Sustainable Wetlands Adaptation and Mitigation ProgramDatabase Description and User’s Manual

Manual Version 1.1

**Introduction**

This document describes the database used to manage the biometric data collected as part of the Sustainable Wetlands Adaptation and Mitigation Program (SWAMP) project. The database is a relational database designed on protocols described in Kauffman and Donato (2012) for mangrove forests and Kauffman et al. (2016) for peat swamp forests. Plot data were collected using a series of subplots collected along a main transect (Transect) or a series of subplots clustered around a center subplot (Nested) described in see Kauffman and Donato (2012). The database consists of a series of data tables and reference tables that describe the data.

**Updates**

**SWAMP Database – Updated from Version 1.0**

* Plot Table (*Plot*)
  + Column – AUTHOR: added
* Woody Debris Sample Length Table (Ref\_*WoodyDebris\_SampL*)
  + Table removed
* Woody Debris Table (*WoodyDebris*)
  + Column – WDTLID: removed
  + Column – L: added (replacing WDTLID)
  + Column – CNT: changed to N
* Woody Debris Subplot Carbon Table (*WoodyDebrisSubp\_C*)
  + Column – WD\_C: added text to describe the method used to determine value.
* Soil Depth Type Table (*Ref\_SoilDepth*)
  + Table added
* Soil Depth Table (*SoilDepth*)
  + Column – SDTID: added.
* Soil Subplot Carbon & Nitrogen Table (*SoilSubp\_CN*)
  + Column – SDTMID: added.
* Soil Flux Plot Table (*SoilFlux\_Plot*)
  + Column – AUTHOR: added
* Tree Table (*Tree*)
  + Column – DBASE: Added.
* Tree Biomass Table (*TreeBiomass*)
  + Column – NOTES: Added.
* Sapling Table (*Sapling*)
  + Column – DBASE: Added.
* Sapling Biomass Table (*SaplingBiomass*)
  + Column – NOTES: Added.
* Carbon Concentration Table (*Ref\_C\_Concentration*)
  + Column – COMP\_GRPID: Removed. Can be linked through Ref\_Component\_BioGrp.
  + Updated unique keys.

**Swamp Database**

**Database**

This section provides information about the database tables, including a brief summary description of each table, list of table keys and a detailed description of table’s attributes.

1. The brief summary for each table description includes:

* Column name – data field name as found in the database
* Descriptive name – unabbreviated field name
* Access data type – Microsoft Access data type (e.g. Short text, Long Text, Number, Date, Hyperlink, etc.). Numeric values following the Short text data type indicate the maximum number of characters the field can contain. Date field are formatted as short date (SDate). Text following a Number data type indicates the field’s numeric format.
  + Dbl – double
  + Sgl – Single
  + Int – integer
  + LInt – long integer
* Units – units (e.g. Centimeters, Meters, Number, Coded, etc.). Coded (Foreign Key) indicates the value is referenced in a different table.
* Reference – identifies the table that contains additional information about the column.

1. The list of table keys identifies the table fields primary and unique keys used to uniquely identify a record in a table.

* Primary Key – A single column that uniquely identifies a record in a table.
* Unique Key – A series of columns that when combined create a unique record in a table.
* Foreign Key – A column in a table used to link to a matching column in another table.

1. The list of tables with column name the primary key (ID) relates to. Not all primary keys relate to another table.
2. The detailed summary description includes the column name as described in the brief summary description and a detailed description of column or attribute.

**Data Tables**

**Site**

Site Table (*Site*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Site ID | Number(LInt) |  |  |
| 2 | SITE\_NAME | Site name | Short text(255) |  |  |
| 3 | SITECD | Site code | Short text(50) |  |  |
| 4 | MAX\_LAT | Max Latitude | Number(Dbl) | Dec. degrees |  |
| 5 | MIN\_LAT | Min Latitude | Number(Dbl) | Dec. degrees |  |
| 6 | MAX\_LON | Max Longitude | Number(Dbl) | Dec. degrees |  |
| 7 | MIN\_LON | Min Longitude | Number(Dbl) | Dec. degrees |  |
| 8 | COUNTRYID | Country ID | Number(LInt) | Coded | *Ref\_Country* |
| 9 | SITE\_DESCRIPTION | Site description | Short text(255) |  |  |
| 10 | CITID | Citation ID | Number(LInt) | Coded | *Ref\_Citation* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (COUNTRYID, SITE) |

|  |  |
| --- | --- |
| Related Table | Column |
| SiteData | SITEID |
| Plot | SITEID |
| SoilFlux\_Plot | SITEID |
| *WoodyDebris\_Density* | SITEID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Site ID – unique number used to identify a site record. |
| 2 | SITE\_NAME | Site name. |
| 3 | SITECD | Site abbreviation code. |
| 4 | MAX\_LAT | Maximum latitude (decimal degrees) – the approximate maximum latitude defining the site bounding box using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 5 | MIN\_LAT | Minimum latitude (decimal degrees) – the approximate minimum latitude defining the site bounding box using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 6 | MAX\_LON | Maximum longitude (decimal degrees) – the approximate maximum longitude defining the site bounding box using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 7 | MIN\_LON | Minimum longitude (decimal degrees) – the approximate minimum latitude defining the site bounding box using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 8 | COUNTRYID | Country ID – foreign key linking the site record to the country record (*Ref\_Country*). |
| 9 | SITE\_DESCRIPTION | Site Description. |
| 10 | CITID | Citation ID – foreign key linking the site record to the citation record (*Ref\_Citation*). |

**Site Data**

Site Data Table (SiteData)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Site data ID | Number(LInt) |  |  |
| 2 | SITEID | Site ID | Number(LInt) | Coded | *Site* |
| 3 | DATASETID | Dataset ID | Number(LInt) | Coded | *Ref\_Dataset* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SITEID, DATASETID) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Site data ID – unique number used to identify a site data record. |
| 2 | SITEID | Site ID – foreign key linking the site data record to the site record (*Site*). |
| 3 | DATASETID | Dataset ID – foreign key linking the site data record to the dataset record (Ref\_Dataset). |

**Plot**

Plot Table (*Plot*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Plot ID | Number(LInt) |  |  |
| 2 | SITEID | Site ID | Number(LInt) | Coded | *Site* |
| 3 | PLOT | Plot name | Short text (10) |  |  |
| 4 | MEAS | Measurement | Number(LInt) |  |  |
| 5 | MDATE | Measurement date | Date/Time (Sdate) | mm/dd/yyyy |  |
| 6 | PROJID | Project ID | Number(LInt) | Coded | *Ref\_Project* |
| 7 | LANDCOVID | Land cover ID | Number(LInt) | Coded | *Ref\_LandCover* |
| 8 | PROTOID | Prototype ID | Number(LInt) | Coded | *Ref\_Protocol* |
| 9 | LATITUDE | Latitude | Number(Dbl) | Dec. degrees |  |
| 10 | LONGITUDE | Longitude | Number(Dbl) | Dec. degrees |  |
| 11 | TREE\_AREA | Tree subplot sample area | Number(Dbl) | Square meters |  |
| 12 | SAP\_AREA | Sapling subplot sample area | Number(Dbl) | Square meters |  |
| 13 | UND\_AREA | Understory transect sample area | Number(Dbl) | Square meters |  |
| 14 | AUTHOR | Primary author | Short text (255) |  |  |
| 15 | PLOT\_DESCRIPTION | Plot description | Short text (255) |  |  |
| 16 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SITEID, PLOT, MEAS) |

|  |  |
| --- | --- |
| Related Table | Column |
| Subplot | PLOTID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Plot ID – unique number used to identify a plot record. |
| 2 | SITEID | Site ID – foreign key linking the plot record to the site record (*Site*). |
| 3 | PLOT | Plot – plot name. |
| 4 | MEAS | Plot measurement number – consecutive number starting with the first measurement. |
| 5 | MDATE | Plot measurement date (mm/dd/yyyy). |
| 6 | PROJID | Project ID – foreign key linking the plot record to the project record (*Ref\_Project*). |
| 7 | LANDCOVID | Land cover ID – foreign key linking the plot record to the land cover record (*Ref\_LandCover*). |
| 8 | PROTOID | Protocol ID – foreign key linking the plot record to the protocol record (*Ref\_Protocol*). |
| 9 | LATITUDE | Latitude (decimal degrees) – the approximate latitude of the plot center using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 10 | LONGITUDE | Longitude (decimal degrees) – the approximate longitude of the plot center using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 11 | TREE\_AREA | Tree sample area (m2). |
| 12 | SAP\_AREA | Sapling sample area (m2). |
| 13 | UND\_AREA | Understory sample area (m2). |
| 14 | AUTHOR | Primary author. |
| 15 | PLOT\_DESCRIPTION | Plot description. |
| 16 | NOTES | Notes. |

**Subplot**

Subplot Table (*Subplot*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Subplot ID | Number(LInt) |  |  |
| 2 | PLOTID | Plot ID | Number(LInt) | Coded | *Plot* |
| 3 | SUBP | Subplot number | Number(LInt) |  |  |
| 4 | AZI | Azimuth from subplot 1 | Number(LInt) | Degrees |  |
| 5 | DIST | Distance from subplot 1 | Number(LInt) | Meters |  |
| 6 | SLOPE | Slope from subplot 1 | Number(LInt) | Degrees |  |
| 7 | LATITUDE | Latitude | Number(Dbl) | Dec. degrees |  |
| 8 | LONGITUDE | Longitude | Number(Dbl) | Dec. degrees |  |
| 9 | ELEVATION | Elevation | Number(Dbl) | Meters |  |
| 10 | ACCURACY | GPS accuracy | Number(Dbl) | Meters +- |  |
| 11 | GEOID | Geomorphic ID | Number(LInt) | Coded | *Ref\_Geomorphic* |
| 12 | ECOID | Ecological condition ID | Number(LInt) | Coded | *Ref\_EcologicalCond* |
| 13 | TOPOID | Topographic ID | Number(LInt) | Coded | *Ref\_Topography* |
| 14 | SUBP\_DESCRIPTION | Subplot description | Short text (255) |  |  |
| 15 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (PLOTID, SUBP) |

|  |  |
| --- | --- |
| Related Table | Column |
| Disturbance | SUBPID |
| Tree | SUBPID |
| TreeSubp\_C | SUBPID |
| Sapling | SUBPID |
| SaplingSubp\_C | SUBPID |
| Soil | SUBPID |
| SoilDepth | SUBPID |
| SoilSubp\_CN | SUBPID |
| SubpTrans | SUBPID |
| UndSubp\_C | SUBPID |
| WoodyDebrisSubp\_C | SUBPID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Subplot ID – unique number used to identify a subplot record. |
| 2 | PLOTID | Plot ID – foreign key linking the subplot record to the plot record (*Plot*). |
| 3 | SUBP | Subplot number – unique subplot identification number. |
| 4 | AZI | Azimuth (degrees) from subplot 1. |
| 5 | DIST | Horizontal distance (m) from subplot 1. |
| 6 | SLOPE | Slope (%) from subplot 1 measured to nearest 1%. |
| 7 | LATITUDE | Latitude (decimal degrees) – the approximate latitude of the subplot center using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 8 | LONGITUDE | Longitude (decimal degrees) – the approximate longitude of the subplot center using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 9 | ELEVATION | Elevation (m) – height above sea level. |
| 10 | ACCURACY | GPS accuracy (+-m). |
| 11 | GEOID | Geomorphic ID – foreign key linking the subplot record to the geomorphic record (*Ref\_Geomorphic*). |
| 12 | ECOID | Ecological condition ID – foreign key linking the subplot record to the ecological condition record (*Ref\_EcologicalCond*). |
| 13 | TOPOID | Topographic ID – foreign key linking the subplot record to the topography record (*Ref\_Topography*). |
| 14 | SUBP\_DESCRIPTION | Subplot description. |
| 15 | NOTES | Notes. |

**Disturbance**

Disturbance Table (*Disturbance*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Disturbance ID | Number(LInt) |  |  |
| 2 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 3 | DISTURBN | Disturbance number | Number(LInt) |  |  |
| 4 | DISTURBID | Disturbance ID | Number(LInt) | Coded | *Ref\_Disturbance* |
| 5 | DISTURBANCE\_NOTES | Disturbance notes | Text(255) |  |  |
| 6 | DYEAR | Disturbance year | Number(LInt) | Year |  |
| 7 | CITID | Citation ID | Number(LInt) | Coded | *Ref\_Citation* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SUBPID, DISTURBN) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Disturbance ID – unique number used to identify a disturbance record. |
| 2 | SUBPID | Subplot ID – foreign key linking the disturbance record to the subplot record (*Subplot*). |
| 3 | DISTRUBN | Disturbance number – unique number used to identify a subplot disturbance record. |
| 4 | DISTURBID | Disturbance ID – foreign key linking the disturbance record to the subplot record (*Ref\_Disturbance*). |
| 5 | DISTURBANCE\_NOTES | Disturbance notes. |
| 6 | DYEAR | Disturbance year. |
| 7 | CITID | Citation ID – foreign key linking the disturbance record to the citation record (*Ref\_Citation*). |

**Soil**

Soil Table (*Soil*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil ID | Number(LInt) |  |  |
| 2 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 3 | SAMP | Sample number | Number(LInt) |  |  |
| 4 | MIND | Soil minimum depth | Number(Dbl) | Centimeters |  |
| 5 | MAXD | Soil maximum depth | Number(Dbl) | Centimeters |  |
| 6 | INTD | Soil interval depth | Number(Dbl) | Centimeters |  |
| 7 | AREA | Auger area | Number(Dbl) | Square centimeters |  |
| 8 | VOL | Sample volume | Number(Dbl) | Cubic centimeters |  |
| 9 | DWT | Dry weight | Number(Dbl) | Grams |  |
| 10 | BD | Bulk density | Number(Dbl) | Grams/cubic centimeter |  |
| 11 | C | Carbon concentration | Number(Dbl) | Percent |  |
| 12 | N | Nitrogen concentration | Number(Dbl) | Percent |  |
| 13 | C\_CONT | Carbon content | Number(Dbl) | Megagrams/hectare |  |
| 14 | N\_CONT | Nitrogen content | Number(Dbl) | Megagrams/hectare |  |
| 15 | CNR | Carbon/nitrogen ratio | Number(Dbl) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SUBPID, SAMP) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil sample ID – unique number used to identify a soils record. |
| 2 | SUBPID | Subplot ID – foreign key linking the soils record to the subplot record (*Subplot*). |
| 3 | SAMP | Sample number – unique number used to identify a subplot soils record. |
| 4 | MIND | Minimum soil sample depth (cm). |
| 5 | MAXD | Maximum soil sample depth (cm). |
| 6 | INTD | Interval depth (cm) – soil sample depth interval – Equation: MAXD - MIND. |
| 7 | AREA | Auger area (cm2). |
| 8 | VOL | Sample volume (cm3) – Equation: INTD/AREA. |
| 9 | DWT | Dry weight (g). |
| 10 | BD | Bulk density (g/cm3) – Equation: DWT/VOL. |
| 11 | C | Carbon concentration (%). |
| 12 | N | Nitrogen concentration (%). |
| 13 | C\_CONT | Carbon content (Mg/ha) – Equation: 100\*(BD\*INTD\*(C/100)). |
| 14 | N\_CONT | Nitrogen content (Mg/ha) – Equation: 100\*(BD\*INTD\*(N/100)). |
| 15 | CNR | Carbon nitrogen ratio – Equation: C/N. |

**Soil Depth**

Soil Depth Table (*SoilDepth*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil depth ID | Number(LInt) |  |  |
| 2 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 3 | SAMP | Sample number | Number(LInt) |  |  |
| 4 | DEPTH | Depth | Number(Dbl) | Centimeters |  |
| 5 | SDTID | Soil depth type ID | Number(LInt) | Coded | *Ref\_SoilDepth* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SUBPID, SAMP) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil depth ID – unique number used to identify a soil depth record. |
| 2 | SUBPID | Subplot ID – foreign key linking the soil depth record to the subplot record (*Subplot*). |
| 3 | SAMP | Sample number – unique number used to identify a subplot soil depth record. |
| 4 | DEPTH | Soil depth (cm). |
| 5 | SDTID | Soil depth type – foreign key linking the soil depth record to the soil depth type record (*Ref\_SoilDepth*). |

**Soil Subplot Carbon & Nitrogen**

Soil Subplot Carbon & Nitrogen Table (*SoilSubp\_CN*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 2 | SOIL\_C\_CONT | Total carbon content | Number(Dbl) | Megagrams/hectare |  |
| 3 | SOIL\_N\_CONT | Total nitrogen content | Number(Dbl) | Megagrams/hectare |  |
| 4 | SOIL\_MEAN\_DEPTH | Mean depth | Number(Dbl) | Centimeters |  |
| 5 | SDTMID | Max depth type | Number(LInt) | Coded | *Ref\_SoilDepth* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | SUBPID |
| Unique | (SUBPID) |

|  |  |  |
| --- | --- | --- |
| 1 | SUBPID | Subplot ID – foreign key linking the tree record to the subplot record (*Subplot*). |
| 2 | SOIL\_C\_CONT | Subplot total soil carbon content (Mg/ha). |
| 3 | SOIL\_N\_CONT | Subplot total soil nitrogen content (Mg/ha). |
| 4 | SOIL\_MEAN\_DEPTH | Subplot mean soil depth (cm). |
| 5 | SDTMID | Soil depth type max – foreign key linking the soil depth max record to the soil depth type record (Ref\_SoilDepth). |

**Soil Flux Plot**

Soil Flux Plot Table (*SoilFlux\_Plot*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil flux plot ID | Number(LInt) |  |  |
| 2 | SITEID | Site ID | Number(LInt) | Coded | *Site* |
| 3 | SF\_PLOT | Soil flux plot number | Number(Sgl) |  |  |
| 4 | LATITUDE | Latitude | Number(Dbl) | Dec. degrees |  |
| 5 | LONGITUDE | Longitude | Number(Dbl) | Dec. degrees |  |
| 6 | LANDCOVID | Land cover ID | Number(LInt) | Coded | *Ref\_LandCover* |
| 7 | AUTHOR | Primary author | Short text (255) |  |  |
| 8 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SITEID, SF\_PLOT) |

|  |  |
| --- | --- |
| Related Table | Column |
| SoilFlux\_Collar | SF\_PLOTID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil flux plot ID – unique number used to identify a soil flux plot record. |
| 2 | SITEID | Site ID – foreign key linking the plot record to the site record (*Site*). |
| 3 | SF\_PLOT | Soil flux plot number – unique number used to identify a soil flux plot record. |
| 4 | LATITUDE | Latitude (decimal degrees) – the approximate latitude of the plot center using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 5 | LONGITUDE | Longitude (decimal degrees) – the approximate longitude of the plot center using the Geographic Coordinate System (GCS) and World Geodetic System 1984 (WGS\_1984) datum. |
| 6 | LANDCOVID | Land cover ID – foreign key linking the soil flux plot record to the land cover record (*Ref\_LandCover*). |
| 7 | AUTHOR | Primary author. |
| 8 | NOTES | Notes. |

**Soil Flux Collar**

Soil Flux Collar Table (*SoilFlux\_Collar*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil flux collar ID | Number(LInt) |  |  |
| 2 | SF\_PLOTID | Soil flux plot ID | Number(LInt) | Coded | *SoilFlux\_Plot* |
| 3 | COLLAR | Collar number | Number(LInt) |  |  |
| 4 | TOPID | Topography ID | Number(Dbl) | Coded | *Ref\_Topography* |
| 5 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SF\_PLOTID, COLLAR) |

|  |  |
| --- | --- |
| Related Table | Column |
| Soil\_CO2 | SF\_COLID |
| Soil\_CH4 | SF\_COLID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil sample ID – unique number used to identify a soils record. |
| 2 | SF\_PLOTID | Soil flux plot ID – foreign key linking the soil flux collar record to the soil flux plot record (*Subplot*). |
| 3 | COLLAR | Collar number – unique number used to identify a soil flux collar record on a soil flux plot. |
| 4 | TOPID | Soil flux microtopography ID – foreign key linking the soil flux collar record to the topography record (*Ref\_Topography*). |
| 5 | NOTES | Notes. |

**Soil Carbon Dioxide (CO2)**

Soil CO2 Table (*Soil\_CO2*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil CO2 ID | Number(LInt) |  |  |
| 2 | SF\_COLID | Soil flux collar ID | Number(LInt) | Coded | *SoilFlux\_Collar* |
| 3 | MEAS | Measurement | Number(LInt) |  |  |
| 4 | MDATE | Measurement date | Date/Time (Sdate) | mm/dd/yyyy |  |
| 5 | SF\_DISTURBID | Soil flux disturbance ID | Number(LInt) | Coded | *Ref\_SoilFlux\_Disturb* |
| 6 | VEG\_COV | Vegetation cover | Number(Dbl) | Percent |  |
| 7 | CUSHION\_COV | Cushion cover | Number(Dbl) | Percent |  |
| 8 | GRAMINOID\_COV | Graminoid cover | Number(Dbl) | Percent |  |
| 9 | PAR | Avg. Photosynthetic Active Radiation | Number(Dbl | Micromol/square meter/second |  |
| 10 | NEE | Net ecosystem exchange | Number(Dbl | Grams/square meter/hour |  |
| 11 | ER | Ecosystem respiration | Number(Dbl) | Grams/square meter/hour |  |
| 12 | GPP | Gross Primary production | Number(Dbl | Grams/square meter/hour |  |
| 13 | WT | Water table | Number(Dbl) | Centimeters |  |
| 14 | SF\_MTID | Soil flux measurement type ID | Number(LInt) | Coded | *Ref\_SoilFlux\_MeasTyp* |
| 15 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SF\_COLID, MEAS) |

|  |  |
| --- | --- |
| Related Table | Column |
| Soil\_CO2\_Temp | SOIL\_CO2ID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil CO2 ID – unique number used to identify a soil CO2 record. |
| 2 | SF\_COLID | Soil flux collar ID – foreign key linking the soil methane flux record to the soil flux collar record (*SoilFlux\_Collar*). |
| 3 | MEAS | Soil CO2 measurement number – consecutive number starting with the first measurement. |
| 4 | MDATE | Soil CO2 measurement date (mm/dd/yyyy). |
| 5 | SF\_ DISTURBID | Soil flux disturbance ID – foreign key linking the soil CO2 record to the soil flux disturbance record (*Ref\_SoilFlux\_Disturb*). |
| 6 | VEG\_COV | Vegetation cover (%). |
| 7 | CUSHION\_COV | Cushion plants cover (%). |
| 8 | GRAMINOID\_COV | Graminoid cover (%). |
| 9 | PAR | Average photosynthetic active radiation (umol m-2 s-1). |
| 10 | NEE | Net ecosystem exchange slope g CO2 m-2 hr-1). |
| 11 | ER | Ecosystem respiration slope (g CO2 m-2 hr-1). |
| 12 | GPP | Gross Primary production slope (g CO2 m-2 hr-1). |
| 13 | WT | Water table (cm) – height of water table where 0 is soil level and negative values indicate below soil level marks for water table. |
| 14 | SF\_MTID | Soil flux measurement type ID – foreign key linking the soil CO2 record to the soil flux measurement type record (Ref\_SoilFlux\_MeasTyp). |
| 15 | NOTES | Notes. |

**Soil Carbon Dioxide (CO2) Temperature**

Soil CO2 Temperature Table (*Soil\_CO2\_Temp*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil CO2 Temperature ID | Number(LInt) |  |  |
| 2 | SOIL\_CO2ID | Soil CO2 ID | Number(LInt) | Coded | *Soil\_CO2* |
| 3 | DEPTH | Depth | Number(Dbl) | Centimeters |  |
| 4 | TEMP | Temperature | Number(Dbl) | Degrees Celsius |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | SOIL\_CO2ID, DEPTH) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil CO2 temperature ID – unique number used to identify a soil CO2 temperature record. |
| 2 | SOIL\_CO2ID | Soil CO2 ID – foreign key linking the soil CO2 temperature record to the soil dioxide flux (*Soil\_CO2*). |
| 3 | DEPTH | Depth (cm) – depth soil temperature was measured. |
| 4 | TEMP | Soil temperature (°C). |

**Soil Methane (CH4)**

Soil CH4 Table (*Soil\_CH4*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil CH4 ID | Number(LInt) |  |  |
| 2 | SF\_COLID | Soil flux collar ID | Number(LInt) | Coded | *SoilFlux\_Collar* |
| 3 | MEAS | Measurement | Number(LInt) |  |  |
| 4 | MDATE | Measurement date | Date/Time (Sdate) | mm/dd/yyyy |  |
| 5 | SF\_DISTURBID | Soil flux disturbance ID | Number(Dbl) | Coded | *Ref\_SoilFlux\_Disturb* |
| 6 | VEG\_COV | Vegetation cover | Number(Dbl) | Percent |  |
| 7 | CUSHION\_COV | Cushion cover | Number(Dbl) | Percent |  |
| 8 | GRAMINOID\_COV | Graminoid cover | Number(Dbl) | Percent |  |
| 9 | CH4 | CH4 flux | Number(Dbl) | Megagrams/square meter/day |  |
| 10 | WT | Water table | Number(Dbl) | Centimeters |  |
| 11 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SF\_COLID, MEAS) |

|  |  |
| --- | --- |
| Related Table | Column |
| Soil\_CH4\_Temp | SOIL\_CH4ID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil CH4 ID – unique number used to identify a soil CH4 record. |
| 2 | SF\_COLID | Soil flux collar ID – foreign key linking the soil CH4 flux record to the soil flux collar record (*SoilFlux\_Collar*). |
| 3 | MEAS | Soil CH4 measurement number – consecutive number starting with the first measurement. |
| 4 | MDATE | Soil CH4 measurement date (mm/dd/yyyy). |
| 5 | SF\_ DISTURBID | Soil flux disturbance ID – foreign key linking the soil CH4 record to the soil flux disturbance record (*Ref\_SoilFlux\_Disturb*). |
| 6 | VEG\_COV | Vegetation cover (%). |
| 7 | CUSHION\_COV | Cushion plants cover (%). |
| 8 | GRAMINOID\_COV | Graminoid cover (%). |
| 9 | CH4 | CH4 flux (mg m-2 d-1). |
| 10 | WT | Water table (cm) – height of water table where 0 is soil level and negative values indicate below soil level marks for water table. |
| 11 | NOTES | Notes. |

**Soil Methane (CH4) Temperature**

Soil CH4 Temperature Table (*Soil\_CH4\_Temp*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil CH4 Temperature ID | Number(LInt) |  |  |
| 2 | SOIL\_CH4ID | Soil CH4 ID | Number(LInt) | Coded | *Soil\_CH4* |
| 3 | DEPTH | Depth | Number(Dbl) | Centimeters |  |
| 4 | TEMP | Temperature | Number(Dbl) | Degrees Celsius |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SOIL\_CH4ID, DEPTH) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil CH4 temperature ID – unique number used to identify a soil methane temperature record. |
| 2 | SOIL\_CH4ID | Soil CH4 ID – foreign key linking the soil CH4 temperature record to the soil methane flux (*Soil\_CH4*). |
| 3 | DEPTH | Depth (cm) – depth soil temperature was measured. |
| 4 | TEMP | Soil temperature (°C). |

**Tree**

Tree Table (*Tree*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Tree ID | Number(LInt) |  |  |
| 2 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 3 | TREEN | Tree number | Number(LInt) |  |  |
| 4 | SPECID | Species ID | Number(LInt) | Coded | *Ref\_Species* |
| 5 | DBH | Diameter at breast height | Number(Dbl) | Centimeters |  |
| 6 | DBASE | Diameter at base | Number(Dbl) | Centimeters |  |
| 7 | STATID | Status ID | Number(LInt) | Coded | *Ref\_TreeStatus* |
| 8 | HGT | Height | Number(Dbl) | Meters |  |
| 9 | DEADBREAK\_HGT | Dead break height | Number(Dbl) | Meters |  |
| 10 | BA | Basal area | Number(Dbl) | Square meters |  |
| 11 | SGID | Specific gravity ID | Number(Dbl) | Coded | *Ref\_WoodDensity* |
| 12 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SUBPID, TREEN) |

|  |  |
| --- | --- |
| Related Table | Column |
| TreeBiomass | TREEID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Tree ID – unique number used to identify a tree record. |
| 2 | SUBPID | Subplot ID – foreign key linking the tree record to the subplot record (*Subplot*). |
| 3 | TREEN | Tree number – unique number identifying the subplot tree. |
| 4 | SPECID | Species ID – foreign key linking the tree record to the species record (*Ref\_Species*). |
| 5 | DBH | Diameter at breast height (cm) for trees. Refer to the *Ref\_Protocol* reference table for DBH size range. |
| 6 | DBASE | Diameter at base (cm), approximately 10 cm above the ground. |
| 7 | STATID | Tree status ID – foreign key linking the tree record to the tree status record (*Ref\_TreeStatus*). |
| 8 | HGT | Tree Height (m). |
| 9 | DEADBREAK\_HGT | Dead break height (m), height where dead tree is broken. |
| 10 | BA | Basal area (m2) – Equation: 0.00007854\*DBH2. |
| 11 | SGID | Specific gravity ID – foreign key linking the tree record to the specific gravity record (*Ref\_WoodDensity*). |
| 12 | NOTES | Notes. |

**Tree Biomass**

Tree Biomass Table (*TreeBiomass*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Tree biomass ID | Number(LInt) |  |  |
| 2 | TREEID | Tree ID | Number(LInt) | Coded | *Tree* |
| 3 | COMPID | Component ID | Number(LInt) | Coded | *Ref\_Component* |
| 4 | BIOMASS | Biomass | Number(Dbl) | Kilograms |  |
| 5 | EQID | Equation ID | Number(LInt) | Coded | *REF\_Equation* |
| 6 | C\_CONT | Carbon content | Number(Dbl) | Kilograms |  |
| 7 | C\_CONCID | Carbon concentration ID | Number(LInt) | Coded | *Ref\_C\_Concentration* |
| 8 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (TREEID, COMPID) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Tree biomass ID – unique number used to identify a tree biomass record. |
| 2 | TREEID | Tree ID – foreign key linking the tree biomass record to the tree record (*Tree*). |
| 3 | COMPID | Component ID – foreign key linking the tree biomass record to the component record (*Ref\_Component*). |
| 4 | BIOMASS | Biomass (kg). |
| 5 | EQID | Equation ID – foreign key linking the tree biomass record to the equation record (*Ref\_Equation*). |
| 6 | C\_CONT | Carbon content (kg) – Equation: BIOMASS\*carbon concentration referenced in C\_CONCID. |
| 7 | C\_CONCID | Carbon concentration ID – foreign key linking the tree biomass record to the carbon concentration record (*Ref\_C\_Concentration*). |
| 8 | NOTES | Notes. |

**Tree Subplot Carbon**

Tree Subplot Carbon Table (*TreeSubp\_C*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 2 | TREE\_AGC | Tree aboveground carbon | Number(LInt) | Megagrams C/hectare |  |
| 3 | TREE \_BGC | Tree belowground carbon | Number(Dbl) | Megagrams C/hectare |  |
| 4 | TREE \_BA | Tree basal area | Number(LInt) | Square meters/hectare |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | SUBPID |
| Unique | (SUBPID) |

|  |  |  |
| --- | --- | --- |
| 1 | SUBPID | Subplot ID – foreign key linking the tree subplot carbon record to the subplot record (*Subplot*). |
| 2 | TREE \_AGC | Subplot tree aboveground carbon (MgC/ha). |
| 3 | TREE\_BGC | Subplot tree belowground carbon (MgC/ha). |
| 4 | TREE\_BA | Subplot tree basal area (M2/ha). |

**Sapling**

Sapling Table (*Sapling*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Sapling ID | Number(LInt) |  |  |
| 2 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 3 | SAPN | Sapling number | Number(LInt) |  |  |
| 4 | SPECID | Species ID | Number(LInt) | Coded | *Ref\_Species* |
| 5 | DBH | Diameter at breast height | Number(Dbl) | Centimeters |  |
| 6 | DBASE | Diameter at base | Number(Dbl) | Centimeters |  |
| 7 | STATID | Status ID | Number(LInt) | Coded | *Ref\_TreeStatus* |
| 8 | HGT | Height | Number(Dbl) | Meters |  |
| 9 | DEADBREAK\_HGT | Dead break height | Number(Dbl) | Meters |  |
| 10 | BA | Basal area | Number(Dbl) | Square meters |  |
| 11 | SGID | Specific gravity ID | Number(Dbl) | Coded | *Ref\_WoodDensity* |
| 12 | NOTES | NOTES | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SUBPID, SAPN) |

|  |  |
| --- | --- |
| Related Table | Column |
| SaplingBiomass | SAPID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Sapling ID – unique number used to identify a sapling record. |
| 2 | SUBPID | Subplot ID – foreign key linking the sapling record to the subplot record (*Subplot*). |
| 3 | SAPN | Sapling number – unique number identifying the subplot sapling. |
| 4 | SPECID | Species ID – foreign key linking the sapling record to the species record (*Ref\_Species*). |
| 5 | DBH | Diameter at breast height (cm) for trees. Refer to the *Ref\_Protocol* reference table for DBH size range. |
| 6 | DBASE | Diameter at base (cm), approximately 10 cm above the ground. |
| 7 | STATID | Tree status ID – foreign key linking the sapling record to the tree status record (*Ref\_TreeStatus*). |
| 8 | HGT | Sapling Height (m). |
| 9 | DEADBREAK\_HGT | Dead break height (m) – height where dead sapling is broken. |
| 10 | BA | Basal area (m2) – Equation: 0.00007854\*DBH2. |
| 11 | SGID | Specific gravity ID – foreign key linking the sapling record to the specific gravity record (*Ref\_WoodDensity*). |
| 12 | NOTES | Notes. |

**Sapling Biomass**

Sapling Biomass Table (*SaplingBiomass*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Sapling biomass ID | Number(LInt) |  |  |
| 2 | SAPID | Sapling ID | Number(LInt) | Coded | *Tree* |
| 3 | COMPID | Component ID | Number(LInt) | Coded | *Ref\_Component* |
| 4 | BIOMASS | Biomass | Number(Dbl) | Kilograms |  |
| 5 | EQID | Equation ID | Number(LInt) | Coded | *REF\_Equation* |
| 6 | C\_CONT | Carbon content | Number(Dbl) | Kilograms |  |
| 7 | C\_CONCID | Carbon concentration ID | Number(LInt) | Coded | *Ref\_C\_Concentration* |
| 8 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SAPID, COMPID) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Sapling biomass ID – unique number used to identify a sapling biomass record |
| 2 | SAPID | Sapling ID – foreign key linking the sapling biomass record to the sapling record (*Sapling*). |
| 3 | COMPID | Component ID – foreign key linking the sapling biomass record to the component record (*Ref\_Component*). |
| 4 | BIOMASS | Biomass (kg) |
| 5 | EQID | Equation ID – foreign key linking the sapling biomass record to the equation record (*Ref\_Equation*). |
| 6 | C\_CONT | Carbon content (kg) – Equation: BIOMASS\*carbon concentration referenced in C\_CONCID. |
| 7 | C\_CONCID | Carbon concentration ID – foreign key linking the sapling carbon content record to the carbon concentration record (*Ref\_C\_Concentration*). |
| 8 | NOTES | Notes. |

**Sapling Subplot Carbon**

Sapling Subplot Carbon Table (*SaplingSubp\_C*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 2 | SAP\_AGC | Sapling aboveground carbon | Number(LInt) | Megagrams/hectare |  |
| 3 | SAP\_BGC | Sapling belowground carbon | Number(Dbl) | Megagrams/hectare |  |
| 4 | SAP\_BA | Sapling basal area | Number(LInt) | Square meters/hectare |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | SUBPID |
| Unique | (SUBPID) |

|  |  |  |
| --- | --- | --- |
| 1 | SUBPID | Subplot ID – foreign key linking the sapling subplot carbon record to the subplot record (*Subplot*). |
| 2 | SAP\_AGC | Subplot sapling aboveground carbon (MgC/ha). |
| 3 | SAP\_BGC | Subplot sapling belowground carbon (MgC/ha). |
| 4 | SAP\_BA | Subplot sapling basal area (M2/ha). |

**Subplot Transect**

Subplot Transect Table (*SubpTrans*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Subplot transect ID | Number(LInt) |  |  |
| 2 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 3 | TRANSN | Transect number | Number(LInt) |  |  |
| 4 | TRANS | Transect name | Short text (255) |  |  |
| 5 | SLOPE | Transect slope | Number(Dbl) | Percent |  |
| 6 | AZI | Transect azimuth | Number(LInt) | Degrees |  |
| 7 | NOTES | NOTES | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SUBPID, TRANSN) |

|  |  |
| --- | --- |
| Related Table | Column |
| WoodyDebris | TRANSID |
| Understory | TRANSID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Subplot transect ID – unique number used to identify a subplot transect record. |
| 2 | SUBPID | Subplot ID – foreign key linking the subplot transect record to the subplot record (*Subplot*). |
| 3 | TRANSN | Transect number –unique number identifying the subplot transect. |
| 4 | TRANS | Transect name. |
| 5 | SLOPE | Transect slope (%) measured to nearest 1%. |
| 6 | AZI | Transect azimuth (degrees). |
| 7 | NOTES | Notes. |

**Woody Debris**

Woody Debris Table (*WoodyDebris*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Woody debris ID | Number(LInt) |  |  |
| 2 | TRANSID | Transect ID | Number(LInt) | Coded | *SubpTrans* |
| 3 | COMPID | Component ID | Number(LInt) | Coded | *Ref\_Component* |
| 4 | N | Count | Number(LInt) |  |  |
| 5 | L | Sample length | Number(Dbl) | Meters |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (TRANSID, COMPID) |

|  |  |
| --- | --- |
| Related Table | Column |
| WoodyDebris\_1000hr | WDID |
| WoodyDebris\_Biomass | WDID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Woody debris ID – unique number used to identify a woody debris record. |
| 2 | TRANSID | Transect ID – foreign key linking the woody debris record to the subplot transect record (*SubpTrans*). |
| 3 | COMPID | Component ID – foreign key linking the woody debris record to the component record (*Ref\_Component*). |
| 4 | N | Woody debris count. |
| 5 | L | Woody debris component transect sample length (m). |

**Coarse Woody Debris**

Coarse Woody Debris Table (*WoodyDebris\_1000hr*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Coarse woody debris ID | Number(LInt) |  |  |
| 2 | WDID | Woody debris ID | Number(LInt) | Coded | *WoodyDebris* |
| 3 | WDN | Woody debris number | Number(LInt) |  |  |
| 4 | DIA | Diameter | Number(Dbl) | Centimeters |  |
| 5 | NOTES | NOTES | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (WDID, WDN) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Coarse woody debris ID – unique number used to identify a coarse woody debris record. |
| 2 | WDID | Woody debris ID – foreign key linking the coarse woody debris record to the woody debris record (*WoodyDebris*). |
| 3 | WDN | Woody debris sample number – unique number used to identify the coarse woody debris record. |
| 4 | DIA | Diameter (cm). |
| 5 | NOTES | Notes. |

**Woody Debris Biomass**

Woody Debris Biomass Table (*WoodyDebris\_Biomass*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | WDID | Woody debris ID | Number(LInt) | Coded | *WoodyDebris* |
| 2 | BIOMASS | Biomass | Number(Dbl) | Megagrams/hectare |  |
| 3 | EQID | Equation ID | Number(LInt) | Coded | *Ref\_Equation* |
| 4 | WDSGID | Woody debris specific gravity ID | Number(LInt) | Coded | *WoodyDebris\_Density* |
| 5 | C\_CONT | Carbon content | Number(Dbl) | Megagrams/hectare |  |
| 6 | C\_CONCID | Carbon concentration ID | Number(LInt) | Coded | *Ref\_C\_Concentration* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | WDID |
| Unique | (WDID) |

|  |  |  |
| --- | --- | --- |
| 1 | WDID | Woody debris ID – foreign key linking the woody debris biomass record to the woody debris record (*WoodyDebris*). |
| 2 | BIOMASS | Biomass (Mg/ha) |
| 3 | EQID | Equation ID – foreign key linking the woody debris biomass record to the equation record (*Ref\_Equation*). |
| 4 | WDSGID | Woody debris specific gravity ID – foreign key linking the woody debris biomass record to the wood debris specific gravity record (*WoodyDebris\_Density*). |
| 5 | C\_CONT | Carbon content (Mg/ha) – Equation: BIOMASS\*carbon concentration referenced in C\_CONCID. |
| 6 | C\_CONCID | Carbon concentration ID – foreign key linking the woody debris biomass record to the carbon concentration record (*Ref\_C\_Concentration*). |

**Woody Debris Subplot Carbon**

Woody Debris Subplot Carbon Table (*WoodyDebrisSubp\_C*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 2 | WD\_C | Woody Debris carbon | Number(LInt) | Megagrams/hectare |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | SUBPID |
| Unique | (SUBPID) |

|  |  |  |
| --- | --- | --- |
| 1 | SUBPID | Subplot ID – foreign key linking the woody debris subplot carbon record to the subplot record (*Subplot*). |
| 2 | WD\_C | Subplot woody debris carbon (MgC/ha). Subplot woody debris carbon is estimated by averaging each size class (component) of all transects then the subplot size class averages are summed for the subplot total. |

**Woody Debris Density**

Woody Debris Density Table (*WoodyDebris\_Density*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Woody debris density ID | Number(LInt) |  |  |
| 2 | SITEID | Site ID | Number(LInt) | Coded | *WoodyDebris* |
| 3 | LANDCOVID | Land cover ID | Number(LInt) | Coded | *Ref\_LandCover* |
| 4 | COMPID | Component ID | Number(LInt) | Coded | *Ref\_Component* |
| 5 | SG | Specific gravity | Number(Dbl) | grams/cubic centimeter |  |
| 6 | SG\_SE | Specific gravity standard error | Number(Dbl) | +- grams/cubic centimeter |  |
| 7 | SG\_n | Specific gravity sample size | Number(LInt) |  |  |
| 8 | DIA | Diameter | Number(Dbl) | Centimeters |  |
| 9 | DIA\_SE | Diameter standard error | Number(Dbl) | +- Centimeters |  |
| 10 | QMD | Quadratic mean diameter | Number(Dbl) | Centimeters |  |
| 11 | QMD\_n | Quadratic mean diameter sample size | Number(LInt) |  |  |
| 12 | CITID | Citation ID | Number(LInt) | Coded | *Ref\_Citation* |
| 13 | NOTES | Notes | Short text (255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SITID, LANDID, COMPID) |

|  |  |
| --- | --- |
| Related Table | Column |
| WoodyDebris\_Biomass | WDSGID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Woody debris density ID – unique number used to identify a woody debris density record. |
| 2 | SITEID | Site ID – foreign key linking the woody debris density record to the site record (*Site*). |
| 3 | LANDCOVID | Land cover ID – foreign key linking the woody debris density record to the land cover record (*Ref\_LandCover*). |
| 4 | COMPID | Component ID – foreign key linking the woody debris density record to the component record (*Ref\_Component*). |
| 5 | SG | Woody debris specific gravity. |
| 6 | SG\_SE | Woody debris specific gravity standard error (+- cm). |
| 7 | SG\_n | Woody debris specific gravity sample size. |
| 8 | DIA | Diameter (cm). |
| 9 | DIA\_SE | Diameter standard error (+- cm). |
| 10 | QMD | Quadratic mean diameter (cm) – Equation: sqrt((d1^2+d2^2+d3^2+…dn^2)/n). |
| 11 | QMD\_n | Quadratic mean diameter sample size. |
| 12 | CITID | Citation ID – foreign key linking the woody debris density record to the citation record (*Ref\_Citation*). |
| 13 | NOTES | Notes. |

**Understory**

Understory Table (*Understory*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Understory ID | Number(LInt) |  |  |
| 2 | TRANSID | Transect ID | Number(LInt) | Coded | *SubpTrans* |
| 3 | SAMP | Sample number | Number(LInt) |  |  |
| 4 | COMPID | Component ID | Number(LInt) | Coded | *Ref\_Component* |
| 5 | DWT | Dry weight | Number(Dbl) | grams |  |
| 6 | BIOMASS | Biomass | Number(Dbl) | Megagrams/hectare |  |
| 7 | EQID | Equation ID | Number(LInt) | Coded | *REF\_Equation* |
| 8 | C\_CONT | Carbon content | Number(Dbl) | Kilograms |  |
| 9 | C\_CONCID | Carbon concentration ID | Number(LInt) | Coded | *Ref\_C\_Concentration* |
| 10 | NOTES | Notes | Text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (TRANSID, SAMP, COMPID) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Understory ID – unique number used to identify a understory record. |
| 2 | TRANSID | Transect ID – foreign key linking the understory record to the subplot transect record (*SubpTrans*). |
| 3 | SAMP | Sample number – unique number used to identify a subplot understory record. |
| 4 | COMPID | Component ID – foreign key linking the understory record to the component record (*Ref\_Component*). |
| 5 | DWT | Dry weight (g). |
| 6 | BIOMASS | Biomass (Mg/ha). |
| 7 | EQID | Equation ID – foreign key linking the understory record to the equation record (*Ref\_Equation*). |
| 8 | C\_CONT | Carbon content (kg) – Equation: BIOMASS\*carbon concentration referenced in C\_CONCID. |
| 9 | C\_CONCID | Carbon concentration ID – foreign key linking the understory record to the carbon concentration record (*Ref\_C\_Concentration*). |
| 10 | NOTES | Notes. |

**Understory Subplot Carbon**

Understory Subplot Carbon Table (Understory*Subp\_C*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | SUBPID | Subplot ID | Number(LInt) | Coded | *Subplot* |
| 2 | UND\_C | Understory carbon | Number(LInt) | Megagrams/hectare |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | SUBPID |
| Unique | (SUBPID) |

|  |  |  |
| --- | --- | --- |
| 1 | SUBPID | Subplot ID – foreign key linking the understory subplot carbon record to the subplot record (*Subplot*). |
| 2 | UND\_C | Subplot understory carbon (MgC/ha). |

**Reference Tables**

**Carbon Concentration**

Carbon Concentration Table (*Ref\_C\_Concentration*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Carbon concentration ID | Number(LInt) |  |  |
| 2 | COUNTRYID | Country ID | Number(LInt) | Coded | *Ref\_Country* |
| 3 | SPECID | Species ID | Number(LInt) | Coded | *Ref\_Species* |
| 4 | COMPID | Component ID | Number(LInt) | Coded | *Ref\_Component* |
| 5 | CNUM | Carbon number | Number(LInt) |  |  |
| 6 | C | Carbon concentration | Number(Dbl) | Decimal |  |
| 7 | CITID | Citation ID | Number(LInt) | Coded | *Ref\_Citation* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (COUNTRYID, SPECID, COMPID, CNUM) |

|  |  |
| --- | --- |
| Related Table | Column |
| TreeBiomass | C\_CONCID |
| SaplingBiomass | C\_CONCID |
| Understory | C\_CONCID |
| WoodyDebris\_Biomass | C\_CONCID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Carbon concentration ID – unique number used to identify a carbon concentration record. |
| 2 | COUNTRYID | Country ID – foreign key linking the carbon concentration record to the country record (*Ref\_Country*). |
| 3 | SPECID | Species ID – foreign key linking the carbon concentration record to the species record (*Ref\_Species*). |
| 4 | COMPID | Component ID – foreign key linking the carbon concentration record to the component record (*Ref\_Component*). |
| 5 | CNUM | Carbon number – unique number used to identify a country, component group, species, citation carbon concentration record. |
| 6 | C | Carbon concentration (decimal). |
| 7 | CITID | Citation ID – foreign key linking the carbon concentration record to the citation record (*Ref\_Citation*). |
|  |  |  |

**Citation**

Citation Table (*Ref\_Citation*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Citation ID | Number(LInt) |  |  |
| 2 | AUTHOR | Author | Text(255) |  |  |
| 3 | YEAR | Year | Number(LInt) |  |  |
| 4 | CITATION | Citation | Long Text |  |  |
| 5 | DOI | Digital object identifier | Hyperlink |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (AUTHOR, YEAR) |

|  |  |
| --- | --- |
| Related Table | Column |
| Site | CITID |
| Disturbance | CITID |
| WoodyDebris\_Density | CITID |
| Ref\_C\_Concentration | CITID |
| Ref\_Equation | CITID |
| Ref\_Project | CITID |
| Ref\_Protocol | CITID |
| Ref\_Species | CITID |
| Ref\_WoodDensity | CITID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Citation ID – unique number used to identify a citation record. |
| 2 | AUTHOR | Author – publication primary author or authors. |
| 3 | YEAR | Year of publication. |
| 4 | CITATION | Citation – complete publication including authors, year, title, periodical, volume, pages and DOI/link. |
| 5 | DOI | Publication digital object identifier. |

**Component**

Component Table (*Ref\_Component*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Component ID | Number(LInt) |  |  |
| 2 | COMP\_BIOGRPID | Component biomass group | Short text(255) | Coded | *Ref\_Component\_BioGrp* |
| 3 | COMP | Component | Short text(255) |  |  |
| 4 | COMPONENT\_DESCR | Component description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (COMP\_GRP, COMP) |

|  |  |
| --- | --- |
| Related Table | Column |
| TreeBiomass | COMPID | |
| SaplingBiomass | COMPID | |
| Understory | COMPID | |
| WoodyDebris | COMPID | |
| WoodyDebris\_Density | COMPID | |
| Ref\_C\_Concentration | COMPID | |
| Ref\_Equation | COMPID | |
| Ref\_WoodyDebris\_SampLen | COMPID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Component ID – unique number used to identify a component record. |
| 2 | COMP\_BIOGRPID | Component biomass group ID – foreign key linking the component record to the component biomass group record (*Ref\_Component\_BioGrp*). |
| 3 | COMP | Component name. |
| 4 | COMPONENT\_DESCR | Component description. |

**Component Biomass Group**

Component Biomass Group Table (*Ref\_Component\_BioGrp*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Component aggregation ID | Number(LInt) |  |  |
| 2 | COMP\_GRPID | Component group ID | Number(LInt) | Coded | *Ref\_Component\_Grp* |
| 2 | COMP\_BIOGRP | Component biomass group | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (COMP\_GRPID, COMP\_BIOGRP) |

|  |  |
| --- | --- |
| Related Table | Column |
| Ref\_Component | COMP\_BIOGRPID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Component group ID – unique number used to identify a component group record. |
| 2 | COMP\_GRPID | Component group ID – foreign key linking the component group record to the component biomass group record (*Ref\_Component\_Grp*). |
| 3 | COMP\_BIOGRP | Component biomass group – biomass summary component groups. |

**Component Group**

Component Group Table (*Ref\_Component\_Grp*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Component group ID | Number(LInt) |  |  |
| 2 | COMP\_GRP | Component group | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (COMP\_GRP) |

|  |  |
| --- | --- |
| Related Table | Column |
| Ref\_C\_Concentration | COMP\_GRPID |
| Ref\_Component\_BioGrp | COMP\_GRPID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Component group ID – unique number used to identify a component group record. |
| 2 | COMP\_GRP | Component group – generalized component group. |

**Country**

Country Table (*Ref\_Country*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Country ID | Number(LInt) |  |  |
| 2 | COUNTRY | Country | Text(255) |  |  |
| 3 | WREGID | World region ID | Number(LInt) | Coded | *Ref\_WorldReg* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (WREGID, COUNTRY) |

|  |  |
| --- | --- |
| Related Table | Column |
| Site | COUNTRYID |
| Ref\_Equation | COUNTRYID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Country ID – unique number used to identify a country record. |
| 2 | COUNTRY | Country name. |
| 3 | WREGID | World region ID – foreign key linking the country record to the world region record (*Ref\_WorldReg*). |

**Data Category**

Data Category Table (*Ref\_DataCategory*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Category ID | Number(LInt) |  |  |
| 2 | CATEGORY | Category name | Short text(100) |  |  |
| 3 | CATEGORY \_DESCR | Category description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (CATEGORY) |

|  |  |
| --- | --- |
| Related Table | Column |
| Ref\_Dataset | CATID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Data category ID – unique number used to identify a data category record. |
| 2 | CATEGORY | Data category name. |
| 3 | CATEGORY \_DESCR | Data category description. |

**Dataset**

Dataset Table (*Ref\_Dataset*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Dataset ID | Number(LInt) |  |  |
| 2 | DATASET | Dataset name | Short text(100) |  |  |
| 3 | DATASET\_DESCR | Dataset description | Short text(255) |  |  |
| 4 | CATID | Category ID | Number(LInt) | Coded | *Ref\_Category* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (CLASS) |

|  |  |
| --- | --- |
| Related Table | Column |
| SiteData | DATASETID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Dataset ID – unique number used to identify a dataset record. |
| 2 | DATASET | Dataset name. |
| 3 | DATASET\_DESCR | Dataset description. |
| 4 | CATID | Data category ID – foreign key linking the dataset record to the data category record (*Ref\_Category*). |

**Disturbance**

Disturbance Table (*Ref\_Disturbance*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Disturbance ID | Number(LInt) |  |  |
| 2 | DISTURBANCE | Disturbance | Short text(255) |  |  |
| 3 | DISTURBANCE\_DESCR | Disturbance description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (DISTURBANCE) |

|  |  |
| --- | --- |
| Related Table | Column |
| Disturbance | DISTURBID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Disturbance ID – unique number used to identify a disturbance record. |
| 2 | DISTURBANCE | Disturbance. |
| 3 | DISTURBANCE\_DESCR | Disturbance description. |

**Ecological Condition**

Ecological Condition Table *(Ref\_EcologicalCond*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Ecological condition ID | Number(LInt) |  |  |
| 2 | ECO\_COND | Ecological condition | Short text(255) |  |  |
| 3 | ECO\_DESCR | Ecological condition description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (ECO\_COND) |

|  |  |
| --- | --- |
| Related Table | Column |
| Subplot | ECOID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Ecological condition ID – unique number used to identify an ecological condition record. |
| 2 | ECO\_COND | Ecological condition. |
| 3 | ECO\_DESCR | Ecological condition description. |

**Ecosystem**

Ecosystem Table (*Ref\_Ecosystem*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Land cover group ID | Number(LInt) |  |  |
| 2 | ECOSYSTEM | Ecosystem | Short text(255) |  |  |
| 3 | ECOSYSTEM\_DESCR | Ecosystem description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (ECOSYSTEM) |

|  |  |
| --- | --- |
| Related Table | Column |
| Ref\_LandCover | ECOSYSID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Ecosystem ID – unique number used to identify a ecosystem record. |
| 2 | ECOSYSTEM | Ecosystem type. |
| 3 | ECOSYSTEM\_DESCR | Ecosystem type description. |

**Equation**

Equation Table (*Ref\_Equation*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Equation ID | Number(LInt) |  |  |
| 2 | SPECID | Species ID | Number(LInt) | Coded | *Ref\_Species* |
| 3 | COMPID | Component ID | Number(LInt) | Coded | *Ref\_Component* |
| 4 | EQUAT | Equation number | Number(LInt) |  |  |
| 5 | OUTPUT | Output type | Short text(255) |  |  |
| 6 | OUTPUT\_UNITS | Output units | Short text(255) |  |  |
| 7 | EQUATION | Equation | Short text(255) |  |  |
| 8 | INPUT\_PAR | Input parameters |  |  |  |
| 9 | R2 | R-squared | Number(Dbl) |  |  |
| 10 | SE | Standard error | Number(Dbl) |  |  |
| 11 | N | Sample size | Number(LInt) |  |  |
| 12 | MIND | Minimum diameter | Number(LInt) | Centimeters |  |
| 13 | MAXD | Maximum diameter | Number(LInt) | Centimeters |  |
| 14 | COUNTRYID | Country ID | Number(LInt) | Coded | *Ref\_Country* |
| 15 | ORIGIN |  |  |  |  |
| 16 | CITID | Citation ID | Number(LInt) | Coded | *Ref\_Citation* |
| 17 | NOTES | Notes |  |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SPECID, COPMID, EQUAT) |

|  |  |
| --- | --- |
| Related Table | Column |
| TreeBiomass | TREEID |

|  |  |
| --- | --- |
| Related Table | Column |
| TreeBiomass | EQID |
| SaplingBiomass | EQID |
| Understory | EQID |
| WoodyDebris\_Biomass | EQID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Equation ID – unique number used to identify a equation record. |
| 2 | SPECID | Species ID – foreign key linking the equation record to the species record (*Ref\_Species*). |
| 3 | COMPID | Component ID – foreign key linking the equation record to the component record (*Ref\_Component*). |
| 4 | EQUAT | Equation number – unique number used to identify the species component record. |
| 5 | OUTPUT | Equation output. |
| 6 | OUTPUT\_UNITS | Equation output units. |
| 7 | EQUATION | Equation. |
| 8 | INPUT\_PARAMETERS | Equation input parameters. |
| 9 | R2 | R-squared. |
| 10 | SE | Equation standard error (+- output units). |
| 11 | N | Equation sample size. |
| 12 | MIND | Minimum diameter (cm) – equation minimum input diameter. |
| 13 | MAXD | Maximum diameter (cm) – equation maximum input diameter. |
| 14 | COUNTRYID | Country ID – Foreign key linking the equation record to the origin country record (*Ref\_Country*). |
| 15 | ORIGIN | Origin of equation that may differ from COUNTRYID. |
| 16 | CITID | Citation ID – foreign key linking the equation record to the citation record (*Ref\_Citation*). |
| 17 | NOTES | Notes. |

**Geomorphic Setting**

Geomorphic Setting Table (*Ref\_Geomorphic*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Geomorphic ID | Number(LInt) |  |  |
| 2 | GEOMORP | Geomorphic setting | Short text(255) |  |  |
| 3 | GEOMORP\_DESCR | Geomorphic setting description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (ECO\_COND) |

|  |  |
| --- | --- |
| Related Table | Column |
| Subplot | GEOID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Geomorphic ID – unique number used to identify a geomorphic record. |
| 2 | GEOMORP | Geomorphic setting. |
| 3 | GEOMORP\_DESCR | Geomorphic setting description. |

**Land Cover**

Land Cover Table (*Ref\_LandCover*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Land cover ID | Number(LInt) |  |  |
| 2 | ECOSYSID | Ecosystem ID | Number(LInt) | Coded | *Ref\_Ecosystem* |
| 3 | LANDCOV | Land cover | Short text(255) |  |  |
| 4 | LANDCOV\_DESCR | Land cover description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (ECOSYSID, LANDCOV) |

|  |  |
| --- | --- |
| Related Table | Column |
| Plot | LANDCOVID |
| SoilFlux\_Plot | LANDCOVID |
| WoodyDebris\_Density | LANDCOVID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Land cover ID – unique number used to identify a land cover record. |
| 2 | ECOSYSID | Ecosystem ID – foreign key linking the land cover record to the ecosystem record (*Ref\_Ecosystem*). |
| 3 | LANDCOV | Land cover type. |
| 4 | LANDCOV\_DESCR | Land cover type description. |

**Plot Design**

Plot Design Table (*Ref\_PlotDesign)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Plot design ID | Number(LInt) |  |  |
| 2 | DESIGN | Plot design | Short text(50) |  |  |
| 3 | DESIGN\_DESCR | Plot design description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (DESIGN) |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Plot design ID – unique number used to identify a plot design record. |
| 2 | DESIGN | Plot design – subplot layout within the plot. |
| 3 | DESIGN\_DESCR | Plot design description. |

**Project**

Project Table (*Ref\_Project*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Project ID | Number(LInt) |  |  |
| 2 | PROJECT | Project abbreviation | Short text(50) |  |  |
| 3 | PROJECT\_TITLE | Project title | Short text(255) |  |  |
| 4 | CITID | Citation ID | Number(LInt) | Coded | *Ref\_Citation* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (PROJECT) |

|  |  |
| --- | --- |
| Related Table | Column |
| Plot | PROJID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Project ID – unique number used to identify a project record. |
| 2 | PROJECT | Project abbreviation. |
| 3 | PROJECT\_TITLE | Project title. |
| 4 | CITID | Citation ID – foreign key linking the project record to the citation record (*Ref\_Citation*). |

**Protocol**

Protocol table (*Ref\_Protocol*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Protocol ID | Number(LInt) |  |  |
| 2 | PROTOCOL | Protocol | Short text(50) |  |  |
| 3 | PLT\_DESIGNID | Plot design | Short text(255) | Coded | *Ref\_PlotDesign* |
| 4 | SUBP\_CNT | Subplot count | Number(LInt) | Count |  |
| 5 | TREE\_SAMP | Tree subplot sample | Short text(255) |  |  |
| 6 | TREE\_DBH | Tree DBH range | Short text(255) |  |  |
| 7 | SAP\_SAMP | SapLInt subplot sample | Short text(255) |  |  |
| 8 | SAP\_DBH | Sapling DBH range | Short text(255) |  |  |
| 9 | UNDERSTORY | Understory sample | Short text(255) |  |  |
| 10 | WD\_TRANS\_CNT | Woody debris transect count | Number(LInt) | Count |  |
| 11 | WD\_TRANS\_LEN | Woody debris transect length | Short text(255) |  |  |
| 12 | 1HR\_TRANS | 1 hr. transect sample | Short text(255) |  |  |
| 13 | 10HR\_TRANS | 10 hr. transect sample | Short text(255) |  |  |
| 14 | 100HR\_TRANS | 100 hr. transect sample | Short text(255) |  |  |
| 15 | 1000HR\_TRANS | 1000 hr. transect sample | Short text(255) |  |  |
| 16 | CITID | Citation ID | Number(LInt) | Coded | *Ref\_Citation* |
| 17 | NOTES | Notes | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (PROTOCOL) |

|  |  |
| --- | --- |
| Related Table | Column |
| Plot | PROTOID |
| Ref\_WoodyDebris\_SampLen | PROTOID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Protocol ID – unique number used to identify a protocol record. |
| 2 | PROTOCOL | Protocol name. |
| 3 | PLT\_DESIGNID | Plot design ID – foreign key linking the protocol record to the citation record (*Ref\_PlotDesign*). |
| 4 | SUBP\_CNT | Subplot count – number of subplots within the plot. |
| 5 | TREE\_SAMP | Tree subplot sample. |
| 6 | TREE\_DBH | Tree DBH range. |
| 7 | SAP\_SAMP | Sapling subplot sample. |
| 8 | SAP\_DBH | Sapling DBH range. |
| 9 | UNDERSTORY | Understory transect sample. |
| 10 | WD\_TRANS\_CNT | Woody debris transect count – number of transects on the subplot. |
| 11 | TRANS\_LEN | Woody debris transect sample length. |
| 12 | 1HR\_TRANS | Fine woody debris (1 hour) transect sample for wood debris with diameter range of 0-0.6 cm. |
| 13 | 10HR\_TRANS | Small woody debris (10 hour) transect sample for wood debris with diameter range of 0.6-2.5 cm. |
| 14 | 100HR\_TRANS | Medium (100 hour) transect sample for wood debris with diameter range of 2.5-7.6 cm. |
| 15 | 1000HR\_TRANS | Large (1000 hour) transect sample for wood debris with diameter range>7.6 cm. |
| 16 | CITID | Citation ID – foreign key linking the protocol record to the citation record (*Ref\_Citation*). |
| 17 | NOTES | Notes. |

**Soil Depth Type**

Soil Depth Type Table (*Ref\_SoilDepth*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil depth type ID | Number(LInt) |  |  |
| 2 | DEPTH\_TYP | Depth type | Short text(50) |  |  |
| 3 | DEPTH\_DESCR | Depth type description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (DEPTH\_TYP) |

|  |  |
| --- | --- |
| Related Table | Column |
| SoilDepth | SDTID |
| Soil Subplot Carbon & Nitrogen | SDTMID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil depth type ID – unique number used to identify a soil depth type. |
| 2 | DEPTH\_TYP | Depth type. |
| 3 | DEPTH\_DESCR | Depth type description. |

**Soil Flux Disturbance**

Soil Flux Disturbance Table (*Ref\_SoilFlux\_Disturb*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil flux disturbance ID | Number(LInt) |  |  |
| 2 | DISTURBANCE | Disturbance | Short text(50) |  |  |
| 3 | DISTURBANCE\_DESCR | Disturbance description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (DISTURBANCE) |

|  |  |
| --- | --- |
| Related Table | Column |
| Soil\_CO2 | DISTURBID |
| Soil\_CH4 | DISTURBID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil flux disturbance ID – unique number used to identify a soil flux disturbance. |
| 2 | DISTURBANCE | Disturbance. |
| 3 | DISTURBANCE\_DESCR | Disturbance description. |

**Soil Flux Measurement Type**

Soil Flux Measurement Type Table (*Ref\_SoilFlux\_MeasTyp*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Soil flux measurement type ID | Number(LInt) |  |  |
| 2 | SOILFLUX\_ MEASTYP | Soil flux measurement type | Short text(50) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SOILFLUX\_ MEASTYP) |

|  |  |
| --- | --- |
| Related Table | Column |
| Soil\_CO2 | SF\_MTID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Soil flux measurement type ID – unique number used to identify a soil flux measurement type. |
| 2 | SOILFLUX\_ MEASTYP | Soil flux measurement type. |

**Species**

Species Table (*Ref\_Species*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Species ID | Number(LInt) |  |  |
| 2 | SPP | Species symbol | Short text(50) |  |  |
| 3 | SCIENTIFIC\_NAME | Scientific name | Short text(255) |  |  |
| 4 | PHYLUM | Phylum | Short text(255) |  |  |
| 5 | CLASS | Class | Short text(255) |  |  |
| 6 | ORDER | Order | Short text(255) |  |  |
| 7 | FAMILY | Family | Short text(255) |  |  |
| 8 | GENUS | Genus | Short text(255) |  |  |
| 9 | CITID | Citation ID | Number(LInt) | Coded | *Ref\_Citation* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (PROJECT) |

|  |  |
| --- | --- |
| Related Table | Column |
| Tree | SPECID |
| Sapling | SPECID |
| Ref\_C\_Concentration | SPECID |
| Ref\_Equation | SPECID |
| Ref\_WoodDensity | SPECID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Species ID – unique number used to identify a species record. |
| 2 | SPP | Species symbol. |
| 3 | SCIENTIFIC\_NAME | Scientific name. |
| 4 | PHYLUM | Phylum. |
| 5 | CLASS | Class. |
| 6 | ORDER | Order. |
| 7 | FAMILY | Family. |
| 8 | GENUS | Genus. |
| 9 | CITID | Citation ID – foreign key linking the species record to the citation record (*Ref\_Citation*). |

**Topography**

Topography Table (*Ref\_Topography*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Topography ID | Number(LInt) |  |  |
| 2 | TOPO | Topography | Short text(50) |  |  |
| 3 | TOPO\_DESCR | Topography description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (TOPO) |

|  |  |
| --- | --- |
| Related Table | Column |
| Subplot | TOPOID |
| SoilFlux\_Collar | TOPOID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Topographic ID – unique number used to identify a topographic record. |
| 2 | TOPO | Topography. |
| 3 | TOPO\_DESCR | Topography description. |

**Tree Status**

Tree Status Table (*Ref\_TreeStatus*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Tree status ID | Number(LInt) |  |  |
| 2 | STATUS | Tree status | Short text(50) |  |  |
| 3 | STATUS\_DESCR | Tree status description | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (STATUS) |

|  |  |
| --- | --- |
| Related Table | Column |
| Tree | STATID |
| Sapling | STATID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Tree status ID – unique number used to identify a topographic record. |
| 2 | STATUS | Tree status. |
| 3 | STATUS\_DESCR | Tree status description. |

**Wood Density**

Wood Density Table (*Ref\_WoodDensity*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | Wood density ID | Number(LInt) |  |  |
| 2 | SPECID | Species ID | Number(LInt) | Coded | *Ref\_Species* |
| 3 | SGN | Specific gravity number | Number(LInt) |  |  |
| 4 | SG | Specific gravity | Number(Dbl) |  |  |
| 5 | ORIGIN | Origin | Short text(255) |  |  |
| 6 | CITID | Citation ID | Number(LInt) | Coded | *Ref\_Citation* |
| 7 | NOTES | Notes | Short text(255) |  |  |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (SPECIID, SGN) |

|  |  |
| --- | --- |
| Related Table | Column |
| Tree | SGID |
| Sapling | SGID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | Wood density ID – unique number used to identify a wood density record. |
| 2 | SPECID | Species ID – foreign key linking the equation record to the species record (*Ref\_Species*). |
| 3 | SGN | Specific gravity number – unique number used to identify the species specific gravity record. |
| 4 | SG | Specific gravity (g/cm3) – Wood density specific gravity. |
| 5 | ORIGIN | Origin – region the wood density estimates were created for. |
| 6 | CITID | Citation ID – foreign key linking the wood density record to the citation record (*Ref\_Citation*). |
| 7 | NOTES | Notes. |

**World Regions**

World Regions Table (*Ref\_WorldReg*)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Column Name | Descriptive name | Data Type | Units | Reference |
| 1 | ID | World region ID | Number(LInt) |  |  |
| 2 | WORLD\_REGION | World region | Number(LInt) | Coded | *Ref\_WorldReg* |

|  |  |
| --- | --- |
| Type of key | Column(s) |
| Primary | ID |
| Unique | (WORLD\_REGION) |

|  |  |
| --- | --- |
| Related Table | Column |
| Ref\_Protocol | PLT\_DESIGNID |

|  |  |  |
| --- | --- | --- |
| 1 | ID | World region ID – unique number used to identify a world region record. |
| 2 | WORLD\_REGION | World region – (<http://gsociology.icaap.org/dataupload.html>). |

**References**

Kauffman, J.B.; Donato, D.C. 2012 Protocols for the measurement, monitoring and reporting of structure, biomass and carbon stocks in mangrove forests. Working Paper 86. CIFOR, Bogor, Indonesia. doi:10.17528/cifor/003749.

Kauffman, J.B.; Arifanti, V.B.; Basuki, I.; Kurnianto, S.; Novita, N.; Murdiyarso, D.; Donato, D.C.; Warren, M.W. 2016. Protocols for the measurement, monitoring, and reporting of structure, biomass, carbon stocks and greenhouse gas emissions in tropical peat swamp forests. Working Paper 221. Bogor, Indonesia: CIFOR. doi:10.17528/cifor/006429.