

**The Forest Inventory and Analysis Database: Database Description and Users
Guide Version 3.0
(Phase 3 Indicators)**

**Forest Inventory and Analysis Program
U.S. Department of Agriculture, Forest Service**

Foreword

Forest Inventory and Analysis (FIA) is a continuing endeavor mandated by Congress in the Forest and Rangeland Renewable Resources Planning Act of 1974 and the McSweeney-McNary Forest Research Act of 1928. FIA's primary objective is to determine the extent, condition, volume, growth, and depletions of timber on the Nation's forest land. Before 1999, all inventories were conducted on a periodic basis. With the passage of the 1998 Farm Bill, FIA is required to collect data on 20 percent of the plots annually within each State. This kind of up-to-date information is essential to frame realistic forest policies and programs. USDA Forest Service regional research stations are responsible for conducting these inventories and publishing summary reports for individual States.

In addition to published reports, the Forest Service can also provide portions of the data collected in each inventory to those interested in further analysis. This report describes a standard format in which data can be obtained. This standard format, referred to as the Forest Inventory and Analysis Database (FIADB) structure, was developed to provide users with as much data as possible in a consistent manner among States. FIADB files can be obtained for any State inventory conducted after 1988 (Eastern U.S.) or 1994 (Western U.S.). Files for many State inventories conducted before this time may also be available; however, some data fields may be empty or the items may have been collected or computed differently. Annual inventories begun after 1998 use a common plot design and common data collection procedures nationwide, resulting in greater consistency among FIA units than earlier inventories. Data field definitions note inconsistencies caused by different sampling designs and processing methods.

As well, there has been an ongoing effort to develop a National Information Management System (NIMS) to process and store annual inventory data. Changes in the FIADB structure have allowed for data processing and storage with NIMS. Members of the team that developed NIMS, led by Charles Liff, are Carol L. Alerich, Larry L. Bednar, Gary J. Brand, Kurt Campbell, Laurie Klevgard, Kevin Nimerfro, Larry Royer, Mark E. Rubey, Geetha Sendhil, Ron Wanek, Charles Washington, Shirley Waters, and Sharon W. Woudenberg. Bryan L. Lanier and Richard Teck of the National Forest System were liaisons to the team.

Acknowledgments

The material in this document is based on previous efforts to provide a uniform database for multiple FIA units (Hansen *et al.* 1992, Woudenberg and Farrenkopf 1995, Miles *et al.* 2001).

The following persons contributed to this document as editors and compilers: Carol L. Alerich (USDA Forest Service, North Research Station), Laurie Klevgard (University of Nevada-Las Vegas), Charles Liff (USDA Forest Service, Rocky Mountain Research Station), Patrick D. Miles (USDA Forest Service, North Research Station), Barbara Knight (USDA Forest Service, formerly of the North Central Research Station), and Barbara L. Conkling (North Carolina State University). In addition, we thank William Bechtold (USDA Forest Service, Southern Research Station), Mark Hansen (USDA Forest Service, North Research Station) and other members of the Statistics band, Gretchen Smith (University of Massachusetts), Susan Will-Wolf (University of Wisconsin), Michael Amacher (USDA Forest Service, Rocky Mountain Research Station), Charles Perry (USDA Forest Service, North Research Station), Christopher Woodall (USDA

Forest Service, North Research Station), and Beth Schulz (USDA Forest Service, Pacific Northwest Research Station) for their valuable assistance

Chapter 1 -- Database Structure	6
Ozone Bioindicator General Introduction	6
Ozone Plot Table (Oracle table name is OZONE_PLOT)	9
Ozone Visit Table (Oracle table name is OZONE_VISIT)	14
Ozone Validation Table (Oracle table name is OZONE_VALIDATION).....	21
Ozone Biosite Summary Table (Oracle table name is OZONE_BIOSITE_SUMMARY).....	27
Ozone Plot Summary Table (Oracle table name is OZONE_PLOT_SUMMARY)	35
Ozone Species Summary Table (Oracle table name is OZONE_SPECIES_SUMMARY)	42
Lichens Visit Table (Oracle table name is LICHEN_VISIT)	50
Lichens Lab Table (Oracle table name is LICHEN_LAB)	60
Lichens Plot Summary Table (Oracle table name is LICHEN_PLOT_SUMMARY)	64
Lichens Species Summary Table (Oracle table name is LICHEN_SPECIES_SUMMARY)	67
Lichens Reference Lichen Species Table (Oracle table name is REF_LICHEN_SPECIES) ...	71
Lichens Species Comments Table (Oracle table name is REF_LICHEN_SPP_COMMENTS)	74
Soils Visit Table (Oracle table name is SOILS_VISIT)	78
Soils Erosion Table (Oracle table name is SOILS_EROSION)	81
Soils Sample Location Table (Oracle table name is SOILS_SAMPLE_LOC)	86
Soils Lab Table (Oracle table name is SOILS_LAB)	92
Vegetation Visit Table (Oracle table name is VEG_VISIT).....	98
Vegetation Plot Species Table (Oracle table name is VEG_PLOT_SPECIES)	102
Vegetation Subplot Table (Oracle table name is VEG_SUBPLOT)	106
Vegetation Quadrat Table (Oracle table name is VEG_QUADRAT)	114
Vegetation Subplot Species Table (Oracle table name is VEG_SUBPLOT_SPP)	118
Down Woody Material Visit Table (Oracle table name is DWM_VISIT)	124
Down Woody Material Coarse Woody Debris Table (Oracle table name is DWM_COARSE_WOODY_DEBRIS)	128
Down Woody Material Duff, Litter, Fuel Table (Oracle table name is DWM_DUFF_LITTER_FUEL).....	133
Down Woody Material Fine Woody Debris Table (Oracle table name is DWM_FINE_WOODY_DEBRIS)	136
Down Woody Material Microplot Fuel Table (Oracle table name is DWM_MICROPLOT_FUEL)	140
Down Woody Material Residual Pile Table (Oracle table name is DWM_RESIDUAL_PILE) .	145
Down Woody Material Transect Segment Table (Oracle table name is DWM_TRANSECT_SEGMENT).....	149
Chapter 2 -- Views	153
Appendix A – Index of Column Names	155

Chapter 1 -- Database Structure

Ozone Bioindicator General Introduction

Every year the results of the field crew injury surveys for the ozone indicator, and expert review of the leaf vouchers are summarized for each FIA region in standard summary tables that contain the core data for the ozone indicator. The ozone summary tables provide annual statistics that can be used to report on field crew activities and regional trends in ozone stress. The terms *biosite* or *ozone biomonitoring site* are used to refer to the ozone plot or ground location where ozone data is collected. The biosite summary table provides ozone summary statistics for each ozone plot or biosite. The plot summary table provides summary statistics for each ground location. Ground location differs from biosite when the data from two nearby locations are combined for a given biosite to meet the site selection requirements for the ozone indicator. The species summary table provides summary statistics by species. There is also a validation table that contains the results of the expert review of the leaf voucher samples, and an ozone visit table that includes a record of biosite characteristics and measurement status on the ozone grid. For each table, the attribute codes, computation specifications, and definitions are fully described. Introductory comments are presented in front of each table to provide general guidelines for data use. Annual summary statistics may be summarized by species or by biosite and reported by county, state, region, or eco-region.

For most analyses, the *biosite-level ozone injury index* or BI is the measurement attribute which carries the most weight. The biosite index is derived each year from the validated crew data and presented in the biosite summary table. The annual BI provides an indication of ozone stress for a given year, but should not be used alone to make definitive statements about ozone air quality. An examination of regional trends in ozone stress should be based on a 5-year rolling average of the biosite index. For a given 5-year period, ambient ozone concentrations may fluctuate from above normal to below normal levels. Calculating an average biosite index for a multi-year period ensures that the injury index used to describe plant response to ozone is a truly representative value.

In addition to the summary tables, two map products are made available annually to FIA analysts and other users. The map products are derived from weighted data that are not readily available (*contact*: National Ozone Advisor), and true plot locations that are not in the public domain. The first map product is the national ozone risk map. Every year, geostatistical procedures are applied to the 5-year rolling average of the biosite index to interpolate a surface of biological response to ozone across the landscape. The resulting ozone risk map can be used to assign an estimated biosite index value to any mapped surface including the FIA P2 sample. The second map product is an interpolated surface of ambient ozone concentrations (e.g., SUM06 data). Each regional analyst can clip their area of interest (e.g., state, region, or eco-region) from these two map products, and use the procedures outlined in the ozone estimation document and user guide to calculate and interpret population metrics for the ozone indicator. Population metrics for the ozone indicator include, but are not limited to (1) the acres of forestland at low, moderate, and

high risk of ozone injury, and (2) the volume of ozone susceptible species at low, moderate, and high risk of ozone injury.

FIA Spatial Data Services uses the national ozone risk map to generate an estimated BI value for forested ground plots on the FIA P2 grid. This interpolated biosite index (IBI) and accompanying plant count attribute are part of the larger P2 table of forest plot attributes in the FIADB. Using the map surface and IBI any user can examine relationships between the ozone indicator and other FIA indicators of tree growth, forest health, and forest condition. Similarly, the national ozone risk map (first map product) can be used in conjunction with the interpolated surface of ambient ozone concentrations (second map product) to help interpret FIA findings. Overlays are also possible with other external data bases or map surfaces such as climate or seasonal drought. The goal is to ensure national consistency with respect to the published map products and interpretive reports on the ozone indicator. Additional detail and guidance on ozone sampling, estimation, analysis, and interpretation of the ozone indicator data are available in the two general technical reports published by the USDA Forest Service, Forest Inventory and Analysis Program (<http://fia.fs.fed.us/>).

The ozone crosswalk table (not included here) tracks changes to the ozone sample over time. The ozone indicator was part of the FHM grid sample from 1994 through 2001. When FIA assumed administration of the P3 forest health indicators in 2002, the ozone indicator moved to a new sample grid constructed to meet the unique needs of the ozone indicator. The new grid allowed greater flexibility in plot location such that sites were optimized for ozone biomonitoring and high plant and species counts. The concept of split plots (*see*: ozone Field Guide) was introduced to maximize plant counts in more challenging areas. An adjustment to the 2002 grid was implemented in 2007 to address detection monitoring concerns in the interior region. These changes to the ozone sample have resulted in changes to ozone plot identification numbers even though ground locations have been stable. The ozone crosswalk table allows data collected at plot number A₁ in 1994 on the FHM grid to be linked to data collected at the same ground location that is identified as plot number A₂ on the 2002 ozone grid, and plot number A₃ on the 2007 ozone grid. Further, starting with the 2002 ozone sample grid, ozone biomonitoring sites were assigned to one of four possible strata and the data must be weighted accordingly for interpretive analyses. Strata weights change as the sample grid changes, as it did in 2007. Weights, calculated annually, are available from the FIA Ozone Advisor.

The ozone base plot tables (not included here) track changes to the ozone plot coordinates and provide linkage to the fuzzed coordinates that are generated for public use. Field crews are trained to replace sites that become overgrown or disturbed, although the plot identification number stays with the relocated plot. Changes in ground location that exceed three miles are documented in these base plot tables using the ground location attribute. The crosswalk and base plot tables are not part of the FIADB, nor are they readily accessible to FIA analysts. However, analysts should be aware that these files exist to ensure that they make full use of historical and current ozone data files (i.e., 1994 through the current year). Information on when each state first implemented the ozone

indicator is available on the ozone indicator web site (<http://fia.fs.fed.us>, then click on Program Features, Forest Health Indicators, Ozonae, and Ozone Indicator Website).

Ozone Plot Table (Oracle table name is OZONE_PLOT)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	SRV_CN	VARCHAR2(34)	Character
3	CTY_CN	VARCHAR2(34)	Character
4	INVYR	NUMBER(4)	Year (YYYY)
5	STATECD	NUMBER(4)	Coded
6	UNITCD	NUMBER(2)	Coded
7	COUNTYCD	NUMBER(3)	Coded
8	O3PLOT	NUMBER	Number
9	FIELD_ID	NUMBER(7)	
10	SPLIT_PLOTID	NUMBER(1)	Coded
11	MEASYEAR	NUMBER(4)	Year (YYYY)
12	MEASMON	NUMBER(2)	Month (MM)
13	MEASDAY	NUMBER(2)	Day (DD)
14	KINDCD	NUMBER(2)	Not null
15	LAT	NUMBER(8,6)	
16	LON	NUMBER(9,6)	
17	ELEVATION	NUMBER	Number
18	MANUAL	NUMBER(3,1)	
19	QA_STATUS	NUMBER(1)	Coded
20	CREW_TYPE	NUMBER(1)	Coded
21	MANUAL_DB	NUMBER(3,1)	Not null
22	CREATED_BY	VARCHAR2(30)	Character
23	CREATED_DATE	DATE	DD-MON-YYYY
24	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
25	MODIFIED_BY	VARCHAR2(30)	Character
26	MODIFIED_DATE	DATE	DD-MON-YYYY
27	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number
28	CYCLE	NUMBER(2)	Number
29	SUBCYCLE	NUMBER(2)	Number

NOP_PK (CN)
 NOP_UK (STATECD, INVYR, COUNTYCD, O3PLOT, FIELD_ID, SPLIT_PLOTID)

1. CN Sequence number. A unique sequence number used to identify a county record.
2. SRV_CN Survey sequence number. Foreign key linking the plot record to the survey record.
3. CTY_CN County sequence number. Foreign key linking the plot record to the county record.
4. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. However, all ozone plots are measured every year, the same plots every year.
5. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
6. UNITCD Survey unit code. Survey unit code. Forest Inventory and Analysis survey unit identification number. Survey units are usually groups of counties within each State. For periodic inventories, Survey units may be made up of lands of particular owners. Refer to Appendix C for codes.
7. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
8. O3PLOT Ozone plot. A unique identifier used in combination with STATECD, COUNTYCD, and MEASYEAR to identify an ozone biomonitoring site.
9. FIELD_ID Field identification number. This is the 7-digit number used by the field crew for all current and active biosites.
10. SPLIT_PLOTID

Split plot identification. SPLIT_PLOTID = 1 when the ozone plot consists of a single location, or to indicate that this is the first location of a plot split between two locations. SPLIT_PLOTID = 2 when the ozone plot is split between two locations, to identify the second location added by the field crew to increase species and plant counts for an ozone plot. If two locations are selected, they are within 3 miles of each other. O3PLOT is the same for both locations.

11. MEASYEAR Measurement year. The year that the plot was completed.
12. MEASMON Measurement month. The month that the plot was completed.
- | Code | Description | Code | Description |
|------|-------------|------|-------------|
| 01 | January | 07 | July |
| 02 | February | 08 | August |
| 03 | March | 09 | September |
| 04 | April | 10 | October |
| 05 | May | 11 | November |
| 06 | June | 12 | December |
13. MEASDAY Measurement day. The day of the month that the plot was completed.
14. KINDCD Sample kind code. A code to indicate whether the plot is being measured for the first time, had been measured in a previous cycle and is being remeasured, or had been remeasured previously but could not be relocated and this is the replacement.
- | Code | Description |
|------|------------------------------------------------------------------------------------------------------|
| 0 | Periodic inventory plot |
| 1 | Initial plot establishment of the National design plot |
| 2 | Remeasurement of a previously established National design plot –field visited or remotely classified |
| 3 | Replacement of a previously established National design plot |
| 4 | Modeled |
| 9 | Not sampled |
15. LAT Latitude. Fuzzed coordinates.
16. LON Longitude. Fuzzed coordinates
17. ELEVATION Obtain elevation data from USGS topographic maps, generally the 7½ minute series quadrangle. Locate the area where most of the bioindicator species are growing and record elevation to the nearest foot. Recorded when elevation is not collected using a GPS unit.
18. MANUAL Field guide (manual) version number. Version of the National Field Guide used to describe procedures for collecting data on the plot. New in annual inventory. This is the version of the guide with which the data were collected. Value is 0.0 if data were collected with a regional field guide.

19. QA_STATUS QA Status. The code to indicate the type of plot data collected.

Code	Description
1	Standard ozone plot
2	Cold check
4	Training/practice plot (off grid)
5	Botched plot file
6	Blind check
7	Hot check (production plot)

20. CREW_TYPE This code specifies what type of crew is measuring the plot.

Code	Description
1	Standard field crew
2	QA crew (any QA crew member present collecting remeasurement data)

21. MANUAL_DB

Version of the National Field Guide used to describe procedures for collecting data on the plot.

22. CREATED_BY

The user who created the record.

23. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

24. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

25. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

26. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

27. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

28. CYCLE

Inventory cycle number. Inventory cycle number. Identifies the cycle number for the inventory data. For example, a 4 shows the data came from the fourth inventory of that State. A cycle number greater than 1 does not necessarily mean that information for previous cycles resides in the database.

29. SUBCYCLE

Inventory subcycle number.

Ozone Visit Table (Oracle table name is OZONE_VISIT)

The measurement variables in this table summarize identifying characteristics of the biosite with respect to site conditions evaluated by the visiting field crew, and measurement status on the ozone grid. For each ground location, coded site characteristics include plot size (PLTSIZE), aspect (ASPECT), terrain position (TERRPOS), soil depth (SOILDPTH), soil drainage (SOILDRN), plot wetness (PLOTWET), and plot disturbance (PLTDSTRB). These site attributes are defined below. The quality assurance status (QASTATCD) and crew type (CRWTYPCD) attributes indicate the type of data collected and whether or not it is intended for quality assurance purposes. The injury check (INJCHECK) attribute indicates whether or not ozone injury was observed on non-tallied plants or species. For example, the field crew may observe ozone injury on a species after 30 records of no injury (zero values) have already been recorded for that species. This attribute allows a biosite to be identified as impacted by ozone (i.e., injury detected on non-tallied plants) even though there is no quantitative data on injury amount or injury severity for trend analyses.

The grid density (GRIDDEN) and sample kind (SMPKNDCD) attributes are artifacts of the conversion from the P3 grid to the 2002 Ozone Grid. They provide information on whether the biosite is newly established or not, and whether or not there is more than one biosite within the boundaries of a given ozone grid polygon. The grid density attribute was dropped in 2006. The application of the SMPKNDCD attribute was modified in 2006 so that it could be used in conjunction with geographical coordinates entered by the field crew to signal whether or not new fuzzed coordinates are needed for the FIADB. Field crews are trained to replace sites that become overgrown or disturbed. When SMKNDCD indicates site replacement and the distance between the previous ground location and the new ground location exceeds 3 miles, new fuzzed coordinates are called for. The distance of 3 miles reflects the area within which it is reasonable to assume a stable air quality regime. Biosites in the southern states, where open areas tend to become rapidly overgrown, are relocated more frequently than in any other region. Changes in ground location are stored in the ozone base plot tables. These tables are not available for public view as they contain true plot locations that must be obscured to protect landowner privacy.

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	O3PLOT	NUMBER	Number
7	FIELD_ID	NUMBER(7)	Number
8	SPLIT_PLOTID	NUMBER(1)	Coded

	Column Name	Oracle data type	Value or unit of measure
9	SMPKND	NUMBER(2)	Coded
10	MEASDAY	NUMBER(2)	Day (DD)
11	MEASMON	NUMBER(2)	Month (MM)
12	MEASYEAR	NUMBER(4)	Year (YYYY)
13	PLTSIZE	NUMBER	Coded
14	ASPECT	NUMBER(3)	Degrees
15	TERRPOS	NUMBER	Coded
16	SOILDPH	NUMBER	Coded
17	SOILDRN	NUMBER	Coded
18	PLTDSTRB	NUMBER	Coded
19	QASTATCD	NUMBER(1)	Coded
20	CRWTYPCD	NUMBER(1)	Coded
21	PLOTWET	NUMBER	Coded
22	INJCHECK	NUMBER(2)	Coded
23	GRIDDEN	NUMBER(1)	Coded
24	CREATED_BY	VARCHAR2(30)	Character
25	CREATED_DATE	DATE	DD-MON-YYYY
26	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
27	MODIFIED_BY	VARCHAR2(30)	Character
28	MODIFIED_DATE	DATE	DD-MON-YYYY
29	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

OVT_NAT_I (STATECD, INVYR, COUNTYCD, O3PLOT, FIELD_ID, SPLIT_PLOTID)
OVT_PK (CN)
OVT_UK (PLT_CN)

1. CN Sequence number. A unique sequence number used to identify a county record.
2. PLT_CN Plot sequence number. Foreign key linking the ozone visit record to the plot record.
3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. However, all ozone plots are measured every year, the same plots every year.

- 4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table

- 5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

- 6. O3PLOT Ozone plot. A unique identifier used in combination with STATECD, COUNTYCD, and MEASYEAR to identify an ozone biomonitoring site.

- 7. FIELD_ID Field identification number. This is the 7-digit number used by the field crew for all current and active biosites.

- 8. SPLIT_PLOTID

 Split plot identification. SPLIT_PLOTID = 1 when the ozone plot consists of a single location, or to indicate that this is the first location of a plot split between two locations. SPLIT_PLOTID = 2 when the ozone plot is split between two locations, to identify the second location added by the field crew to increase species and plant counts for an ozone plot. If two locations are selected, they are within 3 miles of each other. O3PLOT is the same for both locations.

- 9. SMPKNDCD Ozone sample kind. Describes the kind of plot being visited. OZONE SAMPLE KIND has a value of 1 when an ozone plot is established in a previously empty polygon. OZONE SAMPLE KIND has a value of 2 when remeasurement occurs at the same location, or when the replacement plot is within 3 miles of the previously established plot. OZONE SAMPLE KIND has a value of 3 when the replacement plot is more than 3 miles away from the previously established plot.

Code Description

- 1 Initial plot establishment on the base grid or on a newly intensified grid.
- 2 Remeasurement of a previously established plot.
- 3 Replacement of a previously established plot that was replaced because the original plot could not be relocated or because it no longer met ozone plot measurement criteria.

10. MEASDAY Measurement day. The day of the month that the plot was completed.
11. MEASMON Measurement month. The month that the plot was completed.
- | Code | Description | Code | Description |
|------|-------------|------|-------------|
| 01 | January | 07 | July |
| 02 | February | 08 | August |
| 03 | March | 09 | September |
| 04 | April | 10 | October |
| 05 | May | 11 | November |
| 06 | June | 12 | December |
12. MEASYEAR Measurement year. The year that the plot was completed.
13. PLTSIZE Plot size. The plot size attribute indicates the size of the opening used for biomonitoring. Open areas that are more than 3 acres in size are ideal because they optimize ozone air mixture. Uniform, open areas with a wide selection of bioindicator species are relatively easy to find in eastern FIA regions, more difficult to find in western FIA regions.
- | Code | Description |
|------|---------------------------------------------------|
| 1 | Greater than three acres. |
| 2 | Greater than one acre, but less than three acres. |
14. ASPECT The aspect attribute identifies the direction of slope for land surfaces with at least 5 percent slope as measured with a hand compass to the nearest degree (0° to 360°). The majority of biosites in eastern regions have no aspect whereas conditions in western regions are more variable. There are no published reports that suggest the direction of slope has a significant bearing on the ozone indicator. However, in western regions, north or east facing slopes indicate drier plot moisture conditions than south or west facing slopes, and plot moisture can have a significant influence on plant response to ozone.
15. TERRPOS Terrain position. This is the position of the biosite in relation to the surrounding topography. Eastern biosites are often located on flatland. In the west, the terrain may be more varied.
- | Code | Description |
|------|--------------------------------------|
| 1 | Ridge top or upper slope |
| 2 | Bench or level area along a slope |
| 3 | Lower slope |
| 4 | Flat land unrelated to slope |
| 5 | Bottom land with occasional flooding |

16. SOILDPTH Soil depth. This indicates the general depth of the soil where most of the bioindicator species are growing. Soil that is generally shallow may be subject to more frequent and severe drought, thereby mitigating the response of bioindicator species to ambient ozone exposures.

Code Description

- 1 Bedrock is not exposed.
- 2 Bedrock is exposed; Soil is generally shallow.

17. SOILDRN Soil drainage. This indicates the general soil drainage conditions where most of the bioindicator species are growing. The response of bioindicator species to ambient ozone exposures is optimized on soils that are well-drained. This attribute is used for eastern FIA regions.

Code Description

- 1 Soil is well drained
- 2 Soil is generally wet
- 3 Soil is excessively dry

18. PLTDSTRB Disturbance. This indicates the presence and kind of disturbance where most of the bioindicator species are growing. The response of bioindicator species to ambient ozone exposures is optimized on sites with no recent or significant disturbance. The area affected by any human caused or natural disturbance must be clearly visible and recent enough to influence plant health and condition. Disturbance that results in significant soil compaction may mitigate the response of bioindicator species to ambient ozone exposures and is considered especially significant. Crews are trained to replace biosites that have been disturbed.

Code Description

- 0 No recent or significant disturbance.
- 1 Evidence of overuse; Human activity causing obvious soil compaction or erosion.
- 2 Evidence of natural disturbance including fire, wind, flooding, grazing, pests, etc.

19. QASTATCD Quality assurance status code. The QA Status attribute indicates the type of data collected at the biosite and whether or not it is intended for quality assurance purposes. Each year, 10 biosites in each region are remeasured for quality assurance purposes. Generally, the remeasurements are blind.

Code Description

- 1 Standard field plot, the data is not intended for quality assurance purposes

6 QA field plot, the data is intended for quality assurance purposes

20. CRWTYPCD Crew type code. The crew type attribute specifies what type of crew is measuring the plot. If the data collected by the crew is not intended for quality assurance purposes, then the crew is specified as a regular field crew. If the biosite is remeasured for quality assurance purposes, then the field crew collecting the remeasurement data is specified as a QA field crew.

Code	Description
1	Regular field crew
2	QA field crew

21. PLOTWET Plot wetness. This indicates the degree of wetness where most of the bioindicator species are growing. Very dry or exposed sites may mitigate the response of bioindicator species to ambient ozone exposures. This attribute is used for western FIA regions.

Code	Description
1	Wet or damp (riparian zones, damp areas along a stream or meadow)
2	Moderately dry (grassland, meadow, or east facing slopes)
3	Very dry (exposed rocky ledges, desert, and some alpine areas)

22. INJCHECK Injury check. The injury check attribute indicates whether or not ozone injury was observed on non-tallied plants or species. For example, the field crew may observe ozone injury on a species after 30 records of no injury have already been recorded. This attribute allows a biosite to be identified as impacted by ozone even though there is no quantitative data on injury amount or injury severity for trend analyses. A leaf voucher must be collected from the non-tallied plant to validate the injury. This data could be used in a state or regional report using a map or tabular product documenting presence or absence of ozone injury by ozone plot (O3PLOT).

Code	Description
0	No injury was observed on non-tallied plants or species.
1	Ozone injury was observed on non-tallied plants or species and a leaf voucher collected.

23. GRIDDEN Ozone grid density. This grid density attribute specifies whether or not the ozone plot is on the base ozone grid or on an intensified

ozone grid. If the grid is intensified then there is more than one ozone plot (O3PLOT) in a given polygon on the ozone grid.

Code Description

- 1 Unique ozone plot within a polygon. (1 biosite:1polygon)
- 2 One of two or more ozone plots within the same polygon.

24. CREATED_BY

The user who created the record.

25. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

26. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

27. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

28. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

29. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Ozone Validation Table (Oracle table name is OZONE_VALIDATION)

The measurement variables in this table are part of the validation file that is used by the FIA data processor in each region to edit the ozone data files before they are loaded into the ozone summary tables. The biosite summary statistics do not load properly unless the validation table is complete and in accord with the raw data files entered by the field crews. The following steps describe the process. The field crew collects a leaf voucher for every species at every location where ozone injury is recorded. These are mailed to an expert ozone diagnostician who reviews the leaf vouchers, generates the ozone validation file, and returns the validation table to each region for data processing. The ozone validation table (OZONE_VALIDATION) provides a record of whether the ozone injury rated by the field crews was validated, or not for every species (BIOSPCD) at every ground location. FIELD_ID is used in combination with STATECD, COUNTYCD, MEASYEAR, and SPLIT_PLOTID to uniquely identify each ground location. In some cases the leaf voucher is missing. If the injury is not validated, or is missing, the crew data file is modified to reflect this fact. Occasionally, the field crew submits leaf vouchers for plants or species that are not included in the injury data file. These are considered non-tallied leaf vouchers as defined by the INJCHECK attribute (see OZONE_VISIT). If injury on non-tallied plants or species is validated, this is reflected in the validation file. Injury to non-tallied plants or species can only be used to indicate, or map presence or absence of ozone injury. Only validated data from tallied plants and species are used in the computation of ozone summary statistics and other risk assessment analyses such as the national ozone risk map.

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	O3PLOT	NUMBER	Number
7	FIELD_ID	NUMBER(7)	
8	SPLIT_PLOTID	NUMBER(1)	Coded
9	BIOSPCD	NUMBER	
10	QASTATCD	NUMBER(1)	
11	CRWTYPCD	NUMBER(1)	
12	LEAFVCHR	NUMBER	
13	INJVALID	NUMBER	
14	O3_STATCD	NUMBER	
15	MEASYEAR	NUMBER(4)	Year (YYYY)
16	CREATED_BY	VARCHAR2(30)	Character
17	CREATED_DATE	DATE	DD-MON-YYYY

Column Name	Oracle data type	Value or unit of measure
18 CREATED_IN_INSTANCE	VARCHAR2(6)	Number
19 MODIFIED_BY	VARCHAR2(30)	Character
20 MODIFIED_DATE	DATE	DD-MON-YYYY
21 MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

OVN_NAT_I (STATECD, INVYR, COUNTYCD, O3PLOT, FIELD_ID, SPLIT_PLOTID, BIOSPCD)

OVN_PK (CN)

OVN_UK (PLT_CN, BIOSPCD)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the ozone validation record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. However, all ozone plots are measured every year, the same plots every year.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table

5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

6. O3PLOT Ozone plot. A unique identifier used in combination with STATECD, COUNTYCD, and MEASYEAR to identify an ozone biomonitoring site.

7. FIELD_ID Field identification number. This is the 7-digit number used by the field crew for all current and active biosites.

8. SPLIT_PLOTID

Split plot identification. SPLIT_PLOTID = 1 when the ozone plot consists of a single location, or to indicate that this is the first location of a plot split between two locations. SPLIT_PLOTID = 2 when the ozone plot is split between two locations, to identify the second location added by the field crew to increase species and plant counts for an ozone plot. If two locations are selected, they are within 3 miles of each other. O3PLOT is the same for both locations.

9. BIOSPCD

Biospecies code. This identifies the bioindicator species on the biosite. Bioindicator species may be a tree, a woody shrub, or a non-woody herb species. All of the species selected for use respond to ambient levels of ozone pollution with distinct visible foliar symptoms that are easy to diagnose.

10. QASTATCD

Quality assurance status code. The QA Status attribute indicates the type of data collected at the biosite and whether or not it is intended for quality assurance purposes. Each year, 10 biosites in each region are remeasured for quality assurance purposes. Generally, the remeasurements are blind.

Code Description

- 1 Standard field plot, the data is not intended for quality assurance purposes
- 6 QA field plot, the data is intended for quality assurance purposes

11. CRWTYPCD

Crew type code. The crew type attribute specifies what type of crew is measuring the plot. If the data collected by the crew is not intended for quality assurance purposes, then the crew is specified as a regular field crew. If the biosite is remeasured for quality assurance purposes, then the field crew collecting the remeasurement data is specified as a QA field crew.

Code Description

- 1 Standard field crew
- 2 QA field crew

12. LEAFVCHR

Leaf voucher. The leaf voucher attribute specifies whether the field crew followed the voucher preparation and mailing procedures outlined in the Field Guide. The procedures require the field crew to select three leaves that clearly show ozone injury symptoms from every injured species at each biosite (PLOT). The

crew places the leaves in a plant press for 48 hours, completes a data sheet on the leaf samples, and mails the sheet and the leaves to the validation expert. If procedures are not followed such that the voucher is missing, or compromised by mishandling, the injury ratings for that species and site are discounted.

Code	Description
1	The field crew followed procedures and mailed in a readable voucher
2	The leaf voucher is missing and the data file indicates the crew found injury
3	The data file indicates the crew did not find injury and the crew mailed in a clean voucher to verify this finding.

13. INJVALID

Injury validation. The leaf samples from western species are mailed to a plant diagnostics lab for the West and the leaf samples for eastern species are mailed to a plant diagnostics lab for the East. The samples are examined microscopically and subject to additional diagnostic tests, as needed, to validate the ozone injury symptom. The results of the diagnosis are documented on the voucher data sheet, entered in an electronic file, and returned to the regions for data processing and edit checks.

Code	Description
1	Ozone injury was validated by an expert either by voucher or with an on site visit
2	Ozone injury was not validated because the symptoms are clearly not attributable to ozone, or because the condition of the leaf sample makes validation questionable
3	Ozone injury was not validated because the voucher was missing
4	Ozone injury was not validated because the crew did not find injury and the voucher sent in was uninjured

14. O3_STATCD

Ozone status code. Each biosite (O3PLOT) is assigned an ozone status based on the validation results for each species (BIOSPCD). When leaf samples from more than one species are evaluated, ozone status for a given biosite may be positive for one species and negative for another. Further, a biosite may qualify as a plus ozone plot based on non-tallied vouchers. In this case, there may be no injury recorded in the data file. Refer to the INJURYCHK attribute in the OZONE_VISIT table for more information.

Code	Description
1	Qualifies as a plus ozone plot for a given species based on the voucher and/or other information

- 2 Does not qualify as a plus ozone plot for a given species based on the leaf voucher and/or other information
- 3 There is insufficient information to determine plot ozone status
- 4 Qualifies as a plus ozone plot for a given species based on a non-tallied voucher with no injury data
- 5 Does not qualify as a plus ozone plot based on a non-tallied voucher with no injury data

If O3_STATCD = 1, then the field data is included in summary calculations and analysis. If O3_STATCD = 2, then the field data is included in summary calculations and analysis after the injury amount is set to zero and the injury severity to null for each individual of the given species on the PLOT. If O3_STATCD = 3, then the field data is not included in analysis. If O3_STATCD = 4, then INJCHECK is set to 1. Include any field data in analysis. If O3_STATCD = 5, then INJCHECK is set to zero. Include any field data in analysis.

15. MEASYEAR Measurement year. The year the plot was completed.

16. CREATED_BY

The user who created the record.

17. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

18. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

19. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

20. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

21. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Ozone Biosite Summary Table (Oracle table name is OZONE_BIOSITE_SUMMARY)

The measurement variables in this table summarize ozone injury data by plot number. The code name for the ozone plot number in the ozone summary tables is FIELD_ID. FIELD_ID provides a unique identifier that can be used in combination with STATECD, COUNTYCD, and MEASYEAR to identify the ozone biomonitoring site, or biosite. The terms *biosite* or *ozone biomonitoring site* are used to refer to the ozone plot to distinguish it from the FIA ground plots on the P2/P3 grid. In the biosite summary table, each FIELD_ID is associated with a location count (LOCATION_CNT) and a ground location (GRND_LOC_CD) attribute. LOCATION_CNT has a value of '1' or '2' depending on whether the data was collected from one or two locations. GRND_LOC_CD has a value of 1 or more depending on whether the ground location for a biosite has remained the same, or changed from one year to the next.

For each biosite (FIELD_ID), summary values are tabulated for the total number of species evaluated (SPECIES_EVAL_CNT), the total number of plants evaluated (PLANT_EVAL_CNT), the total number of plants injured (PLANT_INJ_CNT), the ratio of injured to evaluated plants (PLANT_RATIO), the percent of sampled plants in each injury severity class (SVRTY_CLASS_ZERO to SVRTY_CLASS_FIVE), and the biosite-level ozone injury index (BIOSITE_INDEX). These summary statistics may be used in an annual report to list how many biosites were visited, how many plants were evaluated, and the number (or percent) of the total plots and plants that sustained ozone injury. Over time, these summary statistics can be used to report on regional trends in ozone stress in terms of significant changes in the number and distribution of biomonitoring plots with ozone injury, changes in injury severity classifications, and increases or decreases in the ozone injury index.

Severity classifications are based on a modified Horsfall-Barrett (HB) scale with breakpoints at 6, 25, 50, 75, and 100 percent. The HB scale was developed in the 1940's for plant disease research and has a long history of use in ozone field surveys. Injury severity is an estimate of the mean severity of symptoms on injured foliage as recorded by the FIA field crews for individual plant samples. Calculated percents are rounded to the nearest whole number. Severity class zero = no injury; class one = 1-6 percent injury; class two = 7-25%; class three = 26-50%; class four = 51-75%; class 5 = more than 75 percent injury. Providing a table for each FIA reporting unit (e.g., state, ecoregion) and year that displays the number of biosites evaluated, the number of plants sampled, and the percent of sampled plants in each injury severity category is a highly defensible way to present ozone summary statistics.

Guidelines for interpreting the biosite-level ozone injury index (BIOSITE_INDEX) are provided in the following table. The biosite index (BI) is classified into four categories of risk designed to capture differences in plant damage to ozone-sensitive tree species in areas of low, moderate, and high ozone stress where stress is defined as the confluence of interacting factors (e.g., plant properties and external growth conditions) that determine ozone uptake and injury. The assumption of risk assigned to each category represents a relative measure of probable impacts from ambient ozone exposure, and/or a relative measure of ozone air quality with respect to forest health.

Biosite Index	Bioindicator response	Assumption of risk	Possible impact	Relative air quality ¹
0 to 4.9	Little or no foliar injury	None	Visible injury to highly sensitive species, e.g. black cherry	Good
5.0 to 14.9	Light to moderate foliar injury	Low	Visible injury to moderately sensitive species, e.g. tulip poplar	Moderate
15.0 to 24.9	Moderate to severe foliar injury	Moderate	Visible and invisible injury. Tree-level response. ³	Unhealthy for sensitive species
≥ 25	Severe foliar injury	High	Visible and invisible injury. Ecosystem-level response. ³	Unhealthy

¹Relative ozone air quality for plant (tree, woody shrub, non-woody herb species) rather than human receptors.

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	INVYR	NUMBER(4)	Year (YYYY)
3	STATECD	NUMBER(4)	Coded
4	COUNTYCD	NUMBER(3)	Coded
5	O3PLOT	NUMBER	Number
6	FIELD_ID	NUMBER(7)	
7	LOCATION_CNT	NUMBER	
8	GROUND_LOC_CD	NUMBER(1)	
9	MEASYEAR	NUMBER(4)	Year (YYYY)
10	PLANT_INJ_CNT	NUMBER	
11	PLANT_EVAL_CNT	NUMBER	
12	PLANT_RATIO	NUMBER	
13	SPECIES_EVAL_CNT	NUMBER	
14	BIOSITE_INDEX	NUMBER	
15	BIOSITE_INDEX_MULTIPLIER	NUMBER	
16	SVRTY_CLASS_ZERO	NUMBER	

Column Name	Oracle data type	Value or unit of measure
17 SVRTY_CLASS_ONE	NUMBER	
18 SVRTY_CLASS_TWO	NUMBER	
19 SVRTY_CLASS_THREE	NUMBER	
20 SVRTY_CLASS_FOUR	NUMBER	
21 SVRTY_CLASS_FIVE	NUMBER	
22 CREATED_BY	VARCHAR2(30)	Character
23 CREATED_DATE	DATE	DD-MON-YYYY
24 CREATED_IN_INSTANCE	VARCHAR2(6)	Number
25 MODIFIED_BY	VARCHAR2(30)	Character
26 MODIFIED_DATE	DATE	DD-MON-YYYY
27 MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

OBS_PK (CN)
OBS_UK (STATECD, INVYR, COUNTYCD, O3PLOT, FIELD_ID)

1. CN Sequence number. A unique sequence number used to identify a county record
2. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. However, all ozone plots are measured every year, the same plots every year.
3. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
4. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
5. O3PLOT Ozone plot. A unique identifier used in combination with STATECD, COUNTYCD, and MEASYEAR to identify an ozone biomonitoring site.
6. FIELD_ID Field identification number. This is the 7-digit number used by the field crew for all current and active biosites.

7. LOCATION_CNT

Location count. The value of this attribute is either 1 or 2. When LOCATION_CNT = 1, then the plant injury data is collected from a single location. When LOCATION_CNT = 2, then the plant injury data is collected from two locations. Two nearby locations are used infrequently to improve species and plant counts for each biosite (O3PLOT). When two locations are used, the data from both locations are combined in the biosite summary values.

8. GROUND_LOC_CD

Ground location code. GROUND_LOC_CD = 1 means the GPS values stayed the same from one year to the next.
GROUND_LOC_CD = 2 means the biosite has been moved more than 3 miles and has a second set of GPS values.
GROUND_LOC_CD = 3 means the biosite has moved more than 3 miles for a third time and has a third set of GPS values.

9. MEASYEAR Measurement year. The year the plot was completed.

10. PLANT_INJ_CNT

Plant injury count. The number of injured plants at a biosite (O3PLOT) equals the number of plants that have injury amounts greater than zero. This value is combined across all species. Sensitivity to ozone is strongly influenced by genotype and microhabitat such that neighboring plants of the same species show very different responses to ozone exposure. At any one location (O3PLOT), around ten percent of a sensitive population will show a visible response to phytotoxic ozone concentrations.

PLANT_INJ_CNT = count (plants at an ozone plot that have an injury amount greater than zero).

11. PLANT_EVAL_CNT

Plant evaluation count. The number of plants evaluated equals the total number of plants examined at a biosite (O3PLOT). This value is combined across all species. Field crews are trained to evaluate up to 30 plants of two or more species. The average number of evaluated plants at western biosites is 75. The average count for eastern biosites is 100, although many have 150 evaluated plants. It takes injury to only one plant of one species to document the occurrence of plant damaging ozone concentrations. However, the assessment of risk to the surrounding forest is more robust when many plants of more than one species show an ozone injury

response. $PLANT_EVAL_CNT = \text{count (all plants evaluated at an ozone plot)}$

12. PLANT_RATIO

Plant ratio. The plants ratio is the ratio of the number of plants injured to the number of plants evaluated. That is, the plants ratio equals the number of plants injured divided by the number of plants evaluated. Using a ratio allows a direct comparison between plots, states, or regions that have different sample counts.

Examining the relationship between the percent injured plants and the biosite index also provides insight into whether a high injury index is the result of an acute exposure (severe injury to relatively few plants), or the result of moderate injury to a larger sample of the sensitive population. $PLANT_RATIO = PLANTS_INJ_CNT / PLANTS_EVAL_CNT$

13. SPECIES_EVAL_CNT

Species evaluation count. The species evaluation count equals the number of species evaluated at a biosite (O3PLOT). Crews working in the western forest types usually evaluate two unique species. Crews working in the eastern forest types usually evaluate three species and often evaluate five species. We combine the information obtained from different species because we want the BIOSITE_INDEX to be a representative value for a given location. Furthermore, certain species are good bioindicators of elevated ozone concentrations in growing seasons with above average rainfall and others are good bioindicators in dry seasons. The goal is to maximize the opportunity to capture the ozone stress signal by evaluating as many species and plants as possible in areas close to the forests and subject to the same ozone air quality regime. $SPECIES_EVAL_CNT = \text{count (the unique species evaluated at an ozone plot)}$

14. BIOSITE_INDEX

Biosite index. The biosite index (BIOSITE_INDEX) at a biosite (O3PLOT) equals the sum of the species index (BIOSPCD_INDEX) divided by the species evaluation count (SPECIES_EVAL_CNT). We combine the information obtained from different species into one injury index because we want the BIOSITE_INDEX to be a representative value for a given ozone plot. The BIOSITE_INDEX is formulated from the injury amount and severity ratings recorded for each plant and the numbers of plants and species evaluated at each site. The injury index provides a precise estimate of plant response and the opportunity to calculate thresholds of concern for the ozone indicator. The index is not intended to be used as a measurement of

harm. Rather, it provides a relative value, a gradation of response that quantifies the degree of ozone injury conditions on the FIA detection monitoring plots. Ozone injury conditions are characterized by the prolonged exposure of sensitive plants to elevated ozone concentrations in a predisposing environment. Ozone cannot injure plants unless it enters the leaves through open stomata. Visible injury on bioindicator species tells us, not only that ozone concentrations were elevated for a particular time and place, but also that other necessary conditions for injury (e.g., adequate light, nutrition, and moisture) were also present. Thus, the BIOSITE_INDEX provides a biologically meaningful record of high ozone levels, more meaningful than ozone data from physical monitors (e.g., SUM06 data), if the goal is to accurately characterize and predict the risk to forest health from ambient ozone exposure. $BIOSITE_INDEX = \text{summation}(BIOSPCD_INDEX) / SPECIES_EVAL_CNT$

15. BIOSITE_INDEX_MULTIPLIER

Biosite index multiplier. The biosite index is formulated from the injury amount and severity ratings recorded for each plant and the numbers of plants and species evaluated at each biosite. Biosite index values are classified into categories of ozone risk designed to capture differences in plant damage to ozone sensitive species in areas of low, moderate, and high ozone exposure. The biosite index multiplier is the biosite index (BIOSITE_INDEX) multiplied by 1000 to allow the ozone risk categories to be defined by integers. Use this value in reports rather than the calculated biosite index.

$$BIOSITE_INDEX_MULTIPLIER = BIOSITE_INDEX * 1000$$

16. SVRTY_CLASS_ZERO

Severity class zero. The percent of all evaluated plants at a given biosite that have no symptoms of ozone-induced foliar injury. $SVRTY_CLASS_ZERO = \text{count}(\text{all plants with injury severity equal to zero}) * 100 / \text{count}(\text{all plants evaluated at an ozone plot, i.e., PLANT_EVAL_CNT})$

17. SVRTY_CLASS_ONE

Severity class one. The percent of all evaluated plants at a given biosite that have 1 to 6 percent injury. The injury estimate is based on the mean severity of ozone-induced injury symptoms on the injured foliage for each plant. Injury class one may be considered slight injury. $SVRTY_CLASS_ONE = \text{count}(\text{all plants with injury severity equal to 1 or 3.5\%}) * 100 / \text{count}(\text{all plants evaluated at an ozone plot, i.e., PLANT_EVAL_COUNT})$

18. SVRTY_CLASS_TWO

Severity class two. The percent of all evaluated plants at a given biosite that have 7 to 25 percent injury. The injury estimate is

based on the mean severity of ozone-induced injury symptoms on the injured foliage for each plant. Injury class two may be considered low to moderate ozone injury.

$SVRTY_CLASS_TWO = \text{count (all plants with injury severity equal to 2 or 16\%)} * 100 / \text{count (all plants evaluated at an ozone plot, i.e., PLANT_EVAL_COUNT)}$

19. SVRTY_CLASS_THREE

Severity class three. The percent of all evaluated plants at a given biosite that have 26 to 50 percent injury. The injury estimate is based on the mean severity of ozone-induced injury symptoms on the injured foliage for each plant. Injury class three may be considered moderate ozone injury. $SVRTY_CLASS_THREE = \text{count (all plants with injury severity equal to 3 or 38\%)} * 100 / \text{count (all plants evaluated at an ozone plot, i.e., PLANT_EVAL_COUNT)}$

20. SVRTY_CLASS_FOUR

Severity class four. The percent of all evaluated plants at a given biosite that have 51 to 75 percent injury. The injury estimate is based on the mean severity of ozone-induced injury symptoms on the injured foliage for each plant. Injury class four may be considered moderate to severe ozone injury. $SVRTY_CLASS_FOUR = \text{count (all plants with injury severity equal to 4 or 63\%)} * 100 / \text{count (all plants evaluated at an ozone plot, i.e., PLANT_EVAL_COUNT)}$

21. SVRTY_CLASS_FIVE

Severity class five. The percent of all evaluated plants at a given biosite that have greater than 75 percent injury. The injury estimate is based on the mean severity of ozone-induced injury symptoms on the injured foliage for each plant. Injury class five may be considered severe ozone injury. $SVRTY_CLASS_FIVE = \text{count (all plants with injury severity equal to 5 or 88\%)} * 100 / \text{count (all plants evaluated at an ozone plot, i.e., PLANT_EVAL_COUNT)}$

22. CREATED_BY

The user who created the record.

23. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

24. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

25. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

26. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

27. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Ozone Plot Summary Table (Oracle table name is OZONE_PLOT_SUMMARY)

This table provides the most site specific information recorded by the field crew or derived from the crew data. The measurement variables in this table summarize ozone injury, species counts and site characteristics for each *ground location* visited by the field crews. Ground location differs from ozone biosite (FIELD_ID) in that there are a small number of ozone biosites that consist of two ground locations. Ozone biosites that consist of two locations are referred to as split plots. Two locations are used to increase species and plant counts for a single ozone biosite. If two locations are used, they are within 3 miles of each other. FIELD_ID is the same for both locations, but they have different split plot identification numbers (SPLIT_PLOTID). FIELD_ID is used in combination with STATECD, COUNTYCD, MEASYEAR, and SPLIT_PLOTID to uniquely identify each ground location. For each ground location, coded site characteristics include plot size (PLTSIZE), elevation (ELEV), aspect (ASPECT), terrain position (TERRPOS), soil depth (SOILDPTH), soil drainage (SOILDRN), plot wetness (PLOTWET), and plot disturbance (PLTDSTRB).

Ozone plots vary in size and do not have set boundaries. Crews specify the predominant site characteristics where most of the plant species are located. If conditions vary markedly across the site, or by species, then this is described in the plot notes or on the site map. Elevation, aspect, terrain position, soil depth, soil drainage, plot wetness, and disturbance are specified for the highest priority species listed in the Field Guide. The soil depth, soil drainage, plot wetness, and disturbance variables are intended to describe general conditions on the plot and are not based on actual measurements.

Geographical coordinates that have been fuzzed to protect landowner privacy are provided for each ground location. The sample kind attribute (SMPKNDCD) indicates whether the field crew revisited the same ground location or moved the site more than three miles to a new ground location with new geographical coordinates. Changes in ground location over time are stored in the ozone crosswalk tables that are not available for public view.

The location specific attributes in this table provide the opportunity to examine certain site characteristics (e.g., elevation, plot size) more closely. However, for the purposes of detection monitoring reports, the preferred summary statistic is the biosite-level injury index (BIOSITE_INDEX) presented in the OZONE_BIOSITE_SUMMARY table.

The injury check (INJCHECK) attribute allows a ground location to be identified as impacted by ozone (i.e., injury detected on non-tallied plants) even though there is no quantitative data on injury amount or injury severity for trend analyses. This data can be used to map the presence or absence of ozone injury across a state or region. Analysts should review the OZONE_VISIT table for additional information on site conditions, measurement status, and the injury check attribute for each ground location.

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	INVYR	NUMBER(4)	Year (YYYY)
3	STATECD	NUMBER(4)	Coded
4	COUNTYCD	NUMBER(3)	Coded
5	O3PLOT	NUMBER	Number
6	FIELD_ID	NUMBER(7)	
7	SPLIT_PLOTID	NUMBER(1)	Coded
8	MEASYEAR	NUMBER(4)	Year (YYYY)
9	SPECIES_EVAL_CNT	NUMBER	
10	BIOSITE_INDEX	NUMBER	
11	ELEV	NUMBER(5)	
12	PLTSIZE	NUMBER	Coded
13	ASPECT	NUMBER(3)	Degrees
14	TERRPOS	NUMBER	Coded
15	SOILDPH	NUMBER	Coded
16	SOILDRN	NUMBER	Coded
17	PLOTWET	NUMBER	
18	PLTDSTRB	NUMBER	Coded
19	BIOSITE_INDEX_MULTIPLIER	NUMBER	
20	LAT	NUMBER(8,6)	
21	LON	NUMBER(9,6)	
22	CREATED_BY	VARCHAR2(30)	Character
23	CREATED_DATE	DATE	DD-MON-YYYY
24	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
25	MODIFIED_BY	VARCHAR2(30)	Character
26	MODIFIED_DATE	DATE	DD-MON-YYYY
27	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

OPS_PK (CN)
OPS_UK (STATECD, INVYR, COUNTYCD, O3PLOT, FIELD_ID, SPLIT_PLOTID)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. INVR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is

selected that best represents the year when the data were collected. However, all ozone plots are measured every year, the same plots every year.

3. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
- 4.. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
- 5.. O3PLOT Ozone plot. A unique identifier used in combination with STATECD, COUNTYCD, and MEASYEAR to identify an ozone biomonitoring site.
6. FIELD_ID Field identification number. This is the 7-digit number used by the field crew for all current and active biosites.

7. SPLIT_PLOTID

Split plot identification. SPLIT_PLOTID = 1 when the ozone plot consists of a single location, or to indicate that this is the first location of a plot split between two locations. SPLIT_PLOTID = 2 when the ozone plot is split between two locations, to identify the second location added by the field crew to increase species and plant counts for an ozone plot. If two locations are selected, they are within 3 miles of each other. O3PLOT is the same for both locations.

8. MEASYEAR Measurement year. The year the plot was completed.

9. SPECIES_EVAL_CNT

Species evaluation count. The species evaluation count equals the number of species evaluated at each ground location visited by the field crews. When the biosite is split between two locations the number of species evaluated at any one location may be one. SPECIES_EVAL_CNT = count (the unique species evaluated at a ground location)

10. BIOSITE_INDEX

Biosite index. The biosite index is formulated from the injury amount and severity ratings recorded for each plant and the numbers of plants and species evaluated at each ground location. If there is only one species at a ground location, the biosite index is

the same as the species index. $BIOSITE_INDEX = \text{summation} (BIOSPCD_INDEX) / SPECIES_EVAL_CNT$

11. ELEV

Elevation. Elevation data is obtained from USGS topographic maps, generally the 7½ minute series quadrangle. Field crews locate the area where most of the bioindicator species are growing and record elevation to the nearest foot. If available, crews use a global positioning system (GPS) unit to determine the plot elevation (GPS_ELEV). Ambient ozone concentrations vary with elevation due to the influences of global radiation, air temperature, and wind on ozone exposure. However, there are no detailed field studies on how elevation affects plant response to ozone. Plants at high elevations may be stressed by poor site conditions and less responsive to ozone exposure than plants at lower elevations. Generally, for plots within a given state or region, a decrease or increase in elevation of 300 feet is not significant.

12. PLTSIZE

Plot size. The plot size attribute indicates the size of the opening used for biomonitoring. Open areas that are more than 3 acres in size are ideal because they optimize ozone air mixture. Uniform, open areas with a wide selection of bioindicator species are relatively easy to find in eastern FIA regions, more difficult to find in western FIA regions.

Code Description

- 1 Greater than three acres.
- 2 Greater than one acre, but less than three acres.

13. ASPECT

The aspect attribute identifies the direction of slope for land surfaces with at least 5 percent slope as measured with a hand compass to the nearest degree (0° to 360°). The majority of biosites in eastern regions have no aspect whereas conditions in western regions are more variable. There are no published reports that suggest the direction of slope has a significant bearing on the ozone indicator. However, in western regions, north or east facing slopes indicate drier plot moisture conditions than south or west facing slopes, and plot moisture can have a significant influence on plant response to ozone.

14. TERRPOS

Terrain position. This is the position of the biosite in relation to the surrounding topography. Eastern biosites are often located on flatland. In the west, the terrain may be more varied.

Code Description

- 1 Ridge top or upper slope
- 2 Bench or level area along a slope
- 3 Lower slope

- 4 Flat land unrelated to slope
- 5 Bottom land with occasional flooding

15. SOILDPTH Soil depth. This indicates the general depth of the soil where most of the bioindicator species are growing. Soil that is generally shallow may be subject to more frequent and severe drought, thereby mitigating the response of bioindicator species to ambient ozone exposures.

- | Code | Description |
|------|------------------------------------------------|
| 1 | Bedrock is not exposed. |
| 2 | Bedrock is exposed; Soil is generally shallow. |

16. SOILDRN Soil drainage. This indicates the general soil drainage conditions where most of the bioindicator species are growing. The response of bioindicator species to ambient ozone exposures is optimized on soils that are well-drained. This attribute is used for eastern FIA regions.

- | Code | Description |
|------|-------------------------|
| 1 | Soil is well drained |
| 2 | Soil is generally wet |
| 3 | Soil is excessively dry |

17. PLOTWET Plot wetness. This indicates the degree of wetness where most of the bioindicator species are growing. Very dry or exposed sites may mitigate the response of bioindicator species to ambient ozone exposures. This attribute is used for western FIA regions.

- | Code | Description |
|------|-------------------------------------------------------------------|
| 1 | Wet or damp (riparian zones, damp areas along a stream or meadow) |
| 2 | Moderately dry (grassland, meadow, or east facing slopes) |
| 3 | Very dry (exposed rocky ledges, desert, and some alpine areas) |

18. PLTDSTRB Disturbance. This indicates the presence and kind of disturbance where most of the bioindicator species are growing. The response of bioindicator species to ambient ozone exposures is optimized on sites with no recent or significant disturbance. The area affected by any human caused or natural disturbance must be clearly visible and recent enough to influence plant health and condition. Disturbance that results in significant soil compaction may mitigate the response of bioindicator species to ambient ozone exposures and is considered especially significant. Crews are trained to replace biosites that have been disturbed.

Code	Description
0	No recent or significant disturbance.
1	Evidence of overuse; Human activity causing obvious soil compaction or erosion.
2	Evidence of natural disturbance including fire, wind, flooding, grazing, pests, etc.

19. BIOSITE_INDEX_MULTIPLIER

The biosite index (BIOSITE_INDEX) is formulated from the injury amount and severity ratings recorded for each plant and the numbers of plants and species evaluated at each ground location. Biosite index values are classified into categories of ozone risk designed to capture differences in plant damage to ozone sensitive species in areas of low, moderate, and high ozone exposure. The biosite index multiplier is the BIOSITE_INDEX multiplied by 1000 to allow the ozone risk categories to be defined by integers. $BIOSITE_INDEX_MULTIPLIER = BIOSITE_INDEX * (1000)$

20. LAT Latitude. Fuzzed coordinates

21. LON Longitude. Fuzzed coordinates.

22. CREATED_BY

The user who created the record.

23. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

24. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

25. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

26. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

27. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Ozone Species Summary Table (Oracle table name is OZONE_SPECIES_SUMMARY)

The measurement variables in this table summarize ozone injury and site characteristics for each bioindicator species (BIOSPCD) evaluated at each ground location. FIELD_ID is used in combination with STATECD, COUNTYCD, MEASYEAR, and SPLIT_PLOTID to uniquely identify each ground location. An ozone biosite that consists of two locations will have the same biosite number (FIELD_ID), but different split plot identification numbers (SPLIT_PLOTID). When two locations are used, the same species (BIOSPCD) may be evaluated at both locations.

Each plant evaluated by the field crews is rated for amount (AMNT) and severity (SVRTY) of ozone injury. The maximum (AMNT_MAX, SVRTY_MAX), minimum (AMNT_MIN, SVRTY_MIN), and mean (AMNT_MEAN, SVRTY_MEAN) values for these two indices are summarized by species (BIOSPCD). Injury amount is an estimate of the percent injured leaves on each plant. Injury severity is an estimate of the mean severity of symptoms on injured foliage. Both attributes should be considered. Some plants may have slight to moderate injury on all leaves; others may have severe injury on a small number of leaves. The injury pattern may be species specific, or may relate to the stage of development at the time of ozone exposure. Injury may also depend on site characteristics (e.g., soil depth, size of opening) that have a greater or lesser influence on amount and severity of injury depending on the species. Site characteristics presented by species (BIOSPCD) at each ground location include plot size (PLTSIZE), elevation (ELEV), aspect (ASPECT), terrain position (TERRPOS), soil depth (SOILDPTH), soil drainage (SOILDRN), plot wetness (PLOTWET), and plot disturbance (PLTDSTRB).

A species-level ozone injury index (BIOSPCD_INDEX) is also presented. This provides an opportunity to make comparisons among biosites using indices derived from the same species. A species specific analysis may be appropriate for certain evaluation monitoring studies. However, for the purpose of detection monitoring reports, the preferred summary statistic is the biosite-level ozone injury index (BIOSITE_INDEX) presented in the OZONE_BIOSITE_SUMMARY table.

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	INVYR	NUMBER(4)	Year (YYYY)
3	STATECD	NUMBER(4)	Coded
4	COUNTYCD	NUMBER(3)	Coded
5	O3PLOT	NUMBER	Number
6	FIELD_ID	NUMBER(7)	
7	SPLIT_PLOTID	NUMBER(1)	Coded
8	GROUND_LOC_CD	NUMBER(1)	

	Column Name	Oracle data type	Value or unit of measure
9	MEASYEAR	NUMBER(4)	Year (YYYY)
10	BIOSPCD	NUMBER	
11	AMNT_MAX	NUMBER	
12	AMNT_MIN	NUMBER	
13	AMNT_MEAN	NUMBER	
14	SVRTY_MAX	NUMBER	
15	SVRTY_MIN	NUMBER	
16	SVRTY_MEAN	NUMBER	
17	PLANT_INJ_CNT	NUMBER	
18	PLANT_EVAL_CNT	NUMBER	
19	PLANT_RATIO	NUMBER	
20	BIOSPCD_SUM	NUMBER	
21	BIOSPCD_INDEX	NUMBER	
22	ELEV	NUMBER(5)	
23	PLTSIZE	NUMBER	Coded
24	ASPECT	NUMBER(3)	Degrees
25	TERRPOS	NUMBER	Coded
26	SOILDPH	NUMBER	Coded
27	SOILDRN	NUMBER	Coded
28	PLOTWET	NUMBER	
29	PLTDSTRB	NUMBER	Coded
30	CREATED_BY	VARCHAR2(30)	Character
31	CREATED_DATE	DATE	DD-MON-YYYY
32	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
33	MODIFIED_BY	VARCHAR2(30)	Character
34	MODIFIED_DATE	DATE	DD-MON-YYYY
35	MODIFIED IN INSTANCE	VARCHAR2(6)	Number

OSY_PK (CN)

OSY_UK (STATECD, INVYR, COUNTYCD, O3PLOT, BIOSPCD)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often

collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. However, all ozone plots are measured every year, the same plots every year.

3. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
4. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
5. O3PLOT Ozone plot. A unique identifier used in combination with STATECD, COUNTYCD, and MEASYEAR to identify an ozone biomonitoring site.
6. FIELD_ID Field identification number. This is the 7-digit number used by the field crew for all current and active biosites.
7. SPLIT_PLOTID

Split plot identification. SPLIT_PLOTID = 1 when the ozone plot consists of a single location, or to indicate that this is the first location of a plot split between two locations. SPLIT_PLOTID = 2 when the ozone plot is split between two locations, to identify the second location added by the field crew to increase species and plant counts for an ozone plot. If two locations are selected, they are within 3 miles of each other. O3PLOT is the same for both locations.
8. GROUND_LOC_CD

Ground location code. GROUND_LOC_CD = 1 means the GPS values stayed the same from one year to the next.
GROUND_LOC_CD = 2 means the biosite has been moved more than 3 miles and has a second set of GPS values.
GROUND_LOC_CD = 3 means the biosite has moved more than 3 miles for a third time and has a third set of GPS values.
9. MEASYEAR Measurement year. The year the plot was completed.
10. BIOSPCD Bioindicator species code. This identifies the bioindicator species on the biosite. Bioindicator species may be a tree, a woody shrub, or a non-woody herb species. All of the species selected for use

respond to ambient levels of ozone pollution with distinct visible foliar symptoms that are easy to diagnose.

11. AMNT_MAX Amount maximum. The maximum amount of injury for a given bioindicator species (BIOSPCD) at an ozone plot equals the maximum value of all the injury amounts for that species. If there are no injured plants within the species, the maximum amount of injury for the species equals zero. $AMT_MAX = \text{maximum (injury amounts for a given species at an ozone plot)}$
12. AMNT_MIN Amount minimum. The minimum amount of injury for a given bioindicator species (BIOSPCD) at an ozone plot equals the minimum value of all the injury amounts for that species. If there are no injured plants within the species, the minimum amount of injury for the species equals zero. $AMT_MIN = \text{minimum (injury amounts for a given species at an ozone plot)}$
13. AMNT_MEAN
Amount mean. The mean amount of injury for a given bioindicator species (BIOSPCD) at an ozone plot equals the arithmetic mean of all the injury amounts greater than zero. If there are no injured plants within the species, the mean amount of injury for the species equals zero. $AMT_MEAN = \text{summation (injury amounts for a given species at an ozone plot that are greater than zero) / number of injured plants}$
14. SVRTY_MAX Severity maximum. The maximum amount of injury severity for a given bioindicator species (BIOSPCD) at an ozone plot equals the maximum value of all the injury severity amounts for that species. If there are no injured plants within the species, the maximum amount of injury severity for the species equals zero. $SVRTY_MAX = \text{maximum (injury severity amounts for a given species at an ozone plot)}$
15. SVRTY_MIN Severity minimum. The minimum amount of injury severity for a given bioindicator species (BIOSPCD) at an ozone plot equals the minimum value of all the injury severity amounts for that species. If there are no injured plants within the species, the minimum amount of injury severity for the species equals zero. $SVRTY_MIN = \text{minimum (injury severity amounts for a given species at an ozone plot)}$
16. SVRTY_MEAN
Severity mean. The mean amount of injury severity for a given bioindicator species (BIOSPCD) at an ozone plot equals the arithmetic mean of all the injury severity amounts greater than

zero. If there are no damaged plants (injury severity amount is null) within the species, the mean amount of injury severity for the species equals zero. $SVRTY_MEAN = \text{summation (injury severity amounts for a given species at an ozone plot that are greater than zero)} / \text{number of injured plants}$

17. PLANT_INJ_CNT

Plant injury count. The number of injured plants for a given bioindicator species (BIOSPCD) at an ozone plot equals the number of plants that have injury amounts greater than zero. $PLANT_INJ_CNT = \text{count (plants within a given species at an ozone plot that have an injury amount greater than zero)}$

18. PLANT_EVAL_CNT

Plant evaluation count. The number of plants evaluated equals the total number of plants examined for a given bioindicator species (BIOSPCD) at an ozone plot. $PLANT_EVAL_CNT = \text{count (all plants evaluated for a given species at an ozone plot)}$

19. PLANT_RATIO

Plant ratio. The plant ratio is the ratio of the number of plants injured to the number of plants evaluated for a given bioindicator species (BIOSPCD) at an ozone plot. That is, the plant ratio equals the number of plants injured divided by the number of plants evaluated. $PLANT_RATIO = PLANT_INJ_CNT / PLANT_EVAL_CNT$

20. BIOSPCD_SUM

Biospecies sum. The biospecies sum for a given bioindicator species at an ozone plot equals the sum of the products of the plants' injury amount and injury severity values divided by the number of plants injured. If there are no injured plants within the species, the species sum equals zero. $BIOSPCD_SUM = \text{summation ((plant's injury amount) * (plant's injury severity))} / PLANT_INJ_CNT$

21. BIOSPCD_INDEX

Biospecies index. The biospecies index for a given bioindicator species at an ozone plot equals the product of the plant ratio and the biospecies sum. This species-level ozone injury index (BIOSPCD_INDEX) provides an opportunity to make comparisons among plots or regions using an injury index derived from the same species, or group of species. A species specific

analysis may be appropriate for certain evaluation monitoring studies. $BIOSPCD_INDEX = PLANT_RATIO * BIOSPCD_SUM$

22. ELEV Elevation. Elevation data is obtained from USGS topographic maps, generally the 7½ minute series quadrangle. Field crews locate the area where most of the bioindicator species are growing and record elevation to the nearest foot. If available, crews use a global positioning system (GPS) unit to determine the plot elevation (GPS_ELEV).
23. PLTSIZE Plot size. The plot size attribute indicates the size of the opening used for biomonitoring. Open areas that are more than 3 acres in size are ideal because they optimize ozone air mixture. Crews are trained to replace sites that are overgrown.
- | Code | Description |
|------|---------------------------------------------------|
| 1 | Greater than three acres. |
| 2 | Greater than one acre, but less than three acres. |
24. ASPECT The aspect attribute identifies the direction of slope for land surfaces with at least 5 percent slope as measured with a hand compass to the nearest degree (0° to 360°). There are no published reports that suggest the direction of slope has a significant bearing on the ozone indicator. However, in western regions, north or east facing slopes indicate drier plot moisture conditions than south or west facing slopes, and plot moisture can have a significant influence on plant response to ozone.
25. TERRPOS Terrain position. This is the position of the biosite in relation to the surrounding topography. Eastern biosites are often located on flatland. In the West, the terrain may be more varied
- | Code | Description |
|------|--------------------------------------|
| 1 | Ridge top or upper slope |
| 2 | Bench or level area along a slope |
| 3 | Lower slope |
| 4 | Flat land unrelated to slope |
| 5 | Bottom land with occasional flooding |
26. SOILDPTH Soil depth. This indicates the general depth of the soil where most of the bioindicator species are growing. Soil that is generally shallow may be subject to more frequent and severe drought, thereby mitigating the response of bioindicator species to ambient ozone exposures.

Code	Description
1	Bedrock is not exposed.
2	Bedrock is exposed; Soil is generally shallow.

27. SOILDRN Soil drainage. This indicates the general soil drainage conditions where most of the bioindicator species are growing. The response of bioindicator species to ambient ozone exposures is optimized on soils that are well-drained. This attribute is used for eastern FIA regions.

Code	Description
1	Soil is well drained
2	Soil is generally wet
3	Soil is excessively dry

28. PLOTWET Plot wetness. This indicates the degree of wetness where most of the bioindicator species are growing. Very dry or exposed sites may mitigate the response of bioindicator species to ambient ozone exposures. This attribute is used for western FIA regions.

Code	Description
1	This is a wet plot; Riparian zone or bottomland
2	This plot is moderately dry; Meadow or Northeast-facing slope
3	This plot is very dry; Exposed ledge, desert or alpine area

29. PLTDSTRB Disturbance. This indicates the presence and kind of disturbance where most of the bioindicator species are growing. The response of bioindicator species to ambient ozone exposures is optimized on sites with no recent or significant disturbance. The area affected by any human caused or natural disturbance must be clearly visible and recent enough to influence plant health and condition. Disturbance that results in significant soil compaction may mitigate the response of bioindicator species to ambient ozone exposures and is considered especially significant. Crews are trained to replace biosites that have been disturbed.

Code	Description
0	No recent or significant disturbance.
1	Evidence of overuse; Human activity causing obvious soil compaction or erosion.
2	Evidence of natural disturbance including fire, wind, flooding, grazing, pests, etc.

30. CREATED_BY

The user who created the record.

31. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

32. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

33. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

34. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

35. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation..

Lichens Visit Table (Oracle table name is LICHEN_VISIT)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	MEASDAY	NUMBER(2)	Day (DD)
8	MEASMON	NUMBER(2)	Month (MM)
9	MEASYEAR	NUMBER(4)	Year (YYYY)
10	LICHEN_STATCD	NUMBER(2)	Coded
11	FLDCMTS1	VARCHAR2(40)	Character
12	FLDCMTS2	VARCHAR2(40)	Character
13	LIPROJCD	NUMBER(2)	Coded
14	SMPLSTRT	NUMBER(4)	HHMM
15	SMPLSTP	NUMBER(4)	HHMM
16	SMPLTIME	NUMBER(4)	HHMM
17	SFTWDPCT	NUMBER(3)	Percent
18	HRDWPCT	NUMBER(3)	Percent
19	SHRUBPCT	NUMBER(3)	Percent
20	GAPPCT	NUMBER(3)	Coded
21	GAPRCNT	NUMBER(2)	Coded
22	TALLSHRB	NUMBER(2)	Coded
23	FTRCD1	NUMBER	Coded
24	FTRCD2	NUMBER	Coded
25	FTRCD3	NUMBER	Coded
26	FTRCD4	NUMBER	Coded
27	ISSUECD1	NUMBER	Coded
28	ISSUECD2	NUMBER	Coded
29	ISSUECD3	NUMBER	Coded
30	ISSUECD4	NUMBER	Coded
31	SZCLSCD1	NUMBER(2)	Coded
32	SZCLSCD2	NUMBER(2)	Coded
33	SZCLSCD3	NUMBER(2)	Coded
34	CREATED_BY	VARCHAR2(30)	Character

Column Name	Oracle data type	Value or unit of measure
35 CREATED_DATE	DATE	DD-MON-YYYY
36 CREATED_IN_INSTANCE	VARCHAR2(6)	Number
37 MODIFIED_BY	VARCHAR2(30)	Character
38 MODIFIED_DATE	DATE	DD-MON-YYYY
39 MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

LVT_NAT_I (STATECD, INVYR, PLOT, COUNTYCD)
 LVT_PK (CN)
 LVT_UK (PLT_CN)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

7. MEASDAY Measurement day. This is the day on which the lichen plot was surveyed to provide the data presented.

8. MEASMON Measurement month. This is the month in which the lichen plot was surveyed to provide the data presented.

9. MEASYEAR Measurement year. This is the year in which the lichen plot was surveyed to provide the data presented.
10. LICHEN_STATCD
Lichen status code. Indicates whether or not lichens were collected and if not collected, why not.
- | Code | Description |
|------|--------------------------------------------------------|
| 1 | Lichens collected |
| 2 | Plot searched, no lichens found |
| 3 | Not collected – no measurements taken, plot harvested |
| 4 | Not collected – no measurements taken – plot dangerous |
| 5 | Not collected – ran out of time |
| 6 | Not collected – rain/storm |
| 7 | Not collected – left plot for emergency |
| 8 | Lichens not scheduled for collection on the plot |
| 9 | Not collected for other reason |
11. FLDCMTS1 Field comments 1. This field is for any comments by the crew on the lichen plot or the sampling procedure not already indicated by FTRCDx, plot feature codes, or ISSUECDx, sampling issue codes.
12. FLDCMTS2 Field comments 2. This field is for any comments by the crew on the lichen plot or the sampling procedure not already indicated by FTRCDx, plot feature codes, or ISSUECDx, sampling issue codes.
13. LIPROJCD Lichen project code. The type of lichen project for which these data are collected.
- | Code | Description |
|------|--------------------------|
| 1 | Standard production plot |
| 2 | Special Study |
| 3 | Gradient Study |
| 4 | Evaluation Monitoring |
14. SMPLSTRT Sample start time. The time lichen sampling began entered as HHMM, where HH is hour and MM is minutes. Military time is used (e.g., 1:45 pm is 1345).
15. SMPLSTP Sample stop time. The time lichen sampling ended entered as HHMM, where HH is hour and MM is minutes. Military time is used (e.g., 1:45 pm is 1345).
16. SMPLTIME Sample time. The total time used for sampling calculated as SMPLSTP minus SMPLSTRT, reported as HHMM, where HH is hour and MM is minutes (e.g., 0145 is total elapsed time of 1 hour and 45 minutes).

- 17. SFTWDPCT Softwood percent (percent conifer). Percent canopy cover of the lichen plot in overstory conifers (not of lichens) estimated (not measured) in 5 percent classes.
- 18. HRDWDPCT Hardwood percent. Percent canopy cover of the lichen plot in overstory hardwoods (not of lichens) estimated (not measured) in 5 percent classes.
- 19. SHRUBPCT Shrub percent. Percent of the lichen plot with shrubs estimated (not measured) in 5 percent classes.
- 20. GAPPCT Gap percent. Indicates the percent gap in 5 percent classes. To be a gap, there must be: markedly different terrestrial vegetation than on forest floor; lack of trees on at least 3-5% of plot; and canopy opening whose length or width is at least one tree length. Note: gaps are caused by disturbance, not just low density of tree establishment.
- 21. GAPRCNT Gap recent. Indicates whether or not the gap appeared to be less than 5 years old (e.g., caused by recent disturbance).

Code	Description
0	≥ 5 yr old
1	< 5 yr old

- 22. TALLSHRB Tall shrubs. Indicates whether or not the gap had > 40% cover of tall shrubs (i.e., > 3.3 ft (1 m) tall). Broadleaf shrubs in gaps of conifer forest are often especially rich areas for lichen diversity.

Code	Description
0	No tall shrubs
1	Tall shrubs present

- 23. FTRCD1 Feature code 1. Important plot features such as substrate species or conditions that had the most impact on lichen diversity of the plot (e.g., recently clearcut, riparian with large hardwoods, old growth). If any FTRCDx = 00, no other values will be retained.

Code	Description
00	No significant features

High Diversity:

01	Stand appears relatively old for its forest type
02	Old remnant trees in otherwise young stand
03	Riparian
04	Gap in forest

- 05 Moist areas on plot with open structure and high light
- 06 Abundance of tall shrubs hosting high lichen diversity
- 07 Hardwoods within conifer forest had high diversity and/or different species
- 08 Conifers within hardwood forest had high diversity and/or different species
- 09 Presence of exceptionally good lichen substrate species (differs by region)
- 10 Other

Low Diversity:

- 11 Very young forest or recently regenerating clearcut
- 12 Clearcut
- 13 Recently burned—lichens apparently removed by fire
- 14 Too dry for good lichen growth
- 15 Too exposed or open for good lichen growth
- 16 Some of plot nonforest
- 17 Most of trees on plot were poor lichen substrates (differs by region)
- 18 Most of the diversity was on a few trees or less
- 19 Other

24. FTRCD2

Feature code 2. Important plot features such as substrate species or conditions that had the most impact on lichen diversity of the plot (e.g., recently clearcut, riparian with large hardwoods, old growth). If any FTRCDx = 00, no other values will be retained.

- | Code | Description |
|------|-------------------------|
| 00 | No significant features |

High Diversity:

- 01 Stand appears relatively old for its forest type
- 02 Old remnant trees in otherwise young stand
- 03 Riparian
- 04 Gap in forest
- 05 Moist areas on plot with open structure and high light
- 06 Abundance of tall shrubs hosting high lichen diversity
- 07 Hardwoods within conifer forest had high diversity and/or different species
- 08 Conifers within hardwood forest had high diversity and/or different species
- 09 Presence of exceptionally good lichen substrate species (differs by region)
- 10 Other

Low Diversity:

- 11 Very young forest or recently regenerating clearcut
- 12 Clearcut
- 13 Recently burned—lichens apparently removed by fire
- 14 Too dry for good lichen growth
- 15 Too exposed or open for good lichen growth
- 16 Some of plot nonforest
- 17 Most of trees on plot were poor lichen substrates (differs by region)
- 18 Most of the diversity was on a few trees or less
- 19 Other

25. FTRCD3

Feature code 3. Important plot features such as substrate species or conditions that had the most impact on lichen diversity of the plot (e.g., recently clearcut, riparian with large hardwoods, old growth). If any FTRCDx = 00, no other values will be retained.

Code	Description
00	No significant features

High Diversity:

- 01 Stand appears relatively old for its forest type
- 02 Old remnant trees in otherwise young stand
- 03 Riparian
- 04 Gap in forest
- 05 Moist areas on plot with open structure and high light
- 06 Abundance of tall shrubs hosting high lichen diversity
- 07 Hardwoods within conifer forest had high diversity and/or different species
- 08 Conifers within hardwood forest had high diversity and/or different species
- 09 Presence of exceptionally good lichen substrate species (differs by region)
- 10 Other

Low Diversity:

- 11 Very young forest or recently regenerating clearcut
- 12 Clearcut
- 13 Recently burned—lichens apparently removed by fire
- 14 Too dry for good lichen growth
- 15 Too exposed or open for good lichen growth
- 16 Some of plot nonforest
- 17 Most of trees on plot were poor lichen substrates (differs by region)
- 18 Most of the diversity was on a few trees or less

19 Other

26. FTRCD4 Feature code 4. Important plot features such as substrate species or conditions that had the most impact on lichen diversity of the plot (e.g., recently clearcut, riparian with large hardwoods, old growth). If any FTRCDx = 00, no other values will be retained.

Code Description
 00 No significant features

High Diversity:

- 01 Stand appears relatively old for its forest type
- 02 Old remnant trees in otherwise young stand
- 03 Riparian
- 04 Gap in forest
- 05 Moist areas on plot with open structure and high light
- 06 Abundance of tall shrubs hosting high lichen diversity
- 07 Hardwoods within conifer forest had high diversity and/or different species
- 08 Conifers within hardwood forest had high diversity and/or different species
- 09 Presence of exceptionally good lichen substrate species (differs by region)
- 10 Other

Low Diversity:

- 11 Very young forest or recently regenerating clearcut
- 12 Clearcut
- 13 Recently burned—lichens apparently removed by fire
- 14 Too dry for good lichen growth
- 15 Too exposed or open for good lichen growth
- 16 Some of plot nonforest
- 17 Most of trees on plot were poor lichen substrates (differs by region)
- 18 Most of the diversity was on a few trees or less
- 19 Other

27. ISSUECD1 Issue code 1. Any major problems (up to 4) that negatively impacted the collection effort. If any ISSUECDx = 0, no other values will be retained.

Code Description
 0 No significant issues
 1 Too wet to see lichens well
 2 Too dark to see lichen well
 3 Sampling compromised by heat

- 4 Sampling compromised by other extreme weather (e.g., hail, lightning, snow)
- 5 Very steep slope hindered thorough plot access
- 6 Access to some or all of plot blocked by natural obstacles (e.g., lingering snowpack, high water, landslide, large blowdowns)
- 7 Other

28. ISSUECD2 Issue code 2. Any major problems (up to 4) that negatively impacted the collection effort. If any ISSUECDx = 0, no other values will be retained.

- | Code | Description |
|------|-------------------------------------------------------------------------------------------------------------------------------|
| 0 | No significant issues |
| 1 | Too wet to see lichens well |
| 2 | Too dark to see lichen well |
| 3 | Sampling compromised by heat |
| 4 | Sampling compromised by other extreme weather (e.g., hail, lightning, snow) |
| 5 | Very steep slope hindered thorough plot access |
| 6 | Access to some or all of plot blocked by natural obstacles (e.g., lingering snowpack, high water, landslide, large blowdowns) |
| 7 | Other |

29. ISSUECD3 Issue code 3. Any major problems (up to 4) that negatively impacted the collection effort. If any ISSUECDx = 0, no other values will be retained.

- | Code | Description |
|------|-------------------------------------------------------------------------------------------------------------------------------|
| 0 | No significant issues |
| 1 | Too wet to see lichens well |
| 2 | Too dark to see lichen well |
| 3 | Sampling compromised by heat |
| 4 | Sampling compromised by other extreme weather (e.g., hail, lightning, snow) |
| 5 | Very steep slope hindered thorough plot access |
| 6 | Access to some or all of plot blocked by natural obstacles (e.g., lingering snowpack, high water, landslide, large blowdowns) |
| 7 | Other |

30. ISSUECD4 Issue code 4. Any major problems (up to 4) that negatively impacted the collection effort. If any ISSUECDx = 0, no other values will be retained.

Code	Description
0	No significant issues
1	Too wet to see lichens well
2	Too dark to see lichen well
3	Sampling compromised by heat
4	Sampling compromised by other extreme weather (e.g., hail, lightning, snow)
5	Very steep slope hindered thorough plot access
6	Access to some or all of plot blocked by natural obstacles (e.g., lingering snowpack, high water, landslide, large blowdowns)
7	Other

31. SZCLSCD1 Size class code 1. The size class of the first of the three largest trees on the entire lichen plot.

Code	Size class (DBH, inches)
1	< 10
2	10-20
3	21-30
4	31-40
5	> 40

32. SZCLSCD2 Size class code 2. The size class of the second of the three largest trees on the entire lichen plot.

Code	Size class (DBH, inches)
1	< 10
2	10-20
3	21-30
4	31-40
5	> 40

33. SZCLSCD3 Size class code 3. The size class of the third of the three largest trees on the entire lichen plot.

Code	Size class (DBH, inches)
1	< 10
2	10-20
3	21-30
4	31-40
5	> 40

34. CREATED_BY

The user who created the record.

35. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

36. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

37. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

38. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

39. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Lichens Lab Table (Oracle table name is LICHEN_LAB)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	LICH_SPPCD	NUMBER(5)	Coded
8	MEASYEAR	NUMBER(4)	Year (YYYY)
9	ABUNDANCE_CLASS	NUMBER(4)	Coded
10	ORIGIN_FLAG	NUMBER(1)	Coded
11	SPP_COMMENTS	VARCHAR2(2000)	Character
12	CREATED_BY	VARCHAR2(30)	Character
13	CREATED_DATE	DATE	DD-MON-YYYY
14	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
15	MODIFIED_BY	VARCHAR2(30)	Character
16	MODIFIED_DATE	DATE	DD-MON-YYYY
17	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

LCH_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, LICH_SPPCD)
LCH_PK (CN)
LCH_UK (PLT_CN,LICH_SPPCD)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.
5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.
7. LICH_SPPCD
- Lichen species code. A unique lichen species numerical code for a single taxon, linked with unique SPP_ACRONYM and a unique combination of GENUS and SPECIES in table REF_LICHEN_SPECIES.
8. MEASYEAR Measurement year. This is the year in which the lichen plot samples were collected to provide the data presented.
9. ABUNDANCE_CLASS

Abundance class assigned to LICH_SPPCD in this sample. Abundance class is assigned in the field according to the following scheme:

Code	Abundance
1	Rare (1-3 individuals in area)
2	Uncommon (4-10 individuals in area)
3	Common (> 10 individuals in area but less than half of the boles and branches have that species present)
4	Abundant (more than half of boles and branches have the subject species present) Note: this code is not frequently assigned, but is valid. Make sure that more than one out of every 2 boles, branches, and twigs host this species.

Abundance class is modified in the lab if the taxon is represented by two or more field collections, according to the following scheme:

Recorded values	Final Abundance
1 + 1	2
1 + 1 + 1 + 1 + 1	2
More than five 1s.	3
1 + 2	2
2 + 2	2
1 + 1 + 2	2
1 + 1 + 1 + 2	3
1 + 2 + 2	3
3 + any others	3
4 + any others	4
0 + 1	3
0 + 2	3
0 + 3	3
0 + 4	4
0 (any number of 0s with no other values)	0.01

Any sample with no assigned field abundance is assigned a lab abundance code of '0.' If this species has no other abundance code >0, the lab enters the code '0.01.' When data are uploaded to the FIA database, a default abundance code of '3' is entered into the database for a species with abundance code '0.01'. When ORIGIN_FLAG is fully implemented, this code will signal that ORIGIN_FLAG is to be set to an as yet unassigned value for non-field origin of the abundance code.

10. ORIGIN_FLAG

Origin flag. Flag denoting whether abundance class was assigned based on field designation (ORIGIN_FLAG value = 1), or was assigned a value in the lab because no abundance class was assigned in the field (ORIGIN_FLAG value as yet unassigned). Currently all records are assigned origin value = 1 when loaded, regardless of ABUNDANCE_CLASS value at loading.

11. SPP_COMMENTS

Species comments. Comments about this species on this plot by the lichen identification specialist. For instance 'cf' in the comment field means the identification was tentative. For a species identified only to genus this field might list some morphological characters. Currently not implemented

12. CREATED_BY

The user who created the record.

13. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

14. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

15. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

16. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

17. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Lichens Plot Summary Table (Oracle table name is LICHEN_PLOT_SUMMARY)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3.	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	MEASYEAR	NUMBER(4)	Year (YYYY)
8	SUMMATION	NUMBER(7,4)	Number
9	RICHNESS	NUMBER(2)	Number
10	EVENNESS	NUMBER(5,4)	Number
11	DIVERSITY	NUMBER(5,4)	Number
12	CREATED_BY	VARCHAR2(30)	Character
13	CREATED_DATE	DATE	DD-MON-YYYY
14	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
15	MODIFIED_BY	VARCHAR2(30)	Character
16	MODIFIED_DATE	DATE	DD-MON-YYYY
17	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

LPS_NAT_I (STATECD, INVYR, COUNTYCD, PLOT)
 LPS_PK (CN)
 LPS_UK (PLT_CN)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.
5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.
7. MEASYEAR Measurement year. This is the year in which the lichen plot samples were collected to provide the data summarized.
8. SUMMATION Summation. Sum of abundance values for all lichen species on plot. Values are 1 = 1-3 individuals; 2 = 4-10 individuals; 3 = >10 individuals but on less than half the available substrates (boles, branches, shrubs, saplings, snags); 4 = on more than half the available substrates.
9. RICHNESS Richness. The number of lichen species on a plot. Lichens identified only to genus are included in this count; a lichen listed by genus only is known to be different from any other species found on the plot.
10. EVENNESS Evenness. Evenness of species abundance. This is a measure of how evenly abundance is distributed among species, calculated as $(\text{DIVERSITY} = H') / \ln(\text{RICHNESS})$.
11. DIVERSITY Diversity. Diversity is the Shannon-Wiener Diversity Index:
$$H' = - \sum (P_i * \ln(P_i)) \text{ for all species } 1 \text{ to } i \text{ on a plot}$$
where P_i is the proportion of total abundance for species i on that plot. $P_i = (\text{ABUNDANCE for species } i \text{ on that plot}) / \text{SUMMATION}$.
12. CREATED_BY
The user who created the record.

13. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

14. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

15. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

16. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

17. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Lichens Species Summary Table (Oracle table name is LICHEN_SPECIES_SUMMARY)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	INVYR	NUMBER(4)	Year (YYYY)
3	LICHEN_REGION	NUMBER(4)	Coded
4	LICH_SPPCD	NUMBER(5)	Coded
5	MEASYEAR	NUMBER(4)	Year (YYYY)
6	LICHEN_REGION_DESCR	VARCHAR2(80)	Character
7	SPP_ACRONYM	VARCHAR2(6)	Character
8	GENUS	VARCHAR2(40)	Character
9	SUM_ABUNDANCE	NUMBER(7,4)	Number
10	FREQUENCY_PCT	NUMBER(3)	Number
11	SPECIES	VARCHAR2(40)	Character
12	PLOTS_IN_REGION	NUMBER(4)	Number
13	CREATED_BY	VARCHAR2(30)	Character
14	CREATED_DATE	DATE	DD-MON-YYYY
15	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
16	MODIFIED_BY	VARCHAR2(30)	Character
17	MODIFIED_DATE	DATE	DD-MON-YYYY
18	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

LSY_PK (CN)
 LSY_UK (INVYR, LICHEN_REGION, LICH_SPPCD)

1. CN Sequence number. A unique sequence number used to identify a county record.
2. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

3. LICHEN_REGION

Lichen region. Numerical code for lichen region (see table below). This is the numerical code for the FIA region or subregion across which lichen species distribution is summarized; boundaries usually coincide with state boundaries. This region is not the same as a lichen gradient model.

Code	Region name	Included States
1	Northeastern	STATECD = 9, 23, 25, 33, 36, 44, 50
2	Southeastern	STATECD = 1, 12, 13, 21, 37, 45, 47, 51
3	Interior West	STATECD = 4, 8, 16, 30, 32, 35, 49, 56
4	West Coast	STATECD = 2, 6, 15, 41, 53
5	Mid-South	STATECD = 5, 22, 28, 40, 48
6	Mid-Atlantic	STATECD = 10, 24, 34, 39, 42, 54
7	North Central	STATECD = 17, 18, 19, 20, 26, 27, 29, 31, 38, 46, 55

4. LICH_SPPCD Lichen species code. See table REF_LICHEN_SPECIES for a complete list of numerical codes, species acronyms, and species names used in the program, and see table REF_LICHEN_SPP_COMMENTS for a history of taxonomic usage in the program.

5. MEASYEAR Measurement year. This is the year in which the lichen plot samples were collected to provide the data summarized .

6. LICHEN_REGION_DESCR

Lichen region description. The name (see table above) for the FIA region or subregion for which data are summarized, for example Northeastern, Mid-Atlantic, Southeastern, etc.

7. SPP_ACRONYM

Species acronym. 3 to 6-letter acronym for lichen species. See table REF_LICHEN_SPECIES for a complete list of numerical codes, species acronyms, and species names used in the program, and see table REF_LICHEN_SPP_COMMENTS for a history of taxonomic usage in the program.

8. GENUS Genus. The lichen genus name. See table REF_LICHEN_SPECIES for a complete list of numerical codes, species acronyms, and species names used in the program, and see table REF_LICHEN_SPP_COMMENTS for a history of taxonomic usage in the program.

9. SUM_ABUNDANCE

Sum of abundance. Sum of abundance values on all plots in the region. Values are 1 = 1-3 individuals; 2 = 4-10 individuals; 3 = >10 individuals but on less than half the available substrates (boles, branches, shrubs, saplings, snags); 4 = on more than half the available substrates.

10. FREQUENCY_PCT

Frequency percent. Percent of searched plots in region with species present. This is calculated as $100 * (\# \text{ plots with species present}) / \text{PLOTS_IN_REGION}$. Note that plots searched and found to have no lichens are counted for the denominator.

11. SPECIES

Species. The lichen species name (including subspecies, variety, or form if needed). See table REF_LICHEN_SPECIES for a complete list of numerical codes, species acronyms, and species names used in the program, and see table REF_LICHEN_SPP_COMMENTS for a history of taxonomic usage in the program.

12. PLOTS_IN_REGION

Plots in region. Number of plots in LICHEN_REGION searched for lichens. This is the number of plots searched for lichens in the region being summarized. Plots searched and found to have no lichens are included in this count. Plots not searched for lichens, for any reason, are not included in this count.

13. CREATED_BY

The user who created the record.

14. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

15. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

16. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

17. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

18. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Lichens Reference Lichen Species Table (Oracle table name is REF_LICHEN_SPECIES)

	Column Name	Oracle data type	Value or unit of measure
1	LICH_SPPCD	NUMBER(5)	Coded
2	YEARSTART	NUMBER(4)	Year (YYYY)
3	YEAREND	NUMBER(4)	Year (YYYY)
4	SPP_ACRONYM	VARCHAR2(6)	Character
5	GENUS	VARCHAR2(40)	Character
6	SPECIES	VARCHAR2(40)	Character
7	CN	VARCHAR2(34)	Character
8	CREATED_BY	VARCHAR2(30)	Character
9	CREATED_DATE	DATE	DD-MON-YYYY
10	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
11	MODIFIED_BY	VARCHAR2(30)	Character
12	MODIFIED_DATE	DATE	DD-MON-YYYY
13	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

1. **LICH_SPPCD** Lichen species code. A unique numerical code for each lichen species name used in the program. Only one particular combination of LICH_SPPCD and SPP_ACRONYM with a GENUS and SPECIES is in use in the program at any one time. A taxon is tracked through time with LICH_SPPCD and SPP_ACRONYM; GENUS and SPECIES may change without interfering with tracking the taxon through time. LICH_SPPCD links this table with table REF_LICHEN_SPP_COMMENTS that includes important notes about taxonomic usage and documents changes in taxonomic usage in the program.

2. **YEARSTART** The year a particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES (the latter two represented in this table by SPP_NAME) was put into use. Default start year for most species is 1993. LICHEN_LAB entries with MEASYEAR = YEARSTART use that particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES as needed.

3. **YEAREND** The year a particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES (the latter two represented in this table by SPP_NAME) was retired from use. LICHEN_LAB entries with MEASYEAR = YEAREND do not

use that particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES. Records in this table with YEAREND not null should be deleted before matching this table with any LICHEN_LAB table.

4. SPP_ACRONYM

Species acronym. A unique 3 to 6-letter acronym for each lichen species used in the program. Only one particular combination of LICH_SPPCD and SPP_ACRONYM with a GENUS and SPECIES is in use in the program at any one time. A taxon is tracked through time with LICH_SPPCD and SPP_ACRONYM; GENUS and SPECIES may change without interfering with tracking the taxon through time. See table REF_LICHEN_SPP_COMMENTS for a history of taxonomic usage in the program.

5. GENUS

Genus. The lichen genus name. Only one particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES is in use in the program at any one time. A taxon is tracked through time with LICH_SPPCD and SPP_ACRONYM; GENUS and SPECIES may change without interfering with tracking the taxon through time. See table REF_LICHEN_SPP_COMMENTS for a history of taxonomic usage in the program.

6. SPECIES

Species. The lichen species name (including subspecies, variety, or form if needed). Only one particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES is in use in the program at any one time. A taxon is tracked through time with LICH_SPPCD and SPP_ACRONYM; GENUS and SPECIES may change without interfering with tracking the taxon through time. See table REF_LICHEN_SPP_COMMENTS for a history of taxonomic usage in the program.

7. CN

Sequence number. A unique sequence number used to identify a county record.

8. CREATED_BY

The user who created the record.

9. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

10. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

11. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

12. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

14. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

**Lichens Species Comments Table (Oracle table name is
 REF_LICHEN_SPP_COMMENTS)**

	Column Name	Oracle data type	Value or unit of measure
1	LICH_SPPCD	NUMBER(5)	Coded
2	SPP_NAME	VARCHAR2(80)	Character
3	YEAREND	NUMBER(4)	Year (YYYY)
4	YEARSTART	NUMBER(4)	Year (YYYY)
5	SPP_COMMENTS	VARCHAR2(2000)	Character
6	CN	VARCHAR2(34)	Character
7	CREATED_BY	VARCHAR2(30)	Character
8	CREATED_DATE	DATE	DD-MON-YYYY
9	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
10	MODIFIED_BY	VARCHAR2(30)	Character
11	MODIFIED_DATE	DATE	DD-MON-YYYY
12	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

1. LICH_SPPCD Lichen species code. A unique numerical code for each lichen species name used in the program. Only one particular combination of LICH_SPPCD and SPP_ACRONYM with a GENUS and SPECIES is in use in the program at any one time. A taxon is tracked through time with LICH_SPPCD and SPP_ACRONYM; GENUS and SPECIES may change without interfering with tracking the taxon through time. LICH_SPPCD links this table with table REF_LICHEN_SPECIES, a master list of all species codes and names used in the program.
2. SPP_NAME Species name. This field includes the full species name corresponding to LICH_SPPCD; it includes both GENUS and SPECIES from table REF_LICHEN_SPECIES. Only one particular combination of LICH_SPPCD and SPP_ACRONYM with a GENUS and SPECIES is in use in the program at any one time.
3. YEAREND The year a particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES (the latter two represented in this table by SPP_NAME) was retired from use. LICHEN_LAB entries with MEASYEAR = YEAREND do not use that particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES.

4. YEARSTART The year a particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES (the latter two represented in this table by SPP_NAME) was put into use. Default start year for most species is 1993. LICHEN_LAB entries with MEASYEAR = YEARSTART use that particular combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES as needed.

5. SPP_COMMENTS

Species comments. This field includes informational comments, explanations of changes in taxonomic usage between years, and actions to perform before analyzing data. For most changes (even those with action code 0 = no action), there are individual records for each unique combination of LICH_SPPCD, SPP_ACRONYM, GENUS, and SPECIES (the latter two represented in this table by SPP_NAME) involved in the change and/or action. Simple corrections to spelling of genus or species name are not represented by comments in this file, although they are recorded by YEARSTART and YEAREND in table REF_LICHEN_SPECIES. If data from a single MEASYEAR (in table LICHEN_LAB) are to be analyzed, action codes 1 and 2 apply, action codes 3 and 4 do not apply, and action codes 5, 6, and 7 should be checked to see if parts apply. If data from both East and West are to be combined for analysis, the analyst should consult the lichens Indicator Advisor for advice on how to reconcile actions between regions, for all taxa with action code 5 listed.

Action Codes:

0 = no action
1 = exclude for most analysis
2 = always combine
3 = 'crossing [YEAR]' conditional combine
4 = subset before or after [YEAR] conditional combine
5 = region conditional combine
6 = unique complicated combination of actions 1-5
7 = complicated action not definable as a combination of other action codes.

For year conditional combines, the phrase 'crossing [YEAR]' should be interpreted as 'data with MEASYEAR=[YEAR] and/or later, compared to data with MEASYEAR=[YEAR]-1 and/or earlier.' The phrase 'before [YEAR]' means data with MEASYEAR=[YEAR]-1 and/or earlier; 'after [YEAR]' means data with MEASYEAR=[YEAR]+1 and/or later.

For action codes 5 and 6, other action codes for specific regions or years are listed after that code. If a region conditional action is one

of the actions under action code 6, action code 5 is listed just before action codes 0-4 for within a region.

Region definitions:

East = Northern (N) and Southern (S) FIA Regions

West = Interior West (IW) and Pacific Northwest (PNW) FIA Regions

For any action (codes 2, 3, 4) that involves combining two or more taxa by LICH_SPPCD and SPP_ACRONYM, if more than one of these LICH_SPPCD or SPP_ACRONYM occur on a single plot, then abundances (field ABUNDANCE_CLASS in table LICHEN_LAB) for the original taxa must be combined by the following rules to become the abundance for the 'combined into' LICH_SPPCD and SPP_ACRONYM on that plot:

Abundances for individual taxa	Abundance for final combined taxon
1 + 1	2
1 + 1 + 1 + 1 + 1	2
More than five 1s	3
1 + 2	2
2 + 2	2
1 + 1 + 2	2
1 + 1 + 1 + 2	3
1 + 2 + 2	3
3 + any others	3
4 + any others	4

6. CN Sequence number. A unique sequence number used to identify a county record.

7. CREATED_BY

The user who created the record.

8. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

9. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

10. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

11. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

12. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Soils Visit Table (Oracle table name is SOILS_VISIT)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	MEASDAY	NUMBER(2)	Day (DD)
8	MEASMON	NUMBER(2)	Month (MM)
9	MEASYEAR	NUMBER(4)	Year (YYYY)
10	CREATED_BY	VARCHAR2(30)	Character
11	CREATED_DATE	DATE	Character
12	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
13	MODIFIED_BY	VARCHAR2(30)	Character
14	MODIFIED_DATE	DATE	DD-MON-YYYY
15	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

SVT_NAT_I (STATECD, INVYR, COUNTYCD, PLOT)
 SVT_PK (CN)
 SVT_UK (PLT_CN)

1. CN Sequence number. A unique sequence number used to identify a county record.
2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.
3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.
4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

- 5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

- 6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

- 7. MEASDAY Measurement day. The day of the month that the plot was completed.

- 8. MEASMON Measurement month. The month that the plot was completed.

Code	Description	Code	Description
01	January	07	July
02	February	08	August
03	March	09	September
04	April	10	October
05	May	11	November
06	June	12	December

- 9. MEASYEAR Measurement year. The year the plot was completed.

- 10. CREATED_BY

The user who created the record.

- 11. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

- 12. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

- 13. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

14. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

15. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Soils Erosion Table (Oracle table name is SOILS_EROSION)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	SUBP	NUMBER	Coded
8	MEASYEAR	NUMBER(4)	Year (YYYY)
9	SOILSPCT	NUMBER	Coded
10	COMPCPCT	NUMBER	Coded
11	TYPRTDCD	NUMBER	Coded
12	TYPCMPCD	NUMBER	Coded
13	TYPAREACD	NUMBER	Coded
14	TYPOTHRCD	NUMBER	Coded
15	CREATED_BY	VARCHAR2(30)	Character
16	CREATED_DATE	DATE	DD-MON-YYYY
17	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
18	MODIFIED_BY	VARCHAR2(30)	Character
19	MODIFIED_DATE	DATE	DD-MON-YYYY
20	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

SEN_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, SUBP)
 SEN_PK (CN)
 SEN_UK (PLT_CN,SUBP)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected.

A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.
5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.
7. SUBP Subplot number. Number of the subplot. Annual inventories have subplot number values of 1 through 4. Periodic inventories' subplot numbers will vary. For more information, contact the appropriate FIA unit.
8. MEASYEAR Measurement year. The year the plot was completed.
9. SOILSPCT Soils percent (percent bare soil). Indicates the percentage of the subplot that is covered by bare soil (mineral or organic). Fine gravel [0.08-0.20 inch (2-5 mm)] should be considered part of the bare soil. However, large rocks protruding through the soil (e.g., bedrock outcrops) are not included in this category because these are not erodible surfaces. For the purposes of the soil indicator, cryptobiotic crusts are not considered bare soil.

If the subplot includes non-forested areas, the % cover of bare soil in the forested part of the subplot is multiplied by the % of the subplot that is in forested area. For example, if 50% of the subplot is forested and the % cover of bare soil of the forested part is 30%, then the % cover of bare soil for the entire subplot is 15 %

Code	Description	Code	Description
00	Absent	50	46-50%
01	Trace	55	51-55%
05	1 to 5%	60	56-60%
10	6-10%	65	61-65%
15	11-15%	70	66-70%
20	16-20%	75	71-75%
25	21-25%	80	76-80%
30	26-30%	85	81-85%
35	31-35%	90	86-90%
40	36-40%	95	91-95%
45	41-45%	99	96-100%

10. COMPCPCT Compacted percent (percent compacted area). Indicates the percentage of the subplot that exhibits evidence of compaction. Soil compaction is assessed relative to the conditions of adjacent undisturbed soil. Improved roads are not included in the evaluation.

Code	Description	Code	Description
00	Absent	50	46-50%
01	Trace	55	51-55%
05	1 to 5%	60	56-60%
10	6-10%	65	61-65%
15	11-15%	70	66-70%
20	16-20%	75	71-75%
25	21-25%	80	76-80%
30	26-30%	85	81-85%
35	31-35%	90	86-90%
40	36-40%	95	91-95%
45	41-45%	99	96-100%

11. TYPRTDCD Type rutted trail code. Type of compaction is a rutted trail. Ruts must be at least 2 inches deep into mineral soil or 6 inches deep from the undisturbed forest litter surface.

Code	Description
1	Present
0	Not present

12. **TYPMPCD** Type compacted trail code. Type of compaction is a compacted trail (usually the result of many passes of heavy machinery, vehicles, or large animals).

Code	Description
1	Present
0	Not present

13. **TYPAREACD** Type compacted area code. Type of compaction is a compacted area. Examples include the junction areas of skid trails, landing areas, work areas, animal bedding areas, heavily grazed areas, etc.

Code	Description
1	Present
0	Not present

14. **TYPOTHRCD** Type other code. Type of compaction is some other form. An explanation must be entered in the plot notes.

Code	Description
1	Present
0	Not present

15. **CREATED_BY**

The user who created the record.

16. **CREATED_DATE**

The date the record was created. Date will be in the form DD-MON-YYYY.

17. **CREATED_IN_INSTANCE**

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

18. **MODIFIED_BY**

The user who modified the record. This field will be null if the data have not been modified since initial creation.

19. **MODIFIED_DATE**

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

20. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Soils Sample Location Table (Oracle table name is SOILS_SAMPLE_LOC)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	SMPLNNBR	NUMBER(1)	
8	MEASYEAR	NUMBER(4)	Year (YYYY)
9	FORFLTHK	NUMBER	Inches
10	LTRLRTHK	NUMBER	Inches
11	FORFLTHKN	NUMBER	Inches
12	LTRLRTHKN	NUMBER	Inches
13	FORFLTHKS	NUMBER	Inches
14	LTRLRTHKS	NUMBER	Inches
15	FORFLTHKE	NUMBER	Inches
16	LTRLRTHKE	NUMBER	Inches
17	FORFLTHKW	NUMBER	Inches
18	LTRLRTHKW	NUMBER	Inches
19	CONDID	NUMBER(1)	Number
20	VSTNBR	NUMBER(1)	Number
21	TXTRLYR1	NUMBER	Coded
22	TXTRLYR2	NUMBER	Coded
23	DPTHBSL	NUMBER	Number
24	SOILS_STATCD	NUMBER(2)	Coded
25	CREATED_BY	VARCHAR2(30)	Character
26	CREATED_DATE	DATE	DD-MON-YYYY
27	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
28	MODIFIED_BY	VARCHAR2(30)	Character
29	MODIFIED_DATE	DATE	DD-MON-YYYY
30	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

SSL_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, SMPLNNBR)
 SSL_PK (CN)
 SSL_UK (PLT_CN, SMPLNNBR)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

7. SMPLNNBR Sample line number. The number corresponding to the subplot where the sample was collected. SMPLNNBR should equal the subplot number (SUBP). Values are 2, 3, 4.

8. MEASYEAR Measurement year. The year the plot was completed.

9. FORFLTHK Average forest floor thickness for the subplot. $FORFLTHK = (FORFLTHKE + FORFLTHKW + FORFLTHKN + FORFLTHKS) / 4$

10. LTRLRTHK Average litter layer thickness for the subplot. $LTRLRTHK = (LTRLRTHKE + LTRLRTHKW + LTRLRTHKN + LTRLRTHKS) / 4$

11. FORFLTHKN Forest floor thickness north (at the north edge of the sampling frame). The thickness (to the nearest 0.1 inch) of the forest floor measured from the top of the litter layer to the boundary between the forest floor and mineral soil; measured to a maximum depth of 20.0 inches. If the thickness of the forest floor is greater than 20.0

inches, then the code "20.0" is used. For locations where bare soil or bedrock material is exposed, "00.0" inches depth is entered.

12. LTRLRTHKN Litter layer thickness north (at the north edge of the sampling frame). The thickness of the litter layer (to the nearest 0.1 inch) at the north location within the sampling frame. The bottom of the litter layer can be distinguished as the boundary where plant parts (such as leaves or needles) are no longer recognizable as such because of decomposition. Another criterion is that the organic layer may contain plant roots, but the litter layer will probably not. At some locations, the depth of the forest floor and the litter layer may be the same. For locations where bare soil or bedrock material is exposed, "00.0" inches depth is entered.
13. FORFLTHKS Forest floor thickness south (at the south edge of the sampling frame). The thickness (to the nearest 0.1 inch) of the forest floor measured from the top of the litter layer to the boundary between the forest floor and mineral soil; measured to a maximum depth of 20.0 inches. If the thickness of the forest floor is greater than 20.0 inches, then the code "20.0" is used. For locations where bare soil or bedrock material is exposed, "00.0" inches depth is entered.
14. LTRLRTHKS Litter layer thickness south (at the south edge of the sampling frame). The thickness of the litter layer (to the nearest 0.1 inch) at the south location within the sampling frame. The bottom of the litter layer can be distinguished as the boundary where plant parts (such as leaves or needles) are no longer recognizable as such because of decomposition. Another criterion is that the organic layer may contain plant roots, but the litter layer will probably not. At some locations, the depth of the forest floor and the litter layer may be the same. For locations where bare soil or bedrock material is exposed, "00.0" inches depth is entered.
15. FORFLTHKE Forest floor thickness east (at the east edge of the sampling frame). The thickness (to the nearest 0.1 inch) of the forest floor measured from the top of the litter layer to the boundary between the forest floor and mineral soil; measured to a maximum depth of 20.0 inches. If the thickness of the forest floor is greater than 20.0 inches, then the code "20.0" is used. For locations where bare soil or bedrock material is exposed, "00.0" inches depth is entered.
16. LTRLRTHKE Litter layer thickness east (at the east edge of the sampling frame). The thickness of the litter layer (to the nearest 0.1 inch) at the east location within the sampling frame. The bottom of the litter layer can be distinguished as the boundary where plant parts (such as leaves or needles) are no longer recognizable as such because of decomposition. Another criterion is that the organic layer may

contain plant roots, but the litter layer will probably not. At some locations, the depth of the forest floor and the litter layer may be the same. For locations where bare soil or bedrock material is exposed, "00.0" inches depth is entered.

17. FORFLTHKW Forest floor thickness west (at the west edge of the sampling frame). The thickness (to the nearest 0.1 inch) of the forest floor measured from the top of the litter layer to the boundary between the forest floor and mineral soil; measured to a maximum depth of 20.0 inches. If the thickness of the forest floor is greater than 20.0 inches, then the code "20.0" is used. For locations where bare soil or bedrock material is exposed, "00.0" inches depth is entered.
18. LTRLRTHKW Litter layer thickness west (at the west edge of the sampling frame). The thickness of the litter layer (to the nearest 0.1 inch) at the west location within the sampling frame. The bottom of the litter layer can be distinguished as the boundary where plant parts (such as leaves or needles) are no longer recognizable as such because of decomposition. Another criterion is that the organic layer may contain plant roots, but the litter layer will probably not. At some locations, the depth of the forest floor and the litter layer may be the same. For locations where bare soil or bedrock material is exposed, "00.0" inches depth is entered.
19. CONDIC Condition class number. The condition class for the soil sampling site. If the condition class for the soil sample is different from any recorded on the 4 subplots, "0" is entered.
20. VSTNBR Visit number. The number of the soil sampling location (see Figure 11-1 in the FIA field guide) at which the soil sample was collected. Values are 1 - 9.
21. TXTRLR1 Texture layer 1. The soil texture of the 0-4 inch layer estimated in the field.

Code	Description
0	Organic
1	Loamy
2	Clayey
3	Sandy
4	Coarse Sand
9	Not measured – make plot notes

22. TXTRLR2 Texture layer 2. The soil texture of the 4-8 inch layer estimated in the field.

Code	Description
0	Organic
1	Loamy
2	Clayey
3	Sandy
4	Coarse Sand
9	Not measured – make plot notes

23. DPTHBSL Depth to a restricted layer. Indicates the median depth of five locations within the soil sampling area (center, north, east, south and west edges) to a restrictive layer (to the nearest 0.1 inch). The maximum depth for testing for a restrictive horizon is 20.0 inches. If a restrictive layer is encountered within the 20.0 inches, the median depth (to the nearest 0.1 inch) to the restrictive horizon of the five locations probed is recorded. Other possible values are:

20.0 if a restrictive horizon is not encountered.

00.0 if superficial bedrock is present.

999 if too many rock fragments or cobbles prevent inserting soil probe.

24. SOILS_STATCD

Soil sampling status. Indicates whether or not a forest floor or mineral soil sample was collected at the soil sampling location. For both forest floor and mineral samples, it is the condition of the soil sampling sites in the annular plot that determines whether soil samples are collected. Samples are collected if, and only if, the soil sampling site is in a forested condition (regardless of the condition class of the subplot). For example, in cases where the subplot has at least one forested condition class and the soil sampling site is not in a forested condition class, soil samples are not collected. Similarly, in cases where the soil sampling site is in a forested condition class and the subplot does not have at least one forested condition class, soil samples are collected.

Code	Description
1	Sampled
2	Not sampled: non-forest

The following are for forest conditions:

3	Not sampled: too rocky to sample
4	Not sampled: water or boggy
5	Not sampled: access denied
6	Not sampled: too dangerous to sample
7	Not sampled: obstruction in sampling area
8	Not sampled: broken or lost equipment
9	Not sampled: other - enter reason in plot notes

25. CREATED_BY

The user who created the record.

26. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

27. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record

28. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

29. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

30. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Soils Lab Table (Oracle table name is SOILS_LAB)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	
2	PLT_CN	VARCHAR2(34)	
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	SMPLNNBR	NUMBER(3)	
8	VSTNBR	NUMBER(1)	Number
9	LAYER_TYPE	VARCHAR2(10)	
10	SAMPLER_TYPE	VARCHAR2(2)	
11	QASTATCD	NUMBER(1)	
12	SAMPLE_DATE	DATE	
13	LAB_ID	VARCHAR2(10)	
14	SAMPLE_ID	VARCHAR2(12)	
15	FIELD_MOIST_SOIL_WT	NUMBER(7,2)	
16	AIR_DRY_SOIL_WT	NUMBER(7,2)	
17	OVEN_DRY_SOIL_WT	NUMBER(7,2)	
18	FIELD_MOIST_WATER_CONTENT_PCT	NUMBER(6,2)	
19	RESIDUAL_WATER_CONTENT_PCT	NUMBER(6,2)	
20	TOTAL_WATER_CONTENT_PCT	NUMBER(6,2)	
21	BULK_DENSITY	NUMBER(7,3)	
22	COARSE_FRACTION_PCT	NUMBER(7,3)	
23	C_ORG_PCT	NUMBER(7,3)	
24	C_INORG_PCT	NUMBER(7,3)	
25	C_TOTAL_PCT	NUMBER(7,3)	
26	N_TOTAL_PCT	NUMBER(7,3)	
27	PH_H2O	NUMBER(7,3)	
28	PH_CACL2	NUMBER(7,3)	
29	EXCHNG_NA	NUMBER(7,3)	
30	EXCHNG_K	NUMBER(7,3)	
31	EXCHNG_MG	NUMBER(7,3)	
32	EXCHNG_CA	NUMBER(8,3)	
33	EXCHNG_AL	NUMBER(7,3)	
34	ECEC	NUMBER(7,3)	

Column Name	Oracle data type	Value or unit of measure
35 EXCHNG_MN	NUMBER(7,3)	
36 EXCHNG_FE	NUMBER(7,3)	
37 EXCHNG_NI	NUMBER(7,3)	
38 EXCHNG_CU	NUMBER(7,3)	
39 EXCHNG_ZN	NUMBER(7,3)	
40 EXCHNG_CD	NUMBER(7,3)	
41 EXCHNG_PB	NUMBER(7,3)	
42 EXCHNG_S	NUMBER(7,3)	
43 BRAY1_P	NUMBER(7,3)	
44 OLSEN_P	NUMBER(7,3)	
45 MEASYEAR	NUMBER(4)	Year (YYYY)
46 MODIFIED_BY	VARCHAR2(30)	Character
47 MODIFIED_DATE	DATE	DD-MON-YYYY
48 MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number
49 CREATED_BY	VARCHAR2(30)	Character
50 CREATED_DATE	DATE	DD-MON-YYYY
51 CREATED IN INSTANCE	VARCHAR2(6)	Number

SLB_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, SMPLNNBR, LAYER_TYPE)
 SLB_PK (CN)
 SLB_UK (PLT_CN, SMPLNNBR, LAYER_TYPE)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table.

5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.
7. SMPLNNBR Sample line number. The number corresponding to the subplot where the sample was collected. SMPLNNBR should equal the subplot number (SUBP). Values are 2, 3, 4.
8. VSTNBR Visit number. The number of the soil sampling location (see Figure 11-1 in the FIA field guide) at which the soil sample was collected. Values are 1 - 9.
9. LAYER_TYPE
Layer Type. Indicates the soil layer type:
Total forest floor: litter + humus (duff)
Organic soil litter layer
0-4 inch mineral soil layer
4-8 inch mineral soil layer
0-4 inch organic soil layer
4-8 inch organic soil layer
10. SAMPLER_TYPE
Sampler type. Indicates type of soil sampler used:
SF = sample frame
BD = bulk density sampler
O = other
11. QASTATCD Quality assurance status. Indicates whether the sample is from a regular or blind check.
12. SAMPLE_DATE
Sample date. Indicates the date of soil measurements and sampling.
13. LAB_ID Laboratory identification. Indicates the laboratory where the analyses were done.

14. SAMPLE_ID Sample identification. Internal lab sample identification number used to identify samples, match to plot identifier data, and track samples.
15. FIELD_MOIST_SOIL_WT
Field moist soil weight. The weight of the soil sample as received from the field in g.
16. AIR_DRY_SOIL_WT
Air-dry soil weight. The weight of the soil sample after air-drying at ambient temperature in g.
17. OVEN_DRY_SOIL_WT
Oven-dry soil weight. The calculated weight of the soil sample based on an oven-dried subsample in g.
18. FIELD_MOIST_WATER_CONTENT_PCT
Field moist water content percent. The field-moist to air-dry water content in percent.
19. RESIDUAL_WATER_CONTENT_PCT
Residual water content percent. The air-dry to oven-dry water content in percent.
20. TOTAL_WATER_CONTENT_PCT
Total water content in percent. The field-moist to air-dry + air-dry to oven-dry water contents in percent.
21. BULK_DENSITY
Bulk density. The soil bulk density calculated as weight per unit volume of soil, g/cm^3 .
22. COARSE_FRACTION_PCT
Coarse fraction percent. The percentage of mineral soil greater than 2-mm in size.
23. C_ORG_PCT Carbon organic percent. Organic carbon in percent

24. C_INORG_PCT
Carbon inorganic percent. Inorganic carbon (carbonates) in percent.
25. C_TOTAL_PCT
Carbon total percent. Total carbon (organic + inorganic) in percent.
26. N_TOTAL_PCT
Nitrogen total percent. Total nitrogen in percent.
27. PH_H2O pH in water. Soil pH in a 1:1 soil/water suspension
28. PH_CACL2 pH in calcium chloride. Soil pH in 0.01 M CaCl₂ solution.
29. EXCHNG_NA Exchangeable sodium in mg/kg.
30. EXCHNG_K Exchangeable potassium in mg/kg.
31. EXCHNG_MG Exchangeable magnesium in mg/kg.
32. EXCHNG_CA Exchangeable calcium in mg/kg.
33. EXCHNG_AL Exchangeable aluminum in mg/kg
34. ECEC Effective cation exchange capacity. Exchangeable Na + K + Mg + Ca + Al) in cmol_c/kg
35. EXCHNG_MN Exchangeable manganese in mg/kg
36. EXCHNG_FE Exchangeable iron in mg/kg.
37. EXCHNG_NI Exchangeable nickel in mg/kg.
38. EXCHNG_CU Exchangeable copper in mg/kg.
39. EXCHNG_ZN Exchangeable zinc in mg/kg.
40. EXCHNG_CD Exchangeable cadmium in mg/kg
41. EXCHNG_PB Exchangeable lead in mg/kg.
42. EXCHNG_S Exchangeable sulfur in mg/kg.
43. BRAY1_P Bray 1 phosphorus. Bray 1 extractable phosphorus in mg/kg.

44. OLSEN_P Olsen phosphorus. Olsen extractable phosphorus in mg/kg.
45. MEASYEAR Measurement year. The year the plot was completed.
46. MODIFIED_BY
- The user who modified the record. This field will be null if the data have not been modified since initial creation.
47. MODIFIED_DATE
- The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.
48. MODIFIED_IN_INSTANCE
- The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.
49. CREATED_BY
- The user who created the record.
50. CREATED_DATE
- The date the record was created. Date will be in the form DD-MON-YYYY.
51. CREATED_IN_INSTANCE
- The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

Vegetation Visit Table (Oracle table name is VEG_VISIT)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
7	PLOT	NUMBER(5)	Number
8	VEG_QA_STATUS	NUMBER(1)	Coded
9	VEG_KINDCD	NUMBER(2)	Coded
10	VEG_MANUAL	VARCHAR2(8)	Character
11	TRACE_COVER_ALLOWED	NUMBER(1)	Coded
12	VEG_MEASYEAR	NUMBER(4)	Year (YYYY)
13	VEG_MEASMON	NUMBER(2)	Month (MM)
14	VEG_MEASDAY	NUMBER(2)	Day (DD)
15	VEG_CREW_TYPE	NUMBER(1)	Coded
16	VEG_SAMPLE_BASIS	NUMBER(1)	Coded
17	CREATED_BY	VARCHAR2(30)	Character
18	CREATED_DATE	DATE	DD-MON-YYYY
19	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
20	MODIFIED_BY	VARCHAR2(30)	Character
21	MODIFIED_DATE	DATE	DD-MON-YYYY
22	MODIFIED IN INSTANCE	VARCHAR2(6)	Number

VVT_NAT_I (STATECD, INVYR, COUNTYCD, PLOT)

VVT_PK (CN)

VVT_UK (PLT_CN, CN)

1. CN Control number. A unique sequence number used to identify an individual record within the table. Other tables will reference this as VVT_CN (VEG_VISIT CN)
2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the P2 plot record.
3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is

selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

- 4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table

- 5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

- 6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

- 7. VEG_QA_STATUS Vegetation quality assurance status. The code corresponding to the type of vegetation measurement conducted.

Code	Description
1	Standard field production plot
2	Cold Check
3	Reference plot (off grid)
4	Training/Practice plot (off grid)
5	Botched Plot file (disregard during data processing)
6	Blind Check
7	Hot Check (production plot)

- 8. VEG_KINDCD

Vegetation sample kind code.

Code	Description
1	Initial P3 VEG plot establishment
2	Remeasure of previously established P3 VEG plot
3	Replacement P3 VEG plot

- 9. VEG_MANUAL

Vegetation manual. Field guide version used.

10. TRACE_COVER_ALLOWED

Trace cover allowed.

Code	Description
0	Trace cover value (0.01%) not allowed, VEG_MANUAL v2.0 and earlier
1	Trace cover value (0.01%) allowed for species canopy cover records (VEG_MANUAL v 2.0.1 and later)

11. VEG_MEASYEAR

Vegetation measurement year. Year in which the plot was measured

12. VEG_MEASMON

Vegetation measurement month. Month in which the plot was measured.

13. VEG_MEASDAY

Vegetation measurement day. Day on which the plot was measured.

14. VEG_CREW_TYPE

Vegetation crew type. The code corresponding to the type of crew measuring the vegetation diversity and structure.

Code	Description
1	Regular field crew
2	QA crew (any QA crew member present collecting data)

15. VEG_SAMPLE_BASIS

Vegetation sample basis.

Code	Description
1	Data collected across entire subplot where % Accessible forest conditions is greater or equal to 50% (VEG_MANUAL = v1.7). May include non-forest, hazardous, or access denied conditions.
2	Data collected on accessible forested conditions only (VEG_MANUAL 2.0 and higher)

16. CREATED_BY

The user who created the record.

17. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

18. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

19. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

20. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

21. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Vegetation Plot Species Table (Oracle table name is VEG_PLOT_SPECIES)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	VVT_CN	VARCHAR2(34)	Character
4	INVYR	NUMBER(4)	Year (YYYY)
5	STATECD	NUMBER(4)	Coded
6	COUNTYCD	VARCHAR2(3)	Coded
7	PLOT	NUMBER(5)	Number
8	VEG_FLDSPCD	VARCHAR2(16)	Character
9	UNIQUE_SP_NBR	NUMBER(2)	Number
10	VEG_SPCD	VARCHAR2(16)	Character
11	SPECIMEN_COLLECTED	CHAR	Coded
12	SPECIMEN_LABEL_NBR	NUMBER	Number
13	SPECIMEN_NOT_COLLECTED_REASON	NUMBER(2)	Coded
14	SPECIMEN_RESOLVED	CHAR	Coded
15	CREATED_BY	VARCHAR2(30)	Character
16	CREATED_DATE	DATE	DD-MON-YYYY
17	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
18	MODIFIED_BY	VARCHAR2(30)	Character
19	MODIFIED_DATE	DATE	DD-MON-YYYY
20	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

VPS_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, VEG_FLDSPCD, UNIQUE_SP_NBR)

VPS_PK (CN)

VPS_UK (PLT_CN, VVT_CN, VEG_FLDSPCD, UNIQUE_SP_NBR)

VPS_UK2 (PLT_CN, VVT_CN, CN)

1. CN Control number. A unique sequence number used to identify an individual record within the table. Other tables will reference this as VPS_CN (VEG_PLOT_SPECIES)
2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the P2 plot record.

3. VVT_CN Plot sequence number. Foreign key linking the plot species record to the VEG_VISIT record.
4. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.
5. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
6. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
7. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.
8. VEG_FLDSPCD

Vegetation field species code. Field recorded vegetation species code for each vascular plant species found rooted in or overhanging a subplot. Codes must be the standardized codes in the Natural Resource Conservation Service (NRCS) PLANTS database January 2000 version to represent species, genus, or unknown plants. Identification to species only is expected. However, if subspecies information is known, the appropriate NRCS code may be entered.
9. UNIQUE__SP_NBR

Unique species number. Identifies the number of specie occurrences within each NRCS genus or unknown code. For example, 2 unidentifiable CAREX species would be entered as 2 separate records with differing Unique Species Numbers to show that they are not the same species.
10. VEG_SPCD

Vegetation species code. Final edited species code conforming to the NRCS PLANTS database.

11. SPECIMEN_COLLECTED

Specimen officially collected. Y or N (Yes or No) value indicating whether a specimen sample was collected.

Code	Description
0	No, a specimen was not collected
1	Yes, a specimen was collected

12. SPECIMEN_LABEL_NBR

Specimen label number. For any unknown specimen collected, the corresponding specimen label number.

13. SPECIMEN_NOT_COLLECTED_REASON

Specimen not collected reason. If VEG_FLDSPCD is an NRCS genus or unknown code and a specimen is not collected, this code provides the reason.

Code	Description
01	Species is locally sparse
02	Species has < 1% canopy cover on the subplot and no mature foliage or reproductive parts are present
03	Hazardous situation
04	Time limitation
05	Already collected with previous entry of genus or unknown code with the same unique species number
06	Specimen collected for immediate/local identification
10	Other (explain in notes)

14. SPECIMEN_RESOLVED

Specimen resolved. If VEG_FLDSPCD code type is "unknown", set to "N" until plant voucher data loaded; set to null if code type="species"; set to "Y" upon NIMS_VEG_UNKNOWN_UPDATE table load for specific record.

15. CREATED_BY

The user who created the record.

16. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

17. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

18. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

19. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

20. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Vegetation Subplot Table (Oracle table name is VEG_SUBPLOT)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	VVT_CN	VARCHAR2(34)	Character
4	INVYR	NUMBER(4)	Year (YYYY)
5	STATECD	NUMBER(4)	Coded
6	COUNTYCD	NUMBER(3)	Coded
7	PLOT	NUMBER(5)	Number
8	SUBP	NUMBER(1)	Number
9	VEG_SUBP_STATUS_CD	NUMBER(1)	Coded
10	VEG_SUBP_NONSAMPLE_REASN_CD	NUMBER(2)	Coded
11	SUBP_ACCESSIBLE_FOREST_PCT	NUMBER(3)	Number
12	DETAILED_NONFOREST_LAND_USE	NUMBER(2)	Coded
13	COMMUNITY_DESC_SPECIMEN_LABEL	VARCHAR2(200)	Character
14	TOTAL_CANOPY_COVER_LAYER_1	NUMBER(3)	Number
15	TOTAL_CANOPY_COVER_LAYER_2	NUMBER(3)	Number
16	TOTAL_CANOPY_COVER_LAYER_3	NUMBER(3)	Number
17	TOTAL_CANOPY_COVER_LAYER_4	NUMBER(3)	Number
18	CRYPTO_CRUST_COVER_PCT	NUMBER(3)	Number
19	LICHEN_COVER_PCT	NUMBER(3)	Number
20	LITTER_DUFF_COVER_PCT	NUMBER(3)	Number
21	MINERAL_SOIL_COVER_PCT	NUMBER(3)	Number
22	MOSS_COVER_PCT	NUMBER(3)	Number
23	ROAD_TRAIL_COVER_PCT	NUMBER(3)	Number
24	ROCK_COVER_PCT	NUMBER(3)	Number
25	STANDING_WATER_COVER_PCT	NUMBER(3)	Number
26	STREAM_LAKE_COVER_PCT	NUMBER(3)	Number
27	TRASH_JUNK_COVER_PCT	NUMBER(3)	Number
28	WOOD_COVER_PCT	NUMBER(3)	Number
29	VEG_SUBP_STATUS_CD_PRE2004	NUMBER(1)	Number
30	VEG_SUBP_NONSMP_RSN_CD_PRE2004	NUMBER(2)	Number
31	CREATED_BY	VARCHAR2(30)	Character
32	CREATED_DATE	DATE	DD-MON-YYYY
33	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
34	MODIFIED_BY	VARCHAR2(30)	Character
35	MODIFIED_DATE	DATE	DD-MON-YYYY

Column Name	Oracle data type	Value or unit of measure
36 MODIFIED IN INSTANCE	VARCHAR2(6)	Number

VSB_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, SUBP)
VSB_PK (CN)
VSB_UK (PLT_CN, VVT_CN, SUBP)
VSB_UK2 (PLT_CN, VVT_CN, CN)

1. CN Control number. A unique sequence number used to identify an individual record within the table. Other tables reference this as VSB_CN (VEG_SUBPLOT_CN)
2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the P2 plot record.
3. VVT_CN Veg visit sequence number. Foreign key linking the subplot record to the VEG_VISIT record
4. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.
5. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
6. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
7. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

8. SUBP Subplot number. Number of the subplot center from which the transect originates.

Code	Description
1	Center subplot
2	North subplot
3	Southeast subplot
4	Southwest subplot

9. VEG_SUBP_STATUS_CD

Vegetation subplot status code. Veg subplot status as recorded for 2004 and later, copied from subplot record for pre-2004 plots.

Code	Description
1	Sampled – at least one accessible forest land condition present
2	Sampled – no accessible forest land condition present on subplot
3	Nonsampled

10. VEG_SUBP_NONSAMPLE_REASN_CD

Vegetation subplot nonsampled reason code. For subplots that cannot be sampled, and are wholly or partially within the FIA sampling population (U.S. boundary), one of the following reasons is recorded. Codes 1-4 can be assigned to entire plots or portions of plots that are not sampled. Code 5 is assigned only when the entire plot is affected.

01	Outside U.S. boundary
02	Denied access area
03	Hazardous situation
04	Time Limitation
05	Lost data (office use only)
10	Other

11. SUBP_ACCESSIBLE_FOREST_PCT

Subplot accessible forest percent. The percent area of the subplot in an accessible forested condition as estimated by the vegetation specialist.

12. DETAILED_NONFOREST_LAND_USE

Detailed nonforest land use. The code corresponding to the NONFOREST land use of the portion of the subplot that is not forest. If more than one nonforest land use is present, the code that

best describes the land use occurring closet to subplot center is recorded.

- 10 Agriculture
 - 11 Cropland
 - 12 Pasture
 - 13 Idle farmland
 - 14 Orchard
 - 15 Christmas tree plantation
- 20 Rangeland
- 30 Developed
 - 31 Cultural (business, residential, urban buildup)
 - 32 Rights-of-way (improved roads, railway, power lines, canals)
 - 33 Recreation (parks, ski areas, golf courses, etc.)
- 40 Other (beach, desert, noncensus water, marsh, bog)

13. COMMUNITY_DESC_SPECIMEN_LABEL

Community description specimen label. To fully automate Specimen Label, a brief description of the community type to aid the taxonomist in the identification of any specimens collected from this subplot is recorded. Community descriptions often describe the dominant overstory species (i.e., Open mixed conifer, closed paper birch, pinyon juniper woodland).

14. TOTAL_CANOPY_COVER_LAYER_1

Total canopy cover layer 1. Estimated total canopy cover of the foliage of all vascular plants in Layer 1 within the accessible forested conditions on the subplot. A rapid canopy cover estimate is made, ignoring overlap among species.

15. TOTAL_CANOPY_COVER_LAYER_2

Total canopy cover layer 2. Estimated total canopy cover of the foliage of all vascular plants in Layer 2 within the accessible forested conditions on the subplot. A rapid canopy cover estimate is made, ignoring overlap among species.

16. TOTAL_CANOPY_COVER_LAYER_3

Total canopy cover layer 3. Estimated total canopy cover of the foliage of all vascular plants in Layer 3 surface within the accessible forested conditions on the subplot. A rapid canopy cover estimate is made, ignoring overlap among species.

17. TOTAL_CANOPY_COVER_LAYER_4

Total canopy cover layer 4. Estimate the total canopy cover of the foliage of all vascular plants in Layer 4 surface within the accessible forested conditions on the subplot. A rapid canopy cover estimate is made, ignoring overlap among species.

18. CRYPTO_CRUST_COVER_PCT

Cryptobiotic crust cover percent. The percent cryptobiotic crust cover on the subplot forest floor. Cryptobiotic crust is a layer of symbiotic lichens and algae on the soil surface (common in arid regions).

19. LICHEN_COVER_PCT

Lichen cover percent. The percent lichen cover on the subplot forest floor.

20. LITTER_DUFF_COVER_PCT

Litter and duff percent cover. The percent litter and duff cover on the subplot forest floor. This is a continuous layer of accumulated organic matter over forest mineral soil (e.g., scattered leaves over mineral soil is coded mineral soil).

21. MINERAL_SOIL_COVER_PCT

Mineral soil cover percent. The percent mineral soil cover on the subplot forest floor. This is physically weathered soil parent material that may or may not also be chemically and biologically altered.

22. MOSS_COVER_PCT

Moss cover percent. The percent moss cover on the subplot forest floor. If liverworts occur on the subplot, include them here with mosses.

23. ROAD_TRAIL_COVER_PCT

Road and trail cover percent. The percent road/trail cover on the portions of the subplot designated as accessible forest condition. Include any areas compacted and unvegetated from regular use by foot travel or small motorized vehicles

24. ROCK_COVER_PCT

Rock cover percent. The percent rock cover on the subplot. Include any rocks, boulders, or accumulations of gravel (> 1/4 inch diameter) or pebbles.

25. STANDING_WATER_COVER_PCT

Standing water cover percent. The percent standing water/flooded cover on the subplot. Include any ponding or flowing water that is not contained within banks.

26. STREAM_LAKE_COVER_PCT

Stream and lake cover percent. The percent stream/lake cover on the subplot. Include any body of water contained within banks that is within a forested condition.

27. TRASH_JUNK_COVER_PCT

Trash and junk cover percent. The percent trash/junk/other cover on the subplot forest floor.

28. WOOD_COVER_PCT

Wood cover percent. The percent wood cover on the subplot. Wood pieces included should average greater than 3 inches in diameter and be in contact with the ground; smaller pieces should be included in Litter/ Duff Cover. Stumps, live trunks, and roots are included.

29. VEG_SUBP_STATUS_CD_PRE2004

Vegetation subplot status code, pre2004. "Veg Subplot Status Code consistent with NIMS_VEG_VISIT.VEG_MANUAL = 1.7 P3 Veg protocol. Value derived from P2 condition data, plot notes, and availability of various field-recorded records (e.g., subplot species and subplot totals.)

Code	Description
01	Subplot Sampled - accessible forest condition is greater than or equal to 50% of subplot
02	Subplot sampled - accessible forest condition is less than 50% of subplot
03	Nonsampled

30. VEG_SUBP_NONSMP_RSN_CD_PRE2004

Vegetation subplot nonsampled reason code, pre2004. Veg Subplot Nonsampled Reason Code Code consistent with NIMS_VEG_VISIT.VEG_MANUAL = 1.7 P3 Veg protocol. Value derived from VEG_SUBP_NONSAMPLE_REASN_CD, P2 condition data, plot notes, and availability of various field-recorded records (e.g., subplot species and subplot totals.)

Code	Description
1	Outside U.S. boundary
2	Denied access area
3	Hazardous situation
4	Time Limitation
5	Lost data (office use only)
10	Other

31. CREATED_BY

The user who created the record.

32. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

33. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

34. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

35. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

36. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Vegetation Quadrat Table (Oracle table name is VEG_QUADRAT)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	VVT_CN	VARCHAR2(34)	Character
4	VSF_CN	VARCHAR2(34)	Character
5	INVYR	NUMBER(4)	Year (YYYY)
6	STATECD	NUMBER(4)	Coded
7	COUNTYCD	NUMBER(3)	Coded
8	PLOT	NUMBER(5)	Number
9	SUBP		
10	QUADRAT	NUMBER(1)	Number
11	CONDID	NUMBER(1)	Number
12	QUADRAT_STATUS	NUMBER(1)	Coded
13	QUADRAT_STATUS_PRE2004	NUMBER(1)	Number
14	TRAMPLING	NUMBER(1)	Coded
15	CREATED_BY	VARCHAR2(30)	Character
16	CREATED_DATE	DATE	DD-MON-YYYY
17	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
18	MODIFIED_BY	VARCHAR2(30)	Character
19	MODIFIED_DATE	DATE	DD-MON-YYYY
20	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

VQT_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, SUBP, QUADRAT)
 VQT_PK (CN)
 VQT_UK (PLT_CN, VVT_CN, VSB_CN, QUADRAT)
 VQT_UK2 (PLT_CN, VVT_CN, VSB_CN, CN)

1. CN Control number. A unique sequence number used to identify an individual record in this table. Other tables reference this as VQT_CN (VEG_QUADRAT_CN)
2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the P2 plot record.
3. VVT_CN Veg visit sequence number. Foreign key linking the quadrat record to the VEG_VISIT record

4. VSB_CN Veg subplot sequence number. Foreign Key linking the quadrat record to the VEG_SUBPLOT record.
5. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.
6. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
7. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
8. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.
9. SUBP Subplot number. Number of the subplot center from which the transect originates.
- | Code | Description |
|------|-------------------|
| 1 | Center subplot |
| 2 | North subplot |
| 3 | Southeast subplot |
| 4 | Southwest subplot |
10. QUADRAT Quadrat. the code corresponding to the number of the quadrat.
- | Code | Description |
|------|----------------------------------|
| 1 | Quadrat on 30° subplot transect |
| 2 | Quadrat on 150° subplot transect |
| 3 | Quadrat on 270° subplot transect |
11. CONDID Forest condition class. The code indicating the number of the condition class.

12. QUADRAT_STATUS

Quadrat status. The code corresponding to how the quadrat was sampled. If QUADRAT STATUS is 1 or 3, the quadrat is sampled and data are collected even if no vascular plants are present. If the value entered is 2, 4, or 5, the quadrat was not sampled.

Code	Description
1	Quadrat sampled (most of the quadrat is in an accessible forest condition)
2	Quadrat not sampled because most or all of it does not fall in an accessible forested condition class
3	Quadrat sampled, no vascular plants rooted in or overhanging within 6 feet of the ground surface
4	Quadrat not sampled, hazard present on quadrat
5	Quadrat not sampled, other reason – enter in plot notes

13. QUADRAT_STATUS_PRE2004

Quadrat status of quadrats sampled before 2004. Quadrat Status Code as field-recorded for 2001 - 2003 plots Consistent with NIMS_VEG_VISIT.VEG_MANUAL = 1.7 P3 Veg protocol. Codes and descriptions are the same as QUADRAT_STATUS.

14. TRAMPLING Trampling. A trampling code is assigned to each quadrat at the start of vegetation diversity measurements. Trampling is defined as damage to plants or disturbance of the ground layer by humans, livestock, or wildlife.

Code	Description
1	Low: 0-10% of quadrat trampled: pristine to relatively undisturbed.
2	Moderate: 10-50% of quadrat trampled: trampling by animals or field crew
3	Heavy: >50% of quadrat trampled: hiking trail or heavily grazed.

15. CREATED_BY

The user who created the record.

16. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

17. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

18. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

19. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

20. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Vegetation Subplot Species Table (Oracle table name is VEG_SUBPLOT_SPP)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	VVT_CN	VARCHAR2(34)	Character
4	VSB_CN	VARCHAR2(34)	Character
5	VPS_CN	VARCHAR2(34)	Character
6	INVYR	NUMBER(4)	Year (YYYY)
7	STATECD	NUMBER(4)	Coded
8	COUNTYCD	NUMBER(3)	Coded
9	PLOT	NUMBER(5)	Number
10	SUBP	NUMBER(1)	Number
11	VEG_FLDSPCD	VARCHAR2(16)	Character
12	UNIQUE_SP_NBR	NUMBER(2)	Number
13	VEG_SPCD	VARCHAR2(16)	Character
14	SP_CANOPY_COVER_TOTAL	NUMBER(5,2)	Number
15	SP_CANOPY_COVER_LAYER_1_2	NUMBER(5,2)	Number
16	SP_CANOPY_COVER_LAYER_3	NUMBER(5,2)	Number
17	SP_CANOPY_COVER_LAYER_4	NUMBER(5,2)	Number
18	QUAD_1_PRESENCE	NUMBER(1)	Coded
19	QUAD_2_PRESENCE	NUMBER(1)	Coded
20	QUAD_3_PRESENCE	NUMBER(1)	Coded
21	DUMMY_SUBP_COVER_PRE2004	NUMBER(1)	Number
22	MAX_COVER_LAYER_NBR_PRE2004	NUMBER(1)	Coded
23	CREATED_BY	VARCHAR2(30)	Character
24	CREATED_DATE	DATE	DD-MON-YYYY
25	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
26	MODIFIED_BY	VARCHAR2(30)	Character
27	MODIFIED_DATE	DATE	DD-MON-YYYY
28	MODIFIED IN INSTANCE	VARCHAR2(6)	Number

VSS_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, SUBP, UNIQUE_SP_NBR, VEG_SPCD)

VSS_PK (CN)

VSS_UK (PLT_CN, VVT_CN, VPS_CN, SUBP)

1. CN Sequence number. A unique sequence number used to identify an individual record in this table.

2. PLT_CN Plot sequence number. Foreign key linking the vegetation subplot species record to the P2 plot record.

3. VVT_CN Veg visit sequence number. Foreign key linking the vegetation subplot species record to the VEG_VISIT record.

4. VSB_CN Veg subplot sequence number. Foreign Key linking the vegetation subplot species record to the VEG_SUBPLOT record.

5. VPS_CN Veg plot species sequence number. Foreign key linking the vegetation subplot species record to the vegetation plot species record.

6. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

7. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table

8. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

9. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

10. SUBP Subplot number. Number of the subplot center from which the transect originates.

Code	Description
1	Center subplot
2	North subplot
3	Southeast subplot
4	Southwest subplot

11. VEG_FLDSPCD

Vegetation field species code. Field recorded vegetation species code for each vascular plant species found rooted in or overhanging a subplot. Codes must be the standardized codes in the Natural Resource Conservation Service (NRCS) PLANTS database January 2000 version to represent species, genus, or unknown plants. Identification to species only is expected. However, if subspecies information is known, the appropriate NRCS code may be entered.

12. UNIQUE__SP_NBR

Unique species number. Identifies the number of specie occurrences within each NRCS genus or unknown code. For example, 2 unidentifiable CAREX species would be entered as 2 separate records with differing Unique Species Numbers to show that they are not the same species.

13. VEG_SPCD Vegetation species code. Final edited species code conforming to the NRCS PLANTS database.

14. SP_CANOPY_COVER_TOTAL

Subplot species canopy cover total. Percent canopy cover of species on subplot is recorded as estimated by ocular means. Beginning with VEG_MANUAL 2.0, only accessible forested conditions are accessed, but total cover has always estimated based on the area of a 24 foot radius circle. That is, if a species total cover is about equal to a circle with a radius of 5.3 feet within accessible forest, the subplot species canopy cover is recorded as 5%, regardless of the total percent accessible forest on the subplot.

15. SP_CANOPY_COVER_LAYER_1_2

Subplot species canopy cover layers 1 and 2. Species canopy cover percent within a layer from the ground to 6 feet in height across all accessible forest land on subplot, based on the area of a 24-foot radius circle.

16. SP_CANOPY_COVER_LAYER_3

Subplot canopy cover layer 3. Species canopy cover percent within a layer from 6 to 16 feet in height across all accessible forest land on subplot, based on the area of a 24-foot radius circle.

17. SP_CANOPY_COVER_LAYER_4

Subplot canopy cover layer 4. Species canopy cover percent within a layer from 16 feet in height and above across all accessible forest land on subplot, based on the area of a 24-foot radius circle.

18. QUAD_1_PRESENCE

Quadrat 1 presence. Indicates whether species is found on Quadrat 1 of current subplot.

Code	Description
0	No, the species is not present
1	Yes, the species is present

19. QUAD_2_PRESENCE

Quadrat 2 presence. Indicates whether species is found on Quadrat 2 of current subplot.

Code	Description
0	No, the species is not present
1	Yes, the species is present

20. QUAD_3_PRESENCE

Quadrat 3 presence. Indicates whether species is found on Quadrat 3 of current subplot.

Code	Description
0	No, the species is not present
1	Yes, the species is present

21. DUMMY_SUBP_COVER_PRE2004

Dummy subplot cover for data collected prior to 2004. For NIMS_VEG_VISIT.VEG_MANUAL = 1.7 plots only. 0 = subplot species cover data is field recorded; 1 = NIMS_VEG_VISIT.VEG_MANUAL = 1.7 dummy subplot cover data added where a quadrat species record existed without a matching subplot species record. When DUMMY_SUBP_COVER_PRE2004 = 1, SP_CANOPY_COVER_TOTAL is set to 1 and MAX_COVER_LAYER_NBR_PRE2004 is set to 1.

22. MAX_COVER_LAYER_NBR_PRE2004

Maximum cover layer number for data collected prior to 2004. For NIMS_VEG_VISIT.VEG_MANUAL = 1.7 plots only. Layer number with maximum cover for the species on the subplot.

Code	Description
1	0 – 2 feet above ground
2	>2 – 6 feet above ground
3	>6-16 feet above ground
4	>16 above ground

23. CREATED_BY

The user who created the record.

24. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

25. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

26. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

27. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

28. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Down Woody Material Visit Table (Oracle table name is DWM_VISIT)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	MEASDAY	NUMBER(2)	Day (DD)
8	MEASMON	NUMBER(2)	Month (MM)
9	MEASYEAR	NUMBER(4)	Year (YYYY)
10	QASTATCD	NUMBER(1)	Coded
11	CRWTYPCD	NUMBER(1)	Coded
12	SMPKND CD	NUMBER(2)	Coded
13	CREATED_BY	VARCHAR2(30)	Character
14	CREATED_DATE	DATE	DD-MON-YYYY
15	CREATED_IN_INSTANCE	NUMBER(6)	Number
16	MODIFIED_BY	VARCHAR2(30)	Character
17	MODIFIED_DATE	DATE	DD-MON-YYYY
18	MODIFIED_IN_INSTANCE	NUMBER(6)	Number

DVT_NAT_I (STATECD, INVYR, COUNTYCD, PLOT)
 DVT_PK (CN)
 DVT_UK (PLT_CN)

1. CN Sequence number. A unique sequence number used to identify a county record.
2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.
3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.
7. MEASDAY Measurement day. The day of the month in which the plot was completed.
8. MEASMON Measurement month. The month in which the plot was completed.

Code	Description
01	January
02	February
03	March
04	April
05	May
06	June
07	July
08	August
09	September
10	October
11	November
12	December

9. MEASYEAR Measurement year. The year in which the plot was completed. This year may differ from INVYR in the SURVEY table.
10. QASTATCD QA status code. The code indicates the type of plot data collected.

Code	Description
1	Standard production plot
2	Cold check
3	Reference plot (off grid)
4	Training/practice plot (off grid)
5	Botched plot file (disregard during data processing)

- 6 Blind check
- 7 Production plot (hot check)

11. CRWTYPCD Crew type code. A code identifying the type of crew measuring the plot.

- | Code | Description |
|------|------------------------------------------------------|
| 1 | Standard field crew |
| 2 | QA crew (any QA crew member present collecting data) |

12. SMPKNDCD Sample kind code. A code to indicate whether the plot is being measured for the first time, had been measured in a previous cycle and is being remeasured, or had been remeasured previously but could not be relocated and this is the replacement.

- | Code | Description |
|------|------------------------------------------------------------------------------------------------------|
| 0 | Periodic inventory plot |
| 1 | Initial plot establishment of the National design plot |
| 2 | Remeasurement of a previously established National design plot –field visited or remotely classified |
| 3 | Replacement of a previously established National design plot |
| 4 | Modeled |
| 9 | Not sampled |

13. CREATED_BY

The user who created the record.

14. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

15. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

16. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

17. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

18. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Down Woody Material Coarse Woody Debris Table (Oracle table name is DWM_COARSE_WOODY_DEBRIS)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	SUBP	NUMBER(1)	Coded
8	TRANSECT	NUMBER(3)	Coded
9	CWDID	NUMBER	
10	MEASYEAR	NUMBER(4)	Year (YYYY)
11	SLOPDIST	NUMBER	Feet
12	SPCD	NUMBER(3)	Coded
13	DECAYCD	NUMBER(1)	Coded
14	TRANSDIA	NUMBER(3)	Inches
15	SMALLDIA	NUMBER(3)	Inches
16	LARGEDIA	NUMBER(3)	Inches
17	LENGTH	NUMBER(3)	Feet
18	HOLLOWCD	VARCHAR2(1)	Coded
19	CWDHSTCD	NUMBER(1)	Coded
20	CREATED_BY	VARCHAR2(30)	Character
21	CREATED_DATE	DATE	DD-MON-YYYY
22	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
23	MODIFIED_BY	VARCHAR2(30)	Character
24	MODIFIED_DATE	DATE	DD-MON-YYYY
25	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

DCW_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, TRANSECT, SUBP, CWDID)
 DCW_PK (CN)
 DCW_UK (PLT_CN, TRANSECT, SUBP, CWDID)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table

5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

7. SUBP Subplot number. Number of the subplot. Annual inventories have subplot number values of 1 through 4. Periodic inventories subplot numbers will vary. For more information, contact the appropriate FIA unit.

8. TRANSECT Transect. The azimuth of the subplot transect on which the piece is sampled.

Code	Description
030	Transect extends 30 degrees from subplot center
150	Transect extends 150 degrees from subplot center
270	Transect extends 270 degrees from subplot center

9. CWDID Coarse woody debris piece number.

10. MEASYEAR Measurement year. The year the plot was completed.

11. SLOPDIST Slope distance. CWD slope distance indicating the slope distance from the subplot center to the point where the transect intersects the longitudinal center of the piece. Recorded to the nearest 0.1 feet.

12. SPCD Species code. An FIA tree species code. Refer to Appendix F for codes.
13. DECAYCD Decay code. CWD decay class, which predominates along the recorded CWD total length of the piece.

Decay Class	Structural Integrity	Texture of Rotten Portions	Color of Wood	Invading Roots	Branches and Twigs
1	Sound, freshly fallen, intact logs	Intact, no rot; conks of stem decay absent	Original color	Absent	If branches are present, fine twigs are still attached and have tight bark
2	Sound	Mostly intact; sapwood partly soft (starting to decay) but can't be pulled apart by hand	Original color	Absent	If branches are present, many fine twigs are gone and remaining fine twigs have peeling bark
3	Heartwood sound; piece supports its own weight	Hard, large pieces; sapwood can be pulled apart by hand or sapwood absent	Reddish-brown or original color	Sapwood only	Branch stubs will not pull out
4	Heartwood rotten; piece does not support its own weight, but maintains its shape	Soft, small blocky pieces; a metal pin can be pushed into heartwood	Reddish or light brown	Through-out	Branch stubs pull out
5	None, piece no longer maintains its shape, it spreads out on ground	Soft; powdery when dry	Red-brown to dark brown	Through-out	Branch stubs and pitch pockets have usually rotted down

Note: CWD decay class 5 pieces must still resemble a log, therefore, the first tally rule is that they must be ≥ 5.0 inches in diameter, ≥ 5.0 inches from the surface of the ground, and at least 3.0 feet long

14. TRANSDIA Transect diameter. The diameter at point of intersection that indicates the piece's diameter at the point where the transect intersects the longitudinal center of the piece. Recorded to the nearest inch.
15. SMALLDIA Small diameter. The diameter at the small end that indicates the diameter at the piece's small end, recorded to the nearest inch. The diameter at the small end occurs either at (1) the actual end of the piece, if the end has a diameter ≥ 3.0 inches, or (2) at the point where the piece tapers down to 3.0 inches in diameter.
16. LARGEDIA Large diameter. The diameter at the large end that indicates the diameter at the piece's large end, recorded to the nearest inch. The

large end will occur either at a broken or sawn end, at a fracture, or at the root collar.

17. LENGTH Length. CWD total length is the length of the piece that lies between the piece's recorded diameter at the small end and diameter at the large end. Recorded to the nearest foot.
18. HOLLOWCD Hollow code. This code indicates whether or not the piece is hollow.
- | Code | Description |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Y | A piece is considered hollow if a cavity extends at least 2 feet along the central longitudinal axis of the piece, and the diameter of the entrance to the cavity is at least 1/4 of the diameter of the piece where the entrance occurs. The entrance occurs at the point where the circumference of the cavity is whole -- the point where wood is present completely around the circumference of the cavity. The length of the cavity begins at this point. |
| N | Does not meet criteria for being a hollow log |
19. CWDHSTCD Coarse woody debris history code. Indicates whether or not the piece of CWD is on the ground as a result of harvesting operations or as a result of natural circumstances.
- | Code | Description |
|------|--------------------------------------------------------------------------------------------|
| 1 | CWD piece is on the ground as a result of natural causes |
| 2 | CWD piece is on the ground as a result of major recent harvest activity (<= 15 yrs old) |
| 3 | CWD piece is on the ground as a result of older harvest activity (> 15 yrs old) |
| 4 | CWD piece is on the ground as a result of an incidental harvest (such as firewood cutting) |
| 5 | Exact Reason Unknown |
20. CREATED_BY The user who created the record.
21. CREATED_DATE The date the record was created. Date will be in the form DD-MON-YYYY.

22. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

23. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

24. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

25. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Down Woody Material Duff, Litter, Fuel Table (Oracle table name is DWM_DUFF_LITTER_FUEL)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	TRANSECT	NUMBER(3)	Coded
8	SUBP	NUMBER(1)	Coded
9	SMPLOCCD	NUMBER(1)	Number
10	MEASYEAR	NUMBER(4)	Year (YYYY)
11	SMPLDCD	NUMBER(1)	Coded
12	DUFFDEP	NUMBER	Inches
13	LITTDEP	NUMBER	Inches
14	FUELDEP	NUMBER	Feet
15	CREATED_BY	VARCHAR2(30)	Character
16	CREATED_DATE	DATE	DD-MON-YYYY
17	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
18	MODIFIED_BY	VARCHAR2(30)	Character
19	MODIFIED_DATE	DATE	DD-MON-YYYY
20	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

DDL_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, TRANSECT, SUBP, SMPLOCCD)
 DDL_PK (CN)
 DDL_UK (PLT_CN, TRANSECT, SUBP, SMPLOCCD)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.
7. TRANSECT Transect. Indicates the azimuth of the subplot transect.
- | Code | Description |
|------|--------------------------------------------------|
| 030 | Transect extends 30 degrees from subplot center |
| 150 | Transect extends 150 degrees from subplot center |
| 270 | Transect extends 270 degrees from subplot center |
8. SUBP Subplot number. Number of the subplot center from which the transect originates.
- | Code | Description |
|------|-------------------|
| 1 | Center subplot |
| 2 | North subplot |
| 3 | Southeast subplot |
| 4 | Southwest subplot |
9. SMPLOCCD Sample location code. Duff/litter sample location (Note: During 2001 field season duff/litter sampled at two locations (14 and 24 feet), while from 2002 to present duff/litter are sampled at one location along the CWD transect at 24 feet).
- | Code | Description |
|------|-----------------------------------------------|
| 1 | Duff/litter sampled at 14 feet slope distance |
| 2 | Duff/litter sampled at 24 feet slope distance |
10. MEASYEAR Measurement year. The year the plot was completed.

11. SMPLDCD Sampled code. Indicates if the depth of the duff, litter, and fuelbed was measured.

Code	Description
0	Duff and litter depth not sampled; Fuelbed is sampled
1	All sampled: Duff, litter, and fuelbed
2	Nothing sampled; Duff, litter, fuelbed are not sampled

12. DUFFDEP Duff depth. Depth of duff layer to the nearest 0.1 inch.

13. LITTDEP Litter depth. Depth of litter layer to the nearest 0.1 inch.

14. FUELDEP Fuelbed depth. Depth of fuelbed to the nearest 0.1 foot.

15. CREATED_BY

The user who created the record.

16. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

17. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

18. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

19. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

20. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Down Woody Material Fine Woody Debris Table (Oracle table name is DWM_FINE_WOODY_DEBRIS)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	TRANSECT	NUMBER(3)	Coded
8	SUBP	NUMBER(1)	Coded
9	CONDID	NUMBER(1)	Coded
10	MEASYEAR	NUMBER(4)	Year (YYYY)
11	SMALLCT	NUMBER(3)	Number
12	MEDIUMCT	NUMBER(3)	Number
13	LARGECT	NUMBER(3)	Number
14	RSNCTCD	NUMBER(1)	Coded
15	PILESCD	NUMBER(1)	Coded
16	CREATED_BY	VARCHAR2(30)	Character
17	CREATED_DATE	DATE	DD-MON-YYYY
18	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
19	MODIFIED_BY	VARCHAR2(30)	Character
20	MODIFIED_DATE	DATE	DD-MON-YYYY
21	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

DFW_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, TRANSECT, SUBP, CONDID)
DFW_PK (CN)
DFW_UK (PLT_CN, TRANSECT, SUBP, CONDID)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is

selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

- 4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table

- 5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

- 6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

- 7. TRANSECT Transect. The azimuth of the subplot transect on which the piece is sampled.

Code	Description
030	Transect extends 30 degrees from subplot center
150	Transect extends 150 degrees from subplot center
270	Transect extends 270 degrees from subplot center

- 8. SUBP Subplot number. Number of the subplot. Annual inventories have subplot number values of 1 through 4. Periodic inventories subplot numbers will vary. For more information, contact the appropriate FIA unit.

- 9. CONDID Forest condition class. The code indicating the number of the condition class that pertains to the FWD count.

- 10. MEASYEAR Measurement year. The year the plot was completed.

- 11. SMALLCT Small count. 1-hr FWD tally. The number of pieces counted in this size class (0.01 to 0.24-inch diameter) along the transect segment. Individual pieces are tallied up to 50, then ocularly estimated over a tally of 50 (see 14.5, #6).

- 12. MEDIUMCT Medium count. 10-hr FWD tally. The number of pieces counted in this size class (0.25 to 0.9-inch diameter) along the transect segment. Individual pieces are tallied up to 50, then ocularly estimated over a tally of 50 (see 14.5, #6).

13. **LARGECT** Large count. 100-hr FWD tally. The number of pieces counted in this size class (1.0 to 2.9 inch diameter) along the transect segment. Individual pieces are tallied up to 20, then ocularly estimated over a tally of 20 (see section 14.5, #6).

14. **RSNCTCD** Reason count code. Reason high tally code that applies to the situation encountered on the transect. A code is entered if any of the counts on a transect are greater than 100 pieces.

Code	Description
0	FWD is not unusually high
1	High count is due to an overall high density of FWD across the transect
2	Wood Rat's nest located on transect
3	Tree or shrub laying across transect
4	Other reason

15. **PILESCD** Piles code. Pile obstruction code that indicates whether a residue pile intersects the FWD transect segment. The default is always 0; crews will enter a 1 if the situation is encountered on the transect.

Code	Description
0	No
1	Yes

16. **CREATED_BY**

The user who created the record.

17. **CREATED_DATE**

The date the record was created. Date will be in the form DD-MON-YYYY.

18. **CREATED_IN_INSTANCE**

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

19. **MODIFIED_BY**

The user who modified the record. This field will be null if the data have not been modified since initial creation.

20. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

21. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Down Woody Material Microplot Fuel Table (Oracle table name is DWM_MICROPLOT_FUEL)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	SUBP	NUMBER(1)	Coded
8	MEASYEAR	NUMBER(4)	Year (YYYY)
9	LVSHRBCD	NUMBER(2)	Coded
10	DSHRBCD	NUMBER(2)	Coded
11	LVHRBCD	NUMBER(2)	Coded
12	DHRBCD	NUMBER(2)	Coded
13	LITTERCD	NUMBER	Feet
14	LVSHRBHT	NUMBER	Feet
15	DSHRBHT	NUMBER	Feet
16	LVHRBHT	NUMBER	Feet
17	DHRBHT	NUMBER	Feet
18	CREATED_BY	VARCHAR2(30)	Character
19	CREATED_DATE	DATE	DD-MON-YYYY
20	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
21	MODIFIED_BY	VARCHAR2(30)	Character
22	MODIFIED_DATE	DATE	DD-MON-YYYY
23	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

DMF_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, SUBP)
 DMF_PK (CN)
 DMF_UK (PLT_CN, SUBP)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.
4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table
5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.
6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.
7. SUBP Subplot number. Number of the subplot center from which the transect originates.
8. MEASYEAR Measurement year. The year the plot was completed.
9. LVSHRBCD Live shrub code. The code for the cover class that indicates the percent cover of the forested microplot area covered with live shrubs.

Code	Description
1	Center subplot
2	North subplot
3	Southeast subplot
4	Southwest subplot

Code	Description
00	Absent
01	Trace (< 1% cover)
10	1-10%
20	11-20%
30	21-30%
....	
90	81-90%
99	91-100%

10. DSHRBCD Dead shrub code. The code for the cover class that indicates the percent cover of the forested microplot area covered with dead shrubs and dead branches attached to live shrubs if visible from above.

Code	Description
00	Absent
01	Trace (< 1% cover)
10	1-10%
20	11-20%
30	21-30%
....	
90	81-90%
99	91-100%

11. LVHRBCD Live herb code. The code for the cover class that indicates the percent cover of the forested microplot area covered with live herbaceous plants.

Code	Description
00	Absent
01	Trace (< 1% cover)
10	1-10%
20	11-20%
30	21-30%
....	
90	81-90%
99	91-100%

12. DHRBCD Dead herb code. The code for the cover class that indicates the percent cover of the forested microplot area covered with dead herbaceous plants and dead leaves attached to live plants if visible from above.

Code	Description
00	Absent
01	Trace (< 1% cover)
10	1-10%
20	11-20%
30	21-30%
....	
90	81-90%
99	91-100%

13. LITTERCD Litter code. The code for the cover class that indicates the percent cover of the forested microplot area covered with litter. Litter is the layer of freshly fallen leaves, twigs, dead moss, dead lichens, and other fine particles of organic matter found on the surface of the forest floor. Decomposition is minimal.

Code	Description
00	Absent
01	Trace (< 1% cover)
10	1-10%
20	11-20%
30	21-30%
....	
90	81-90%
99	91-100%

14. LVSHRBHT Live shrub height. Indicates the height of the tallest shrub to the nearest 0.1 foot. Heights < 6 feet are measured and heights \geq 6 feet are estimated.

15. DSHRBHT Dead shrub height. Indicates the height of the tallest dead shrub to the nearest 0.1 foot. Heights < 6 feet are measured and heights \geq 6 feet are estimated.

16. LVHRBHT Live herb height. Indicates the height (at the tallest point) of the live herbaceous layer to the nearest 0.1 foot. Maximum height is 6 feet.
17. DHRBHT Dead herb height. Indicates the height (at the tallest point) of the dead herbaceous layer to the nearest 0.1 foot. Maximum height is 6 feet.
18. CREATED_BY

 The user who created the record.
19. CREATED_DATE

 The date the record was created. Date will be in the form DD-MON-YYYY.
20. CREATED_IN_INSTANCE

 The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.
21. MODIFIED_BY

 The user who modified the record. This field will be null if the data have not been modified since initial creation.
22. MODIFIED_DATE

 The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.
23. MODIFIED_IN_INSTANCE

 The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Down Woody Material Residual Pile Table (Oracle table name is DWM_RESIDUAL_PILE)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	SUBP	NUMBER(1)	Coded
8	PILE	NUMBER	
9	MEASYEAR	NUMBER(4)	Year (YYYY)
10	CONDID	NUMBER(1)	Coded
11	SHAPECD	NUMBER(1)	Coded
12	AZIMUTH	NUMBER(3)	Degrees
13	DENSITY	NUMBER(2)	Percent
14	HEIGHT1	NUMBER(2)	Feet
15	WIDTH1	NUMBER(2)	Feet
16	LENGTH1	NUMBER(2)	Feet
17	HEIGHT2	NUMBER(2)	Feet
18	WIDTH2	NUMBER(2)	Feet
19	LENGTH2	NUMBER(2)	Feet
20	CREATED_BY	VARCHAR2(30)	Character
21	CREATED_DATE	DATE	DD-MON-YYYY
22	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
23	MODIFIED_BY	VARCHAR2(30)	Character
24	MODIFIED_DATE	DATE	DD-MON-YYYY
25	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

DRP_NAT_I (STATECD, INVYR, COUNTYCD, PLOT, SUBP, PILE)
 DRP_PK (CN)
 DRP_UK (PLT_CN, SUBP, PILE)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table

5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

7. SUBP Subplot number.

Code	Description
1	Center subplot
2	North subplot
3	Southeast subplot
4	Southwest subplot

8. PILE Subplot pile number.

9. MEASYEAR Measurement year. The year the plot was completed.

10. CONDID Forest condition class. The code indicating the number of the condition class to which the pile is assigned.

11. SHAPECD Shape code. The pile is assigned a shape code depending on its unique shape (figure 14-12 in field methods guide).

Code	Description
1	Paraboloids
2	Half-cylinder
3	Half-frustum of cone
4	Irregular solid

12. AZIMUTH The code indicating the azimuth from the subplot center to the pile. This azimuth centers on the pile so that it can be relocated. Use 360 for north.
13. DENSITY Density (packing ratio of pile). Use the PILE DENSITY variable to estimate the percent of the pile that contains woody material ≥ 3 inches. The code estimating the percent of the pile that consists of wood. Air, soil, rock, and live plants are not included in the estimate. Estimate to the nearest 10 percent.
- | Code | Description |
|------|--------------------|
| 00 | Absent |
| 01 | Trace (< 1% cover) |
| 10 | 1 – 10% |
| 20 | 11-20% |
| 30 | 21-30% |
| | |
| 90 | 81-90% |
| 99 | 91-100% |
14. HEIGHT1 Pile height1 (ft). The code indicating the height of either end of the pile. Estimated to the nearest foot. Pile height 1 may equal pile height 2.
15. WIDTH1 Pile width1 (ft). The code indicating the width of the sides of the pile. Estimated to the nearest foot. Pile width 1 may equal pile width 2.
16. LENGTH1 Pile length1 (ft). The code indicating the length of the sides of the pile. Estimated to the nearest foot. Pile length 1 may equal pile length 2.
17. HEIGHT2 Pile height2 (ft). The code indicating the height of either end of the pile. Estimated to the nearest foot. Pile height 1 may equal pile height 2.
18. WIDTH2 Pile width2 (ft). The code indicating the width of the sides of the pile. Estimated to the nearest foot. Pile width 1 may equal pile width 2.
19. LENGTH2 Pile length2 (ft). The code indicating the length of the sides of the pile. Estimated to the nearest foot. Pile length 1 may equal pile length 2.

20. CREATED_BY

The user who created the record.

21. CREATED_DATE

The date the record was created. Date will be in the form DD-MON-YYYY.

22. CREATED_IN_INSTANCE

The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.

23. MODIFIED_BY

The user who modified the record. This field will be null if the data have not been modified since initial creation.

24. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

25. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Down Woody Material Transect Segment Table (Oracle table name is DWM_TRANSECT_SEGMENT)

	Column Name	Oracle data type	Value or unit of measure
1	CN	VARCHAR2(34)	Character
2	PLT_CN	VARCHAR2(34)	Character
3	INVYR	NUMBER(4)	Year (YYYY)
4	STATECD	NUMBER(4)	Coded
5	COUNTYCD	NUMBER(3)	Coded
6	PLOT	NUMBER(5)	Number
7	SUBP	NUMBER(1)	Coded
8	TRANSECT	NUMBER(3)	Coded
9	SEGMNT	NUMBER(1)	
10	MEASYEAR	NUMBER(4)	Year (YYYY)
11	CONDID	NUMBER(1)	Coded
12	BEGNDIST	NUMBER	Feet
13	ENDDIST	NUMBER	Feet
14	SLOPE	NUMBER	Percent
15	HORIZDIST	NUMBER	
16	CREATED_BY	VARCHAR2(30)	Character
17	CREATED_DATE	DATE	DD-MON-YYYY
18	CREATED_IN_INSTANCE	VARCHAR2(6)	Number
19	MODIFIED_BY	VARCHAR2(30)	Character
20	MODIFIED_DATE	DATE	DD-MON-YYYY
21	MODIFIED_IN_INSTANCE	VARCHAR2(6)	Number

DTS_NAT_I (STATECD,INVYR,COUNTYCD,PLOT,SUBP,TRANSECT,SEGMNT)
 DTS_PK (CN)
 DTS_UK (PLT_CN,SUBP,TRANSECT,SEGMNT)

1. CN Sequence number. A unique sequence number used to identify a county record.

2. PLT_CN Plot sequence number. Foreign key linking the subplot record to the plot record.

3. INVYR Inventory year. The calendar year that best represents when the inventory data were collected (e.g., 1994). FIA data are often collected over more than 1 year; however, a specific year is

selected that best represents the year when the data were collected. A plot belongs to a panel. INVYR is the year in which the majority of plots in that panel were to be collected.

- 4. STATECD State code. Bureau of the Census Federal Information Processing Standards (FIPS) two-digit code for each State. Refer to table 1 at the end of the description of the SURVEY table

- 5. COUNTYCD County code. The identification number for a county, parish, watershed, borough, or similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1990, are used. Refer to Appendix C for codes.

- 6. PLOT Phase 2 plot number. An identifier for a plot location. Along with STATECD, CYCLE, SUBCYCLE, COUNTYCD and/or some other combinations of variables, PLOT may be used to uniquely identify a plot. On the base grid of plots, a single phase 2 plot is associated with a phase 2 hex.

- 7. SUBP Subplot number. The code indicating the subplot center from which the transect originates.

Code	Description
1	Center subplot
2	North subplot
3	Southeast subplot
4	Southwest subplot

- 8. TRANSECT Transect. The azimuth of the subplot transect on which the piece is sampled.

Code	Description
030	Transect extends 30 degrees from subplot center
150	Transect extends 150 degrees from subplot center
270	Transect extends 270 degrees from subplot center

- 9. SEGMNT Transect segment number.

- 10. MEASYEAR Measurement year. The year the plot was completed.

- 11. CONDID Segment condition class. The code indicating the number of the condition class for the transect segment. Use the same code assigned to the condition class on the subplot or elsewhere on the plot. The first segment recorded for each transect will have the same condition class number as assigned to the subplot center.

12. **BEGNDIST** Beginning distance. The location (using slope distance) on the transect line where the transect intersects the boundary with the adjacent condition class nearer to the subplot center. The first record for each transect will have a beginning distance of 00.0 ft. Each subsequent record will have a beginning distance equal to the ending distance of the previous record. Measured to the nearest 0.1 ft.
13. **ENDDIST** Ending distance. The location (using slope distance) on the transect line where the transect exits the condition class being delineated and intersects the boundary with a different condition class further away from the subplot center. If no other condition classes are encountered, the location (using slope distance) of the end of the transect line is recorded. Measured to the nearest 0.1 foot.
14. **SLOPE** Segment slope. Indicates the average slope percent along the transect within the condition class being segmented. When only one condition class is present on a transect, slope percent is the average slope percent along the entire transect. Measured to the nearest 5%.
15. **HORIZDIST** Horizontal distance. Segment Horizontal distance (ft)
16. **CREATED_BY**
The user who created the record.
17. **CREATED_DATE**
The date the record was created. Date will be in the form DD-MON-YYYY.
18. **CREATED_IN_INSTANCE**
The database instance in which the record was created. This uniquely identifies which computer system was used to create the record.
19. **MODIFIED_BY**
The user who modified the record. This field will be null if the data have not been modified since initial creation.

20. MODIFIED_DATE

The date the record was last modified. This field will be null if the data have not been modified since initial creation. Date will be in the form DD-MON-YYYY.

21. MODIFIED_IN_INSTANCE

The database instance in which the record was modified. This field will be null if the data have not been modified since initial creation.

Chapter 2 -- Views

VEG_QUADRAT_SPP

The data presented in this created view originates from the Vegetation Subplot Species Table (VEG_SUBPLOT_SPP). In the Vegetation Subplot Species table, each subplot species record contains presence/absence information on each quadrat. The Quadrat Species “view” is the first step to put the data in a format where it can be easily used for estimations of species quadrat frequency and quadrat-level species richness.

Species quadrat frequency is determined by dividing the number of quadrats where a species was recorded by the total number of quadrats sampled. The Quadrat Species view is used to determine the number of quadrats where a species was recorded. The total number of quadrats sampled is determined from the Vegetation Quadrat Table (QUADRAT_STATUS = 1 or 3).

Quadrat species richness is the number of species found on a quadrat (on a standard area of 1 m²). This view is used to determine the number of species on each quadrat where QUADRAT_STATUS = 1. Population estimates of quadrat species richness must also include quadrats where QUADRAT_STATUS = 3 (quadrat sampled, but no vascular plants were rooted in or overhanging within 6 feet).

```
CREATE OR REPLACE VIEW VEG_QUADRAT_SPP_VW
(PLT_CN, VVT_CN, VSB_CN, VQT_CN, VPS_CN,
 STATECD, INVYR, COUNTYCD, PLOT, SUBP,
 QUADRAT, VEG_FLDSPCD, UNIQUE_SP_NBR, VEG_SPCD)
AS
Select
"PLT_CN","VVT_CN","VSB_CN","VQT_CN","VPS_CN","STATECD","INVYR","COUNTYCD","PLOT",
"SUBP","QUADRAT","VEG_FLDSPCD","UNIQUE_SP_NBR","VEG_SPCD"
from
(SELECT vss.plt_cn, vss.vvt_cn, vsb.cn as vsb_cn, vqt.cn as vqt_cn, vss.vps_cn,
 plt.statecd, plt.invyr, plt.countycd, plt.plot,
 vss.subp, 1 AS quadrat,
 vps.veg fldspcd, vps.unique_sp_nbr, vps.veg_spcd
FROM veg_visit vvt,
 plot plt,
 veg_plot_species vps,
 veg_subplot vsb,
 veg_subplot_spp vss,
 veg_quadrat vqt
WHERE plt.cn = vvt.plt_cn
AND vvt.cn = vps.vvt_cn
AND vps.cn = vss.vps_cn
AND vvt.cn = vsb.vvt_cn
AND vsb.vvt_cn = vps.vvt_cn
AND vsb.subp = vss.subp
AND vqt.vsb_cn = vsb.cn
AND vqt.quadrat = 1
```

```
AND vss.quad_1_presence = 1
UNION
SELECT vss.plt_cn, vss.vvt_cn, vsb.cn as vsb_cn, vqt.cn as vqt_cn, vss.vps_cn,
    plt.statecd, plt.invyr, plt.countycd, plt.plot,
    vss.subp, 2 AS quadrat,
    vps.veg fldspcd, vps.unique_sp_nbr, vps.veg_spcd
FROM veg_visit vvt,
    plot plt,
    veg_plot_species vps,
    veg_subplot vsb,
    veg_subplot_spp vss,
    veg_quadrat vqt
WHERE plt.cn = vvt.plt_cn
AND vvt.cn = vps.vvt_cn
AND vps.cn = vss.vps_cn
AND vvt.cn = vsb.vvt_cn
AND vsb.vvt_cn = vps.vvt_cn
AND vsb.subp = vss.subp
AND vqt.vsb_cn = vsb.cn
AND vqt.quadrat = 2
AND vss.quad_2_presence = 1
UNION
SELECT vss.plt_cn, vss.vvt_cn, vsb.cn as vsb_cn, vqt.cn as vqt_cn, vss.vps_cn,
    plt.statecd, plt.invyr, plt.countycd, plt.plot,
    vss.subp, 3 AS quadrat,
    vps.veg fldspcd, vps.unique_sp_nbr, vps.veg_spcd
FROM veg_visit vvt,
    plot plt,
    veg_plot_species vps,
    veg_subplot vsb,
    veg_subplot_spp vss,
    veg_quadrat vqt
WHERE plt.cn = vvt.plt_cn
AND vvt.cn = vps.vvt_cn
AND vps.cn = vss.vps_cn
AND vvt.cn = vsb.vvt_cn
AND vsb.vvt_cn = vps.vvt_cn
AND vsb.subp = vss.subp
AND vqt.vsb_cn = vsb.cn
AND vqt.quadrat = 3
AND vss.quad_3_presence = 1
) a
    order by a.statecd, a.invyr, a.countycd, a.plot, a.subp, a.quadrat;
```

Appendix A – Index of Column Names

The following table lists column names used in the database tables, their location within the table, and a short description of the variable.

Column name and field guide section	Table name	Location in table	Description
ABUNDANCE_CLASS (10.3.9)	LICHEN_LAB	9	
AIR_DRY_SOIL_WT	SOILS_LAB	16	
AMNT_MAX	OZONE_SPECIES_SUMMARY	11	Amount maximum
AMNT_MEAN	OZONE_SPECIES_SUMMARY	13	Amount mean
AMNT_MIN	OZONE_SPECIES_SUMMARY	12	Amount minimum
ASPECT (9.4.11)	OZONE_PLOT_SUMMARY	13	
ASPECT (9.4.11)	OZONE_SPECIES_SUMMARY	24	
ASPECT (9.4.11)	OZONE_VISIT	14	
AZIMUTH (14.8.3)	DWM_RESIDUAL_PILE	12	Bearing from subplot to pile (deg)
BEGNDIST (14.3.4)	DWM_TRANSECT_SEGMENT	12	Segment begin slope dist (ft)
BIOSITE_INDEX	OZONE_BIOSITE_SUMMARY	14	The biosite index at a biosite (P3Hex) equals the sum of the species index (BIOSPCD_INDEX) divided by the species evaluation count. $\text{count.biosite_index} = \text{summation}(\text{biospcd_index}) / \text{species_eval_cnt}$
BIOSITE_INDEX	OZONE_PLOT_SUMMARY	10	The biosite index at a biosite (P3Hex) equals the sum of the species index (BIOSPCD_INDEX) divided by the species evaluation count. $\text{count.biosite_index} = \text{summation}(\text{biospcd_index}) / \text{species_eval_cnt}$
BIOSITE_INDEX_MULTIPLIER	OZONE_BIOSITE_SUMMARY	15	
BIOSITE_INDEX_MULTIPLIER	OZONE_PLOT_SUMMARY	19	
BIOSPCD (9.6.1)	OZONE_SPECIES_SUMMARY	10	
BIOSPCD (9.6.1)	OZONE_VALIDATION	9	
BIOSPCD_INDEX	OZONE_SPECIES_SUMMARY	21	
BIOSPCD_SUM	OZONE_SPECIES_SUMMARY	20	
BRAY1_P	SOILS_LAB	43	
BULK_DENSITY	SOILS_LAB	21	

Column name and field guide section	Table name	Location in table	Description
C_INORG_PCT	SOILS_LAB	24	
C_ORG_PCT	SOILS_LAB	23	
C_TOTAL_PCT	SOILS_LAB	25	
CN	DWM_COARSE_WOODY_DEBRIS	1	Unique Index
CN	DWM_DUFF_LITTER_FUEL	1	Unique Index
CN	DWM_FINE_WOODY_DEBRIS	1	Unique Index
CN	DWM_MICROPLOT_FUEL	1	Unique Index
CN	DWM_RESIDUAL_PILE	1	Unique Index
CN	DWM_TRANSECT_SEGMENT	1	Unique Index
CN	DWM_VISIT	1	Unique Index
CN	LICHEN_LAB	1	
CN	LICHEN_PLOT_SUMMARY	1	
CN	LICHEN_SPECIES_SUMMARY	1	
CN	LICHEN_VISIT	1	Unique Index
CN	OZONE_BIOSITE_SUMMARY	1	
CN	OZONE_PLOT	1	
CN	OZONE_PLOT_SUMMARY	1	
CN	OZONE_SPECIES_SUMMARY	1	
CN	OZONE_VALIDATION	1	Unique Index
CN	OZONE_VISIT	1	Unique Index
CN	REF_LICHEN_SPECIES	7	
CN	REF_LICHEN_SPP_COMMENTS	6	
CN	SOILS_EROSION	1	Unique Index
CN	SOILS_LAB	1	
CN	SOILS_SAMPLE_LOC	1	Unique Index
CN	SOILS_VISIT	1	Unique Index
CN	VEG_PLOT_SPECIES	1	CN partly identifies NIMS_VEG_PLOT_SPECIES_TBL
CN	VEG_QUADRAT	1	CN partly identifies NIMS_VEG_QUADRAT_TBL
CN	VEG_SUBPLOT	1	CN partly identifies NIMS_VEG_SUBPLOT_TBL
CN	VEG_SUBPLOT_SPP	1	CN partly identifies

Column name and field guide section	Table name	Location in table	Description
CN	VEG_VISIT	1	NIMS_VEG_SUBPLOT_SPECIES_TBL CN partly identifies NIMS_VEG_VISIT_TBL
COARSE_FRACTION_PCT	SOILS_LAB	22	
COMMUNITY_DESC_SPECIMEN_LABEL (13.4.6)	VEG_SUBPLOT	13	Community Description for Specimen Label
COMPCPCT (11.6.2)	SOILS_EROSION	10	% Compacted Area
CONDID (14.5.2)	DWM_FINE_WOODY_DEBRIS	9	Forest condition class nbr
CONDID (14.8.2)	DWM_RESIDUAL_PILE	10	Forest cond. of pile
CONDID (14.3.3)	DWM_TRANSECT_SEGMENT	11	Segment cond class nbr
CONDID (11.7.9)	SOILS_SAMPLE_LOC	19	Forest condition class nbr
CONDID (13.7.3)	VEG_QUADRAT	11	Condition Class Number
COUNTYCD	DWM_COARSE_WOODY_DEBRIS	5	County Code
COUNTYCD	DWM_DUFF_LITTER_FUEL	5	County Code
COUNTYCD	DWM_FINE_WOODY_DEBRIS	5	County Code
COUNTYCD	DWM_MICROPLOT_FUEL	5	County Code
COUNTYCD	DWM_RESIDUAL_PILE	5	County Code
COUNTYCD	DWM_TRANSECT_SEGMENT	5	County Code
COUNTYCD	DWM_VISIT	5	County Code
COUNTYCD (10.3.5)	LICHEN_LAB	5	County Code
COUNTYCD (10.3.5)	LICHEN_PLOT_SUMMARY	5	County Code
COUNTYCD (10.3.5)	LICHEN_VISIT	5	County Code
COUNTYCD (9.4.2)	OZONE_BIOSITE_SUMMARY	4	County Code
COUNTYCD (9.4.2)	OZONE_PLOT	7	County Code
COUNTYCD (9.4.2)	OZONE_PLOT_SUMMARY	4	County Code
COUNTYCD (9.4.2)	OZONE_SPECIES_SUMMARY	4	County Code
COUNTYCD (9.4.2)	OZONE_VALIDATION	5	County code
COUNTYCD (9.4.2)	OZONE_VISIT	5	County code
COUNTYCD	SOILS_EROSION	5	County Code
COUNTYCD	SOILS_LAB	5	County Code
COUNTYCD	SOILS_SAMPLE_LOC	5	County Code
COUNTYCD	SOILS_VISIT	5	County Code
COUNTYCD (13.3.2)	VEG_PLOT_SPECIES	6	County Code
COUNTYCD (13.3.2)	VEG_QUADRAT	7	County Code

Column name and field guide section	Table name	Location in table	Description
COUNTYCD (13.3.2)	VEG_SUBPLOT	6	County Code
COUNTYCD (13.3.2)	VEG_SUBPLOT_SPP	8	County Code
COUNTYCD (13.3.2)	VEG_VISIT	5	County Code
CREATED_BY	DWM_COARSE_WOODY_DEBRIS	20	Created by
CREATED_BY	DWM_DUFF_LITTER_FUEL	15	Created by
CREATED_BY	DWM_FINE_WOODY_DEBRIS	16	Created by
CREATED_BY	DWM_MICROPLOT_FUEL	18	Created by
CREATED_BY	DWM_RESIDUAL_PILE	20	Created by
CREATED_BY	DWM_TRANSECT_SEGMENT	16	Created by
CREATED_BY	DWM_VISIT	13	Created by
CREATED_BY	LICHEN_LAB	12	Created by
CREATED_BY	LICHEN_PLOT_SUMMARY	12	Created by
CREATED_BY	LICHEN_SPECIES_SUMMARY	13	Created by
CREATED_BY	LICHEN_VISIT	34	Created by
CREATED_BY	OZONE_BIOSITE_SUMMARY	22	Created by
CREATED_BY	OZONE_PLOT	22	Created by
CREATED_BY	OZONE_PLOT_SUMMARY	22	Created by
CREATED_BY	OZONE_SPECIES_SUMMARY	30	Created by
CREATED_BY	OZONE_VALIDATION	16	Created by
CREATED_BY	OZONE_VISIT	24	Created by
CREATED_BY	REF_LICHEN_SPECIES	8	Created by
CREATED_BY	REF_LICHEN_SPP_COMMENTS	7	Created by
CREATED_BY	SOILS_EROSION	15	Created by
CREATED_BY	SOILS_LAB	49	Created by
CREATED_BY	SOILS_SAMPLE_LOC	25	Created by
CREATED_BY	SOILS_VISIT	10	Created by
CREATED_BY	VEG_PLOT_SPECIES	15	Created by
CREATED_BY	VEG_QUADRAT	15	Created by
CREATED_BY	VEG_SUBPLOT	31	Created by
CREATED_BY	VEG_SUBPLOT_SPP	23	Created by
CREATED_BY	VEG_VISIT	16	Created by
CREATED_DATE	DWM_COARSE_WOODY_DEBRIS	21	Created Date
CREATED_DATE	DWM_DUFF_LITTER_FUEL	16	Created Date

Column name and field guide section	Table name	Location in table	Description
CREATED_DATE	DWM_FINE_WOODY_DEBRIS	17	Created Date
CREATED_DATE	DWM_MICROPLOT_FUEL	19	Created Date
CREATED_DATE	DWM_RESIDUAL_PILE	21	Created Date
CREATED_DATE	DWM_TRANSECT_SEGMENT	17	Created Date
CREATED_DATE	DWM_VISIT	14	Created Date
CREATED_DATE	LICHEN_LAB	13	Created Date
CREATED_DATE	LICHEN_PLOT_SUMMARY	13	Created Date
CREATED_DATE	LICHEN_SPECIES_SUMMARY	14	Created Date
CREATED_DATE	LICHEN_VISIT	35	Created Date
CREATED_DATE	OZONE_BIOSITE_SUMMARY	23	Created Date
CREATED_DATE	OZONE_PLOT	23	Created Date
CREATED_DATE	OZONE_PLOT_SUMMARY	23	Created Date
CREATED_DATE	OZONE_SPECIES_SUMMARY	31	Created Date
CREATED_DATE	OZONE_VALIDATION	17	Created Date
CREATED_DATE	OZONE_VISIT	25	Created Date
CREATED_DATE	REF_LICHEN_SPECIES	9	Created Date
CREATED_DATE	REF_LICHEN_SPP_COMMENTS	8	Created Date
CREATED_DATE	SOILS_EROSION	16	Created Date
CREATED_DATE	SOILS_LAB	50	Created Date
CREATED_DATE	SOILS_SAMPLE_LOC	26	Created Date
CREATED_DATE	SOILS_VISIT	11	Created Date
CREATED_DATE	VEG_PLOT_SPECIES	16	Created Date
CREATED_DATE	VEG_QUADRAT	16	Created Date
CREATED_DATE	VEG_SUBPLOT	32	Created Date
CREATED_DATE	VEG_SUBPLOT_SPP	24	Created Date
CREATED_DATE	VEG_VISIT	17	Created Date
CREATED_IN_INSTANCE	DWM_COARSE_WOODY_DEBRIS	22	Created in Instance
CREATED_IN_INSTANCE	DWM_DUFF_LITTER_FUEL	17	Created in Instance
CREATED_IN_INSTANCE	DWM_FINE_WOODY_DEBRIS	18	Created in Instance
CREATED_IN_INSTANCE	DWM_MICROPLOT_FUEL	20	Created in Instance
CREATED_IN_INSTANCE	DWM_RESIDUAL_PILE	22	Created in Instance
CREATED_IN_INSTANCE	DWM_TRANSECT_SEGMENT	18	Created in Instance
CREATED_IN_INSTANCE	DWM_VISIT	15	Created in Instance

Column name and field guide section	Table name	Location in table	Description
CREATED_IN_INSTANCE	LICHEN_LAB	14	Created in Instance
CREATED_IN_INSTANCE	LICHEN_PLOT_SUMMARY	14	Created in Instance
CREATED_IN_INSTANCE	LICHEN_SPECIES_SUMMARY	15	Created in Instance
CREATED_IN_INSTANCE	LICHEN_VISIT	36	Created in Instance
CREATED_IN_INSTANCE	OZONE_BIOSITE_SUMMARY	24	Created in Instance
CREATED_IN_INSTANCE	OZONE_PLOT	24	Created in Instance
CREATED_IN_INSTANCE	OZONE_PLOT_SUMMARY	24	Created in Instance
CREATED_IN_INSTANCE	OZONE_SPECIES_SUMMARY	32	Created in Instance
CREATED_IN_INSTANCE	OZONE_VALIDATION	18	Created in Instance
CREATED_IN_INSTANCE	OZONE_VISIT	26	Created in Instance
CREATED_IN_INSTANCE	REF_LICHEN_SPECIES	10	Created in Instance
CREATED_IN_INSTANCE	REF_LICHEN_SPP_COMMENTS	9	Created in Instance
CREATED_IN_INSTANCE	SOILS_EROSION	17	Created in Instance
CREATED_IN_INSTANCE	SOILS_LAB	51	Created in Instance
CREATED_IN_INSTANCE	SOILS_SAMPLE_LOC	27	Created in Instance
CREATED_IN_INSTANCE	SOILS_VISIT	12	Created in Instance
CREATED_IN_INSTANCE	VEG_PLOT_SPECIES	17	CREATED_IN_INSTANCE is of NIMS_VEG_PLOT_SPECIES_TBL
CREATED_IN_INSTANCE	VEG_QUADRAT	17	CREATED_IN_INSTANCE is of NIMS_VEG_PLOT_SPECIES_TBL
CREATED_IN_INSTANCE	VEG_SUBPLOT	33	CREATED_IN_INSTANCE is of NIMS_VEG_SUBPLOT_TBL
CREATED_IN_INSTANCE	VEG_SUBPLOT_SPP	25	CREATED_IN_INSTANCE is of NIMS_VEG_SUBPLOT_SPECIES_TBL
CREATED_IN_INSTANCE	VEG_VISIT	18	CREATED_IN_INSTANCE
CREW_TYPE (9.4.6)	OZONE_PLOT	20	Crew type code
CRWTYPCD	DWM_VISIT	11	Crew type code
CRWTYPCD (9.4.6)	OZONE_VALIDATION	11	Crew type code
CRWTYPCD (9.4.6)	OZONE_VISIT	20	Crew type code
CRYPTO_CRUST_COVER_PCT (13.6.1)	VEG_SUBPLOT	18	Ground Cover (Cryptobiotic Crust)
CTY_CN	OZONE_PLOT	3	
CWDHSTCD (14.4.3.9)	DWM_COARSE_WOODY_DEBRIS	19	History of CWD piece
CWDID	DWM_COARSE_WOODY_DEBRIS	9	CWD ID

Column name and field guide section	Table name	Location in table	Description
CYCLE	OZONE_PLOT	28	
DECAYCD (14.4.3.4)	DWM_COARSE_WOODY_DEBRIS	13	Decay Class
DENSITY (14.8.11)	DWM_RESIDUAL_PILE	13	Packing ratio of pile (%)
DETAILED_NONFOREST_LAND_ USE (13.4.5)	VEG_SUBPLOT	12	Detailed Nonforest Land Use
DHRBCD (14.7.8)	DWM_MICROPLOT_FUEL	12	Dead herb cover (%)
DHRBHT (14.7.9)	DWM_MICROPLOT_FUEL	17	Dead herb height (ft)
DIVERSITY	LICHEN_PLOT_SUMMARY	11	
DPTHSBSL (11.7.20)	SOILS_SAMPLE_LOC	23	Depth to a Restricted Layer
DSHRBCD (14.7.4)	DWM_MICROPLOT_FUEL	10	Dead shrub cover (%)
DSHRBHT (14.7.5)	DWM_MICROPLOT_FUEL	15	Dead shrub height (ft)
DUFFDEP (14.6.6)	DWM_DUFF_LITTER_FUEL	12	Depth of duff layer
DUMMY_SUBP_COVER_PRE200 4	VEG_SUBPLOT_SPP	21	
ECEC	SOILS_LAB	34	Effective cation exchange capacity
ELEV	OZONE_PLOT_SUMMARY	11	
ELEV	OZONE_SPECIES_SUMMARY	22	
ELEVATION (9.4.17)	OZONE_PLOT	17	
ENDDIST (14.3.6)	DWM_TRANSECT_SEGMENT	13	Segment end slope dist (ft)
EVENNESS	LICHEN_PLOT_SUMMARY	10	
EXCHNG_AL	SOILS_LAB	33	Exchangeable aluminum
EXCHNG_CA	SOILS_LAB	32	Exchangeable calcium
EXCHNG_CD	SOILS_LAB	40	Exchangeable cadmium
EXCHNG_CU	SOILS_LAB	38	Exchangeable copper
EXCHNG_FE	SOILS_LAB	36	Exchangeable iron
EXCHNG_K	SOILS_LAB	30	Exchangeable potassium
EXCHNG_MG	SOILS_LAB	31	Exchangeable magnesium
EXCHNG_MN	SOILS_LAB	35	Exchangeable manganese
EXCHNG_NA	SOILS_LAB	29	Exchangeable sodium
EXCHNG_NI	SOILS_LAB	37	Exchangeable nickel
EXCHNG_PB	SOILS_LAB	41	Exchangeable lead
EXCHNG_S	SOILS_LAB	42	Exchangeable sulfur
EXCHNG_ZN	SOILS_LAB	39	Exchangeable zinc

Column name and field guide section	Table name	Location in table	Description
FIELD_ID	OZONE_BIOSITE_SUMMARY	6	the 7-digit number used by the field crew for all current and active biosites
FIELD_ID	OZONE_PLOT	9	
FIELD_ID	OZONE_PLOT_SUMMARY	6	the 7-digit number used by the field crew for all current and active biosites
FIELD_ID	OZONE_SPECIES_SUMMARY	6	the 7-digit number used by the field crew for all current and active biosites
FIELD_ID	OZONE_VALIDATION	7	P3 Hexagon Number
FIELD_ID	OZONE_VISIT	7	P3 Hexagon Number
FIELD_MOIST_SOIL_WT	SOILS_LAB	15	
FIELD_MOIST_WATER_CONTENT_PCT	SOILS_LAB	18	
FLDCMTS1	LICHEN_VISIT	11	Field Comments (1-2)
FLDCMTS2	LICHEN_VISIT	12	Field Comments (1-2)
FORFLTHK	SOILS_SAMPLE_LOC	9	Forest Floor Thickness
FORFLTHKE (11.7.13)	SOILS_SAMPLE_LOC	15	Forest Floor Thickness at the East Edge of the Sampling Frame
FORFLTHKN (11.7.12)	SOILS_SAMPLE_LOC	11	Forest Floor Thickness at the North Edge of the Sampling Frame
FORFLTHKS (11.7.14)	SOILS_SAMPLE_LOC	13	Forest Floor Thickness at the South Edge of the Sampling Frame
FORFLTHKW (11.7.15)	SOILS_SAMPLE_LOC	17	Forest Floor Thickness at the West Edge of the Sampling Frame
FREQUENCY_PCT	LICHEN_SPECIES_SUMMARY	10	
FTRCD1 (10.3.23)	LICHEN_VISIT	23	Features (1-4)
FTRCD2 (10.3.23)	LICHEN_VISIT	24	Features (1-4)
FTRCD3 (10.3.23)	LICHEN_VISIT	25	Features (1-4)
FTRCD4 (10.3.23)	LICHEN_VISIT	26	Features (1-4)
FUELDEP (14.6.8)	DWM_DUFF_LITTER_FUEL	14	Depth of fuelbed (ft)
GAPPCT (10.3.21.1)	LICHEN_VISIT	20	Gap Percent
GAPRCNT (10.3.21.2)	LICHEN_VISIT	21	Gap Recent
GENUS	LICHEN_SPECIES_SUMMARY	8	
GENUS	REF_LICHEN_SPECIES	5	

Column name and field guide section	Table name	Location in table	Description
GRIDDEN	OZONE_VISIT	23	
GROUND_LOC_CD	OZONE_BIOSITE_SUMMARY	8	
GROUND_LOC_CD	OZONE_SPECIES_SUMMARY	8	
HEIGHT1 (14.8.9)	DWM_RESIDUAL_PILE	14	Pile height1 (ft)
HEIGHT2 (14.8.10)	DWM_RESIDUAL_PILE	17	Pile height2 (ft)
HOLLOWCD (14.4.3.8)	DWM_COARSE_WOODY_DEBRIS	18	HOLLOW?
HORIZDIST	DWM_TRANSECT_SEGMENT	15	Segment hor dist (ft)
HRDWDPC (10.3.17)	LICHEN_VISIT	18	Percent Hardwood
INJCHECK (9.4.16)	OZONE_VISIT	22	
INJVALID	OZONE_VALIDATION	13	
INVYR	DWM_COARSE_WOODY_DEBRIS	3	Inventory Year
INVYR	DWM_DUFF_LITTER_FUEL	3	Inventory Year
INVYR	DWM_FINE_WOODY_DEBRIS	3	Inventory Year
INVYR	DWM_MICROPLOT_FUEL	3	Inventory Year
INVYR	DWM_RESIDUAL_PILE	3	Inventory Year
INVYR	DWM_TRANSECT_SEGMENT	3	Inventory Year
INVYR	DWM_VISIT	3	Inventory Year
INVYR	LICHEN_LAB	3	Inventory Year
INVYR	LICHEN_PLOT_SUMMARY	3	Inventory Year
INVYR	LICHEN_SPECIES_SUMMARY	2	Inventory Year
INVYR	LICHEN_VISIT	3	Inventory Year
INVYR	OZONE_BIOSITE_SUMMARY	2	Inventory Year
INVYR	OZONE_PLOT	4	Inventory Year
INVYR	OZONE_PLOT_SUMMARY	2	Inventory Year
INVYR	OZONE_SPECIES_SUMMARY	2	Inventory Year
INVYR	OZONE_VALIDATION	3	Inventory Year
INVYR	OZONE_VISIT	3	Inventory Year
INVYR	SOILS_EROSION	3	Inventory Year
INVYR	SOILS_LAB	3	Inventory Year
INVYR	SOILS_SAMPLE_LOC	3	Inventory Year
INVYR	SOILS_VISIT	3	Inventory Year
INVYR	VEG_PLOT_SPECIES	4	Inventory Year
INVYR	VEG_QUADRAT	5	Inventory Year

Column name and field guide section	Table name	Location in table	Description
INVYR	VEG_SUBPLOT	4	Inventory Year
INVYR	VEG_SUBPLOT_SPP	6	Inventory Year
INVYR	VEG_VISIT	3	Inventory Year
ISSUECD1 (10.3.24)	LICHEN_VISIT	27	Issues (1-4)
ISSUECD2 (10.3.24)	LICHEN_VISIT	28	Issues (1-4)
ISSUECD3 (10.3.24)	LICHEN_VISIT	29	Issues (1-4)
ISSUECD4 (10.3.24)	LICHEN_VISIT	30	Issues (1-4)
KINDCD	OZONE_PLOT	14	
LAB_ID	SOILS_LAB	13	
LARGECT (14.5.5)	DWM_FINE_WOODY_DEBRIS	13	100-hr FWD tally
LARGEDIA (14.4.3.6.3)	DWM_COARSE_WOODY_DEBRIS	16	Large diameter
LAT	OZONE_PLOT	15	Fuzzed coordinates
LAT	OZONE_PLOT_SUMMARY	20	Fuzzed coordinates
LAYER_TYPE	SOILS_LAB	9	
LEAFVCHR	OZONE_VALIDATION	12	
LENGTH (14.4.3.7)	DWM_COARSE_WOODY_DEBRIS	17	Length of Log
LENGTH1 (14.8.5)	DWM_RESIDUAL_PILE	16	Pile length1 (ft)
LENGTH2 (14.8.6)	DWM_RESIDUAL_PILE	19	Pile length2 (ft)
LICH_SPPCD	LICHEN_LAB	7	
LICH_SPPCD	LICHEN_SPECIES_SUMMARY	4	
LICH_SPPCD	REF_LICHEN_SPECIES	1	
LICH_SPPCD	REF_LICHEN_SPP_COMMENTS	1	
LICHEN_COVER_PCT (13.6.2)	VEG_SUBPLOT	19	Ground Cover (Lichen)
LICHEN_REGION	LICHEN_SPECIES_SUMMARY	3	
LICHEN_REGION_DESCR	LICHEN_SPECIES_SUMMARY	6	
LICHEN_STATCD (10.3.13)	LICHEN_VISIT	10	Lichens Collected
LIPROJCD (10.3.7)	LICHEN_VISIT	13	Lichen Project Code
LITTDEP (14.6.7)	DWM_DUFF_LITTER_FUEL	13	Depth of litter layer (in)
LITTER_DUFF_COVER_PCT (13.6.3)	VEG_SUBPLOT	20	Ground Cover (Litter Duff)
LITTERCD (14.7.10)	DWM_MICROPLOT_FUEL	13	Litter cover (%)
LOCATION_CNT	OZONE_BIOSITE_SUMMARY	7	
LON	OZONE_PLOT	16	Fuzzed coordinates

Column name and field guide section	Table name	Location in table	Description
LON	OZONE_PLOT_SUMMARY	21	Fuzzed coordinates
LTRLRTHK	SOILS_SAMPLE_LOC	10	Litter Layer Thickness
LTRLRTHKE (11.7.17)	SOILS_SAMPLE_LOC	16	Litter Layer Thickness at the East Edge of the Sampling Frame
LTRLRTHKN (11.7.16)	SOILS_SAMPLE_LOC	12	Litter Layer Thickness at the North Edge of the Sampling Frame
LTRLRTHKS (11.7.18)	SOILS_SAMPLE_LOC	14	Litter Layer Thickness at the South Edge of the Sampling Frame
LTRLRTHKW (11.7.19)	SOILS_SAMPLE_LOC	18	Litter Layer Thickness at the West Edge of the Sampling Frame
LVHRBCD (14.7.6)	DWM_MICROPLOT_FUEL	11	Live herb cover (%)
LVHRBHT (14.7.7)	DWM_MICROPLOT_FUEL	16	Live herb height (ft)
LVSHRBCD (14.7.2)	DWM_MICROPLOT_FUEL	9	Live shrub cover (%)
LVSHRBHT (14.7.3)	DWM_MICROPLOT_FUEL	14	Live shrub height (ft)
MANUAL	OZONE_PLOT	18	
MANUAL_DB	OZONE_PLOT	21	
MAX_COVER_LAYER_NBR_PRE 2004	VEG_SUBPLOT_SPP	22	For NIMS_VEG_VISIT.VEG_MANUAL = 1.7 plots only. Layer number with maximum cover for the species on the subplot.
MEASDAY	DWM_VISIT	7	Measurement Day
MEASDAY	LICHEN_VISIT	7	Measurement Day
MEASDAY (9.4.8.3)	OZONE_PLOT	13	Measurement Day
MEASDAY (9.4.8.3)	OZONE_VISIT	10	Measurement Day
MEASDAY	SOILS_VISIT	7	Measurement Day
MEASMON	DWM_VISIT	8	Measurement Month
MEASMON	LICHEN_VISIT	8	Measurement Month
MEASMON (9.4.8.2)	OZONE_PLOT	12	Measurement Month
MEASMON (9.4.8.2)	OZONE_VISIT	11	Measurement Month
MEASMON	SOILS_VISIT	8	Measurement Month
MEASYEAR	DWM_COARSE_WOODY_DEBRIS	10	Measurement Year
MEASYEAR	DWM_DUFF_LITTER_FUEL	10	Measurement Year
MEASYEAR	DWM_FINE_WOODY_DEBRIS	10	Measurement Year
MEASYEAR	DWM_MICROPLOT_FUEL	8	Measurement Year

Column name and field guide section	Table name	Location in table	Description
MEASYEAR	DWM_RESIDUAL_PILE	9	Measurement Year
MEASYEAR	DWM_TRANSECT_SEGMENT	10	Measurement Year
MEASYEAR	DWM_VISIT	9	Measurement Year
MEASYEAR	LICHEN_LAB	8	Measurement Year
MEASYEAR	LICHEN_PLOT_SUMMARY	7	Measurement Year
MEASYEAR	LICHEN_SPECIES_SUMMARY	5	Measurement Year
MEASYEAR	LICHEN_VISIT	9	Measurement Year
MEASYEAR (9.4.8.1)	OZONE_BIOSITE_SUMMARY	9	Measurement Year
MEASYEAR (9.4.8.1)	OZONE_PLOT	11	Measurement Year
MEASYEAR (9.4.8.1)	OZONE_PLOT_SUMMARY	8	Measurement Year
MEASYEAR (9.4.8.1)	OZONE_SPECIES_SUMMARY	9	Measurement Year
MEASYEAR (9.4.8.1)	OZONE_VALIDATION	15	Measurement Year
MEASYEAR (9.4.8.1)	OZONE_VISIT	12	Measurement Year
MEASYEAR	SOILS_EROSION	8	Measurement Year
MEASYEAR	SOILS_LAB	45	Measurement Year
MEASYEAR	SOILS_SAMPLE_LOC	8	Measurement Year
MEASYEAR	SOILS_VISIT	9	Measurement Year
MEDIUMCT	DWM_FINE_WOODY_DEBRIS	12	10-hr FWD tally
MINERAL_SOIL_COVER_PCT (13.6.4)	VEG_SUBPLOT	21	Ground Cover (Mineral Soil)
MODIFIED_BY	DWM_COARSE_WOODY_DEBRIS	23	Modified by
MODIFIED_BY	DWM_DUFF_LITTER_FUEL	18	Modified by
MODIFIED_BY	DWM_FINE_WOODY_DEBRIS	19	Modified by
MODIFIED_BY	DWM_MICROPLOT_FUEL	21	Modified by
MODIFIED_BY	DWM_RESIDUAL_PILE	23	Modified by
MODIFIED_BY	DWM_TRANSECT_SEGMENT	19	Modified by
MODIFIED_BY	DWM_VISIT	16	Modified by
MODIFIED_BY	LICHEN_LAB	15	Modified by
MODIFIED_BY	LICHEN_PLOT_SUMMARY	15	Modified by
MODIFIED_BY	LICHEN_SPECIES_SUMMARY	16	Modified by
MODIFIED_BY	LICHEN_VISIT	37	Modified by
MODIFIED_BY	OZONE_BIOSITE_SUMMARY	25	Modified by
MODIFIED_BY	OZONE_PLOT	25	Modified by

Column name and field guide section	Table name	Location in table	Description
MODIFIED_BY	OZONE_PLOT_SUMMARY	25	Modified by
MODIFIED_BY	OZONE_SPECIES_SUMMARY	33	Modified by
MODIFIED_BY	OZONE_VALIDATION	19	Modified by
MODIFIED_BY	OZONE_VISIT	27	Modified by
MODIFIED_BY	REF_LICHEN_SPECIES	11	Modified by
MODIFIED_BY	REF_LICHEN_SPP_COMMENTS	10	Modified by
MODIFIED_BY	SOILS_EROSION	18	Modified by
MODIFIED_BY	SOILS_LAB	46	Modified by
MODIFIED_BY	SOILS_SAMPLE_LOC	28	Modified by
MODIFIED_BY	SOILS_VISIT	13	Modified by
MODIFIED_BY	VEG_PLOT_SPECIES	18	Modified by
MODIFIED_BY	VEG_QUADRAT	18	Modified by
MODIFIED_BY	VEG_SUBPLOT	34	Modified by
MODIFIED_BY	VEG_SUBPLOT_SPP	26	Modified by
MODIFIED_BY	VEG_VISIT	19	Modified by
MODIFIED_DATE	DWM_COARSE_WOODY_DEBRIS	24	Modified Date
MODIFIED_DATE	DWM_DUFF_LITTER_FUEL	19	Modified Date
MODIFIED_DATE	DWM_FINE_WOODY_DEBRIS	20	Modified Date
MODIFIED_DATE	DWM_MICROPLOT_FUEL	22	Modified Date
MODIFIED_DATE	DWM_RESIDUAL_PILE	24	Modified Date
MODIFIED_DATE	DWM_TRANSECT_SEGMENT	20	Modified Date
MODIFIED_DATE	DWM_VISIT	17	Modified Date
MODIFIED_DATE	LICHEN_LAB	16	Modified Date
MODIFIED_DATE	LICHEN_PLOT_SUMMARY	16	Modified Date
MODIFIED_DATE	LICHEN_SPECIES_SUMMARY	17	Modified Date
MODIFIED_DATE	LICHEN_VISIT	38	Modified Date
MODIFIED_DATE	OZONE_BIOSITE_SUMMARY	26	Modified Date
MODIFIED_DATE	OZONE_PLOT	26	Modified Date
MODIFIED_DATE	OZONE_PLOT_SUMMARY	26	Modified Date
MODIFIED_DATE	OZONE_SPECIES_SUMMARY	34	Modified Date
MODIFIED_DATE	OZONE_VALIDATION	20	Modified Date
MODIFIED_DATE	OZONE_VISIT	28	Modified Date
MODIFIED_DATE	REF_LICHEN_SPECIES	12	Modified Date

Column name and field guide section	Table name	Location in table	Description
MODIFIED_DATE	REF_LICHEN_SPP_COMMENTS	11	Modified Date
MODIFIED_DATE	SOILS_EROSION	19	Modified Date
MODIFIED_DATE	SOILS_LAB	47	Modified Date
MODIFIED_DATE	SOILS_SAMPLE_LOC	29	Modified Date
MODIFIED_DATE	SOILS_VISIT	14	Modified Date
MODIFIED_DATE	VEG_PLOT_SPECIES	19	Modified Date
MODIFIED_DATE	VEG_QUADRAT	19	Modified Date
MODIFIED_DATE	VEG_SUBPLOT	35	Modified Date
MODIFIED_DATE	VEG_SUBPLOT_SPP	27	Modified Date
MODIFIED_DATE	VEG_VISIT	20	Modified Date
MODIFIED_IN_INSTANCE	DWM_COARSE_WOODY_DEBRIS	25	Modified in Instance
MODIFIED_IN_INSTANCE	DWM_DUFF_LITTER_FUEL	20	Modified in Instance
MODIFIED_IN_INSTANCE	DWM_FINE_WOODY_DEBRIS	21	Modified in Instance
MODIFIED_IN_INSTANCE	DWM_MICROPLOT_FUEL	23	Modified in Instance
MODIFIED_IN_INSTANCE	DWM_RESIDUAL_PILE	25	Modified in Instance
MODIFIED_IN_INSTANCE	DWM_TRANSECT_SEGMENT	21	Modified in Instance
MODIFIED_IN_INSTANCE	DWM_VISIT	18	Modified in Instance
MODIFIED_IN_INSTANCE	LICHEN_LAB	17	Modified in Instance
MODIFIED_IN_INSTANCE	LICHEN_PLOT_SUMMARY	17	Modified in Instance
MODIFIED_IN_INSTANCE	LICHEN_SPECIES_SUMMARY	18	Modified in Instance
MODIFIED_IN_INSTANCE	LICHEN_VISIT	39	Modified in Instance
MODIFIED_IN_INSTANCE	OZONE_BIOSITE_SUMMARY	27	Modified in Instance
MODIFIED_IN_INSTANCE	OZONE_PLOT	27	Modified in Instance
MODIFIED_IN_INSTANCE	OZONE_PLOT_SUMMARY	27	Modified in Instance
MODIFIED_IN_INSTANCE	OZONE_SPECIES_SUMMARY	35	Modified in Instance
MODIFIED_IN_INSTANCE	OZONE_VALIDATION	21	Modified in Instance
MODIFIED_IN_INSTANCE	OZONE_VISIT	29	Modified in Instance
MODIFIED_IN_INSTANCE	REF_LICHEN_SPECIES	13	Modified in Instance
MODIFIED_IN_INSTANCE	REF_LICHEN_SPP_COMMENTS	12	Modified in Instance
MODIFIED_IN_INSTANCE	SOILS_EROSION	20	Modified in Instance
MODIFIED_IN_INSTANCE	SOILS_LAB	48	Modified in Instance
MODIFIED_IN_INSTANCE	SOILS_SAMPLE_LOC	30	Modified in Instance
MODIFIED_IN_INSTANCE	SOILS_VISIT	15	Modified in Instance

Column name and field guide section	Table name	Location in table	Description
MODIFIED_IN_INSTANCE	VEG_PLOT_SPECIES	20	Modified in Instance
MODIFIED_IN_INSTANCE	VEG_QUADRAT	20	Modified in Instance
MODIFIED_IN_INSTANCE	VEG_SUBPLOT	36	Modified in Instance
MODIFIED_IN_INSTANCE	VEG_SUBPLOT_SPP	28	Modified in Instance
MODIFIED_IN_INSTANCE	VEG_VISIT	21	Modified in Instance
MOSS_COVER_PCT (13.6.5)	VEG_SUBPLOT	22	Ground Cover (Moss)
N_TOTAL_PCT	SOILS_LAB	26	
O3_STATCD (9.4.1)	OZONE_VALIDATION	14	
O3PLOT (9.4.4)	OZONE_BIOSITE_SUMMARY	5	
O3PLOT (9.4.4)	OZONE_PLOT	8	
O3PLOT (9.4.4)	OZONE_PLOT_SUMMARY	5	
O3PLOT (9.4.4)	OZONE_SPECIES_SUMMARY	5	
O3PLOT (9.4.4)	OZONE_VALIDATION	6	Concatination of P3HEX and P3PLOT
O3PLOT (9.4.4)	OZONE_VISIT	6	Concatination of P3HEX and P3PLOT
OLSEN_P	SOILS_LAB	44	
ORIGIN_FLAG	LICHEN_LAB	10	
OVEN_DRY_SOIL_WT	SOILS_LAB	17	
PH_CACL2	SOILS_LAB	28	pH measured in calcium chloride
PH_H2O	SOILS_LAB	27	pH measured in water
PILE	DWM_RESIDUAL_PILE	8	Subplot pile nbr
PILESCD	DWM_FINE_WOODY_DEBRIS	15	Pile obstruction?
			The number of plants evaluated equals the total number of plants examined at a biosite
PLANT_EVAL_CNT	OZONE_BIOSITE_SUMMARY	11	(P3Hex).plant_eval_cnt = count (all plants evaluated at a hexagon)
PLANT_EVAL_CNT	OZONE_SPECIES_SUMMARY	18	
			The number of injured plants at a biosite (P3Hex) equals the number of plants that have injury amounts greater than zero.plant_inj_cnt =
PLANT_INJ_CNT	OZONE_BIOSITE_SUMMARY	10	count (plants at a hexagon that have an injury amount greater than zero)
PLANT_INJ_CNT	OZONE_SPECIES_SUMMARY	17	
PLANT_RATIO	OZONE_BIOSITE_SUMMARY	12	The plants ratio is the ratio of the number of

Column name and field guide section	Table name	Location in table	Description
			plants injured to the number of plants evaluated. That is, the plants ratio equals the number of plants injured divided by the number of plants evaluated. $\text{plant_ratio} = \text{plants_inj_cnt} / \text{plants_eval_cnt}$
PLANT_RATIO	OZONE_SPECIES_SUMMARY	19	
PILE (14.8.1)	DWM_RESIDUAL_PILE	8	Subplot pile number
PLOT	DWM_COARSE_WOODY_DEBRIS	6	P2 Plot Number
PLOT	DWM_DUFF_LITTER_FUEL	6	P2 Plot Number
PLOT	DWM_FINE_WOODY_DEBRIS	6	P2 Plot Number
PLOT	DWM_MICROPLOT_FUEL	6	P2 Plot Number
PLOT	DWM_RESIDUAL_PILE	6	P2 Plot Number
PLOT	DWM_TRANSECT_SEGMENT	6	P2 Plot Number
PLOT	DWM_VISIT	6	P2 Plot Number
PLOT (10.3.3)	LICHEN_LAB	6	P2 Plot Number
PLOT (10.3.3)	LICHEN_PLOT_SUMMARY	6	P2 Plot Number
PLOT (10.3.3)	LICHEN_VISIT	6	P2 Plot Number
PLOT	SOILS_EROSION	6	P2 Plot Number
PLOT	SOILS_LAB	6	P2 Plot Number
PLOT	SOILS_SAMPLE_LOC	6	P2 Plot Number
PLOT	SOILS_VISIT	6	P2 Plot Number
PLOT (13.3.3)	VEG_PLOT_SPECIES	7	P2 Plot Number
PLOT (13.3.3)	VEG_QUADRAT	8	P2 Plot Number
PLOT (13.3.3)	VEG_SUBPLOT	7	P2 Plot Number
PLOT (13.3.3)	VEG_SUBPLOT_SPP	9	P2 Plot Number
PLOT (13.3.3)	VEG_VISIT	6	P2 Plot Number
PLOTS_IN_REGION	LICHEN_SPECIES_SUMMARY	12	
PLOTWET (9.4.14)	OZONE_PLOT_SUMMARY	17	
PLOTWET (9.4.14)	OZONE_SPECIES_SUMMARY	28	
PLOTWET (9.4.14)	OZONE_VISIT	21	
PLT_CN	DWM_COARSE_WOODY_DEBRIS	2	Foreign Key to NIMS_PLOT
PLT_CN	DWM_DUFF_LITTER_FUEL	2	Foreign Key to NIMS_PLOT
PLT_CN	DWM_FINE_WOODY_DEBRIS	2	Foreign Key to NIMS_PLOT

Column name and field guide section	Table name	Location in table	Description
PLT_CN	DWM_MICROPLOT_FUEL	2	Foreign Key to NIMS_PLOT
PLT_CN	DWM_RESIDUAL_PILE	2	Foreign Key to NIMS_PLOT
PLT_CN	DWM_TRANSECT_SEGMENT	2	Foreign Key to NIMS_PLOT
PLT_CN	DWM_VISIT	2	Foreign Key to NIMS_PLOT
PLT_CN	LICHEN_LAB	2	
PLT_CN	LICHEN_PLOT_SUMMARY	2	
PLT_CN	LICHEN_VISIT	2	Foreign Key to NIMS_PLOT
PLT_CN	OZONE_VALIDATION	2	Foreign Key to NIMS_OZONE_PLOT
PLT_CN	OZONE_VISIT	2	Foreign Key to NIMS_OZONE_PLOT
PLT_CN	SOILS_EROSION	2	Foreign Key to NIMS_PLOT
PLT_CN	SOILS_LAB	2	
PLT_CN	SOILS_SAMPLE_LOC	2	Foreign Key to NIMS_PLOT
PLT_CN	SOILS_VISIT	2	Foreign Key to NIMS_PLOT
PLT_CN	VEG_PLOT_SPECIES	2	PLT_CN is foreign key to parent NIMS_PLOT_TBL.CN
PLT_CN	VEG_QUADRAT	2	PLT_CN is foreign key to parent NIMS_PLOT_TBL.CN
PLT_CN	VEG_SUBPLOT	2	PLT_CN is foreign key to parent NIMS_PLOT_TBL.CN
PLT_CN	VEG_SUBPLOT_SPP	2	PLT_CN is foreign key to parent NIMS_PLOT_TBL.CN
PLT_CN	VEG_VISIT	2	PLT_CN is foreign key to NIMS_PLOT_TBL.CN
PLTDSTRB (9.4.15)	OZONE_PLOT_SUMMARY	18	
PLTDSTRB (9.4.15)	OZONE_SPECIES_SUMMARY	29	
PLTDSTRB (9.4.15)	OZONE_VISIT	18	
PLTSIZE (9.4.10)	OZONE_PLOT_SUMMARY	12	
PLTSIZE (9.4.10)	OZONE_SPECIES_SUMMARY	23	
PLTSIZE (9.4.10)	OZONE_VISIT	13	
QA_STATUS (9.4.5)	OZONE_PLOT	19	
QASTATCD	DWM_VISIT	10	QA Status Code
QASTATCD	OZONE_VALIDATION	10	
QASTATCD	OZONE_VISIT	19	

Column name and field guide section	Table name	Location in table	Description
QASTATCD	SOILS_LAB	11	
QUAD_1_PRESENCE	VEG_SUBPLOT_SPP	18	Indicates whether species is found on Quadrat 1 of current subplot
QUAD_2_PRESENCE	VEG_SUBPLOT_SPP	19	Indicates whether species is found on Quadrat 2 of current subplot
QUAD_3_PRESENCE	VEG_SUBPLOT_SPP	20	Indicates whether species is found on Quadrat 3 of current subplot
QUADRAT (13.7.2)	VEG_QUADRAT	10	Quadrat Number
QUADRAT_STATUS (13.7.4)	VEG_QUADRAT	12	Quadrat Status Code
QUADRAT_STATUS_PRE2004	VEG_QUADRAT	13	Quadrat Status Code as field-recorded for 2001 - 2003 plots. Consistent with NIMS_VEG_VISIT.VEG_MANUAL = 1.7 P3 Veg protocol.
RESIDUAL_WATER_CONTENT_PCT	SOILS_LAB	19	
RICHNESS	LICHEN_PLOT_SUMMARY	9	
ROAD_TRAIL_COVER_PCT (13.6.6)	VEG_SUBPLOT	23	Ground Cover (Road/Tral)
ROCK_COVER_PCT (13.6.7)	VEG_SUBPLOT	24	Ground Cover (Rock)
RSNCTCD (14.5.6)	DWM_FINE_WOODY_DEBRIS	14	Reason high tally?
SAMPLE_DATE	SOILS_LAB	12	
SAMPLE_ID	SOILS_LAB	14	
SAMPLER_TYPE	SOILS_LAB	10	
SEGMNT	DWM_TRANSECT_SEGMENT	9	Segment number
SFTWDPCT (10.3.16)	LICHEN_VISIT	17	Percent Conifer
SHAPECD	DWM_RESIDUAL_PILE	11	Pile shape code
SHRUBPCT (10.3.18)	LICHEN_VISIT	19	Percent Shrub
SLOPDIST (14.4.3.3)	DWM_COARSE_WOODY_DEBRIS	11	Slope Distance
SLOPE (14.3.5)	DWM_TRANSECT_SEGMENT	14	Segment slope (%)
SMALLCT (14.5.3)	DWM_FINE_WOODY_DEBRIS	11	1-hr FWD tally
SMALLDIA (14.4.3.6.2)	DWM_COARSE_WOODY_DEBRIS	15	Small diameter
SMPKND CD	DWM_VISIT	12	Sample Kind Code
SMPKND CD (9.4.7)	OZONE_VISIT	9	

Column name and field guide section	Table name	Location in table	Description
SMPLDCD (14.6.5)	DWM_DUFF_LITTER_FUEL	11	Duff/litter sampled?
SMPLNNBR	SOILS_LAB	7	
SMPLNNBR	SOILS_SAMPLE_LOC	7	Sample Line Number
SMPLOCCD	DWM_DUFF_LITTER_FUEL	9	Duff/Litter sample location
SMPLSTP (10.3.15)	LICHEN_VISIT	15	Sample Stop Time
SMPLSTRT (10.3.14)	LICHEN_VISIT	14	Sample Start Time
SMPLTIME	LICHEN_VISIT	16	Total Sample Time
SOILDPTH (9.4.13)	OZONE_PLOT_SUMMARY	15	
SOILDPTH (9.4.13)	OZONE_SPECIES_SUMMARY	26	
SOILDPTH (9.4.13)	OZONE_VISIT	16	
SOILDRN (9.4.14)	OZONE_PLOT_SUMMARY	16	
SOILDRN (9.4.14)	OZONE_SPECIES_SUMMARY	27	
SOILDRN (9.4.14)	OZONE_VISIT	17	
SOILS_STATCD (11.7.11)	SOILS_SAMPLE_LOC	24	Soil Sampling Status
SOILSPCT (11.6.1)	SOILS_EROSION	9	% Bare Soil
SP_CANOPY_COVER_LAYER_1_2	VEG_SUBPLOT_SPP	14	Layers 1 and 2 Canopy Cover Percent (w/ trace) of Species within all accessible forest land on subplot
SP_CANOPY_COVER_LAYER_3	VEG_SUBPLOT_SPP	15	Layer 3 Canopy Cover Percent (w/ trace) of Species within all accessible forest land on subplot
SP_CANOPY_COVER_LAYER_4	VEG_SUBPLOT_SPP	16	Layer 4 Canopy Cover Percent (w/ trace) of Species within all accessible forest land on subplot
SP_CANOPY_COVER_TOTAL	VEG_SUBPLOT_SPP	17	Total Canopy Cover Percent (w/ trace) of Species within all accessible forest land on subplot
SPCD (14.4.3.5)	DWM_COARSE_WOODY_DEBRIS	12	Species Code
SPECIES	LICHEN_SPECIES_SUMMARY	11	
SPECIES	REF_LICHEN_SPECIES	6	
SPECIES_EVAL_CNT	OZONE_BIOSITE_SUMMARY	13	The species evaluation count equals the number of species evaluated at a biosite (P3Hex).species_eval_cnt = count (the unique

Column name and field guide section	Table name	Location in table	Description
			species evaluated at a hexagon)
			The number of plants evaluated equals the total number of plants examined at a biosite (P3Hex).plant_eval_cnt = count (all plants evaluated at a hexagon)
SPECIES_EVAL_CNT	OZONE_PLOT_SUMMARY	9	
SPECIMEN_COLLECTED (13.8.1.3)	VEG_PLOT_SPECIES	11	Y or N (Yes or No) value indicating whether a specimen sample was collected.
SPECIMEN_LABEL_NBR (13.8.1.4)	VEG_PLOT_SPECIES	12	For any unknown specimen collected, the corresponding specimen label number
SPECIMEN_NOT_COLLECTED_REASON (13.8.1.5)	VEG_PLOT_SPECIES	13	If VEG_FLDSPCD is an NRCS genus or unknown code and a specimen is not collected, provides reason. If VEG_FLDSPCD code type is "unknown", set to "N" until plant voucher data loaded; set to null if code type="species"; set to "Y" upon NIMS_VEG_UNKNOWN_UPDATE table load for specific record.
SPECIMEN_RESOLVED	VEG_PLOT_SPECIES	14	
SPLIT_PLOTID	OZONE_PLOT	10	
SPLIT_PLOTID	OZONE_PLOT_SUMMARY	7	
SPLIT_PLOTID	OZONE_SPECIES_SUMMARY	7	
SPLIT_PLOTID	OZONE_VALIDATION	8	P3 Plot Number
SPLIT_PLOTID	OZONE_VISIT	8	P3 Plot Number
SPP_ACRONYM	LICHEN_SPECIES_SUMMARY	7	
SPP_ACRONYM	REF_LICHEN_SPECIES	4	
SPP_COMMENTS	LICHEN_LAB	11	
SPP_COMMENTS	REF_LICHEN_SPP_COMMENTS	5	
SPP_NAME	REF_LICHEN_SPP_COMMENTS	2	
SRV_CN	OZONE_PLOT	2	
STANDING_WATER_COVER_PERCENT (13.6.8)	VEG_SUBPLOT	25	Ground Cover (Standing Water/Flooded)
STATECD	DWM_COARSE_WOODY_DEBRIS	4	State Code
STATECD	DWM_DUFF_LITTER_FUEL	4	State Code
STATECD	DWM_FINE_WOODY_DEBRIS	4	State Code

Column name and field guide section	Table name	Location in table	Description
STATECD	DWM_MICROPLOT_FUEL	4	State Code
STATECD	DWM_RESIDUAL_PILE	4	State Code
STATECD	DWM_TRANSECT_SEGMENT	4	State Code
STATECD	DWM_VISIT	4	State Code
STATECD (10.3.4)	LICHEN_LAB	4	State Code
STATECD (10.3.4)	LICHEN_PLOT_SUMMARY	4	State Code
STATECD (10.3.4)	LICHEN_VISIT	4	State Code
STATECD (9.4.1)	OZONE_BIOSITE_SUMMARY	3	State Code
STATECD (9.4.1)	OZONE_PLOT	5	State Code
STATECD (9.4.1)	OZONE_PLOT_SUMMARY	3	State Code
STATECD (9.4.1)	OZONE_SPECIES_SUMMARY	3	State Code
STATECD (9.4.1)	OZONE_VALIDATION	4	State Code
STATECD (9.4.1)	OZONE_VISIT	4	State Code
STATE CD	SOILS_EROSION	4	State Code
STATECD	SOILS_LAB	4	State Code
STATECD	SOILS_SAMPLE_LOC	4	State Code
STATECD	SOILS_VISIT	4	State Code
STATECD (13.3.1)	VEG_PLOT_SPECIES	5	State Code
STATECD (13.3.1)	VEG_QUADRAT	6	State Code
STATECD (13.3.1)	VEG_SUBPLOT	5	State Code
STATECD (13.3.1)	VEG_SUBPLOT_SPP	7	State Code
STATECD (13.3.1)	VEG_VISIT	4	State Code
STREAM_LAKE_COVER_PCT (13.6.9)	VEG_SUBPLOT	26	Ground Cover (Stream/Lake)
SUBCYCLE	OZONE_PLOT	29	
SUBP (14.4.3.1)	DWM_COARSE_WOODY_DEBRIS	7	Subplot Number
SUBP (14.6.3)	DWM_DUFF_LITTER_FUEL	8	Subplot Number
SUBP (14.5.1)	DWM_FINE_WOODY_DEBRIS	8	Subplot Number
SUBP (14.7.1)	DWM_MICROPLOT_FUEL	7	Subplot Number
SUBP (14.8.1)	DWM_RESIDUAL_PILE	7	Subplot Number
SUBP (14.3.1)	DWM_TRANSECT_SEGMENT	7	Subplot Number
SUBP (13.7.1)	VEG_QUADRAT	9	Subplot Number
SUBP	SOILS_EROSION	7	Subplot Number

Column name and field guide section	Table name	Location in table	Description
SUBP (13.4.1)	VEG_SUBPLOT	8	Subplot Number
SUBP	VEG_SUBPLOT_SPP	10	Subplot number
SUBP_ACCESSIBLE_FOREST_PC T (13.4.4)	VEG_SUBPLOT	11	Subplot Percent Area Accessible Forest
SUM_ABUNDANCE	LICHEN_SPECIES_SUMMARY	9	
SUMMATION	LICHEN_PLOT_SUMMARY	8	
SVRTY_CLASS_FIVE	OZONE_BIOSITE_SUMMARY	21	
SVRTY_CLASS_FOUR	OZONE_BIOSITE_SUMMARY	20	
SVRTY_CLASS_ONE	OZONE_BIOSITE_SUMMARY	17	
SVRTY_CLASS_THREE	OZONE_BIOSITE_SUMMARY	19	
SVRTY_CLASS_TWO	OZONE_BIOSITE_SUMMARY	18	
			The percent of all evaluated plants at a given biosite that have no symptoms of ozone-induced foliar injury $1.svrt_class_zero = \text{count}(\text{all plants with injury severity equal to zero}) * 100 / \text{count}(\text{all plants evaluated at a hexagon, i.e., plant_eval_count})$
SVRTY_CLASS_ZERO	OZONE_BIOSITE_SUMMARY	16	
SVRTY_MAX	OZONE_SPECIES_SUMMARY	14	
SVRTY_MEAN	OZONE_SPECIES_SUMMARY	16	
SVRTY_MIN	OZONE_SPECIES_SUMMARY	15	
SZCLSCD1 (10.3.22)	LICHEN_VISIT	31	Size Class Code
SZCLSCD2 (10.3.22)	LICHEN_VISIT	32	Size Class Code
SZCLSCD3 (10.3.22)	LICHEN_VISIT	33	Size Class Code
TALLSHRB (10.3.21.3)	LICHEN_VISIT	22	Tall Shrubs
TERRPOS (9.4.12)	OZONE_PLOT_SUMMARY	14	
TERRPOS (9.4.12)	OZONE_SPECIES_SUMMARY	25	
TERRPOS (9.4.12)	OZONE_VISIT	15	
TOTAL_CANOPY_COVER_LAYE R_1 (13.5.1)	VEG_SUBPLOT	14	Layer 1 Total Canopy Cover within accessible forestland conditions
TOTAL_CANOPY_COVER_LAYE R_2 (13.5.2)	VEG_SUBPLOT	15	Layer 2 Total Canopy Cover within accessible forestland conditions
TOTAL_CANOPY_COVER_LAYE R_3 (13.5.3)	VEG_SUBPLOT	16	Layer 3 Total Canopy Cover within accessible forestland conditions

Column name and field guide section	Table name	Location in table	Description
TOTAL_CANOPY_COVER_LAYE R_4 (13.5.4)	VEG_SUBPLOT	17	Layer 4 Total Canopy Cover within accessible forestland conditions
TOTAL_WATER_CONTENT_PCT	SOILS_LAB	20	TRACE_COVER_ALLOWED - added 10/24/2005; 0 = trace cover value (0.01) was not allowed in the protocol under which the plot was measured (pre-2005); 1 = trace cover value was allowed (2005 and later)
TRACE_COVER_ALLOWED	VEG_VISIT	10	
TRAMPLING	VEG_QUADRAT	14	Trampling Code
TRANS DIA (14.4.3.6.1)	DWM_COARSE_WOODY_DEBRIS	14	Transect diameter
TRANSECT (14.4.3.2)	DWM_COARSE_WOODY_DEBRIS	8	Subplot Transect (deg)
TRANSECT (14.6.4)	DWM_DUFF_LITTER_FUEL	7	Subplot Transect (deg)
TRANSECT	DWM_FINE_WOODY_DEBRIS	7	Subplot Transect (deg)
TRANSECT (14.3.2)	DWM_TRANSECT_SEGMENT	8	Subplot Transect (deg)
TRASH_JUNK_COVER_PCT (13.6.10)	VEG_SUBPLOT	27	Ground Cover (Trash/Junk/Other)
TXTRL YR1 (11.7.21)	SOILS_SAMPLE_LOC	21	Soil Texture Layer
TXTRL YR2 (11.7.22)	SOILS_SAMPLE_LOC	22	Soil Texture Layer
TYPAREACD (11.6.5)	SOILS_EROSION	13	Compacted Area
TYPCMPCD (11.6.4)	SOILS_EROSION	12	Compacted Trail
TYPOTHRCD (11.6.6)	SOILS_EROSION	14	Other Type of Compaction
TYPRTDCD (11.6.3)	SOILS_EROSION	11	Rutted trail
UNIQUE_SP_NBR (13.8.1.2)	VEG_PLOT_SPECIES	9	
UNIQUE_SP_NBR (13.8.1.2)	VEG_SUBPLOT_SPP	12	
UNITCD	OZONE_PLOT	6	
VEG_CREW_TYPE (13.3.5)	VEG_VISIT	14	VEG Crew Type
VEG_FLDSPCD (13.8.1.1)	VEG_PLOT_SPECIES	8	Veg Field Species Code
VEG_FLDSPCD (13.8.1.1)	VEG_SUBPLOT_SPP	11	Veg Field Species Code
VEG_KINDCD	VEG_VISIT	8	VEG Sample Kind (Named differently than KINDCD because PDR_ tables require KINDCD as part of key.)
VEG_MANUAL	VEG_VISIT	9	P3 Veg field guide version number, usually recorded as

Column name and field guide section	Table name	Location in table	Description
VEG_MEASDAY	VEG_VISIT	13	VEG Measurement Day
VEG_MEASMON	VEG_VISIT	12	VEG Measurement Month
VEG_MEASYEAR	VEG_VISIT	11	Measurement Year
			QA Status code that refers directly to VEG. Often differs from P2 QA_STATUS, but will always be linked to P2 QA_STATUS=1 plot data. (Named differently than QA_STATUS because LOAD_ and PDR_ tables require QA_STATUS as part of key.)
VEG_QA_STATUS (13.3.4)	VEG_VISIT	7	
VEG_SAMPLE_BASIS	VEG_VISIT	15	
VEG_SPCD	VEG_PLOT_SPECIES	10	Veg Species Code
VEG_SPCD	VEG_SUBPLOT_SPP	13	
VEG_SUBP_NONSAMPLE_REAS N_CD (13.4.3)	VEG_SUBPLOT	10	Subplot Nonsampled Reason
VEG_SUBP_NONSMP_RSN_CD_P RE2004	VEG_SUBPLOT	30	VEG Subplot Status - as recorded for 2004 and later, copied from subplot record (NIMS, FIADB, or MESS) for pre-2004 plots
VEG_SUBP_STATUS_CD (13.4.2)	VEG_SUBPLOT	9	
VEG_SUBP_STATUS_CD_PRE200 4	VEG_SUBPLOT	29	
VPS_CN	VEG_SUBPLOT_SPP	5	VPS_CN is foreign key to parent NIMS_VEG_PLOT_SPECIES_TBL.CN
VSB_CN	VEG_QUADRAT	4	VSB_CN partly identifies parent NIMS_VEG_SUBPLOT_TBL.CN
VSB_CN	VEG_SUBPLOT_SPP	4	VSB_CN partly identifies parent NIMS_VEG_SUBPLOT_TBL.CN
VSTNBR (11.7.10)	SOILS_LAB	8	
VSTNBR (11.7.10)	SOILS_SAMPLE_LOC	20	Visit Number
VVT_CN	VEG_PLOT_SPECIES	3	VVT_CN is foreign key to parent NIMS_VEG_VISIT_TBL.CN
VVT_CN	VEG_QUADRAT	3	VVT_CN is foreign key to parent NIMS_VEG_VISIT_TBL.CN

Column name and field guide section	Table name	Location in table	Description
VVT_CN	VEG_SUBPLOT	3	VVT_CN is foreign key to parent NIMS_VEG_VISIT_TBL.CN
VVT_CN	VEG_SUBPLOT_SPP	3	VVT_CN is foreign key to parent NIMS_VEG_VISIT_TBL.CN
WIDTH1 (14.8.7)	DWM_RESIDUAL_PILE	15	Pile width1 (ft)
WIDTH2 (14.8.8)	DWM_RESIDUAL_PILE	18	Pile width2 (ft)
WOOD_COVER_PCT	VEG_SUBPLOT	28	Ground Cover (Wood)
YEAREND	REF_LICHEN_SPECIES	3	
YEAREND	REF_LICHEN_SPP_COMMENTS	3	
YEARSTART	REF_LICHEN_SPECIES	2	
YEARSTART	REF_LICHEN_SPP_COMMENTS	4	