</i>
14	029	Pinyon needle scale	<i>Matsucoccus acalyptus</i>
14	030	Ponderosa pine twig scale	<i>Matsucoccus bisetosus</i>
14	031	Pine twig scale	<i>Matsucoccus californicus</i>
14	032	Ponderosa pine scale	<i>Matsucoccus degeratus</i>
14	033	Red pine scale	<i>Matsucoccus resinosae</i>
14	034	Prescott scale	<i>Matsucoccus vexillorum</i>
14	035	Treehoppers	<i>Membracidae</i>
14	036	Hibiscus psyllid	<i>Mesohomotoma hibisci</i>
14	037	Balsam twig aphid	<i>Mindarus abietinus</i>
14	038	Hibiscus mealybug	<i>Nipaecoccus vastator</i>
14	039	Black pineleaf scale	<i>Nuculaspis California</i>
14	040	Spruce spider mite	<i>Oligonychus ununquis</i>
14	041	Twig girdler	<i>Oncideres cingulate</i>
14	042	Woolly alder aphid	<i>Paraprociophilus tessellatus</i>
14	043	Maple aphid	<i>Periphyllus spp.</i>
14	044	Spruce bud scale	<i>Physokermes piceae</i>
14	045	Red pine adelgid	<i>Pineus borneri</i>
14	046	Pine leaf adelgid	<i>Pineus pinifoliae</i>
14	047	White pine adelgid	<i>Pineus spp.</i>
14	048	Pine bark adelgid	<i>Pineus strobe</i>
14	049	Root aphid	<i>Prociphilus americanus</i>
14	050	Mealybug	<i>Pseudococcidae</i>

Category	Agent	Common Name	Scientific Name
14	051	Cottony maple scale	<i>Pulvinaria innumerabilis</i>
14	052	Fir mealybug	<i>Puto cupressi</i>
14	053	Douglas-fir mealybug	<i>Puto profusus</i>
14	054	Spruce mealybug	<i>Puto sandini</i>
14	055	Hemispherical scale	<i>Saissetia coffeae</i>
14	056	Woolly pine needle aphid	<i>Schizolachnus piniradiatae</i>
14	057	Steatococcus scale	<i>Steatococcus samaraius</i>
14	058	Pear thrip	<i>Taeniothrips inconsequens</i>
14	059	Mulberry whitefly	<i>Tetraleurodes mori</i>
14	060	Tuliptree scale	<i>Toumeyella liriodendra</i>
14	061	Pine tortoise scale	<i>Toumeyella parvicornis</i>
14	062	Citrus snow scale	<i>Unaspis citri</i>
14	063	Birch aphid	<i>Euceraaphis betulae</i>
14	067	Woolly pine scale	<i>Pseudophilippia quaintancii</i>
14	068	European elm scale	<i>Gossyparia spuria</i>
14	069	Elm scurfy scale	<i>Chionaspis Americana</i>
14	070	Magnolia scale	<i>Neolecanium cornuparvum</i>
14	071	Beech blight aphid	<i>Grylloprociphilus imbricator</i>
14	072	Beech woolly aphid	<i>Phyllaphis fagi</i>
15	000	Boring insects	n / a
15	001	Shoot borer	n/a
15	002	Termite	n/a
15	003	Ponderosa pine bark borer	<i>Acanthocinus princeps</i>
15	004	Bronze birch borer	<i>Agrilus anxius</i>
15	005	Twolined chestnut borer	<i>Agrilus bilineatus</i>

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15	006	Bronze poplar borer	<i>Agrilus liragus</i>
15	007	Carpenter bees	<i>Apidae</i>
15	008	Flatheaded borer	<i>Buprestidae</i>
15	009	Golden buprestid	<i>Buprestis aurulenta</i>
15	010	Carpenter ants	<i>Camponotus spp.</i>
15	011	Gouty pitch midge	<i>Cecidomyia piniinopis</i>
15	012	Shootboring sawflies	<i>Cephidae</i>
15	013	Roundheaded borer	<i>Cermbycidae</i>
15	014	Flatheaded apple tree borer	<i>Chrysobothris femorata</i>
15	015	Cranberry girdler	<i>Chrysoteuchia topiaria</i>
15	016	Columbian timber beetle	<i>Corthylus columbianus</i>
15	017	Pitted ambrosia beetle	<i>Corthylus punctatissimus</i>
15	018	Carpenterworm moth	<i>Cossidae</i>
15	019	Poplar and willow borer	<i>Cryptorhynchus lapathi</i>
15	020	Pine reproduction weevil	<i>Cylindrocopturus eatoni</i>
15	021	Douglas-fir twig weevil	<i>Cylindrocopturus furnissi</i>
15	022	Zimmerman pine moth	<i>Dioryctria zimmermani</i>
15	023	Oak twig pruners	<i>Elaphidionoides spp.</i>
15	024	Twig pruner	<i>Elaphidionoides villosus</i>
15	025	Lesser cornstalk borer	<i>Elasmopalpus lignosellus</i>
15	026	Red oak borer	<i>Enaphalodes rufulus</i>
15	027	Ponderous borer	<i>Ergates spiculatus</i>
15	028	Eastern pine shoot borer	<i>Eucoma glorirole</i>
15	029	Western pine shoot borer	<i>Eucosma sonomana</i>
15	030	Eucosma species	<i>Eucosma spp.</i>

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15	031	Sugar maple borer	<i>Glycobius speciosus</i>
15	032	Goes borer	<i>Goes spp.</i>
15	033	Pine root collar weevil	<i>Hylobius radices</i>
15	034	Warren's collar weevil	<i>Hylobius warren</i>
15	035	Powderpost beetle	<i>Lyctidae</i>
15	036	Tarnished plant bug	<i>Lygus lineolaris</i>
15	037	Unknown	<i>Magdalis spp.</i>
15	038	White pine bark miner	<i>Marmara fasciella</i>
15	039	Locust borer	<i>Megacyclene robiniae</i>
15	040	California flathead borer	<i>Melanophila californica</i>
15	041	Flatheaded fir borer	<i>Melanophila drummondi</i>
15	042	Whitespotted sawyer	<i>Monochamus scutellatus</i>
15	043	Redheaded ash borer	<i>Neoclytus acuminatus</i>
15	044	Western ash borer	<i>Neoclytus conjunctus</i>
15	045	Oberea shoot borer	<i>Oberea spp.</i>
15	046	Eucalyptus longhorned borer	<i>Phoracantha semipunctata</i>
15	047	Northern pine weevil	<i>Pissodes approximatus</i>
15	048	Unknown	<i>Pissodes dubias</i>
15	049	Monterey pine weevil	<i>Pissodes radiatae</i>
15	050	White pine weevil	<i>Pissodes radiatae</i>
15	051	Lodgepole terminal weevil	<i>Pissodes terminalis</i>
15	052	Ambrosia beetles	<i>Platypus spp.</i>
15	053	Cottonwood borer	<i>Plectrodera scalator</i>
15	054	Balsam shootboring sawfly	<i>Pleroneura brunneicornis</i>
15	055	Pine gall weevil	<i>Podapion gallicola</i>

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15	056	Ash borer	<i>Podsesia syringae</i>
15	057	Lilac borer	<i>Podsesia syringae</i>
15	058	Carpenterworm	<i>Prionoxystus robiniae</i>
15	059	Maple shoot borer	<i>Proterteras spp.</i>
15	060	Western subterranean termite	<i>Reticulitermes Hesperus</i>
15	061	Coconut trunk weevil	<i>Rhabdoscelus asperipennis</i>
15	062	New Guinea sugarcane weevil	<i>Rhabdoscelus obscurus</i>
15	063	European pine shoot moth	<i>Rhyacionia buoliana</i>
15	064	Western pine tip moth	<i>Rhyacionia bushnelli</i>
15	065	Nantucket pine tip moth	<i>Rhyacionia frustrana</i>
15	066	Lodgepole pine tip moth	<i>Rhyacionia montana</i>
15	067	Southwestern pine tip moth	<i>Rhyacionia neomexicana</i>
15	068	Poplar borer	<i>Saperda calcarata</i>
15	069	Roundheaded appletree borer	<i>Saperda candida</i>
15	070	Saperda shoot borer	<i>Saperda spp.</i>
15	071	Clearwing moths	<i>Sesiidae</i>
15	072	Dogwood borer	<i>Synanthedon scitula</i>
15	073	Roundheaded fir borer	<i>Tetropium abietis</i>
15	074	Western larch borer	<i>Tetropium velutinum</i>
15	075	Western cedar borer	<i>Trachykele blondeli</i>
15	076	Douglas-fir pitch moth	<i>Vespamima novaroensis</i>
15	077	Sequoia pitch moth	<i>Vespamima sequoia</i>
15	078	Black twig borer	<i>Xylosandrus compactus</i>
15	079	Pacific dampwood termite	<i>Zootermopsis angusticollis</i>
15	080	Subtropical pine tip moth	<i>Rhyacionia subtropica</i>

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15	081	Asian ambrosia beetle	<i>Xylosandrus crassifusculus</i>
15	082	Asian longhorned beetle	<i>Anoplophora glabripennis</i>
15	083	Cottonwood twig borer	<i>Gypsonoma haimbachiana</i>
15	084	Southern pine sawyer	<i>Monochamus titillator</i>
15	085	Banded as borer	<i>Neoclytus capraea</i>
15	086	Sitka spruce weevil	<i>Pissodes sitchensis</i>
15	087	Emerald ash borer	<i>Agrilus planipennis</i>
15	088	Hemlock borer	<i>Melanophila fullvoguttata</i>
16	000	Seed / Cone / Flower / Fruit Insects	n / a
16	001	Douglas-fir cone moth	<i>Barbara colfaxiana</i>
16	002	Lodgepole cone beetle	<i>Conophthorus contortae</i>
16	003	Limber pine cone beetle	<i>Conophthorus flexilis</i>
16	004	Mountain pine cone beetle	<i>Conophthorus monticolae</i>
16	005	Ponderosa pine cone beetle	<i>Conophthorus ponderosae</i>
16	006	Monterey pine cone beetle	<i>Conophthorus radiatae</i>
16	007	Red pine cone beetle	<i>Conophthorus resinosae</i>
16	008	White pine cone beetle	<i>Conophthorus coniperda</i>
16	009	Black walnut curculio	<i>Conotrachelus retentus</i>
16	010	Douglas-fir cone midge	<i>Contarinia oregonesis</i>
16	011	Cone scale midge	<i>Contarinia washingtonensis</i>
16	012	Pecan	<i>Curculio spp.</i>
16	013	Caroline fruitfly	<i>Dacus frauenfeldi</i>
16	014	Spruce bud midge	<i>Dasineura swainei</i>
16	015	Fir coneworm	<i>Dioryctria abietivorella</i>
16	016	Southern pine cone worm	<i>Dioryctria amatella</i>

Category	Agent	Common Name	Scientific Name
16	017	Pine cone worm	<i>Dioryctria merkei</i>
16	018	Loblolly pine cone worm	<i>Dioryctria ponderosae</i>
16	019	Ponderosa twig moth	<i>Dioryctria ponderosae</i>
16	020	Unknown	<i>Dioryctria pseudotsugella</i>
16	021	Dioryctria moths	<i>Dioryctria spp.</i>
16	022	Lodgepole cone moth	<i>Eucosma rescissoriana</i>
16	023	Seed chalcid	<i>Eurytomidae</i>
16	024	Slash pine flower thrip	<i>Gnophothrips fuscus</i>
16	025	Cone maggot	<i>Hylemya anthracina</i>
16	026	Longleaf pine seed worm/moth	<i>Laspeyrsia ingens</i>
16	027	Ponderosa pine seed worm/moth	<i>Laspeyresia piperana</i>
16	028	Spruce seed moth	<i>Laspeyresia youngana</i>
16	029	Boxelder bug	<i>Leptocoris trivittatus</i>
16	030	Leaffooted pine seed bug	<i>Leptoglossus corculus</i>
16	031	Western conifer seed bug	<i>Leptoglossus occidentalis</i>
16	032	Hollyhock thrip	<i>Liothrips varicornis</i>
16	033	Unknown	<i>Magastigmus lasiocarpae</i>
16	034	Spruce seed chalcid	<i>Magastigmus piceae</i>
16	035	Ponderosa pine seed chalcid	<i>Megastigmus albifrons</i>
16	036	Fir seed chalcid	<i>Megastigmus pinus</i>
16	037	Douglas-fir seed chalcid	<i>Megastigmus spermotrophs</i>
16	038	Yellow poplar weevil	<i>Odontopus calceatus</i>
16	039	Fruitpiercing moth	<i>Othreis fullonia</i>
16	040	Roundheaded cone borer	<i>Paratimia conicola</i>
16	041	Mango shoot caterpillar	<i>Penicillaria jocosatrix</i>

Category	Agent	Common Name	Scientific Name
16	042	Coneworm	<i>Phycitidae</i>
16	043	Harvester ants	<i>Pogonomyrmex spp.</i>
16	044	Citrus flower moth	<i>Prays citri</i>
16	045	Fir cone maggot	<i>Strobilomyia abietis</i>
16	046	Spruce cone maggot	<i>Strobilomyia anthracina</i>
16	047	Shieldbacked pine seed bug	<i>Tetyra bipunctata</i>
16	048	Coneworm	<i>Hylemia spp.</i>
16	049	Prairie tent caterpillar	<i>Malacosoma lutescens</i>
16	050	Jack pine tip beetle	<i>Conophthorus banksianae</i>
17	000	Gallmarker insects	n / a
17	001	Birch budgall mite	<i>Aceria rudis</i>
17	002	Eastern spruce gall adelgid	<i>Adelges abietis</i>
17	003	Cooley spruce gall adelgid	<i>Adelges cooleyi</i>
17	004	Horned oak gall	<i>Callirhytis cornigera</i>
17	005	Gouty oak gall	<i>Callirhytis quercuspunctata</i>
17	006	Gall midge	<i>Cecidomyiidae</i>
17	007	Douglas-fir needle gall midge	<i>Contarinia pseudotsugae</i>
17	008	Gall mite	<i>Eriophyidae</i>
17	009	Spruce gall mite	<i>Mayetiola piceae</i>
17	010	Hackberry nipplegall maker	<i>Pachypsylla celtidismamma</i>
17	011	Balsam gall midge	<i>Paradiplosis tumifex</i>
17	012	Leaf stem gall adelgid	<i>Phylloxera caryaecaulis</i>
17	013	Gall aphid	<i>Phylloxeridae</i>
17	014	Alder gall mite	<i>Phytoptus laevis</i>
17	015	Psyllid	<i>Psyllidae</i>

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17	016	Sugarberry psyllid	<i>Tetragonocephela flava</i>
17	017	Mountain apple psyllid	<i>Trioza vitiensis</i>
17	018	Gouty pitch midge	<i>Cecidomyia piniinopsis</i>
17	019	Spider mites	<i>Oligonychus spp.</i>
17	021	Jumping oak gall wasp	<i>Neuroterus saltatorius</i>
18	000	Insect predators	n / a
18	001	Lacewing	n/a
18	002	Blackbellied clerid	<i>Enoclerus lecontei</i>
18	003	Redbellied clerid	<i>Enoclerus sphegeus</i>
18	004	Unknown	<i>Formica rufa</i>
18	005	Western yellowjacket	<i>Vespula pennsylvanica</i>
19	000	General diseases	n / a
20	000	Biotic damage	n / a
20	001	Damping off	n/a
20	002	Gray mold	<i>Botrytis cinerea</i>
20	003	Cassytha	<i>Cassytha filiformis</i>
20	004	Hemlock fluting	n/a
21	000	Root / butt diseases	n / a
21	001	Armillaria root disease	<i>Amillaria spp.</i>
21	002	Yellow stringy rot	<i>Corticium galactimum</i>
21	003	Cylindrocladium root disease	<i>Cylindrocladium spp.</i>
21	004	Brown crumbly rot	<i>Fomitopsis pinicola</i>
21	005	Black root rot of pine	<i>Fusarium oxysporum</i>
21	006	Fusarium root rot	<i>Fusarium spp.</i>
21	007	White mottled rot	<i>Ganoderma applanatum</i>

Category	Agent	Common Name	Scientific Name
21	008	Ganoderma rot of hardwoods	<i>Ganoderma lucidum</i>
21	009	Ganoderma rot of conifers	<i>Ganoderma tsugae</i>
21	010	Annosus root disease	<i>Heterobasidion annosum</i>
21	011	Circinatus root rot	<i>Inonotus circinatus</i>
21	012	Tomentosus root disease	<i>Inonotus tomentosus</i>
21	013	Charcoal root rot	<i>Macrophomina phaseolina</i>
21	014	Black stain root disease	<i>Ophiostoma wagneri</i>
21	015	Schweinitzii butt rot	<i>Phaeolus schweinitzii</i>
21	016	Flame tree root disease	<i>Phellinus noxious</i>
21	017	Laminated root rot	<i>Phellinus weirii</i>
21	018	Phytophthora root rot	<i>Phytophthora cinnamomi</i>
21	019	Littleleaf disease	<i>Phytophthora cinnamomi</i> /Pythium
21	020	Port-Orchard-Cedar root disease	<i>Phytophthora lateralis</i>
21	022	Pythium root rot	<i>Pythium spp.</i>
21	023	Procera root disease of conifers	<i>Verticicladiella procera</i>
21	024	Crown gall	<i>Agrobacterium tumefaciens</i>
21	025	Borealis conk	<i>Climacocystis borealis</i>
21	026	Yellow pitted rot	<i>Hericius abietis</i>
21	027	Brown cubical rot	<i>Laetiporus sulphureus</i>
21	028	Sudden oak death	<i>Phytophthora ramorum</i>
22	000	Stem decays/cankers	n / a
22	001	Heart rot	n/a
22	002	Stem rot	n/a
22	003	Sap rot	n/a
22	004	Slime flux	n/a

Category	Agent	Common Name	Scientific Name
22	005	Virus	<i>n/a</i>
22	006	Black knot of cherry	<i>Apiosporina morbosa</i>
22	007	Atropellis canker	<i>Atropellis piniphila</i>
22	008	Siberian elm canker	<i>Botryodiplodia hypodermia</i>
22	009	Botryosphaeria canker	<i>Botryosphaeria ribis</i>
22	010	Black rot fungus	<i>Botryosphaeria stevensii</i>
22	011	Caliciopsis canker	<i>Caliciopsis pinea</i>
22	012	Black canker of aspen	<i>Ceratocystis fimbriata</i>
22	013	Sycamore canker stain	<i>Ceratocystis fimbriata f.sp. platani</i>
22	023	Chestnut blight	<i>Cryphonectria parasitica</i>
22	024	Gray-brown saprot	<i>Cryptoporus volvatus</i>
22	025	Cryptosphaeria canker of aspen	<i>Cryptosphaeria populina</i>
22	026	Cytospora canker of fir	<i>Cytospora abietis</i>
22	027	Western red rot	<i>Dichomitus squalens</i>
22	028	Rust-red stringy rot	<i>Echinodontium tinctorium</i>
22	029	Sooty-bark canker	<i>Encoelia pruinosa</i>
22	030	Eutypella canker	<i>Eutypella parasitica</i>
22	031	Fusarium cortical stem rot	<i>Fusarium avenaceum</i>
22	032	Pitch canker	<i>Fusarium subglutinans</i>
22	033	Fusicoccum canker	<i>Fusicoccum spp.</i>
22	034	Scleroderris canker	<i>Gremmeniella abietina</i>
22	035	Amelanchier rust	<i>Gymnosporangium harknessianum</i>
22	036	Cedar apple rust	<i>Gymnosporangium juniper-virginianae</i>
22	037	Hypoxylon canker of oak	<i>Hypoxylon atropunctatum</i>

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22	038	Hypoxylon canker of aspen	<i>Hypoxylon mammatum</i>
22	039	Canker rot of oak	<i>Inonotus hispidus</i>
22	040	Sterile conk trunk rot of birch	<i>Inonotus obliquus</i>
22	041	European larch canker	<i>Lachnellula willkommii</i>
22	042	Beech bark disease	<i>Nectia coccinea</i>
22	043	Nectria canker	<i>Nectria galligena</i>
22	044	Ash heart rot	<i>Pereniporia fraxinophila</i>
22	047	Red ring rot	<i>Phellinus pini</i>
22	048	Aspen trunk rot	<i>Phellinus tremulae</i>
22	049	Stem decay of black walnut	<i>Phellinus weirianus</i>
22	050	Phomopsis canker	<i>Phomopsis occulta</i>
22	051	Phomopsis canker	<i>Phomopsis spp.</i>
22	052	Leyland cypress canker	<i>Seriridium cardinal</i>
22	053	Butternut canker	<i>Sirococcus clavigignenti-jugl.</i>
22	054	Maple canker	<i>Steganosporium spp.</i>
22	055	Thyronectria canker	<i>Thyronectria austro-americana</i>
22	056	Citrus canker	<i>Xanthomonas citri</i>
22	057	Cytospora canker of aspen	<i>Cytospora chrysosperma</i>
22	058	Dothichiza canker	<i>Dothichiza populae</i>
22	059	Red belt fungus	<i>Fomitopsis pinicola</i>
22	060	Leucocytospora canker of spruce	<i>Leucocytospora kunzei</i>
22	061	Sooty bark canker	<i>Phialis singular</i>
22	062	Brown heartrot	<i>Fomitopsis officinalis</i>
22	063	Unknown	<i>Coniophora puteana</i>
22	064	Tinder fungus	<i>Fomes formntarius</i>

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22	065	Purple conk	<i>Hirschioporus abietinus</i>
22	066	Pinyon black stain	<i>Leptographium wagnerii</i>
22	067	Unknown	<i>Phelinus hartigii</i>
22	068	False tinder fungus	<i>Phellinus igniarius</i>
22	069	Robustus conk	<i>Phellinus robustus</i>
22	070	Yellow cap fungus	<i>Pholiota spp.</i>
22	071	Oyster mushroom	<i>Pleurotus ostreatus</i>
22	072	White ring rot	<i>Poria albipellucida</i>
22	073	Hemlock canker	<i>Xenomeris abietis</i>
22	074	Cedar brown pocket rot	<i>Poria serceomollis</i>
22	075	Lachnellula canker	<i>Lachnellula flavovirens</i>
22	076	Strumella canker	<i>Strumella coryneoidea</i>
22	077	Phomopsis blight	<i>Phomopsis juniperovora</i>
22	078	Fusarium canker of yellow poplar	<i>Fusarium solani</i>
22	079	Sterile conk of maple and beech	<i>Inonotus glomeratus</i>
22	080	Canker of spruce	<i>Aleurodiscus spp.</i>
22	081	Birch conk	<i>Piptoporus betulinusai</i>
22	082	Canker	<i>Discocainia treleasei</i>
23	000	Parasitic/epiphytic plants	<i>n/a</i>
23	001	Mistletoe	<i>n/a</i>
23	002	Parasitic plants	<i>n/a</i>
23	003	Vine damage	<i>n/a</i>
23	004	White fir dwarf mistletoe	<i>Arceuthobium abietinum f. sp. Concoloris</i>
23	006	Lodgepole pine dwarf mistletoe	<i>Arceuthobium americanum</i>
23	007	Apache dwarf mistletoe	<i>Arceuthobium apachecum</i>

Category	Agent	Common Name	Scientific Name
23	008	Western dwarf mistletoe	<i>Arceuthobium compylopodum</i>
23	009	Limber pine dwarf mistletoe	<i>Arceuthobium cyanocarpum</i>
23	010	Pinyon dwarf mistletoe	<i>Arceuthobium divaricatum</i>
23	011	Douglas-fir dwarf mistletoe	<i>Arceuthobium douglasii</i>
23	012	Chihuahua pine dwarf mistletoe	<i>Arceuthobium gillii</i>
23	013	Larch dwarf mistletoe	<i>Arceuthobium laricis</i>
23	014	Western spruce dwarf mistletoe	<i>Arceuthobium microcarpum</i>
23	015	Eastern dwarf mistletoe	<i>Arceuthobium pusillum</i>
23	016	Hemlock dwarf mistletoe	<i>Arceuthobium tsugense</i>
23	017	Southwestern dwarf mistletoe	<i>Arceuthobium vaginatum</i> <i>subsp. Cryptopodum</i>
23	018	Dodder	<i>Cuscuta spp.</i>
23	019	White fir mistletoe	<i>Phoradendron bolleanum</i> sbsp. <i>Pauciflorum</i>
23	020	True mistletoe (other)	<i>n/a</i>
23	021	Red fir dwarf mistletoe	<i>Arceuthobium abietinum</i> f. sp. <i>Pauciflorum</i>
23	022	Juniper true mistletoe	<i>Phoradendron junipeum</i>
24	000	Decline complexes / dieback / wilts	<i>n / a</i>
24	001	Alaska-yellow cedar decline	<i>n/a</i>
24	002	Norfolk Island pine decline	<i>n/a</i>
24	003	Stillwell's syndrome	<i>n/a</i>
24	004	Ash decline/yellows	<i>n/a</i>
24	005	Birch dieback	<i>n/a</i>
24	006	Cadang-cadang yellow mottle virus	<i>n/a</i>
24	007	Complex	<i>n/a</i>

Category	Agent	Common Name	Scientific Name
24	008	Decline	<i>n/a</i>
24	009	Fall hardwood defoliator complex	<i>n/a</i>
24	010	Joga decline	<i>n/a</i>
24	011	Larch decline	<i>n/a</i>
24	012	Looper; abiotic complex	<i>n/a</i>
24	013	Maple decline	<i>n/a</i>
24	014	Oak decline	<i>n/a</i>
24	015	Pingelap disease	<i>n/a</i>
24	016	Sprout dieback	<i>n/a</i>
24	017	True fir pest complex	<i>n/a</i>
24	018	Western X disease	<i>n/a</i>
24	019	Pinewood nematode	<i>Bursaphelenchus xylophilus</i>
24	020	Sapstreak disease of sugar maple	<i>Ceratocystis coerulescens</i>
24	021	Oak wilt	<i>Ceratocystis fagacearum</i>
24	022	Dutch elm disease	<i>Ceratocystis ulmi</i>
24	023	Bacterial wetwood	<i>Erwinia nimipressuralis</i>
24	024	Mimosa wilt	<i>Fusarium oxysporum f. sp. Perniciosum</i>
24	025	Verticillium wilt	<i>Verticillium albo-atrum</i>
24	026	Unknown	<i>Xyella fastidiosa</i>
24	027	Wetwood	<i>n/a</i>
24	028	Hemlock decline	<i>n/a</i>
24	029	Pacific madrone decline	<i>n/a</i>
24	030	Elm phloem necrosis	<i>Mycoplasma</i>
25	000	Foliage diseases	<i>n / a</i>
25	001	Blight	<i>n/a</i>

Category	Agent	Common Name	Scientific Name
25	002	Broom rust	<i>n/a</i>
25	003	Juniper blights	<i>n/a</i>
25	004	Leaf spots	<i>n/a</i>
25	005	Needlecast	<i>n/a</i>
25	006	Powdery mildew	<i>n/a</i>
25	007	Tobacco mosaic virus	<i>n/a</i>
25	008	Tobacco ringspot virus of ash	<i>n/a</i>
25	009	True fir needlecast	<i>n/a</i>
25	010	Sycamore anthracnose	<i>Apignomonina veneta</i>
25	011	Cercospora blight of juniper	<i>Cercospora sequoia</i>
25	013	Large-spored spruce-laborador tea rust	<i>Chrysomyxa ledicola</i>
25	014	Ink spot of aspen	<i>Ciborinia whetzellii</i>
25	015	Pine needle rust	<i>Coleosporium spp.</i>
25	016	Anthracnose on Russian olive	<i>Colletotrichum spp.</i>
25	017	Coronado limb rust	<i>Coleosporium spp.</i>
25	018	Leaf shothole	<i>Cylindrosporium spp.</i>
25	019	Cedar leaf blight	<i>Didymascella thujina</i>
25	020	Dogwood anthracnose	<i>Discula spp.</i>
25	021	Mango scab	<i>Elsinoe magiferae</i>
25	022	Elytroderma disease	<i>Elytroderma deformans</i>
25	023	Fire blight	<i>Erwinia amylovora</i>
25	024	Walnut anthracno	<i>Gnomonia leptostyla</i>
25	025	Anthracnose	<i>Gnomonia spp.</i>
25	027	Brown felt blight	<i>Herpotrichia juniper</i>
25	028	Larch needle blight	<i>Hypodermella laricis</i>

Category	Agent	Common Name	Scientific Name
25	029	Hardwood anthracnose	<i>Kabatiella apocrypta</i>
25	030	Cone damage	<i>Lasiodiplodia spp.</i>
25	031	Spruce needle cast	<i>Lirula macrospora</i>
25	032	Fir needle cast	<i>Lirula spp.</i>
25	033	White pine needle cast	<i>Lophodermella arcuata</i>
25	034	Lophodermella needle cast	<i>Lophodermella spp.</i>
25	035	Lophodermium needle cast	<i>Lophodermium spp.</i>
25	036	Marssonina blight	<i>Marssonina populi</i>
25	037	Melampsora rusts	<i>Melampsora medusa</i>
25	039	Larch needle cast	<i>Meria laricis</i>
25	040	Dothistroma needle blight	<i>Mycosphaerella pini</i>
25	041	Brown felt blight of pines	<i>Neopeckia coulteri</i>
25	042	Snow blight	<i>Phacidum abietis</i>
25	043	Swiss needle cast	<i>Phaeocryptopus gaumannii</i>
25	044	Phoma blight	<i>Phome spp.</i>
25	045	Phyllosticta leaf spot	<i>Phyllosticta spp.</i>
25	046	Bud rot	<i>Phytophthora palmivora</i>
25	047	Ploioderma needle cast	<i>Ploioderma spp.</i>
25	048	Ash rust	<i>Puccinia sparganioides</i>
25	049	Fir needle rust	<i>Pucciniastrum spp.</i>
25	050	Douglas-fir needle cast	<i>Rhabdocline spp.</i>
25	051	Rhizoctonia needle blight	<i>Rhizoctonia spp.</i>
25	052	Rhizophaeria needle cast	<i>Rhizophaeria spp.</i>
25	053	Rhizopus rot	<i>Rhizopus artocarp</i>
25	054	Brown spot needle blight	<i>Scirrhia acicula</i>

Category	Agent	Common Name	Scientific Name
25	055	Septoria leaf spot	<i>Septoria alnifolia</i>
25	056	Septoria leaf spot and canker	<i>Septoria musiva</i>
25	057	Sirococcus tip blight	<i>Sirococcus conigenus</i>
25	058	Diplodia blight	<i>Sphaeropsis sapinea</i>
25	059	Leaf blister of oak	<i>Taphrina caerulescens</i>
25	060	Venturia leaf blight of maple	<i>Venturia acerina</i>
25	061	Shepherd's crook	<i>Venturia tremulae</i>
25	062	Dothistroma needle blight	<i>Dothistroma septospora</i>
25	063	Yellow-cedar shoot blight	<i>Apostrasseria spp.</i>
25	064	Broom rust	<i>Chrysomyxa arctostaphyli</i>
25	065	Spruce needle rust	<i>Lophodermium picea</i>
25	066	Cedar leaf blight	<i>Gymnosporangium nootkatense</i>
25	067	Spruce needle cast	<i>Lophodermium picea</i>
25	068	Hardwood leaf rust	<i>Rhizosphaera pini</i>
25	070	Hemlock needle rust	<i>Pucciniastrum vaccinii</i>
25	071	Spruce needle cast	<i>Rhizosphaera pini</i>
25	072	Sirococcus shoot blight	<i>Sirococcus strobilinus</i>
25	073	Shepards crook	<i>Ventirua populina</i>
25	074	Delphinella shoot blight	<i>Delphinella abietis</i>
25	075	Tar spot	<i>Rhytisma acerinum</i>
26	000	Stem rusts	n / a
26	001	White pine blister rust	<i>Cronartium ribicola</i>
26	002	Western gall rust	<i>Peridermium harknessii</i>
26	003	Stalactiform blister rust	<i>Cronartium coleosporioides</i>
26	004	Comandra blister rust	<i>Cronartium comandrae</i>

Category	Agent	Common Name	Scientific Name
26	005	Pinyon blister rust	<i>Cronartium occidentale</i>
26	006	Eastern gall rust	<i>Cronartium quercuum</i>
26	007	Gall rust of jack pine	<i>Cronartium quercuum f. sp. Banksinae</i>
26	008	Gall rust of shortleaf pine	<i>Cronartium quercuum f. sp. Echinatae</i>
26	009	Fusiform rust	<i>Cronartium quercuum f. sp. Fusiforme</i>
26	010	Gall rust of Virginia pine	<i>Cronartium quercuum f. sp. Virginianae</i>
26	011	Bethuli rust	<i>Peridermium bethuli</i>
26	012	Limb rust	<i>Peridermium filamentosum</i>
26	013	Southern cone rust	<i>Cronartium strobilinum</i>
27	000	Broom rusts	n / a
27	001	Spruce broom rust	<i>Chrysomyxa arctostaphyll</i>
27	002	Incense cedar broom rust	<i>Gymnosporangium libocedri</i>
27	003	Juniper broom rust	<i>Gymnosporangium nidus-avis</i>
27	004	Fir broom rust	<i>Melampsorella caryophyllacearum</i>
30	000	Fire	n / a
30	001	Wild-fire	n/a
30	002	Human caused fire	n/a
30	003	Crown fire damage	n/a
30	004	Ground fire damage	n/a
40	000	Animal damage, source unknown	n / a
41	000	Wild animals	n / a
41	001	Bear	n/a

Category	Agent	Common Name	Scientific Name
41	002	Beaver	<i>n/a</i>
41	003	Big game (deer)	<i>n/a</i>
41	004	Mice or voles	<i>n/a</i>
41	005	Pocket gophers	<i>n/a</i>
41	006	Porcupines	<i>n/a</i>
41	007	Rabbits or hares	<i>n/a</i>
41	008	Sapsucker	<i>n/a</i>
41	009	Squirrels	<i>n/a</i>
41	010	Woodpeckers	<i>n/a</i>
41	011	Moose	<i>n/a</i>
41	012	Elk	<i>n/a</i>
41	013	Deer	<i>n/a</i>
41	014	Feral pigs	<i>n/a</i>
41	015	Mountain beaver	<i>n/a</i>
41	016	Deer or elk	<i>n/a</i>
41	017	Earthworm	<i>Lumbricidae</i>
42	000	Domestic animals	<i>n / a</i>
42	001	Cattle	<i>n/a</i>
42	002	Goats	<i>n/a</i>
42	003	Horses	<i>n/a</i>
42	004	Sheep	<i>n/a</i>
50	000	Abiotic damage	<i>n / a</i>
50	001	Air pollutants	<i>n/a</i>
50	002	Chemical	<i>n/a</i>
50	003	Drought	<i>n/a</i>

Category	Agent	Common Name	Scientific Name
50	004	Flooding/high water	<i>n/a</i>
50	005	Frost	<i>n/a</i>
50	006	Hail	<i>n/a</i>
50	007	Heat	<i>n/a</i>
50	008	Lightning	<i>n/a</i>
50	009	Nutrient imbalances	<i>n/a</i>
50	010	Radiation	<i>n/a</i>
50	011	Snow/ice	<i>n/a</i>
50	013	Wind-tornado	<i>n/a</i>
50	014	Winter injury	<i>n/a</i>
50	015	Avalanche	<i>n/a</i>
50	016	Mud-land slide	<i>n/a</i>
50	017	Volcano	<i>n/a</i>
50	018	Other geologic events	<i>n/a</i>
50	019	Mechanical (non-human caused)	<i>n/a</i>
60	000	Competition	<i>n / a</i>
70	000	Human activities	<i>n / a</i>
70	001	Herbicides	<i>n/a</i>
70	003	Imbedded objects	<i>n/a</i>
70	004	Improper planting technique	<i>n/a</i>
70	005	Land clearing	<i>n/a</i>
70	006	Land use conversion	<i>n/a</i>
70	007	Logging damage	<i>n/a</i>
70	008	Mechanical	<i>n/a</i>
70	009	Pesticides	<i>n/a</i>

Category	Agent	Common Name	Scientific Name
70	010	Roads	<i>n/a</i>
70	011	Soil compaction	<i>n/a</i>
70	012	Suppression	<i>n/a</i>
70	013	Vehicle damage	<i>n/a</i>
70	014	Road salt	<i>n/a</i>
71	000	Harvest	<i>n / a</i>
80	000	Multi-damage (insect / disease)	<i>n / a</i>
80	001	Aspen defoliation	<i>n/a</i>
80	002	Subalpine fir mortality	<i>n/a</i>
80	003	Five needle pine decline	<i>n/a</i>
80	004	Pinion pine decline	<i>n/a</i>
90	000	Unknown	<i>n / a</i>
99	000	Physical effects	<i>n / a</i>
99	001	Broken or top missing	<i>n/a</i>
99	002	Dead top	<i>n/a</i>
99	003	Limby (large limbs top to ground)	<i>n/a</i>
99	004	Forked top	<i>n/a</i>
99	005	Forked below merch top	<i>n/a</i>
99	006	Crook or sweep	<i>n/a</i>
99	007	Checks, bole cracks	<i>n/a</i>
99	008	Foliage discoloration	<i>n/a</i>
99	009	Mortality (for plantation surveys only)	<i>n/a</i>
99	010	Lack of seed source or dieback (for plantation surveys only)	<i>n/a</i>

Category	Agent	Common Name	Scientific Name
99	011	Poor planting stock (for plantation surveys only)	<i>n/a</i>
99	012	Poor growth/fading/foilage is yellowing and loss of needles is occurring	<i>n/a</i>
99	013	Total board foot volume loss	<i>n/a</i>
99	014	Total cubic foot volume loss	<i>n/a</i>
99	015	Bark removal	<i>n/a</i>
99	016	Foliage loss	<i>n/a</i>
99	017	Sunscald	<i>n/a</i>
99	018	Uproot	<i>n/a</i>
99	019	Scorched foliage	<i>n/a</i>
99	020	Scorched bark	<i>n/a</i>
99	021	Dieback (for plantation surveys only)	<i>n/a</i>
99	022	Poor crown form	<i>n/a</i>
99	023	Severe forking	<i>n/a</i>
99	026	Open wound	<i>n/a</i>
99	031	Broken or dead branches	<i>n/a</i>
99	033	Damaged shoots, buds, or foliage (for plantation surveys only)	<i>n/a</i>
99	034	Excessively deformed sapling	<i>n/a</i>
99	036	Fire scar	<i>n/a</i>
99	037	Leaning tree	<i>>15% and self-supporting</i>
99	038	Charred bark	<i>Not recorded unless cambium is killed from heating</i>

DAMAGE SEVERITY RATINGS

Table 29: Damage severity rating codes

Category	Severity	Description
10	n / a	General insects
10	1	Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected, OR <50% of bole with visible larval galleries
10	2	Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead, OR 50% or more of bole with visible larval galleries
11	n / a	Bark beetles
11	1	Unsuccessful bole attack: pitchout and beetle brood absent
11	2	Strip attacks: galleries and brood present
11	3	Successful current bole attack
11	4	Topkill
11	5	Successful attack last year
11	6	Older dead
12	n / a	Defoliators
12	1	Light defoliation (1-25%), no topkill
12	2	Light defoliation (1-25%), topkill ≤10%
12	3	Light defoliation (1-25%), topkill >10%
12	4	Moderate defoliation (26-75%), no topkill
12	5	Moderate defoliation (26-75%), topkill ≤10%
12	6	Moderate defoliation (26-75%), topkill >10%
12	7	Heavy defoliation (76-100%), no topkill
12	8	Heavy defoliation (76-100%), topkill ≤10%

Category	Severity	Description
12	9	Heavy defoliation (76-100%), topkill >10%
13	n / a	Chewing insects
13	1	Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected
13	2	Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead
14	n / a	Sucking insects
14	1	Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected
14	2	Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead
15	n / a	Boring insects
15	1	Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected
15	2	Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead
16	n / a	Seed / cone / flower / fruit insects
16	1	Minor
16	2	Severe
17	n / a	Gallmaker insects
17	1	Minor
17	2	Severe
18	n / a	Insect predators
18	1	Minor
18	2	Severe
19	n / a	General diseases
19	1	Minor

Category	Severity	Description
19	2	Severe
20	n / a	Biotic damage
20	1	Minor
20	2	Severe
21	n / a	Root / butt diseases
21	1	(for individual trees) Tree within 30 feet of tree with deteriorating crown, tree with diagnostic symptoms or signs, or tree killed by root disease
21	2	(for individual trees) Pathogen (sign) or diagnostic symptom detected – no crown deterioration
21	3	(for individual trees) Crown deterioration detected – no diagnostic symptom or signs
21	4	(for individual trees) Both crown deterioration and diagnostic signs symptoms detected
21	5	(for individual trees) Bleeding present on bole
21	6	(for individual trees) Bleeding present on bole and adjacent mortality present
21	7	(for individual trees) Laboratory confirmed Sudden Oak Death
21	G2	(for setting level) Minor evidence of RDS on plot
21	G3	(for setting level) RDS present, canopy reduction less than 20%
21	G4	(for setting level) RDS present, canopy reduction 20-30%
21	G5	(for setting level) RDS present, canopy reduction 30-50%
21	G6	(for setting level) RDS present, canopy reduction 50-75%, most ground area infested
21	G7	(for setting level) RDS present, 76+ % canopy reduction

Category	Severity	Description
21	G8	(for setting level) Entire area infested with RDS, one or very few susceptible overstory trees
21	G9	(for setting level) Entire area infested with RDA, no susceptible overstory trees present
22	n / a	Stem decay / canker
22	0	0-4% rotten
22	1	5-15% rotten
22	2	16-25% rotten
22	3	26-35% rotten
22	4	36-45% rotten
22	5	46-55% rotten
22	6	56-65% rotten
22	7	66-75% rotten
22	8	76-85% rotten
22	9	86-100% rotten
23	n / a	Parasitic / epiphytic plants
23	1	Hawksworth tree DMR rating = 1; light infection
23	2	Hawksworth tree DMR rating = 2; light infection
23	3	Hawksworth tree DMR rating = 3; medium infection
23	4	Hawksworth tree DMR rating = 4; medium infection
23	5	Hawksworth tree DMR rating = 5; heavy infection
23	6	Hawksworth tree DMR rating = 6; heavy infection
23	7	Vine damage: less than 50% of crown involved
23	8	Vine damage: 50% or more of crown involved
24	n / a	Decline complexes / diebacks / wilts

Category	Severity	Description
24	1	Minor: minor crown symptoms
24	2	Severe: severe crown symptoms
25	n / a	Foliage diseases
25	1	Minor: <20% of foliage affected or <20% of crown in brooms
25	2	Severe: >20% of foliage affected or >20% of crown in brooms
26	n / a	Rust Stems
26	1	Branch infections located greater than 2 feet from tree bole
26	2	Branch infections located between 6 inches and 2 feet from tree bole
26	3	Bole infections or branch infections located within 6 inches of bole
26	4	Topkill
27	n / a	Broom rusts
27	1	Minor: <20% of crown in brooms
27	2	Severe: >20% of crown in brooms
30	n / a	Fire
30	1	Minor: <20% of crown affected
30	2	Severe: >20% of crown affected or any damage to the bole
40	n / a	Animal damage, source unknown
40	1	Minor
40	2	Severe
41	n / a	Wild animals

Category	Severity	Description
41	1	Minor: <20% of crown affected, bole damage is <50% circumference
41	2	Severe: >20% of crown affected, bole damage is >50% circumference, upper 1/3 of crown is killed
41	5	Earthworms are present
41	6	Earthworms are absent
50	n / a	Abiotic damage
50	1	Minor: <20% of crown affected, bole damage is <50% circumference
50	2	Severe: >20% of crown affected, bole damage is >50% circumference, upper 1/3 of crown is killed
60	n / a	Competition
60	1	Minor: tree slightly deformed and has some live, terminal growth
60	2	Severe: tree extremely deformed or has no live terminal, growth severely reduced relative to neighbors
70	n / a	Human activities
70	1	Minor
70	2	Severe
71	n / a	Harvest
71	1	Minor
71	2	Severe
80	n / a	Multi-damage (insect / disease)
80	1	Minor
80	2	Severe
90	n / a	Unknown

Category	Severity	Description
90	0	0 – 9% affected
90	1	10 – 19% affected
90	2	20 – 29% affected
90	3	30 – 39% affected
90	4	40 – 49% affected
90	5	50 – 59% affected
90	6	60 – 69% affected
90	7	70 – 79% affected
90	8	80 – 89% affected
90	9	90 – 100% affected
99	n / a	Physical effects
99	001	Broken top
99	002	Dead top

Table 30: Category 99 damage severity rating codes

Category	Severity	Description	Actual percent of tree affected
99	n / a	Physical effects	n / a
99	001	Broken top	% of original height that is missing; for example, if a tree was originally 100 feet high, but 15 feet of the top is broken or missing; enter "15" in the severity code
99	002	Dead top	% of total tree height that is dead
99	003	Limby (large limbs top to bottom)	% of total tree height with many limbs/knots
99	004	Forked top	% of total tree height above fork
99	005	Forked below merch top	% of the total length of the bole affected

Category	Severity	Description	Actual percent of tree affected
99	006	Crook or sweep	% of total tree height, which contains the crook or sweep
99	007	Checks, bole cracks	% of total tree height, which contains a crack or check
99	008	Foliage discoloration	% of foliage discolored
99	009	Mortality	1 = dead tree
99	010	Lack of seed source	If present, 100%
99	011	Poor planting stock source	If present, 100%
99	012	Poor growth	1 = minor (reduced growth); 2 = severe (affecting survival)
99	013	Total board foot volume loss	% of total board foot volume loss
99	014	Total cubic foot volume loss	% of total cubic foot volume loss
99	015	Bark removal	% of tree circumference missing bark
99	016	Foliage loss	1 = minor; 2 = severe
99	017	Sunscald	1 = minor; 2 = severe
99	018	Uproot	1 = uprooted
99	019	Scorched foliage	% of foliage scorched
99	020	Scorched bark	% of bark scorched
99	021	Dieback source	1 = minor; 2 = severe
99	022	Poor crown form	1 = minor; 2 = severe
99	023	Severe forking	% of bole with forks
99	026	Open wound	% of bole or trunk affected using the height and width of the wound; for example, if a tree is 100 feet tall and the wound covers 15 feet of the bole, enter a value of "15"
99	031	Broken or dead branches	% of branches broken or dead

Category	Severity	Description	Actual percent of tree affected
99	033	Damage shoots, buds, or foliage source	1 = minor; 2 = severe
99	034	Excessively deformed sapling	% of sapling deformed
99	036	Fire scar	% of bole covered by fire scar
99	037	Leaning tree	% lean from vertical
99	038	Charred bark	Not recorded unless cambium is killed from heating

TREE PARTS

Table 31: Tree part codes

Code	Description
UN	Unspecified
TO	Top
FO	Foliar (crown)
LI	Limb
BO	Bole, other than Top or Base
BA	Base
RO	Roots
WT	Whole tree
TT	Top third of crown
MT	Middle third of crown
BT	Bottom third of crown

APPENDIX L: ACCURACY STANDARDS

Table 32: Settings Measurements

Field	Tolerance
Project Name	No errors
Region	No errors
Proclaimed Forest	No errors
District	No errors
Location	No errors
Stand Number	No errors
Ownership	No errors
State	No errors
County	No errors
Administrative Forest	No errors
Date	No errors
Photo ID	No errors
Exam Level	No errors
Exam Purpose	No errors
Stratum	No errors
Existing Vegetation Composition Type	No errors
Potential Vegetation Reference	No errors
Potential Vegetation	No errors
Structure	No errors
Capable Growing Area	± 10 percent
Fuel Model	No errors
Elevation	± 2 contour intervals

Field	Tolerance
Aspect	± 45 degrees
Slope	± 10 percent
Slope Position	± 1 class
Acres	No errors
Radial Growth Interval	No errors
Radial Growth Interval #2	No errors
Height Growth Interval	No errors
Fuel Photo Reference	No errors
Precision Protocol	No errors
Examiner	No errors
Stand Remarks	No errors
Damage Category	No errors
Damage Agent	No errors
Damage Severity	No errors
Species of Management Interest	No errors
Sketch Map and Traverse Notes	n/a

Table 33: Sample Design Criteria

Field	Tolerance
Form Type	n/a
Selection Method Type	No errors
Sample Expansion Factor	No errors
Plots Installed	No errors
Sub-population Filter	No errors
Starting Azimuth	No errors
Sample Design Remarks	No errors

Field	Tolerance
Selection Criteria Number	No errors
Sub-pop Variable	No errors
Sub-pop Minimum Value	No errors
Sub-pop Maximum Value	No errors

Table 34: Plot Data

Field	Tolerance
Plot Number	No errors
Plot Latitude	No errors
Plot Longitude	No errors
Capable Grow Area	± 10 percent
Plot Aspect	± 45
Plot Scope	± 10 percent
Slope Position	± 1 class
Slope Horizontal Shape	± 1 class
Slope Vertical Shape	± 1 class
Plot Elevation	± 2 contour intervals
Existing Vegetation	No errors
Potential Vegetation	Accurate to series understory union and phases
Plot History	No errors
Plot History Date	Year required in field 12 is other than code 10 or blank
Fuel Model	No errors
Residual Descriptive Code	No errors
Distance to Seed Wall	± 100 feet
Plot Remarks	n/a

Table 35: Tree Data

Field	Tolerance
Plot Number	No errors
Tag ID Number	No errors
Tree Status	No errors allowed in recognizing and coding down trees
Site/Growth Trees	No errors
Tree Species	No errors
Tree Count	See specifics in Table 36
Number Stems	No errors
DBH/DRC Intensive Exam	See specifics in Table 37
DBH/DRC Extensive Exam	See specifics in Table 38
DBH/DRC Quick Exam	See specifics in Table 39
Height	10 percent
Height to Crown	10 percent
Radial Growth	1/20 th inch
Radial Growth #2	1/20 th inch
Height Growth	See specifics in Table 40
Tree Age	10 percent (based on actual tree ring count at breast height for trees $\geq 3.0''$ DBH otherwise based on total age recorded)
Crown Ratio	10 percent
Crown Class	No errors
Crown Width	No errors
Wildlife Use	No errors

Field	Tolerance
Log/Snag Decay	No errors
Cone Serenity	No errors
Damage Category	No errors, specifics listed in Table 41
Damage Agent	No errors
Damage Part	No errors
Damage Severity	No errors
Tree Remarks	n/a

Table 36: Tree Data, Tree Count

Height Range	Diameter Range	Trees on Point	Tolerance
*All	All	0	0 trees
≤ 0.5 feet	All	1-5	± 2 trees
≤ 0.5 feet	All	6+	± 50 percent
> 0.5 feet	< 0.5 in.	1-5	± 1 tree
> 0.5 feet	< 0.5 in.	6+	± 20 percent
All	.5" – breakpoint DBH	1-5	± 1 tree
All	.5" – breakpoint DBH	6+	± 10 percent
All	Breakpoint DBH +	1+	0 trees

* There is no tolerance for recording a tree when none are actually present in any of the above size classes. The recording of a fixed plot tree when none are present will result in a single discrepancy. The recording of a variable plot tree when none are present will result in an unacceptable unit.

Group criteria are standardized to facilitate stand exam contract inspection and payment. However, distinguishing characteristics other than tree class, species, and size class may warrant individual tree recording or more refined grouping criteria. Such characteristics include: age, crown ratio, crown class, or incident of damage.

Table 37: Tree Data, DBH/DRC Intensive Exam

Tolerance	Diameter
No errors	<.5 inch
± .1 inch	.5 inch – 13.9 inches
± .2 inch	14.0 inches – 23.9 inches
± .3 inch	24.0 inches – 34.9 inches
± .5 inch	35.0 inches +
± .1 inch	Borderline variable plot trees
± .1 inch	Estimated DRC

Table 38: Tree Data, DBH/DRC Extensive Exam

Tolerance	Diameter
± 1 inch	≤ 20 inches
± 5% of diameter	> 20 inches

Table 39: Tree Data, DBH/DRC Quick Exam

Tolerance	Diameter
± 2 inches	≤ 20 inches
± 10% of diameter	> 20 inches

Table 40: Tree Data, Height Growth

Tolerance	Diameter
± 1 foot	Trees > 6 feet
± 0.1 foot	Trees ≤ 6 feet

Table 41: Tree Data, Damage Category

Damage Category	Damage Category Description	Tolerance
11	Bark Beetles	No misses on live trees with a severity of 2 or greater
12	Defoliators	No misses on live trees with a severity of 3 or greater
13-17	Other Insects	No misses of shoot moths or weevils on live trees
21	Root/Butt Diseases	No misses on live trees with a severity of 2 or greater
22	Stem Decays/Cankers	No misses on live trees with a severity of 3 or greater
25	Foliage Diseases	No misses on Elytroderma on live trees
41-42	Animal Damage	No misses on live trees with terminal leader damage or with greater than $\frac{1}{4}$ of bole circumference affected
50	Abiotic Damage	No misses on wind, snow, or ice bending, breakage, or bole cracks and frost damage to shoots on trees less than 1-inch diameter and lightning
70	Human Damage	No misses on live trees for logging damage or fire if the damage affects greater than $\frac{1}{4}$ of the bole circumference or if an open wound is in contact with the ground

Table 42: Ground Surface Cover

Field	Tolerance
Plot Number	No errors
Cover Type	No errors
Cover Percent	± 10 percent

Table 43: Vegetation Composition

Field	Tolerance
Plot Number	No errors
Live/Dead	No errors
Layer	No errors
Life form	No errors
Species	No error in species-level identification for dominant, common, or community type indicator plants; no plant name can be repeated within a layer
Minimum Height	± 10 percent of height
Average Height	± 10 percent of height
Maximum Height	± 10 percent of height
Canopy Cover	± 10 percent
Average Diameter	No errors
Maturity	No errors
Cover Remarks	n/a
User Field	n/a

Table 44: Down Woody

Field	Tolerance
Plot Number	No errors
First Duff	± ½ inch
Second Duff	± ½ inch
Fuel Depth	No errors
Twigs 0 - .24	± 40 percent
Twigs .25 - .99	± 30 percent

Field	Tolerance
Twigs 1.0 – 2.99	± 20 percent
Volume 1	n/a
Weight 1	n/a
Volume 2	n/a
Weight 2	n/a
Volume 3	n/a
Weight 3	n/a
Volume 4	n/a
Weight 4	n/a
Piece Count	No missed pieces
Decay Class	No errors
Diameter	± 1 inch on measurements
Piece Length	No errors

APPENDIX M: GLOSSARY OF TERMS

Table 45: Glossary

Term	Definition
Aspect	A position facing or commanding a given direction; exposure. Aspect is the compass direction of the prevailing slope with respect to true north.
Azimuth	A horizontal angular measure from true north to an object of interest.
Basal Area	The cross-sectional area of the stem or stems of a plant or of all plants in a stand; generally expressed as square units per unit area. For trees, measured at 4.5 feet above ground; forbs and grasses are measure at the root crown

Term	Definition
Bole Length	The straight-line distance measured parallel to the main bole of a tree, from its base to its tip.
Breast Height	A point located on the uphill side of the main stem, by measuring 4.5 feet along the uphill side of the bole from ground level or the predominant root collar. Preclude slight, non-compacted litter accumulations when establishing breast height.
CALVEG	Classification and Assessment with LANDSAT of Visible Ecological Groupings. It is a California-wide system for classifying vegetative and non-vegetative cover types. The primary cover type relates to life form and uses a 3-character alpha code.
Canopy Cover	The percent of a fixed area covered by the crown of an individual plant species or delimited by the vertical projection of its outermost perimeter; small openings in the crown are included.
Compacted Live Crown Ratio	The percent of the total height of the tree that supports a full, live crown. For trees that have uneven length crowns, occularly transfer lower branches to fill holes in the upper portions of the crown, until a full, even crown is created.
Compartment	A land area, usually between 3,000 and 8,000 acres, easily identified on the ground by physical features. A compartment tis comparable in size to a sub-watershed, or landscape management unit. It is used as a convenience for maintaining stand records and planning vegetation management projects.
Crown Class	The relative position of the tree or shrub crown with respect to the competing vegetation around it. Crown class for each tree or shrub is judged in the context of its immediate environment, that is those trees or shrubs which are competing for sunlight with the subject tree or shrub.
Crown Length	The vertical distance from the top of the leader to the base of the crown, measured to the lowest live branch-whorl with live branches in at least three quadrants, and continuous with the main crown.
Crown Ratio	The ratio of compacted live crown length to bole length. Lengths are measured parallel to the bole from the base of the tree to the tip.

Term	Definition
DEM	Digital Elevation Model. USGS geographic elevation data distributed in raster form. Digital representation of the shape of the earth's surface. Typically, digital elevation data consists of arrays of values that represent topographic elevations measured at equal intervals on the Earth's surface.
Diameter	The length of a straight-line segment passing through the center of an item and terminating at its periphery.
Diameter at Breast Height (DBH)	A measure at breast height (4.5 feet), outside bark, of the tree bole, perpendicular to the tree bole.
Diameter at Root Collar (DRC)	The straight line passing through the center of a cross section of a bole measured at the root collar of a shrub or tree.
Down Log	Stem material (conifer or hardwood) that is lying on the ground. If a stem material is leaning more than 45 degrees from vertical, is not self-supporting, and/or in contact with the ground, it is considered a down log.
Down Woody Material	Woody pieces of trees and shrubs that have been uprooted (no longer supporting growth) or severed from their root system, not self-supporting, and are lying on the ground.
Duff Layer	Duff is the fermentation and humus layer of the forest floor. It does not include the freshly cast material in the litter layer. The top of the duff is where needles, leaves, and other cast-off vegetative material have noticeably begun to decompose. Individual particles usually will be bound by fungi mycelium. When moss is present, the top of the duff is just below the green portion of the moss. The bottom of the duff is the start of the soil ("A" horizon).
Elevation	Vertical distance from a datum, usually mean sea level, to a point or object on the earth's surface. Not to be confused with altitude, this refers to points above the earth's surface.
Fuel Bed	The fuel bed is accumulation of dead, woody residue on the forest floor. It begins at the top of the duff layer and above. It includes litter, dead limb wood, and bole wood from tree species, as well as dead material from shrub, herbaceous, and grass species.

Term	Definition
Fuel Model	Mathematical descriptions of fuel properties (e.g., fuel load and fuel depth) that are used as inputs to calculations of fire danger indices and fire behavior potential.
GPS	Global Positioning System. A network of radio-emitting satellites deployed by the U.S. Department of Defense. Ground-based GPS receivers can automatically derive accurate surface coordinates for all kinds of GIS, mapping, and surveying data collection.
Ground Level	The forest floor, made up by soil and duff layer. It does not include unincorporated woody debris that may rise above the ground line. In reference to a point of measure, it is the highest point of the ground touching the base of the object being referenced.
Group Tally	A count of one or more items of the same type or species and recorded as a single line entry.
Growth	A measure of the increase in growth layers for a specified time frame.
Height Growth	The increase in height over a set period of time.
Intersect Diameter	Measurement of diameter at a point where the sampling plane intersects the geometric center of the object being tallied. No adjustment is made for stem irregularities at the point of intersection.
Lean (Tree)	The deflection from vertical, > 15 degrees of a straight line passing through the geometric center of the base and top of the main stem.
Length	The measurement of the extent of something along its greatest dimension.
Life Form	Species and individuals that are grouped into classes on the basis of their similarities in structure and function. A growth form that displays an obvious relationship to important environmental factors.
Limiting Distance	A comparative measurement between the subplot radius and the distance from the subplot center to the center of the object. The comparison is used to determine whether the object is in or out of the fixed area subplot. The object is "IN" if the measured distance is equal to or less than the subplot radius. The object is "OUT" if the measured distance is greater than the subplot radius.

Term	Definition
Live Crown Length	The straight-line distance measured parallel to the main bole of a tree, from the top of the live crown to the base of the live crown.
Ownership	The identification of the legal owner/administrator on both the surface and subsurface estates.
Plant Species	The major subdivision of a genus or subgenus of a plant being described or measured.
Plot Configuration	The size and shape of the sampling unit (plot) and the spatial arrangement of subplots within that unit.
Plot	A sub-sample of a plot or stand exam. This is the unit on which data are recorded to individual trees, snags, logs, understory vegetation, and fuels. Data can be collected on either a fixed area or variable radius area.
Proclaimed Forest	Units of the National Forest System as originally proclaimed or designated by Congress.
Quadratic Mean Diameter	The diameter of the tree of average basal area.
Radial Growth Increment	The increase in tree radius over a period of time at breast height, or occasionally at the base.
Random Sample	Any method of sample selection based on the theory of probability (degree of certainty). At any stage of the operation of selection, the probability of any set of units being selected must be known. It is the only method that can provide a measure of precision of the estimate.
Reconciliation Code	A code used to reflect the status of an individually tallied item with regards to previous surveys.
Slope	A deviation from the horizontal.
Species	A code that represents a fundamental category of taxonomic classification of an organism.
Stand	A spatially continuous group of trees and associated vegetation having similar structures and growing under similar soil and climatic conditions.

Term	Definition
Stand Exam Grid	Basic data collection method for stand exams. It consists of a set of plots, separated by equal distances on a grid pattern. The lines of the grid (transects) are oriented in cardinal directions. There is a predetermined distance between plots. The number of transects and grid plots will vary depending upon the size and shape of the stand.
Stratified Sample	A method of sampling forest resources where stands or polygons of similar properties are lumped into strata. This improves the efficiency of an inventory by reducing the variability within a given population. The less variability there is within a strata, the fewer samples will need to be taken to achieve a statistically valid result.
Stratum	A group of stands within a condition class; similar characteristics such as forest type, tree size class, and canopy density.
Stump	The woody base of a tree remaining in contact with the soil after the trunk or main stem has been severed at a point less than 4.5 feet above ground height (measured on the uphill side).
Tree	A woody perennial plant, typically large, with a single well-defined stem carrying a more or less definite crown.
Tree Age	Total age of the above-ground stem of a tree (not age of the root stock or the total age from seed). Total age is usually the annual ring count to the pith of the tree at breast height plus an estimate of the number of years it took the tree to reach breast height.

APPENDIX N: FUEL MODELS

The original 13 fuel models are from "Aids to Determining Fuel Models for Estimating Fire Behavior," Hal E. Anderson, INT-122, 1982. The remaining fuel models are from "Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model" by Joe H. Scott and Robert E. Burgan. RMRS – GTR-153. June 2005.

Table 46: Fuel Models

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1 hr	Fuel 10 hr	Fuel 100 hr	Fuel Bed Depth
1	n/a	Short grass (1 foot)	Grass and grass-dominated	Original 13	0.74	0	0	1
2	n/a	Timber (grass and understory)	Grass and grass-dominated	Original 13	2	1	0.500	1
3	n/a	Tall grass (2.5 feet)	Grass and grass-dominated	Original 13	3.01	0	0	2.50
4	n/a	Chaparral (6 feet)	Chaparral and shrub fields	Original 13	5.01	4.010	2	6
5	n/a	Brush (2 feet)	Chaparral and shrub fields	Original 13	1	0.500	0	2
6	n/a	Dormant brush, hardwood slash	Chaparral and shrub fields	Original 13	1.50	2.500	2	2.50
7	n/a	Southern rough	Chaparral and shrub fields	Original 13	1.13	1.870	1.500	2.50
8	n/a	Closed timber litter	Timber litter	Original 13	1.50	1	2.500	0.20
9	n/a	Hardwood litter	Timber litter	Original 13	2.92	0.410	0.150	0.20
10	n/a	Timber (litter and understory)	Timber litter	Original 13	3.01	2	5.010	1
11	n/a	Light logging slash	Slash	Original 13	1.50	4.51	5.510	1
12	n/a	Medium logging slash	Slash	Original 13	4.01	14.03	16.53	2.30
13	n/a	Heavy logging slash	Slash	Original 13	7.01	23.04	28.05	3

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1 hr	Fuel 10 hr	Fuel 100 hr	Fuel Bed Depth
91	NB1	Urban/Developed	Non-burnable	Scott and Burgan	0	0	0	0
92	NB2	Snow/Ice	Non-burnable	Scott and Burgan	0	0	0	0
93	NB3	Agricultural	Non-burnable	Scott and Burgan	0	0	0	0
98	NB4	Open Water	Non-burnable	Scott and Burgan	0	0	0	0
99	NB5	Bare Ground	Non-burnable	Scott and Burgan	0	0	0	0
101	GR1	Short, Sparse Dry Climate Grass (Dynamic)	Grass	Scott and Burgan	0.10	0	0	0.40
102	GR2	Low Load, Dry Climate (Dynamic)	Grass	Scott and Burgan	0.10	0	0	1
103	GR3	Low Load, Very Coarse, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	0.10	0.40	0	2
104	GR4	Moderate Load, Dry Climate Grass (Dynamic)	Grass	Scott and Burgan	0.25	0	0	2
105	GR5	Low Load, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	0.40	0	0	1.50
106	GR6	Moderate Load, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	0.10	0	0	1.50

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1 hr	Fuel 10 hr	Fuel 100 hr	Fuel Bed Depth
107	GR7	High Load, Dry Climate Grass (Dynamic)	Grass	Scott and Burgan	1	0	0	3
108	GR8	High Load, Very Coarse, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	0.50	1	0	4
109	GR9	Very High Load, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	1	1	0	5
121	GS1	Low Load, Dry Climate Grass-Shrub (Dynamic)	Grass-Shrub	Scott and Burgan	0.20	0	0	0.90
122	GS2	Moderate load, Dry Climate Grass-Shrub (Dynamic)	Grass-Shrub	Scott and Burgan	0.50	0.500	0	1.50
123	GS3	Moderate Load, Humid Climate Grass-Shrub (Dynamic)	Grass-Shrub	Scott and Burgan	0.30	0.250	0	1.80
124	GS4	High Load, Humid Climate Grass-Shrub (Dynamic)	Grass-Shrub	Scott and Burgan	1.90	0.300	0.100	2.10
141	SH1	Low Load, Dry Climate Shrub (Dynamic)	Shrub	Scott and Burgan	0.25	0.250	0	1
142	SH2	Moderate Load, Dry Climate Shrub	Shrub	Scott and Burgan	1.35	2.400	0.750	1
143	SH3	Moderate Load, Humid Climate Shrub	Shrub	Scott and Burgan	0.45	3	0	2.40
144	SH4	Low Load, Humid Climate Timber-Shrub	Shrub	Scott and Burgan	0.85	1.150	0.200	3

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1 hr	Fuel 10 hr	Fuel 100 hr	Fuel Bed Depth
145	SH5	High Load, Dry Climate Shrub	Shrub	Scott and Burgan	3.60	2.100	0	6
146	SH6	Low Load, Humid Climate Shrub	Shrub	Scott and Burgan	2.90	1.450	0	2
147	SH7	Very High Load, Dry Climate Shrub	Shrub	Scott and Burgan	3.5	5.300	2.200	6
148	SH8	High Load, Humid Climate Shrub	Shrub	Scott and Burgan	2.05	3.400	0.850	3
149	SH9	Very High Load, Humid Climate Shrub (Dynamic)	Shrub	Scott and Burgan	4.50	2.450	0	4.40
161	TU1	Low Load, Dry Climate Timber-Grass-Shrub (Dynamic)	Timber - Understory	Scott and Burgan	0.20	0.900	1.500	0.60
162	TU2	Moderate Load, Humid Climate Timber-Grass-Shrub (Dynamic)	Timber - Understory	Scott and Burgan	0.95	1.800	1.250	1
163	TU3	Moderate Load, Humid Climate Timber-Grass-Shrub (Dynamic)	Timber – Understory	Scott and Burgan	1.10	0.150	0.250	1.30
164	TU4	Dwarf Conifer with Understory	Timber – Understory	Scott and Burgan	4.50	0	0	0.50
165	TU5	Very High Load, Dry Climate Timber-Shrub	Timber – Understory	Scott and Burgan	4	4	3	1
181	TL1	Low Load Compact Conifer Litter	Timber Litter	Scott and Burgan	1	2.200	3.600	0.20

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1 hr	Fuel 10 hr	Fuel 100 hr	Fuel Bed Depth
182	TL2	Low Load Broadleaf Litter	Timber Litter	Scott and Burgan	1.40	2.300	2.200	0.200
183	TL3	Moderate Load Conifer Litter	Timber Litter	Scott and Burgan	0.50	2.200	2.800	0.30
184	TL4	Small Downed Logs	Timber Litter	Scott and Burgan	0.50	1.500	4.200	0.40
185	TL5	High Load Conifer Litter	Timber Litter	Scott and Burgan	1.15	2.500	4.400	0.60
186	TL6	Moderate Load Broadleaf Litter	Timber Litter	Scott and Burgan	2.40	1.200	1.200	0.30
187	TL7	Large Downed Logs	Timber Litter	Scott and Burgan	0.30	1.400	8.100	0.40
188	TL8	Long-Needle Litter	Timber Litter	Scott and Burgan	5.80	1.400	1.100	0.30
189	TL9	Very High Load Broadleaf Litter	Timber Litter	Scott and Burgan	6.65	3.300	4.150	0.60
201	SB1	Low Load Activity Fuel	Slash-Blowdown	Scott and Burgan	1.50	3	11	1
202	SB2	High Load Activity Fuel or Moderate Load Blowdown	Slash-Blowdown	Scott and Burgan	4.50	4.250	4	1
203	SB3	High Load Activity Fuel or Moderate Load Blowdown	Slash-Blowdown	Scott and Burgan	5.50	2.750	3	1.20

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1 hr	Fuel 10 hr	Fuel 100 hr	Fuel Bed Depth
204	SB4	High Load Blowdown	Slash-Blowdown	Scott and Burgan	5.25	3.500	5.250	2.70

Table 47: Detailed Descriptions of the Fuel Models

Code	Detailed Description
1	Contains fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Generally less than one-third of the area contains shrubs or timber. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations. Annual and perennial grasses are included in this fuel model.
2	Herbaceous material with litter and dead-down stem wood from the open shrub or timber overstory. Open shrub lands and pine stands or scrub oak stands that cover one-third to two-thirds of the area. Stand many include clumps and may include pinyon-juniper.
3	Stands are tall, averaging about three feet, but considerable variation may occur. Approximately one-third or more of the stand is considered dead and cured. May include cultivated grains that have not been harvested, tall prairie, and marshland grasses.
4	Stands of mature shrubs, 6 feet or more tall such as California mixed chaparral, the high pocosin along the east coast, the pine barrens of New Jersey, or the closed jack pine stands of the north-central states. Besides flammable foliage, stand may contain dead woody material. May contains a deep litter layer.
5	Shrubs are young with little dead material, and the foliage contains little volatile material. Usually shrubs are short and almost totally cover the area. Young, green stands with no dead wood qualify: laurel, vine maple, alder, or even chaparral, manzanita, or chamise.
6	The shrubs are older, but not as tall as model 4, nor do they contain as much fuel as model 4. This model covers a broad range of shrub conditions: intermediate stands of chamise, chaparral, oak brush, low pocosin, Alaskan spruce taiga, and shrub tundra. May include hardwood slash that has been cured. Pinyon-juniper shrub lands may be represented.
7	Stands of shrubs are generally between 2 and 6 feet high. Palmetto-galliberry understory, with a pine overstory are typical. Low pocosin may be represented. Black spruce shrub combinations in Alaska may also be represented.

Code	Detailed Description
8	Contains closed canopy stands of short needle conifers or hardwoods that have leafed out. The compact litter layer is mainly needles, leaves, and occasionally twigs because little undergrowth is present. Representative conifer types are white pine, lodgepole pine, spruce, fir, and larch.
9	Both long-needle conifer stands and hardwood stands, especially the oak-hickory types, are typical. Closed stands of long-needled pine like ponderosa, Jeffrey, red pines, or southern pine plantations are grouped in this model. May contain concentrations of dead-down woody material.
10	Dead-down fuels include quantities of 3-inch or larger limb wood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, wind thrown stands, over-mature situations with deadfall, and aged light thinning or partial cut slash.
11	Contains slash and herbaceous material intermixed with slash. Light partial cuts or thinning operations in mixed conifer stands, hardwood stands, and southern pine harvests are considered. Clearcuts generally produce more slash than represented here. The less than 3-inch material load is less than 12 tons per acre. The greater than 3 inch is represented by not more than 10 pieces, 4 inches in diameter, along a 60 foot transect.
12	The visual impression is dominated by slash and much of it is less than 3 inches in diameter. The fuels are well distributed. Heavily thinned conifer stands, clearcuts, and medium or heavy partial cuts are represented. The material larger than 3 inches is represented by encountering 11 pieces, 6 inches in diameter along a 50 foot transect.
13	There is a continuous layer of slash. Large quantities of material larger than 3 inches are present. Clearcuts and heavy partial cuts in mature and over-mature stands are depicted where the slash load is dominated by the greater than 3 inch diameter material. Fuels less than 3 inches are generally only 10 percent of the total load. May include situations where the slash still has "red" needles attached.
91	Land covered by urban and suburban development. The area must not support wildland fire spread. In some cases the area may experience structural fire losses during a wildland fire incident; however, structure ignition in those cases is either house-to-house or by firebrands, neither of which is directly modeled using fire behavior fuel models. If sufficient vegetation surrounds structures such that wildland fire spread is possible, then choose a fuel model appropriate for the wildland vegetation.
92	Land covered by permanent snow and ice. Areas covered by seasonal snow and ice can be mapped to two different fuel models.

Code	Detailed Description
93	Agricultural land maintained in a non-burnable condition, examples include irrigated annual crops, mowed or tilled orchards, and so forth. However, there are many agricultural areas that are not kept in a non-burnable condition. For example, grass is often allowed to grow beneath vines or orchard trees, and wheat and similar crops are allowed to cure before harvest; in those cases use a different fuel model.
98	Land covered by open bodies of water such as lakes, rivers, and oceans.
99	Land devoid of enough fuel to support wildland fire spread. Such areas include: gravel pits, arid deserts with little vegetation, sand dunes, rock outcroppings, beaches, and so forth.
101	The primary carrier of fire in sparse grass, though small amounts of fine fuel may be present. The grass is generally short, either naturally or by grazing, and may be sparse or discontinuous. The moisture extraction is indicative of a dry climate fuelbed, but may also be applied in high-extinction moisture fuelbeds because in both cases predicted spread rate and flame length are low compared to other grass models.
102	The primary carrier of fire is grass, though small amounts of fine dead fuel may be present. Load is greater than 101, and fuelbed may be more continuous. Shrubs, if present, do not affect fire behavior.
103	The primary carrier of fire is continuous, coarse, humid-climate grass. Grass and herb fuel load is relatively light; fuelbed depth is about 2 feet. Shrubs are not present in significant quantity to affect fire behavior.
104	The primary carrier of fire is continuous, dry-climate grass. Load and depth are greater than 102; fuelbed depth is about 2 feet.
105	The primary carrier of fire is humid-climate grass. Load is greater than 103 but depth is lower, about 1-2 feet.
106	The primary carrier of fire is continuous humid-climate grass. Load is greater than 105 but depth is about the same. Grass is less coarse than 105.
107	The primary carrier of fire is continuous dry-climate grass. Load and depth are greater than 104. Grass is about 3 feet tall.
108	The primary carrier of fire is continuous, very coarse, humid-climate grass. Load and depth are greater than 106. Spread rate and flame length can be extreme if grass is fully cured.
109	The primary carrier of fire is dense, tall, humid-climate grass. Load and depth are greater than 108, about 6 feet tall. Spread rate and flame length can be extreme if grass is fully more mostly cured.

Code	Detailed Description
121	The primary carrier of fire is grass and shrubs combined. Shrubs are about 1 foot height, grass load is low. Spread rate is moderate; flame length is low. Moisture of extinction is low.
122	The primary carrier of fire is grass and shrubs combined. Shrubs are 1 to 3 feet high, grass load is moderate. Spread rate is high; flame length moderate. Moisture of extinction is low.
123	The primary carrier of fire is grass and shrubs combined. Moderate grass/shrub load, average grass/shrub depth less than 2 feet. Spread rate is high; flame length moderate. Moisture of extinction is high.
124	The primary carrier of fire is grass and shrubs combined. Heavy grass/shrub load, depth greater than 2 feet. Spread rate high; flame length very high. Moisture of extinction is high.
141	The primary carrier of fire is woody shrubs and shrub litter. Low shrub fuel load, fuelbed about 1 foot; some grass may be present. Spread rate is very low; flame length very low.
142	The primary carrier of fire is woody shrubs and shrub litter. Moderate shrub fuel load (higher than 141), depth about 1 foot, no grass fuel present. Spread rate is very low; flame length low.
143	The primary carrier of fire is woody shrubs and shrub litter. Moderate shrub load, possibly with pine overstory or herbaceous fuel, fuel bed depth 2 to 3 feet. Spread rate is low; flame length low.
144	The primary carrier of fire is woody shrubs and shrub litter. Low to moderate shrub and litter load, possibly with pine overstory, fuel bed depth about 3 feet. Spread rate is high; flame length moderate.
145	The primary carrier of fire is woody shrubs and shrub litter. Heavy shrub load, depth 4-6 feet. Spread rate is very high; flame length very high. Moisture of extinction is high.
146	The primary carrier of fire is woody shrubs and shrub litter. Dense shrubs, little or no herbaceous fuel, fuelbed depth about 2 feet. Spread rate is high; flame length high.
147	The primary carrier of fire is woody shrubs and shrub litter. Very heavy shrub load, depth 4 to 6 feet. Spread rate lower than 146, but flame length similar. Spread rate is high, flame length is very high.
148	The primary carrier of fire is woody shrubs and shrub litter. Dense shrubs, little or no herbaceous fuel, fuelbed depth about 3 feet. Spread rate is high; flame length high.

Code	Detailed Description
149	The primary carrier of fire is woody shrubs and shrub litter. Dense, finely branched shrubs with significant fine dead fuel, about 4 to 6 feet tall; some herbaceous fuel may be present. Spread rate is high; flame length is very high.
161	The primary carrier of fire is low load of grass and/or shrub with litter. Spread rate is low; flame length is low.
162	The primary carrier of fire is moderate litter load with shrub component. High extinction moisture. Spread rate is moderate; flame length is low.
163	The primary carrier of fire is moderate forest litter. High extinction moisture. Spread rate is high; flame length is moderate.
164	The primary carrier of fire is short conifer trees with grass or moss understory. Spread rate is moderate; flame length is moderate.
165	The primary carrier of fire is heavy forest litter with a shrub or small tree understory. Spread rate is moderate; flame length is moderate.
181	The primary carrier of fire is compact forest litter. Light to moderate loads, fuels 1 to 2 inches deep. May be used to represent a recently burned forest. Spread rate is very low; flame length is very low.
182	The primary carrier of fire is broadleaf (hardwood) litter. Low load, compact broadleaf litter. Spread rate is very low; flame length is very low.
183	The primary carrier of fire is moderate load conifer litter, light load of coarse fuels. Spread rate is very low; flame length low.
184	The primary carrier of fire is moderate load of fine litter and coarse fuels. Includes small diameter downed logs. Spread rate is low; flame length low.
185	The primary carrier of fire is high load of fine litter; light slash or mortality fuel. Spread rate is low; flame length low.
186	The primary carrier of fire is moderate load broadleaf litter, less compact than 182. Spread rate is very moderate; flame length is low.
187	The primary carrier of fire is heavy load of forest litter, includes large diameter downed logs. Spread rate is low; flame length low.
188	The primary carrier of fire is moderate load long-needle pine litter, may include small amount of herbaceous load. Spread rate is moderate; flame length low.
189	The primary carrier of fire is very high load, fluffy broadleaf litter. This can also be used to represent heavy needle-drape. Spread rate is very moderate; flame length moderate.

Code	Detailed Description
201	The primary carrier of fire is light dead and down activity fuel. Fine fuel load is 10 to 20 t/ac weighted towards fuels 1 to 3 inch diameter class; depth is less than 1 foot. Spread rate is moderate; flame length moderate.
202	The primary carrier of fire is moderate dead and downed activity fuel or light blowdown. Fine fuel load is 7 to 12 t/ac, evenly distributed across 0 to 0.25, 0.25 to 1, and 1 to 3 inch diameter classes, depth is about 1 foot. Blowdown is scattered, with many trees still standing. Spread rate is moderate; flame length moderate.
203	The primary carrier of fire is heavy dead and down activity fuel or moderate blowdown. Fine fuel load is 7 to 12 t/ac, weighted toward 0 to 0.25 inch diameter class, depth is more than 1 foot. Blowdown is moderate; trees compacted to near the ground. Spread rate is high; flame length high.
204	The primary carrier of fire is heavy blowdown fuel. Blowdown is total, fuelbed is not compacted, most foliage and fine fuel still attached to blowdown. Spread rate is very high; flame length very high.

SPECIES REQUIRING DRC

The following tree species require a measurement at “root collar” (DRC) instead of at “breast height” (DBH).

Table 48: Detailed Descriptions of the Fuel Models

Code	Common Name	Scientific Name
ACGL	Rocky Mountain maple	<i>Acer glabrum</i>
ACGR3	Bigtooth maple	<i>Acer grandidentatum</i>
ACNE2	Boxelder	<i>Acer negundo</i>
ALIN2	Gray alder	<i>Alnus incana</i>
ALINT	Thinleaf alder	<i>Alnus incana</i> ssp. <i>tenuifolia</i>
ALOB2	Arizona alder	<i>Alnus oblongifolia</i>
ARAR2	Arizona madrone	<i>Arbutus Arizonica</i>
ARXA80	Texas Madrone	<i>Arbutus xalapensis</i>
ARPR	Pringle manzanita	<i>Arctostaphylos pringlei</i>
CEIN7	Littleleaf mountain mahogany	<i>Cercocarpus intricatus</i>

Code	Common Name	Scientific Name
CELAR	Netleaf hackberry	<i>Celtis laevigata</i> var. <i>reticulate</i>
CELE3	Curl-leaf mountain mahogany	<i>Cercocarpus ledifolius</i>
CEMO2	Alderleaf mountain mahogany	<i>Cercocarpus montanus</i>
CEMOP	Hairy mountain mahogany	<i>Cercocarpus montanus</i> var. <i>paucidentatus</i>
COSE16	Redosier dogwood	<i>Cornus sericea</i>
COSES	Redosier dogwood	<i>Cornus sericea</i> ssp. <i>sericea</i>
CUAR	Arizona cypress	<i>Cupressus arizonica</i>
FRVE2	Velvet ash	<i>Fraxinus velutina</i>
FRGO	Goodding's ash	<i>Fraxinus goodingii</i>
JUCO11	Redberry juniper	<i>Juniperus coahuilensis</i>
JUCO6	Common juniper	<i>Juniperus communis</i>
JUCOD	Common juniper	<i>Juniperus communis</i> var. <i>depressa</i>
JUDE2	Alligator juniper	<i>Juniperus deppeana</i>
JUMA	Arizona walnut	<i>Juglans major</i>
JUMO	Oneseed juniper	<i>Juniperus monosperma</i>
JUNIP	Juniper	<i>Juniperus</i>
JUOS	Utah juniper	<i>Juniperus osteosperma</i>
JUPI	Pinchot's juniper	<i>Juniperus pinchotii</i>
JUSC2	Rocky Mountain juniper	<i>Juniperus scopulorum</i>
PIDI3	Border pinyon	<i>Pinus discolor</i>
PIED	Twoneedle pinyon	<i>Pinus edulis</i>
PIMO	Singleleaf pinyon	<i>Pinus monophylla</i>
PIMOM2	Singleleaf pinyon	<i>Pinus monophylla</i> var. <i>monophylla</i>
PLWR2	Arizona sycamore	<i>Platanus wrightii</i>

Code	Common Name	Scientific Name
PROSO	Mesquite	Prosopis L.
QUAR	Arizona white oak	Quercus arizonica
QUCH2	Canyon live oak	Quercus chrysolepis
QUEM	Emory oak	Quercys emoryi
QUERC	Oak	Quercus
QUGA	Gambel oak	Quercus gambelii
QUGR3	Gray oak	Quercus grisea
QUHY	Silverleaf oak	Quercus hypoleucoides
QUOB	Mexican blue oak	Quercus oblongifolia
QUPA4	Quercus pauciloba	Quercus pauciloba
QURU4	Netleaf oak	Quercus rugose
QUTO2	Toumey oak	Quercus toumeyi
QUTU2	Sonoran scrub oak	Quercus turbinella
RONE	New Mexico locust	Robinia neomexicana
RONEN	New Mexico locust	Robinia neomexicana var. neo Mexicana
SAAM2	Peachleaf willow	Salix amygdaloides
SABE2	Bebb willow	Salix bebbiana
SABO	Bonpland willow	Salix bonplandiana
SAEX	Narrowleaf willow	Salix exigua
SAGL	Grayleaf willow	Salix glauca
SAGO	Goodding's willow	Salix gooddingii
SALA6	Arroyo willow	Salix lasiolepis
SALI	Strapleaf willow	Salix liguligolia
SALIX	Willow	Salix
SALU	Shining willow	Salix lucida

Code	Common Name	Scientific Name
SALUC	Greenleaf willow	Salix lucida ssp. Caudata
SALUL	Pacific willow	Salix lucida ssp. lasiandra
SAMO2	Park willow	Salix monticola
SAPL2	Diamondleaf willow	Salix planifolia
SASC	Scouler's willow	Salix scouleriana
SATA	Yewleaf willow	Salix taxifolia
TAMAR2	Tamarisk	Tamarix
VACAP	Arizona rosewood	Vauquelina californica ssp. Pauciflora