

NC Appendix 10. Tatum Guides

Plot Data

Plot status (STAT)

- 1 Sampled -At least one forested condition
- 2 Sampled – no forested conditions
- 3 Nonsampled

Plot nonsampled reason (REAS)

- 1 Outside U.S. boundary
- 2 Denied access area
- 3 Hazardous situation
- 6 Lost plot
- 7 Plot in wrong location
- 10 Other

Horizontal Distance Roads (RDIS)

- 1 = or <100 ft
- 2 101'-300'
- 3 301'-500'
- 4 501'- 1000'
- 5 1001'-1/2 mile
- 6 1/2 to 1 mile
- 7 1 to 3 miles
- 8 3 to 5 miles
- 9 Greater than 5 miles

Water on Plot(WTYP)

- 0 None
- 1 Permanent Streams small
- 2 Permanent water (non-census)
- 3 Ditch/Canal
- 4 Temporary streams
- 5 Flood zones
- 9 Other temporary water

QA Status (QAST)

- 1 Standard Production plot
- 2 Cold Check
- 3 Reference plot (off grid)
- 4 Training / Practice plot (off grid)
- 5 Botched plot file
- 6 Blind check
- 7 Production plot (hot check)

Crew Type (CRTY)

- 1 Standard field crew
- 2 QA crew

GPS Unit (UNIT)

- 0 Not collected
- 1 Rockwell (PLGR)
- 2 Other Brand
- 3 Trimble GeoExplorer or Pathfinder Pro
- 4 Recreational GPS (Garmin)

GPS

Last 6 digits of serial number

Condition Data

Condition Number (CON#)

Record a number assigned to the defined condition.

Condition Status (STAT)

- 1 Accessible forest land
- 2 Nonforest land
- 3 Noncensus water
- 4 Census water
- 5 Nonsampled

Condition nonsampled reason (REAS)

- 1 Outside U.S. boundary

- 2 Denied access area
- 3 Hazardous situation
- 10 Other

Stand-Size Class (STSZ)

- 0 Non-stocked
- 1 0.0 – 4.9 in
- 2 5.0 – 8.9(soft),5.0-10.9(hard)
- 3 9.0-19.9(soft), 11.0-19.9(hard)
- 4 20.0-39.9
- 5 40.0 +
- 6 Cover trees (non-tallied)

Reserve Status (RESV)

- 0 Not Reserved
- 1 Reserved

Owner Group (OWNG)

- 10 Forest Service
- 20 Other Federal
- 30 State and Local Government
- 40 Private

Forest Type (FTYP)

- 101 Jack Pine
- 102 Red Pine
- 103 White Pine
- 104 E White pine/E Hemlock
- 105 Eastern Hemlock
- 121 Balsam fir
- 122 White Spruce
- 123 Red spruce
- 124 Red spruce/balsam fir
- 125 Black Spruce
- 126 Tamarack
- 127 Northern white-cedar
- 141 Longleaf pine
- 142 Slash pine
- 161 Loblolly pine
- 162 Shortleaf pine
- 163 Virginia pine
- 164 Sand pine
- 165 Table-mountain pine
- 166 Pond pine
- 167 Pitch pine
- 168 Spruce pine
- 181 Eastern Redcedar
- 182 Rocky Mountain juniper
- 221 Ponderosa pine
- 381 Scotch pine
- 382 Australian pine
- 383 Other exotic softwoods
- 384 Norway spruce
- 385 Introduced larch
- 401 EWP/N RedOak/White ash
- 402 Eastern redcedar-hardwood
- 403 Longleaf pine/oak
- 404 Shortleaf pine-/oak
- 405 Virginia pine/southern red oak
- 406 Loblolly pine/hardwood
- 407 slash pine/hardwood
- 409 Other pine/hardwood
- 501 Post-blackjack
- 502 Chestnut oak

- 503 White oak-red oak-hickory
- 504 White oak
- 505 Nothorn red oak
- 506 Yellow-poplar/white oak/n. red oak
- 507 Sassafras-persimmon
- 508 Sweetgum/yellow-poplar
- 509 Bur oak
- 510 Scarlet oak
- 511 Yellow-poplar
- 512 Black walnut
- 513 Black locust
- 514 Southern scrub oak
- 515 Chestnut-black-scarlet oak
- 519 Red maple/ oak
- 601 Swamp chestnum oak-cherrybark oak
- 602 Sweetgum/Nuttall oak/willow oak
- 605 Overcup oak /water hickory
- 606 Atlantic white-cedar
- 607 Baldcypress / water tupelo
- 608 Sweetby /swamp tupelo/red maple
- 701 Black ash/ American elm/ red maple
- 702 River birch/ sycamore
- 703 Cottonwood
- 704 Willow
- 705 Sycamore/ pecan/ American elm
- 706 Sugarberry/ hackberry/ elm/ green ash
- 707 Silver maple / American elm
- 708 Red maple / lowland
- 709 Cottonwood/ willowbbbbbb
- 710 Oregon ash
- 801 Sugar maple/-beech-/ yellow birch
- 802 Black cherry
- 803 Cherry-ash-yellow poplar
- 805 Hard maple/ basswood
- 807 Elm/ ash/ upland
- 809 Red maple/ upland
- 901 Aspen
- 902 Paper birch
- 904 Balsam poplar
- 991 Paulownia
- 992 Melaluca
- 993 Eucalyptus
- 995 Other exotic hardwoods
- 999 Non stocked

Regeneration Status (SORI)

- 0 Natural
- 1 Artificial

Tree Density (DENS)

- | Code | Tree Density |
|------|--|
| 1 | Initial density class |
| 2 | Density class 2 - density different than 1 |
| 3 | Density class 3 - density different than 1 and 2 |

Owner Class (OWNC)

| <u>Code</u> | <u>Owner Class</u> |
|-------------|--|
| 11 | National Forest |
| 12 | National Grassland |
| 13 | Other Forest Service |
| 21 | National Park Service |
| 22 | Bureau of Land Management |
| 23 | Fish and Wildlife Service |
| 24 | Departments of Defense/Energy |
| 25 | Other Federal |
| 31 | State |
| 32 | Local (County, Municipality, etc.) |
| 33 | Other Non Federal Public |
| 41 | Corporate |
| 42 | Non Governmental Conservation/Natural Resources Organization |
| 43 | Unincorporated Local Partnerships/ Associations/Clubs |
| 44 | Native American (Indian) |
| 45 | Individual |

NC Owner Acres (NCPA)

| <u>Code</u> | <u>Acres</u> |
|-------------|--------------|
| 1 | 1-4 |
| 2 | 5-9 |
| 3 | 10-19 |
| 4 | 20-49 |
| 5 | 50-99 |
| 6 | 100-499 |
| 7 | 500-2499 |
| 8 | 2500-4999 |
| 9 | 5000+ |

Private Owner Industrial Status (INDU)

| <u>Code</u> | <u>Owner Class</u> |
|-------------|------------------------------------|
| 0 | Land not owned by industrial owner |
| 1 | land owned by industrial owner |

Disturbance (DIS1,2,3)

| <u>Code</u> | <u>Disturbance</u> |
|-------------|---------------------------|
| 00 | None |
| 10 | Insects |
| 20 | Disease |
| 30 | Fire |
| 31 | Ground Fire |
| 32 | Crown Fire |
| 40 | Animal damage |
| 41 | Beaver |
| 42 | Porcupine |
| 43 | Deer/ungulate |
| 46 | Domestic animal/livestock |
| 50 | Weather |
| 51 | Ice |
| 52 | Wind |
| 53 | Flooding |
| 54 | Drought |
| 70 | Unknown/not sure / other |
| 80 | Human-caused |

Treatment (TRE1,2,3)

| <u>Code</u> | <u>Treatment</u> |
|-------------|-------------------------------|
| 00 | None |
| 10 | Cutting |
| 20 | Site preparation |
| 30 | Artificial Regeneration |
| 40 | Natural Regeneration |
| 50 | Other silvicultural treatment |

Physiographic Class (PHYS)

| <u>Code</u> | <u>Physiographic Class</u> |
|-------------|-----------------------------------|
| 11 | Dry Tops. |
| 12 | Dry Slopes |
| 13 | Deep Sands |
| 19 | Other Xeric. |
| 21 | Flatwoods |
| 22 | Rolling Uplands |
| 23 | Moist Slopes and Coves |
| 24 | Narrow Floodplains/Bottomlands |
| 25 | Broad Floodplains/Bottomlands. |
| 29 | Other Mesic |
| 31 | Swamps/Bogs |
| 32 | Small Drains |
| 33 | Bays and wet pocosins |
| 34 | Beaver ponds. |
| 35 | Cypress ponds. |
| 39 | Other hydric. |

Present nonforest land use (NFLU)

| | |
|----|---------------------------|
| 10 | Agricultural land |
| 11 | Cropland |
| 12 | Pasture |
| 13 | Idle farmland |
| 14 | Orchard |
| 15 | Christmas tree plantation |
| 20 | Rangeland |
| 30 | Developed |
| 31 | Cultural |
| 32 | Rights-of-way |
| 33 | Recreation |
| 40 | Other |

NC Land USE (NCLU)

| <u>Code</u> | <u>Land Use</u> |
|-------------|---------------------------------------|
| 20 | Timberland |
| 21 | Pastured Timberland |
| 22 | Plantations |
| 40 | Unproductive forest land |
| 41 | Reserved forest land- unproductive |
| 45 | Reserved forest land- productive |
| 57 | Wide windbreaks (> 120') |
| 59 | Wooded pasture |
| 46 | Christmas tree plantations |
| 50 | Reserved nonforest with trees |
| 51 | Cropland with trees |
| 52 | Improved pasture w/ trees |
| 53 | Wooded strip (natural) |
| 54 | Idle farmland with trees |
| 55 | Marsh with trees |
| 56 | Narrow windbreaks (< 120') |
| 58 | Shelterbelt |
| 71 | Urban forest land |
| 72 | Urban and other with trees |
| 61 | Cropland |
| 62 | Improved pasture |
| 64 | Idle farmland |
| 65 | Marsh |
| 66 | Other farmland |
| 67 | Urban and other areas |
| 68 | Rights-of-way |
| 69 | Nonforest (reserved) |
| 80 | Noncensus water |
| 89 | Noncensus water (reserved) |
| 90 | Census water |
| 96 | Inaccessible |
| 99 | Denied access |

Tree Data

Plot Type/NC Plot Type (TYPE)

- 1 subplot
- 2 microplot

Condition Number (CON#)

Record the condition number that the tree is a part of.

Previous Tree Status (PAST)

- 1 Live tree
- 2 Dead tree

Present Tree Status (TRST)

- 0 No history
- 1 Live tree
- 2 Dead tree
- 3 Removal

Reconcile (RECO)

- 1 Ingrowth
- 2 Through growth
- 3 Missed live
- 4 Missed dead
- 5 Shrank
- 6 Missing
- 7 Cruiser error
- 8 Procedural change

Azimuth (AZM)

Record as compass degrees

Standing Dead (DEAD)

- 0 No
- 1 Yes

Diameter Check (DCHE)

- 0 Measured accurately
- 1 Estimated
- 2 Different location

Some have been removed for space.

Tree Species (SPP)

- 0010 fir spp.
- 0012 balsam fir
- 0016 Fraser fir
- 0043 Atlantic white-cedar
- 0057 redcedar / juniper spp.
- 0061 Ashe juniper
- 0066* Rocky Mountain juniper
- 0067 southern redcedar
- 0068 eastern redcedar
- 0071 tamarack (native)
- 0090 spruce spp.
- 0091 Norway spruce
- 0093 Engelmann spruce
- 0094 white spruce
- 0095 black spruce
- 0096 blue spruce
- 0097 red spruce
- 0100 pine spp.
- 0105 jack pine
- 0108 lodgepole pine
- 0110 shortleaf pine
- 0113 limber pine
- 0115 spruce pine
- 0122 ponderosa pine
- 0123 Table Mountain pine
- 0125 red pine
- 0126 pitch pine
- 0129 eastern white pine
- 0130 Scotch pine
- 0131 loblolly pine

- 0132 Virginia pine
- 0136 Austrian pine
- 0202 Douglas-fir
- 0220 cypress spp.
- 0221 baldcypress
- 0222 pondcypress
- 0241 northern white-cedar
- 0260 hemlock spp.
- 0261 eastern hemlock
- 0262 Carolina hemlock
- 0299 Unknown conifer

- 0310 maple spp.
- 0313 Boxelder
- 0314 black maple
- 0315* striped maple
- 0316 red maple
- 0317 silver maple
- 0318 sugar maple
- 0319* Mountain maple
- 0320 Norway maple
- 0321 Rocky Mountain maple
- 0323 chalk maple
- 0330 buckeye, horsechestnut spp.

- 0331 Ohio buckeye
- 0332 yellow buckeye
- 0336 red buckeye
- 0337 painted buckeye
- 0341* ailanthus
- 0345* mimosa/silktree
- 0355 European alder
- 0356* serviceberry spp.
- 0357* common serviceberry
- 0358* roundleaf serviceberry
- 0367* Pawpaw
- 0370 birch spp.
- 0371 yellow birch
- 0372 sweet birch
- 0373 river birch
- 0374 Water birch
- 0375 paper birch
- 0377 Virginia roundleaf birch
- 0379 gray birch
- 0381* Chittamwood/gum bumelia

- 0391* American hornbeam, musclewood

- 0400 hickory spp.
- 0401 water hickory
- 0402 bitternut hickory
- 0403 pignut hickory
- 0404 pecan
- 0405 shellbark hickory
- 0406 nutmeg hickory
- 0407 shagbark hickory
- 0408 black hickory
- 0409 mockernut hickory
- 0410 sand hickory
- 0411 scrub hickory
- 0412 red hickory
- 0413 southern shagbark hickory

- 0420 chestnut spp.
- 0421 American chestnut
- 0422 Allegheny chinkapin
- 0423 Ozark chinkapin
- 0424 Chinese chestnut
- 0450 catalpa spp.
- 0451 southern catalpa
- 0452 northern catalpa
- 0460 hackberry spp.
- 0461 sugarberry
- 0462 hackberry
- 0463 netleaf hackberry
- 0471* eastern redbud

- 0481 yellowwood
- 0491 flowering dogwood
- 0500* hawthorn spp.
- 0501* cockspur hawthorn
- 0502* downy hawthorn
- 0503* Brainerd hawthorn
- 0504* pear hawthorn
- 0505* Fireberry hawthorn
- 0506* broadleaf hawthorn
- 0507* fanleaf hawthorn
- 0508* Oneseed hawthorn
- 0509* scarlet hawthorn
- 05091* Washington hawthorn
- 05092* fleshy hawthorn
- 05093* dwarf hawthorn
- 0521 common persimmon
- 0531 American beech
- 0540 ash spp.
- 0541 white ash
- 0543 black ash
- 0544 green ash
- 0545 pumpkin ash
- 0546 blue ash
- 0548 Carolina ash
- 0549 Texas ash
- 0550 locust spp.
- 0551 water locust
- 0552 honeylocust
- 0555 loblolly bay
- 0561 Ginkgo, maidenhair tree
- 0571 Kentucky coffeetree
- 0580 silverbell spp.
- 0581 Carolina silverbell
- 0582 two-wing silverbell
- 0583 little silverbell
- 0591 American holly
- 0600 walnut spp.
- 0601 butternut
- 0602 black walnut
- 0605 Texas walnut
- 0611 sweetgum
- 0621 yellow-poplar
- 0641* Osage-orange
- 0650 magnolia spp.
- 0651 cucumbertree
- 0652 southern magnolia
- 0653 sweetbay
- 0654 bigleaf magnolia
- 0655 mountain or Fraser magnolia
- 0657 pyramid magnolia
- 0658 umbrella magnolia
- 0660* apple spp.
- 0662* southern crabapple
- 0663* sweet crabapple
- 0664* prairie crabapple
- 0680 mulberry spp.
- 0681 white mulberry
- 0682 red mulberry
- 0684 black mulberry
- 0690 tupelo spp.
- 0691 water tupelo
- 0692 Ogeechee tupelo
- 0693 blackgum
- 0694 swamp tupelo
- 0701* eastern hophornbeam
- 0711 sourwood
- 0712 paulownia, empress-tree
- 0721 redbay
- 0722 water-elm, planertree
- 0731 American sycamore
- 0740 cottonwood and poplar spp.
- 0741 balsam poplar
- 0742 eastern cottonwood
- 0743 bigtooth aspen
- 0744 swamp cottonwood
- 0745 plains cottonwood

0746 quaking aspen
 0747 black cottonwood
 0748 Fremont's cottonwood
 0749 narrowleaf cottonwood
 0752 silver poplar
 0753 Lombardy poplar
 0760 cherry and plum spp.
 0761* pin cherry
 0762 black cherry
 0763* common chokecherry
 0764* peach
 0765* Canada plum
 0766* American plum
 0769* Allegheny plum
 0770* Chickasaw plum
 0771* sweet cherry, domesticated
 0772* sour cherry, domesticated
 0773* European plum, domesticated
 0774* Mahaleb plum, domesticated
 0800 oak – deciduous spp.
 0802 white oak
 0804 swamp white oak
 0806 scarlet oak
 0808 Durand oak
 0809 northern pin oak
 0812 southern red oak
 0813 cherrybark oak
 0816 scrub oak
 0817 shingle oak
 0819 turkey oak
 0820 laurel oak
 0822 overcup oak
 0823 bur oak
 0824 blackjack oak
 0825 swamp chestnut oak
 0826 chinkapin oak
 0827 water oak
 0828 Nuttall oak
 0830 pin oak
 0831 willow oak
 0832 chestnut oak
 0833 northern red oak
 0834 Shumard's oak
 0835 post oak
 0836 Delta post oak
 0837 black oak
 0838 live oak
 0840 dwarf post oak
 0841 dwarf live oak
 0842 bluejack oak
 0844 Oglethorpe oak
 0845 dwarf chinkapin oak
 0846 gray oak
 0847 netleaf oak
 0901 black locust
 0919 western soapberry
 0920 willow spp.
 0921* peachleaf willow
 0922 black willow
 0923 Bebb willow
 0925 coastal plain willow
 0926 balsam willow
 0927 white willow
 0929 weeping willow
 0931 sassafras
 0934 mountain ash spp.
 0935* American mountain ash
 0936 European mountain ash
 0937 northern mountain ash
 0940 mahogany
 0950 basswood spp.
 0951 American basswood
 0952 white basswood
 0953 Carolina basswood
 0970 elm spp.
 0971 winged elm

0972 American elm
 0973 cedar elm
 0974 Siberian elm
 0975 slippery elm
 0976 September elm
 0977 rock elm
 0986 black mangrove
 0987 buttonwood mangrove
 0988 white mangrove
 0989 American mangrove
 0991 saltcedar
 0992 melaleuca
 0993 chinaberry
 0994 Chinese tallowtree
 0995 tungoil tree
 0996 smoketree
 0997 Russian-olive
 0998 unknown hardwood

NC Tree Class/Decay Class (TCC)

20 Growing Stock
 30 Rough Cull, Salvable, and Salvable-down
 31 Short-log Cull
 40 Rotten Cull
 41 Solid
 42 Solid punky
 43 Punky
 44 Disintegrating
 45 Gone

Percent Rotten/Missing Cull (ROTT)

Record the percent rotten or missing cubic foot cull on all live and dead trees as a percent.

Total Lenth (THGT)

Record to the nearest 1.0 ft.
 P2 – all live trees > or = 5.0 in
 P3 – all live trees > or = 1.0 in

Actual Length (ACTU)

Record the actual length to the nearest 1.0 ft.
 P2 – all live and standing dead tally trees > or = 5.0 in
 P3 -- all live tally trees > or = 1.0 in
 Only record for trees with broken or missing tops

Length Method (METH)

1 Total and actual lengths are field measured with a measurement instrument (e.g., clinometer, relascope)
 2 Total length is visually estimated, actual length is measured with an instrument.
 3 Total and actual lengths are visually estimated.

Crown Class(CCC)

1 Open Grown
 2 Dominant
 3 Codominant
 4 Intermediate
 5 Overtopped

Compacted Crown Ratio

(CRC)

Record as percent

Damage Location (LOC1, 2)

0 No damage
 1 Roots (exposed) and
 2 Roots, stump, and lower bole
 3 Lower bole
 4 Lower and upper bole
 5 Upper bole
 6 Crownstem
 7 Branches
 8 Buds and Shoots
 9 Foliage

Damage Type (DAM1, DAM2)

01 Canker, gall
 02 Conks, fruiting bodies, and signs of advanced decay
 03 Open wounds
 04 Resinosis or gummosis
 05 Cracks and seams
 11 Broken bole or roots
 12 Brooms
 13 Broken or dead roots
 20 Vines in the crown
 21 Loss of apical dominance, dead terminal
 22 Broken or dead
 23 Excessive branching or brooms
 24 Damaged Buds, shoots or foliage
 25 Discoloration of Foliage
 31 Other

Damage Severity (SEV1, SEV2)

0 01-09
 1 10-19
 2 20-29
 3 30-39
 4 40-49
 5 50-59
 6 60-69
 7 70-79
 8 80-89
 9 90-99

Damage Agents (NCD1, 2)

000 Healthy
 100 Insect defoliators
 113 Gypsy Moth
 130 Shoot and Branch Insects
 140 Branch Gall Insects
 150 Bole Borers
 170 Bark Beetles
 190 Root/Root Collar Insects
 200 Roliage Diseases
 210 Shoot Blights
 220 Mistletoe
 240 Bole Rusts
 250 Bole Cankers
 251 Eutypella Canker
 252 Hypoxylon Canker
 254 Nectria Canker
 257 Butternut Canker
 260 Stem Decay (heartrot)
 271 Ash Yellows
 281 Dutch Elm Disease
 282 Oak Wilt
 290 Root/Butt Rot
 291 Annosus Root Rot
 292 Armillaria Root Rot
 300 Weather
 400 Animal Damage
 500 Fire
 800 Logging/TSI/Other human
 860 Chemical

MN Damage Agents (NCD1,2)

| | |
|-----|---|
| 000 | Healthy |
| 100 | Insect defoliators |
| 101 | Budworms |
| 110 | Forest Tent Caterpillar |
| 113 | Gypsy Moth |
| 130 | Shoot and Branch Insects |
| 131 | White Pine Weevil |
| 140 | Branch Gall Insects |
| 150 | Bole Borers |
| 170 | Bark Beetles |
| 190 | Root/Root Collar Insects |
| 200 | Foliage Diseases |
| 210 | Shoot Blights |
| 212 | <i>Scleroderris</i> |
| 220 | Mistletoe |
| 240 | Bole Rusts |
| 241 | White Pine Blister Rust |
| 250 | Bole Cankers |
| 251 | <i>Eutypella</i> Canker |
| 252 | <i>Hypoxylon</i> Canker |
| 254 | <i>Nectria</i> Canker |
| 257 | Butternut Canker |
| 260 | Stem Decay (heartrot) |
| 261 | <i>Phellinus pini</i> |
| 262 | <i>Phellinus tremulae</i> |
| 263 | <i>Inonotus obliquus</i> |
| 271 | Ash Yellows |
| 281 | Dutch Elm Disease |
| 282 | Oak Wilt |
| 290 | Root/Butt Rot |
| 291 | <i>Annosus</i> Root Rot |
| 292 | <i>Armillaria</i> Root Rot |
| 300 | Weather |
| 302 | Wind |
| 307 | Flooding |
| 309 | Ice/Snow |
| 400 | Animal Damage |
| 402 | Moose/Elk/Deer |
| 404 | Beaver |
| 409 | Cattle/Domestic Livestock |
| 500 | Fire |
| 800 | Logging/TSI/Other human |
| 811 | Imbedded objects - wire, nails |
| 850 | Land Use Conversion |
| 860 | Chemical |
| 900 | Unknown/uncoded Dead |
| 901 | Unknown/uncoded Defoliation |
| 902 | Unknown/uncoded Discoloration |
| 903 | Unknown/uncoded Decline/Dieback |
| 904 | Unknown/uncoded Breakage |
| 905 | Unknown/uncoded Abnormal Growth or Form in Crown |
| 906 | Unknown/uncoded Canker |
| 907 | Unknown/uncoded Crack |
| 908 | Unknown/uncoded Abnormal Growth or Form on the Bole |

Cause of Death (CAUS)

| | |
|----|-------------------------------|
| 10 | Insect |
| 20 | Disease |
| 30 | Fire |
| 40 | Animal |
| 50 | Weather |
| 60 | Vegetation |
| 70 | Unknown/not sure/other |
| 80 | Silvicultural or landclearing |

Lower/Upper bark harvested (LHAR/UHAR)

| | |
|---|-----------------------|
| 0 | No bark harvest |
| 1 | < 1 year |
| 2 | 1 year and <3 years |
| 3 | 3 years and <6 years |
| 4 | 6 years and <10 years |
| 5 | >10 years |

NC Lower/Upper surface features (LSUR/USUR)

| | |
|---|------------------|
| 1 | Lichens and Moss |
| 2 | Branching |
| 3 | Coarse lenticels |
| 4 | Branch Scars |
| 5 | Blemishes |
| 6 | Fungus |

NC Lower/Upper bark charater (LCHA/UCHA)

| | |
|---|---------|
| 1 | 0-25% |
| 2 | 26-50/% |
| 3 | 51-75% |
| 4 | 76-100% |

NC Boughs Available (BAVA)

| | |
|---|---------------------|
| 0 | No boughs available |
| 1 | Boughs available |

NC Boughs Harvested (BHAR)

| | |
|---|----------|
| 0 | Not used |
| 1 | Used |

NC Bough Harvesting Guidelines (GUID)

| | |
|---|----------|
| 0 | Not used |
| 1 | Used |

NC Lower/Upper trunk curvature (LTRU/UTRU)

| | |
|---|--------------------|
| 1 | No |
| 2 | moderate curvature |
| 3 | extreme curvature |

Decay Class (DECA)

| Decay class stage (code) | Limbs and branches | Top | % Bark Remaining | Sapwood presence and condition ^a | Heartwood condition ^a |
|--------------------------|-----------------------------|---------------|------------------|---|--|
| 1 | All present | Pointed | 100 | Intact; sound, incipient decay, hard, original color | Sound, hard, original color |
| 2 | Few limbs, no fine branches | May be broken | Variable | Sloughing; advanced decay, fibrous, firm to soft, light brown | Sound at base, incipient decay in outer edge of upper bole, hard, light to reddish brown |
| 3 | Limb stubs only | Broken | Variable | Sloughing; fibrous, soft, light to reddish brown | Incipient decay at base, advanced decay throughout upper bole, fibrous, hard to firm, reddish brown |
| 4 | Few or no stubs | Broken | Variable | Sloughing; cubical, soft, reddish to dark brown | Advanced decay at base, sloughing from upper bole, fibrous to cubical, soft, dark reddish brown |
| 5 | None | Broken | Less than 20 | Gone | Sloughing, cubical, soft, dark brown, OR fibrous, very soft, dark reddish brown, encased in hardened shell |

TABLE OF HARDWOOD TREE GRADES FOR FACTORY LUMBER

| Grade factor | Grade 1 | | | Grade 2 | | Grade 3 |
|--|-----------------|----|----|-----------------|----|--------------|
| Length of grading zone (feet) | Butt 16 | | | Butt 16 | | Butt 16 |
| Length of grading section ^a (feet) | Best 12 | | | Best 12 | | Best 12 |
| DBH, minimum (inches) | 16 ^b | | | 13 | | 11 |
| Diameter, minimum inside bark at top of grading section (inches) | 13 ^b | 16 | 20 | 11 ^c | 12 | 8 |
| Clear cuttings (on the 3 best faces) ^d | | | | | | |
| Length, minimum (feet) | 7 | 5 | 3 | 3 | 3 | 2 |
| Number on face (maximum) | | | | 2 | 3 | ^e |
| Yield in face length (minimum) | | | | 4/6 | | 3/6 |
| Cull deduction (including crook and sweep, but excluding shake) maximum within grading section (percent) | 9 | | | 9 ^f | | 50 |

- a Whenever a 14- or 16-foot section of the butt 16-foot log is better than the best 12-foot section, the grade of the longer section will become the grade of the tree. This longer section, when used, is the basis for determining the grading factors such as diameter and cull deduction.
 - b In basswood and ash, DIB at top of grading section must be 12 inches and DBH must be 15 inches.
 - c Grade 2 trees can be 10 inches DIB at top of grading section if otherwise meeting surface requirements for small grade 1s.
 - d A clear cutting is a portion of a face free of defects, extending the width of the face. A face is one-fourth of the surface of the grading section as divided lengthwise.
 - e Unlimited.
 - f Fifteen percent crook and sweep or 40 percent total cull deduction are permitted in grade 2, if size and surface of grading section qualify as grade 1. If rot shortens the required clear cuttings to the extent of dropping the butt log to grade 2, do not drop the tree grade to 3 unless the cull deduction for rot is greater than 40 %.
- NOTE: The tree grading in this table is based on measuring DBH to the nearest inch, since FIA measures to the higher 10th of an inch use diameter classes, i.e. for grade 1, DBH can be 15.5" and for grade 2, DBH can be 12.5" for this table. Also FIA uses 11 inch as the minimum DBH to record tree grades so there only grade 1 and 2 are affected by diameter classes.

| FOREST SERVICE STANDARD SPECIFICATIONS FOR HARDWOOD CONSTRUCTION (GRADE 4) LOGS | | |
|---|---------------|---|
| Position in tree | | Butt & Upper. |
| Min. diameter, small end | | 8 inches +. |
| Min. length, without trim | | 8 feet +. |
| Clear cuttings | | No requirements. |
| Sweep allowance, absolute | | 1/4 d.i.b. of small end for half logs, 1/2 d.i.b. for logs 16 feet long. |
| Sound surface defects permitted | Single knots | Any number, if no one knot has an average collar diameter over 1/3 of log diameter at point of occurrence. |
| | Whorled knots | Any number, if sum of collar diameters does not exceed 1/3 of the log diameter at point of occurrence. |
| | Holes | Any number provided none has a diameter over 1/3 of log diameter at point of occurrence and none extends over 3 inches into included timber. |
| Unsound defects permitted | Surface | Any number and size if they do not extend into included timber. If they do, they can't exceed size, number, and depth, or limits of sound knots. |
| | Interior | None allowed; log must be sound internally, but will permit 1 shake not to exceed 1/3 the scaling diameter and a longitudinal split not extending over 5 inches into the contained timber. No center rot. |

| FOREST SERVICE STANDARD GRADES FOR HARDWOOD FACTORY LUMBER LOGS | | | | | | | | | |
|---|---|--------------------|----------------|-----|--|-----|-------|----------------|----------|
| Grading Factors* | | Log grades | | | | | | | |
| | | F1 | | F2 | | | F3 | | |
| Position in tree | | Butts only | Butts & uppers | | Butts & uppers | | | Butts & uppers | |
| Scaling diameter, inches | | 13-15 ^b | 16-19 | 20+ | 11+ ^c | 12+ | | 8+ | |
| Length without trim, feet | | 10+ | | | 10+ | 8-9 | 10-11 | 12+ | 8+ |
| Required clear ^d cuttings of each of 3 best faces ^e | Min. length, feet | 7 | 5 | 3 | 3 | 3 | 3 | 2 | |
| | Max. number | 2 | 2 | 2 | 2 | 2 | 2 | 3 | No limit |
| | Min. proportion of log length required in clear cutting | 5/6 | 5/6 | 5/6 | 2/3 | 3/4 | 2/3 | 2/3 | 1/2 |
| Maximum sweep & crook allowance | For logs with less than 1/4 of end in sound defects | 15% | | | 30% | | | 50% | |
| | For logs with more than 1/4 of end in sound defects | 10% | | | 20% | | | 35% | |
| Maximum scaling deduction | | 40% ^f | | | 50% ^g | | | 50% | |
| ^a From USDA Forest Service Research FPL. 63 ^b Ash and Basswood butts can be 12 inches if otherwise meeting the requirements for small No. 1's ^c Ten-inch logs of all species can be #2 if they if otherwise meeting the requirements for small No. 1's ^d A Clear cutting is a portion of a face free of defects, extending the width of the face. A face is one-fourth the surface of the log as divided lengthwise. | | | | | ^e A face is 1/4 of the surface of the log as divided lengthwise ^f Otherwise No. 1 logs with 41-60 percent cull can be No. 2. ^g Otherwise No. 2 logs with 51-60 percent cull can be No. 3. | | | | |

| Code | Limiting Factor |
|------|--|
| 00 | Not applicable, already a grade 1, all softwoods |
| 10 | Diameter |
| 20 | Length |
| 30 | Clear cuttings |
| 40 | Sweep and crook |
| 50 | Cull |
| 60 | Position in tree |
| 70 | Multiple factors |
| 80 | Diameter and clear cutting |

EASTERN WHITE PINE SAW-LOG GRADE SPECIFICATIONS

| GRADING FACTOR | LOG GRADE 1 | LOG GRADE 2 | LOG GRADE 3 | LOG GRADE 4 |
|--|---|--|---|---|
| 1 MINIMUM SCALING | 14 ¹ | 6 | 6 | 6 |
| 2 MINIMUM LOG LENGTH (feet) | 10 ² | 8 | 8 | 8 |
| 3 MAXIMUM WEEVIL INJURY (number) | NONE | NONE | 2 INJURIES ³ | NO LIMIT |
| 4 MINIMUM FACE REQUIREMENTS | Two full length or four 50% length good faces. ⁴ (In addition, log knots on balance of faces shall not exceed size limitations of grade 2 logs.) | NO GOOD FACES REQUIRED. Maximum diameter of log knots on three best faces: SOUND RED KNOTS not to exceed 1/6 scaling diameter and 3 inch maximum. DEAD OR BLACK KNOTS including overgrown knots not to exceed 1/12 scaling diameter and 1 1/2 inch maximum. | SOUND RED KNOTS not to exceed 1/3 scaling diameter and 5 inch maximum. DEAD OR BLACK KNOTS including overgrown knots not to exceed 1/6 scaling diameter and 2 1/2 inch maximum | Includes all logs not qualifying for No. 3 or better and judged to have at least one third of their gross volume in sound wood suitable for manufacture into standard lumber. |
| 5 MAXIMUM SWEEP OR CROOK ALLOWANCE (percent) | 20 | 30 | 40 | 66 2/3 |
| 6 MAXIMUM TOTAL SCALING DEDUCTION (percent) | 50 | 50 | 50 | 66 2/3 |
| <p>After the tentative log grade is established from face examination, the log will be reduced in grade whenever the following defects are evident:</p> <p>7 CONKS, PUNK KNOTS, AND PINE BORER DAMAGE ON BARK SURFACE⁵</p> <p style="padding-left: 40px;">Degrade one grade if present on one face Degrade two grades if present on two faces Degrade three grades if present on three or more faces</p> <p>8 LOG END DEFECTS: RED ROT, RING SHAKE, HEAVY STAIN AND PINE BORER DAMAGE OUTSIDE THE HEART CENTER OF THE LOG ⁵</p> <p style="padding-left: 40px;">Consider log as having a total of 8 quarters (4 on each end) and degrade as indicated below: Degrade one grade if present in 2 quarters of log ends. Degrade two grades if present in 3 or 4 quarters of log ends. Degrade three grades if present in 5 or more quarters of log ends.</p> | | | | |
| 1 | 12 and 13 inch logs with four full length good faces are acceptable. | | | |
| 2 | 8 foot logs with four full length good faces are acceptable. | | | |
| 3 | 8 foot Number 3 logs limited to one weevil injury. | | | |
| 4 | Minimum 50% length good face must be at least 6 feet. | | | |
| 5 | Factors 7 and 8 are not cumulative (total degrade based on more serious of the two). No log to be degraded below grade 4 if net scale is at least one third of gross scale. | | | |

LOG GRADES FOR SOFTWOOD LOGS

Grade 1

1. Logs must be 16" d.i.b. or larger, 10' or longer, and with deduction for defect, not over 30 % of gross scale.
2. Logs must be at least 75 % clear on each of three faces.
3. All knots outside clear cutting must be sound and not over 2 1/2" large.

Grade 2

1. Logs must be 12" d.i.b. or larger, 10' or longer, and with a net scale after deduction for defect of at least 50 % of the gross contents of the log.
2. Logs must be at least 50 % clear on each of three faces or 75 % clear on 2 faces.

Grade 3

1. Logs must be 6" d.i.b. or larger, 8' or longer, and with a net scale after deduction for defect of at least 50 % of the gross contents of the log.

Notes: Diameters are d.i.b. at small end of log
% clear refers to % clear in one continuous section

JACK PINE AND RED PINE LOG GRADES

- GRADE 1** Logs with 3 or 4 clear faces *
GRADE 2 Logs with 1 or 2 clear faces.
GRADE 3 Logs with no clear faces.

After the tentative log grade is established from above, the log will be degraded one grade for each of the following defects, except that no log can be degraded below grade 3. Net scale after deduction for defect must be at least 50 percent of the gross contents of the log.

1. **SWEEP** Degrade any tentative 1 or 2 log one grade if sweep amounts to 3 or more inches and equals or exceeds one third the diameter inside bark at the small end.

2. **HEART ROT** Degrade any tentative 1 or 2 log one grade if conk, massed hyphae, or other evidence of advanced heart rot is found anywhere in the log.

* A face is one fourth of the circumference in width extending the full length of the log. Clear faces are those free of: knots measuring more than 1/2 inch in diameter, overgrown knots of any size, and holes more than 1/4 inch in diameter. Faces may be rotated to obtain the maximum number of clear ones.

SOUTHERN PINE TREE GRADES

Always grade the bottom 16-foot log, or the first merchantable log 12 feet or longer in the tree.

Clear face - free of knots measuring more than 1/2 inch in diameter, overgrown knots of any size, holes more than 1/4 inch in diameter. The faces may be rotated if necessary to obtain the maximum number of clear ones.

Overgrown knot - a knot overgrown and buried beneath the log surface, but indicated by a surface bump or distribution of bark pattern.

Tentative Grades

Grade 1 - trees with 3 or 4 clear faces

Grade 2 - trees with 1 or 2 clear faces

Grade 3 - trees with no clear faces

Degrade for Sweep or Heart Rot

(1) Degrade any tentative grade 1 or 2 tree one grade if sweep in the lower 12 feet of the grading sections amount to 3 or more inches and equals or exceeds one-fourth the DBH.

(2) Degrade any tentative 1 or 2 tree one grade if conks, punk knots, or otherwise evidence of advanced heart rot is found anywhere on the tree stem.

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