

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

## Damage Categories

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
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

Category	Agent	Common Name	Scientific Name
<b>10</b>	<b>000</b>	<b>General Insects</b>	
<b><u>SEVERITY RATING</u></b>			
1 = minor			
2 = severe			
	001	Thrips	
	002	Tip moth	
	003	Wasp	
	007	Clerid beetle	<i>Cleridae</i>
	008	Weevil	<i>Curculionidae</i>
	011	Ant	<i>Formicidae</i>
	012	Stick insect	<i>Graeffea crovanii</i>
	014	Conifer swift moth	<i>Korsheltellus gracilis</i>
	017	Bagworm moth	<i>Psychidae</i>
	019	Scarab	<i>Scarabaeidae</i>
	021	unknown	<i>Steremnius carinatus</i>
	022	Pyralid moth	<i>Thliptoceras octoquttale</i>
	023	Wood wasps	<i>Siricidae spp.</i>
<b>11</b>	<b>000</b>	<b>Bark Beetles</b>	
<b><u>SEVERITY RATING</u></b>			
1 = Unsuccessful bole attack: pitchout and beetle brood absent			
2 = Strip attacks: galleries and brood present			
3 = Successful current bole attack: galleries and brood present			
4 = Topkill			
5 = Successful attack last year			
6 = Older dead			
	001	Roundheaded pine beetle	<i>Dendroctonus adjunctus</i>
	002	Western pine beetle	<i>Dendroctonus brevicomis</i>
	006	Mountain pine beetle	<i>Dendroctonus ponderosae</i>
	007	Douglas-fir beetle	<i>Dendroctonus pseudotsugae</i>
	009	Spruce beetle	<i>Dendroctonus rufipennis</i>
	012	Red turpentine beetle	<i>Dendroctonus valens</i>
	015	Western balsam bark beetle	<i>Dryocoetes confusus</i>
	019	Pinon ips	<i>Ips confusus</i>
	021	Sixspined ips	<i>Ips calligraphus</i>
	024	unknown	<i>Ips latidens</i>
	025	Arizona five-spined ips	<i>Ips lecontei</i>
	029	Pine engraver	<i>Ips pini</i>
	030	Ips engraver beetles	<i>Ips spp.</i>
	035	Cedar bark beetles	<i>Phloeosinus spp.</i>
	036	Western cedar bark beetle	<i>Phloeosinus punctatus</i>
	037	Tip beetles	<i>Pityogenes spp.</i>
	038	Douglas-fir twig beetle	<i>Pityophthorus pseudotsugae</i>
	039	Twig beetles	<i>Pityophthorus spp.</i>
	040	Foureyed spruce beetle	<i>Polygraphus rufipennis</i>

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>11 (cont.)</b>	048	True fir bark beetles	<i>Scolytus spp.</i>
	050	Fir engraver	<i>Scolytus ventralis</i>
	053	Four-eyed bark beetle	<i>Polygraphus spp.</i>
	055	Spruce ips	<i>Ips pilifrons</i>
	056	Mexican pine beetle	<i>Dendroctonus mexicanus</i>
<b>12</b>	<b>000</b>	<b>Defoliators</b>	
<b>SEVERITY RATING</b>			
1 = Light defoliation (1-25%), no topkill			
2 = Light defoliation (1-25%), topkill ≤10%			
3 = Light defoliation (1-25%), topkill >10%			
4 = Moderate defoliation (26-75%), no topkill			
5 = Moderate defoliation (26-75%), topkill ≤10%			
6 = Moderate defoliation (26-75%), topkill >10%			
7 = Heavy defoliation (76-100%), no topkill			
8 = Heavy defoliation (76-100%), topkill ≤10%			
9 = Heavy defoliation (76-100%), topkill >10%			
	001	Casebearer	
	002	Leaftier	
	003	Looper	
	004	Needleminer	
	005	Sawfly	
	006	Skeletonizer	
	008	Spanworm	
	009	Webworm	
	013	Whitefly	<i>Aleyrodoidae</i>
	014	Fall cankerworm	<i>Alsophila pometaria</i>
	015	Alder flea beetle	<i>Altica ambiens</i>
	016	Mountain mahogany looper	<i>Anacamptodes clivinaria profanata</i>
	037	Large aspen tortrix	<i>Choristoneura conflictana</i>
	040	Western spruce budworm	<i>Choristoneura occidentalis</i>
	043	Aspen leaf beetle	<i>Chrysomela crotchi</i>
	044	Cottonwood leaf beetle	<i>Chrysomela scripta</i>
	045	Leafhopper	<i>Cicadellidae</i>
	050	Ponderosa needleminer	<i>Coleotechnites spp.</i>
	052	Pandora moth	<i>Coloradia pandora</i>
	054	Lace bugs	<i>Corythucha spp.</i>
	059	Walkingstick	<i>Diaperomera femorata</i>
	066	White fir needleminer	<i>Epinotia meritana</i>
	067	Linden looper	<i>Erannis tiliaria</i>
	069	Pine needleminer	<i>Exoteleia pinifoliella</i>
	072	Geometrid moth	<i>Geometridae</i>
	075	Pale tussock moth	<i>Halisidota tessellaris</i>
	077	Brown day moth	<i>Hemileuca eglanterina</i>
	078	Buck moth	<i>Hemileuca maia</i>
	082	Fall webworm	<i>Hyphantria cunea</i>
	084	unknown	<i>Lambdina punctat</i>

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>12 (cont.)</b>	085	Tent caterpillar moth	<i>Lasiocampidae</i>
	094	Western tent caterpillar	<i>Malacosoma californicum</i>
	097	Southwestern tent caterpillar	<i>Malacosoma incurvum</i>
	098	Leafcutting bees	<i>Megachilidae</i>
	099	Blister beetle	<i>Meloidae</i>
	123	Douglas-fir tussock moth	<i>Orgyia pseudotsugata</i>
	154	Bagworm	<i>Thyridopteryx ephemeraeformis</i>
	155	Leafroller/seed moth	<i>Tortricidae</i>
	156	Willow defoliation	<i>Tortricidae</i>
	160	Pine needle sheathminer	<i>Zelleria haimbachi</i>
	162	Cottonwood leaf beetle	<i>Chrysomela spp.</i>
	165	Leaf roller	<i>Epinotia solandriana</i>
	166	New Mexico fir looper	<i>Gelenara cansimillis</i>
	171	Pinon sawfly	<i>Neodiprion edulicolus</i>
	172	unknown	<i>Neodiprion gilletti</i>
	174	Pine looper	<i>Phaeoura mexicanaria</i>
	175	unknown	<i>Zadiprion rohweri</i>
	176	unknown	<i>Zadiprion townsendi</i>
	190	Hickory tussock moth	<i>Halisidota caryae</i>
	191	Pin oak sawfly	<i>Caliroa lineata</i>
	192	Palmerworm	<i>Dichomeris ligulella</i>
	193	Pitch pine looper	<i>Lambdina athasaria pellucidaria</i>
	194	Red pine sawfly	<i>Neodiprion nanulus nanulus</i>
	195	Pine tip moth	<i>Argyrotaenia pinatubana</i>
	196	Baldcypress leafroller	<i>Archips goyerana</i>
	197	Winter moth	<i>Operophtera</i>
	198	Basswood thrips	<i>Neohydatothrips</i>
	199	Noctuid moth	<i>Xylomyges simplex (walker)</i>
	200	Pyralid moth	<i>Palpita magniferalis</i>
	201	Pacific silver fir budmoth	<i>Zeiraphera sp. destitutana</i>
<b>13</b>	<b>000</b>	<b>Chewing Insects</b>	
<b>SEVERITY RATING</b>			
1 = Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected			
2 = Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead			
	001	Grasshopper	
	002	Shorthorn grasshoppers	<i>Acrididae</i>
	006	Cicadas	<i>Cicadidae</i>
	019	Agamemnon butterfly	<i>Papilio agememnon</i>
	020	Northern pitch twig moth	<i>Petrova albicapitana</i>
	021	Ponderosa pine tip moth	<i>Rhyacionia zozana</i>
	022	Pine needle weevil	<i>Scythropus spp.</i>
	025	Unknown	<i>Thrips madronii</i>
	029	Deodar weevil	<i>Pissodes nemorensis</i>
	030	Adana tip moth	<i>Rhyacionia adana</i>

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>14</b>	<b>000</b>	<b>Sucking Insects</b>	
<b>SEVERITY RATING</b>			
1 = Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected			
2 = Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead			
	001	Scale insect	
	006	Aphid	<i>Aphididae</i>
	008	Western pine spittlebug	<i>Aphrophora permutata</i>
	010	Spittlebug	<i>Cercopidae</i>
	012	Pine needle scale	<i>Chionaspis pinifoliae</i>
	014	Giant conifer aphids	<i>Cinara spp.</i>
	034	Prescott scale	<i>Matsucoccus vexillorum</i>
	017	Spruce aphid	<i>Elatobium abietinum</i>
	022	Pine thrips	<i>Gnophothrips spp.</i>
	029	Pinyon needle scale	<i>Matsucoccus acalyptus</i>
	031	Pine twig scale	<i>Matsucoccus californicus</i>
	032	Ponderosa pine scale	<i>Matsucoccus degeneratus</i>
	035	Treehoopers	<i>Membracidae</i>
	040	Spruce spider mite	<i>Oligonychus ununquis</i>
	041	Twig girdler	<i>Oncideres cingulata</i>
	050	Mealybug	<i>Pseudococcidae</i>
	061	Pine tortoise scale	<i>Toumeyella parvicornis</i>
	069	Elm scurfy scale	<i>Chionaspis americana</i>
<b>15</b>	<b>000</b>	<b>Boring Insects</b>	
<b>SEVERITY RATING</b>			
1 = Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected			
2 = Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead			
	001	Shoot borer	
	002	Termite	
	003	Ponderosa pine bark borer	<i>Acanthocinus princeps</i>
	006	Bronze poplar borer	<i>Agrilus liragus</i>
	007	Carpenter bees	<i>Apidae</i>
	008	Flatheaded borer	<i>Buprestidae</i>
	009	Golden buprestid	<i>Buprestis aurulenta</i>
	010	Carpenter ants	<i>Camponotus spp.</i>
	011	Gouty pitch midge	<i>Cecidomyia piniinopsis</i>
	013	Roundheaded borer	<i>Cerambycidae</i>
	018	Carpenterworm moths	<i>Cossidae</i>
	027	Ponderous borer	<i>Ergates spiculatus</i>
	029	Western pine shoot borer	<i>Eucosma sonomana</i>
	030	Eucosma species	<i>Eucosma spp.</i>
	035	Powderpost beetle	<i>Lyctidae</i>
	037	unknown	<i>Magdalis spp.</i>
	039	Locust borer	<i>Megacyllene robiniae</i>

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>15 (cont.)</b>	041	Flatheaded fir borer	<i>Melanophila drummondi</i>
	042	Whitespotted sawyer	<i>Monochamus scutellatus</i>
	043	Redheaded ash borer	<i>Neoclytus acuminatus</i>
	044	Western ash borer	<i>Neoclytus conjunctus</i>
	045	Oberea shoot borers	<i>Oberea spp.</i>
	052	Ambrosia beetles	<i>Platypus spp.</i>
	053	Cottonwood borer	<i>Plectrodera scalator</i>
	064	Western pine tip moth	<i>Rhyacionia bushnelli</i>
	065	Nantucket pine tip moth	<i>Rhyacionia frustrana</i>
	067	Southwestern pine tip moth	<i>Rhyacionia neomexicana</i>
	068	Poplar borer	<i>Saperda calcarata</i>
	070	Saperda shoot borer	<i>Saperda spp.</i>
	071	Clearwing moths	<i>Sesiidae</i>
	075	Western cedar borer	<i>Trachykele blondeli</i>
	076	Douglas-fir pitch moth	<i>Vespamima novaroensis</i>
		087	Emerald ash borer
<b>16</b>	<b>000</b>	<b>Seed/Cone/Flower/Fruit Insects</b>	
<b>SEVERITY RATING</b>			
1 = minor			
2 = severe			
	003	Limber pine cone beetle	<i>Conophthorus flexilis</i>
	005	Ponderosa pine cone beetle	<i>Conophthorus ponderosae</i>
	008	White pine cone beetle	<i>Conophthorus coniperda</i>
	015	Fir coneworm	<i>Dioryctria abietivorella</i>
	017	Pine coneworm	<i>Dioryctria auranticella</i>
	020	unknown	<i>Dioryctria pseudotsugella</i>
	021	Dioryctria moths	<i>Dioryctria spp.</i>
	023	Seed chalcid	<i>Eurytomidae</i>
	025	Cone maggot	<i>Hylemya anthracina</i>
	027	Ponderosa pine seed worm/moth	<i>Laspeyresia piperana</i>
	028	Spruce seed moth	<i>Laspeyresia youngana</i>
	029	Boxelder bug	<i>Leptocoris trivittatus</i>
	030	Leaffooted pine seed bug	<i>Leptoglossus corculus</i>
	031	Western conifer seed bug	<i>Leptoglossus occidentalis</i>
	034	Spruce seed chalcid	<i>Megastigmus piceae</i>
	035	Ponderosa pine seed chalcid	<i>Megastigmus albifrons</i>
	037	Douglas-fir seed chalcid	<i>Megastigmus spermotrophs</i>
	042	Coneworm	<i>Phycitidae</i>
	043	Harvester ants	<i>Pogonomyrmex spp.</i>
	048	Coneworm	<i>Hylemia spp.</i>
	049	Prairie tent caterpillar	<i>Malacosoma lutescens</i>
	050	Jack pine tip beetle	<i>Conophthorus banksianae</i>

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>17</b>	<b>000</b>	<b>Gallmaker Insects</b>	
<b><u>SEVERITY RATING</u></b>			
1 = minor			
2 = severe			
	003	Cooley spruce gall adelgid	<i>Adelges cooleyi</i>
	006	Gall midge	<i>Cecidomyiidae</i>
	008	Gall mite	<i>Eriophyidae</i>
	013	Gall aphid	<i>Phylloxeridae</i>
	015	Psyllid	<i>Psyllidae</i>
	019	Spider mites	<i>Oligonychus spp.</i>
<b>18</b>	<b>000</b>	<b>Insect Predators</b>	
<b><u>SEVERITY RATING</u></b>			
1 = minor			
2 = severe			
	001	Lacewing	
	002	Blackbellied clerid	<i>Enoclerus lecontei</i>
	003	Redbellied clerid	<i>Enoclerus sphegeus</i>
	004	unknown	<i>Formica rufa</i>
	005	Western yellowjacket	<i>Vespula pennsylvanica</i>
<b>19</b>	<b>000</b>	<b>General Diseases</b>	
<b><u>SEVERITY RATING</u></b>			
1 = minor			
2 = severe			
<b>20</b>	<b>000</b>	<b>Biotic Damage</b>	
<b><u>SEVERITY RATING</u></b>			
1 = minor			
2 = severe			
	001	Damping off	
	002	Gray mold	<i>Botrytis cinerea</i>

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>21</b>	<b>000</b>	<b>Root/Butt Diseases</b>	
<b><u>SEVERITY RATING for trees</u></b>			
1 = Tree within 30 feet of tree with deteriorating crown, tree with diagnostic symptoms or signs, or tree killed by root disease			
2 = Pathogen (sign) or diagnostic symptom detected - no crown deterioration			
3 = Crown deterioration detected - no diagnostic symptoms or signs			
4 = Both crown deterioration and diagnostic signs symptoms detected			
5 = Bleeding present on bole			
6 = Bleeding present on bole and adjacent mortality present			
7 = Laboratory confirmed Sudden Oak Death			
<b><u>SEVERITY RATING for Setting Level</u></b>			
G2 = Minor evidence of RDS on plot			
G3 = RDS present, canopy reduction less than 20%			
G4 = RDS present, canopy reduction 20-30 %			
G5 = RDS present, canopy reduction 30-50%			
G6 = RDS present, canopy reduction 50-57%, most ground area infested			
G7 = RDS present, 76+% canopy reduction			
G8 = Entire area infested with RDS, one or very few susceptible overstory trees			
G9 = Entire area infested with RDS, no susceptible overstory trees present			
	001	Armillaria root disease	<i>Armillaria spp.</i>
	004	Brown crumbly rot	<i>Fomitopsis pinicola</i>
	007	White mottled rot	<i>Ganoderma applanatum</i>
	008	Ganoderma rot of hardwoods	<i>Ganoderma lucidum</i>
	010	Annosus root disease	<i>Heterobasidion annosum</i>
	012	Tomentosus root disease	<i>Inonotus tomentosus</i>
	014	Black stain root disease	<i>Ophiostoma wagneri</i>
	015	Schweinitzii butt rot	<i>Phaeolus schweinitzii</i>
	024	Crown gall	<i>Agrobacterium tumefaciens</i>
	027	Brown cubical rot	<i>Laetiporus sulphureus</i>
<b>22</b>	<b>000</b>	<b>Stem Decays/Cankers</b>	
<b><u>SEVERITY RATING</u></b>			
0 = 0-4% rotten			
1 = 5-15% rotten			
2 = 16-25% rotten			
3 = 26-35% rotten			
4 = 36-45% rotten			
5 = 46-55% rotten			
6 = 56-65% rotten			
7 = 66-75% rotten			
8 = 76-85% rotten			
9 = 86-100% rotten			
	001	Heart rot	
	002	Stem rot	
	003	Sap rot	
	004	Slime flux	

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
22 (cont.)	005	Virus	
	006	Black knot of cherry	<i>Apiosporina morbosa</i>
	007	Atropellis canker	<i>Atropellis piniphila</i>
	008	Siberian elm canker	<i>Botryodiplodia hypoderma</i>
	012	Black canker of aspen	<i>Ceratocystis fimbriata</i>
	013	Sycamore canker stain	<i>Ceratocystis fimbriata f.sp. platani</i>
	024	Gray-brown saprot	<i>Cryptoporus volvatus</i>
	025	Cryptosphaeria canker of aspen	<i>Cryptosphaeria populina</i>
	026	Cytospora canker of fir	<i>Cytospora abietis</i>
	027	Western red rot	<i>Dichomitus squalens</i>
	028	Rust-red stringy rot	<i>Echinodontium tinctorium</i>
	029	Sooty-bark canker	<i>Encoelia pruinosa</i>
	035	Amelanchier rust	<i>Gymnosporangium harknessianum</i>
	036	Cedar apple rust	<i>Gymnosporangium juniperi-virginianae</i>
	037	Hypoxyton canker of oak	<i>Hypoxyton atropunctatum</i>
	038	Hypoxyton canker of aspen	<i>Hypoxyton mammatum</i>
	039	Canker rot of oak	<i>Inonotus hispidus</i>
	040	Sterile conk trunk rot of birch	<i>Inonotus obliquus</i>
	047	Red ring rot	<i>Phellinus pini</i>
	048	Aspen trunk rot	<i>Phellinus tremulae</i>
	049	Stem decay of black walnut	<i>Phellinus weirianus</i>
	051	Phomopsis canker	<i>Phomopsis spp.</i>
	052	Leyland cypress canker	<i>Seiridium cardinale</i>
	054	Maple canker	<i>Steganosporium spp.</i>
	057	Cytospora canker of aspen	<i>Cytospora chrysosperma</i>
	059	Red belt fungus	<i>Fomitopsis pinicola</i>
	062	Brown heartrot	<i>Fomitopsis officinalis</i>
	065	Purple conk	<i>Hirschioporus abietinus</i>
	068	False tinder fungus	<i>Phellinus igniarius</i>
	070	Yellow cap fungus	<i>Pholiota spp.</i>
	071	Oyster mushroom	<i>Pleurotus ostreatus</i>
	074	Cedar brown pocket rot	<i>Poria sericeomollis</i>
	075	Lachnellula canker	<i>Lachnellula flavovirens</i>
	076	Strumella canker	<i>Strumella coryneoidea</i>
	077	Phomopsis blight	<i>Phomopsis juniperovora</i>
	078	Fusarium canker of yellow poplar	<i>Fusarium solani</i>
	079	Sterile conk of maple and beech	<i>Inonotus glomeratus</i>
	080	Canker of spruce	<i>Aleurodiscus spp.</i>
	081	Birch conk	<i>Piptoporus betulinusai</i>
	082	Canker	<i>Discocainia treleasei</i>

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>23</b>	<b>000</b>	<b>Parasitic/epiphytic plants</b>	
<b>SEVERITY RATING</b>			
1 = Hawksworth tree DMR rating = 1; light infection			
2 = Hawksworth tree DMR rating = 2; light infection			
3 = Hawksworth tree DMR rating = 3; medium infection			
4 = Hawksworth tree DMR rating = 4; medium infection			
5 = Hawksworth tree DMR rating = 5; heavy infection			
6 = Hawksworth tree DMR rating = 6; heavy infection			
7 = Vine damage: less than 50% of crown involved			
8 = Vine damage: 50% or more of crown involved			
	001	Mistletoe	
	002	Parasitic plants	
	003	Vine damage	
	005	White fir dwarf mistletoe	<i>Arceuthobium abietinum</i> f. sp. <i>concoloris</i>
	007	Apache dwarf mistletoe	<i>Arceuthobium apacheum</i>
	010	Pinyon dwarf mistletoe	<i>Arceuthobium divaricatum</i>
	011	Douglas-fir dwarf mistletoe	<i>Arceuthobium douglasii</i>
	012	Chihuahua pine dwarf mistletoe	<i>Arceuthobium gillii</i>
	014	Western spruce dwarf mistletoe	<i>Arceuthobium microcarpum</i>
	017	Southwestern dwarf mistletoe	<i>Arceuthobium vaginatum</i> subsp. <i>cryptopodum</i>
	018	Dodder	<i>Cuscuta</i> spp.
	019	White fir mistletoe	<i>Phoradendron bolleanum</i> subsp. <i>pauciflorum</i>
	020	True mistletoe (other)	
	022	Juniper true mistletoe	<i>Phoradendron juniperum</i>
<b>24</b>	<b>000</b>	<b>Decline Complexes/Dieback/Wilts</b>	
<b>SEVERITY RATING</b>			
1 = Minor: minor crown symptoms			
2 = Severe: severe crown symptoms			
	007	Complex	
	008	Decline	
	009	Fall hardwood defoliator complex	
	010	Joga decline	
	011	Larch decline	
	012	Looper; abiotic complex	
	013	Maple decline	
	014	Oak decline	
	016	Sprout dieback	
	017	True fir pest complex	
	023	Bacterial wetwood	<i>Erwinia nimipressuralis</i>
	026	unknown	<i>Xylella fastidiosa</i>
	027	Wetwood	
	030	Elm phloem necrosis	<i>Mycoplasma</i>

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
25	000	<b>Foliage Diseases</b>	
<b>SEVERITY RATING</b>			
1 = Minor: <20% of foliage affected or <20% of crown in brooms			
2 = Severe: >20% of foliage affected or >20% of crown in brooms			
	001	Blight	
	002	Broom rust	
	003	Juniper blights	
	004	Leaf spots	
	005	Needlecast	
	006	Powdery mildew	
	009	True fir needlecast	
	010	Sycamore anthracnose	<i>Apiognomonina veneta</i>
	011	Cercospora blight of juniper	<i>Cercospora sequoiae</i>
	014	Ink spot of aspen	<i>Ciborinia whetzellii</i>
	015	Pine needle rust	<i>Coleosporium spp.</i>
	016	Anthrachnose on Russian olive	<i>Colletotrichum spp.</i>
	017	Coronado limb rust	<i>Cronartium arizonicum</i>
	022	Elytroderma disease	<i>Elytroderma deformans</i>
	023	Fire blight	<i>Erwinia amylovora</i>
	025	Anthrachnose	<i>Gnomonia spp.</i>
	027	Brown felt blight	<i>Herpotrichia juniperi</i>
	031	Spruce needle cast	<i>Lirula macrospora</i>
	032	Fir needle cast	<i>Lirula spp.</i>
	033	White pine needle cast	<i>Lophodermella arcuata</i>
	034	Lophodermella needle cast	<i>Lophodermella spp.</i>
	035	Lophodermium needle cast	<i>Lophodermium spp.</i>
	036	Marssonina blight	<i>Marssonina populi</i>
	037	Melampsora rusts	<i>Melampsora medusae</i>
	040	Dothistroma needle blight	<i>Mycosphaerella pini</i>
	041	Brown felt blight of pines	<i>Neopeckia coulteri</i>
	042	Snow blight	<i>Phacidum abietis</i>
	044	Phoma blight	<i>Phoma spp.</i>
	045	Phyllosticta leaf spot	<i>Phyllosticta spp.</i>
	046	Bud rot	<i>Phytophthora palmivora</i>
	050	Douglas-fir needle cast	<i>Rhabdocline spp.</i>
	059	Leaf blister of oak	<i>Taphrina caerulescens</i>
	061	Shepherd's crook	<i>Venturia tremulae</i>
	062	Dothistroma needle blight	<i>Dothistroma septospora</i>
	064	Broom rust	<i>Chrysomyxa arctostaphyli</i>
	066	Cedar leaf blight	<i>Gymnosporangium nootkatense</i>
	067	Spruce needle cast	<i>Lophodermium picea</i>
	068	Hardwood leaf rusts	<i>Melampsora spp.</i>
	071	Spruce needle cast	<i>Rhizosphaera pini</i>
	072	Sirococcus shoot blight	<i>Sirococcus strobilinus</i>
	073	Shephards crook	<i>Venturia populina</i>
	074	Delphinella shoot blight	<i>Delphinella abietis</i>
	075	Tar spot	<i>Rhytisma acerinum</i>

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>26</b>	<b>000</b>	<b>Stem Rusts</b>	
1 = Branch infections located greater than 2 feet from tree bole 2 = Branch infections located between 6 inches and 2 feet from tree bole 3 = Bole infections or branch infections located within 6 inches of bole 4 = Topkill			
	001	White pine blister rust	<i>Cronartium ribicola</i>
	002	Western gall rust	<i>Peridermium harknessii</i>
	004	Comandra blister rust	<i>Cronartium comandrae</i>
	005	Pinyon blister rust	<i>Cronartium occidentale</i>
	012	Limb rust	<i>Peridermium filamentosum</i>
	013	Southern cone rust	<i>Cronartium strobilinum</i>
<b>27</b>	<b>000</b>	<b>Broom Rusts</b>	
<b>SEVERITY RATING</b>			
1 = Minor: <20% of crown in brooms 2 = Severe >20% of crown in brooms			
	001	Spruce broom rust	<i>Chrysomyxa arctostaphyli</i>
	003	Juniper broom rust	<i>Gymnosporangium nidus-avis</i>
	004	Fir broom rust	<i>Melampsorella caryophyllacearum</i>
<b>30</b>	<b>000</b>	<b>Fire</b>	
<b>SEVERITY RATING</b>			
1 = minor                      2 = severe			
	031	Wild-fire	
	032	Human caused fire	
	033	Crown fire damage	
	034	Ground fire damage	
<b>40</b>	<b>000</b>	<b>Animal damage, source unknown</b>	
<b>SEVERITY RATING</b>			
1 = minor                      2 = severe			
<b>41</b>	<b>000</b>	<b>Wild Animals</b>	
<b>SEVERITY RATING</b>			
1 = Minor: <20% of crown affected, bole damage is <50% circumference 2 = Severe: >20% of crown affected, bole damage is >50% circumference, upper 1/3 of crown is killed 4 = Earthworms are present 5 = Earthworms are absent			
	001	Bear	
	002	Beaver	
	003	Big game (deer)	
	004	Mice or voles	
	005	Pocket gophers	
	006	Porcupines	
	007	Rabbits or hares	
	008	Sapsucker	
	009	Squirrels	
	010	Woodpeckers	
	011	Moose	

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
	012	Elk	
	013	Deer	
	014	Feral pigs	
	015	Mountain beaver	
	016	Deer or elk	
	17	Earthworm	<i>Lumbricidae</i>
<b>42</b>	<b>000</b>	<b>Domestic Animals</b>	
<b>SEVERITY RATING</b>			
1 = Minor <20% of crown affected, bole damage is <50% circumference			
2 = Severe: >20% of crown affected, bole damage is >50% circumference, upper 1/3 of crown is killed			
	001	Cattle	
	002	Goats	
	003	Horses	
	004	Sheep	
<b>50</b>	<b>000</b>	<b>Abiotic Damage</b>	
<b>SEVERITY RATING</b>			
1 = Minor: <20% of crown affected, bole damage is <50% circumference			
2 = Severe: >20% of crown affected, bole damage is >50% circumference, upper 1/3 of crown is killed			
	001	Air pollutants	
	002	Chemical	
	003	Drought	
	004	Flooding/high water	
	005	Frost	
	006	Hail	
	007	Heat	
	008	Lightning	
	009	Nutrient imbalances	
	010	Radiation	
	011	Snow/ice	
	013	Wind-tornado	
	014	Winter injury	
	015	Avalanche	
	016	Mud-land slide	
	017	Volcano	
	018	Other geologic events	
	019	Mechanical (non-human caused)	
<b>60</b>	<b>000</b>	<b>Competition</b>	
<b>SEVERITY RATING</b>			
1 = Minor: tree slightly deformed and has some live, terminal growth			
2 = Severe: tree extremely deformed or has no live terminal, growth severely reduced relative to neighbors			

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>70</b>	<b>000</b>	<b>Human Activities</b>	
<b><u>SEVERITY RATING</u></b>			
1 = minor			
2 = severe			
	001	Herbicides	
	003	Imbedded objects	
	004	Improper planting technique	
	005	Land clearing	
	006	Land use conversion	
	007	Logging damage	
	008	Mechanical	
	009	Pesticides	
	010	Roads	
	011	Soil compaction	
	012	Suppression	
	013	Vehicle damage	
	014	Road salt	

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
<b>71</b>	<b>000</b>	<b>Harvest</b>	
<b><u>SEVERITY RATING</u></b> 1 = minor 2 = severe			
<b>80</b>	<b>000</b>	<b>Multi-Damage (Insect/Disease)</b>	
<b><u>SEVERITY RATING</u></b> 1 = minor 2 = severe			
	001	Aspen defoliation	
	002	Subalpine fir mortality	
	004	Pinion pine decline	
<b>99</b>		<b>Physical Effects</b>	
	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.
	002	Dead top	% of total tree height that is dead
	003	Limby (large limbs top to bottom)	% of total tree height with many limbs/knots
	004	Forked top	% of total tree height above fork
	005	Forked below merch top	% of the total length of the bole affected
	006	Crook or sweep	% of total tree height, which contains the crook or sweep
	007	Checks, bole cracks	% of total tree height, which contains a crack or check
	008	Foliage discoloration	% of foliage discolored
	009	Mortality (for plantation surveys only)	1 = dead tree
	010	Lack of seed source (for plantation surveys only)	If present, 100%
	011	Poor planting stock source (for plantation surveys only)	If present, 100%
	012	Poor growth/fading/foliage is yellowing and loss of needles is occurring	1 = minor (reduced growth) 2 = severe (affecting survival)
	013	Total board foot volume loss	% of total board foot volume loss
	014	Total cubic foot volume loss	% of total cubic foot volume loss
	015	Bark removal	% of tree circumference missing bark
	016	Foliage loss	1 = minor 2 = severe
	017	Sunscauld	1 = minor 2 = severe
	018	Uproot	1 = uprooted tree
	019	Scorched foliage	% of foliage scorched
	020	Scorched bark	% of bark scorched
	021	Dieback source (for plantation surveys only)	1 = minor 2 = severe

**Damage Agents (cont.)**

Category	Agent	Common Name	Scientific Name
	022	Poor crown form	1 = minor 2 = severe
	023	Severe forking	% of bole with forks
	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."
	031	Broken or dead branches	% of branches broken or dead
	033	Damaged shoots, buds, or foliage (for plantation surveys only)	1 = minor 2 = severe
	034	Excessively deformed sapling	% of sapling deformed
	036	Fire scar	% of bole covered by fire scar
	037	Leaning tree	% lean from vertical
	038	Charred bark	Not recorded unless cambium is killed from heating

**Tree Parts**

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