



LANDFIRE

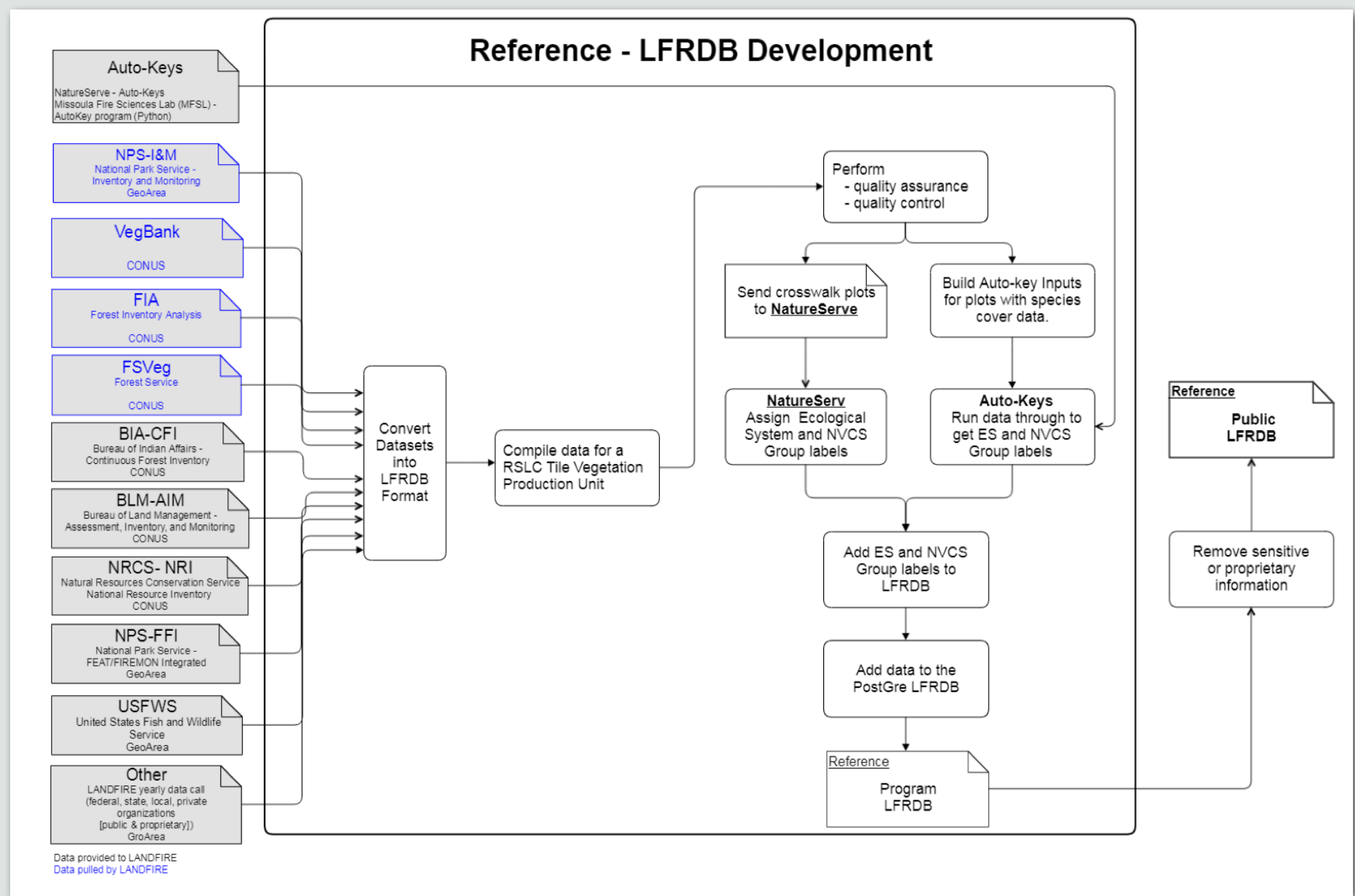
LANDFIRE Remap: CONUS Reference Data

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LANDFIRE (LF) mapping is supported by the LANDFIRE Reference Database (LFRDB) which is a vast database of geo-referenced field data describing vegetation and fuel attributes. The LFRDB provides “ground-truth” data for mapping and modeling vegetation patterns and conditions and for calibrating models developed by the LF team. Data are collected from many different existing sources and processed into the LFRDB.

LFRDB Development Flow Chart

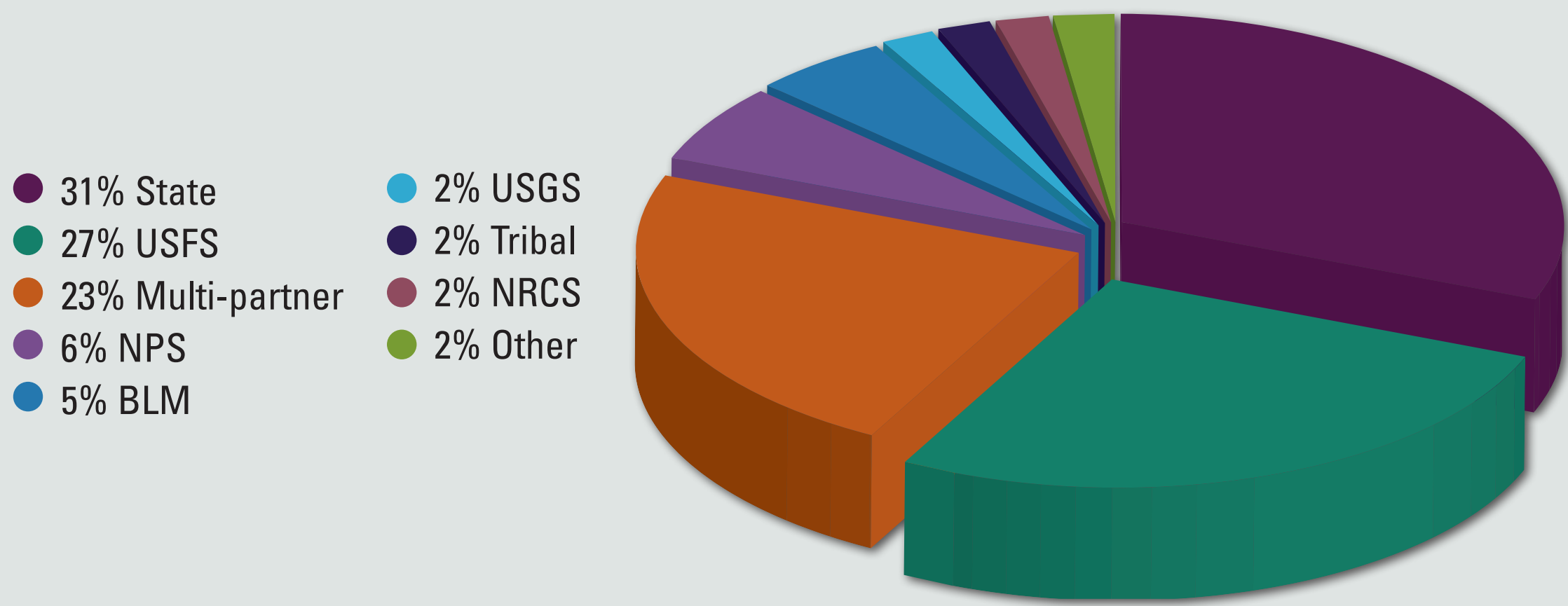


This flow chart depicts how LANDFIRE processes data and develops the LFRDB.

Data Contributions

There are 775 different sources of data in the CONUS LFRDB that were contributed by Federal, State, Local, and Private entities. Data were largely amassed from existing information resources. Some of the new data acquired for LF Remap include the following:

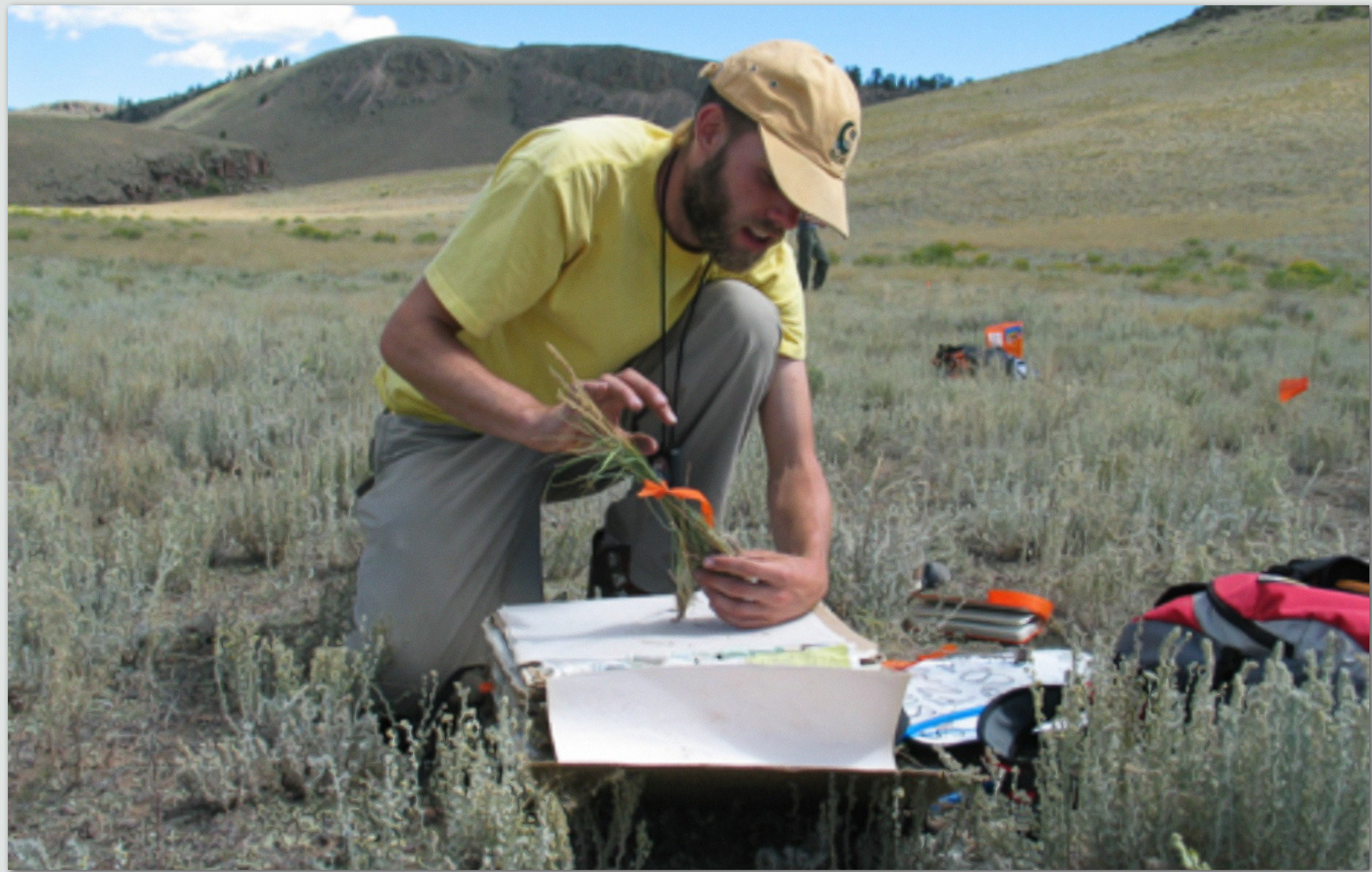
- USFS Forest Inventory Analysis (FIA)
- NPS Inventory and Monitoring (I&M) and FFI (Feat/Firemon Integrated)
- NRCS - National Resource Inventory (NRI)
- BLM -National Assessment, Inventory, and Monitoring Data (AIM)
- State Natural Heritage Data



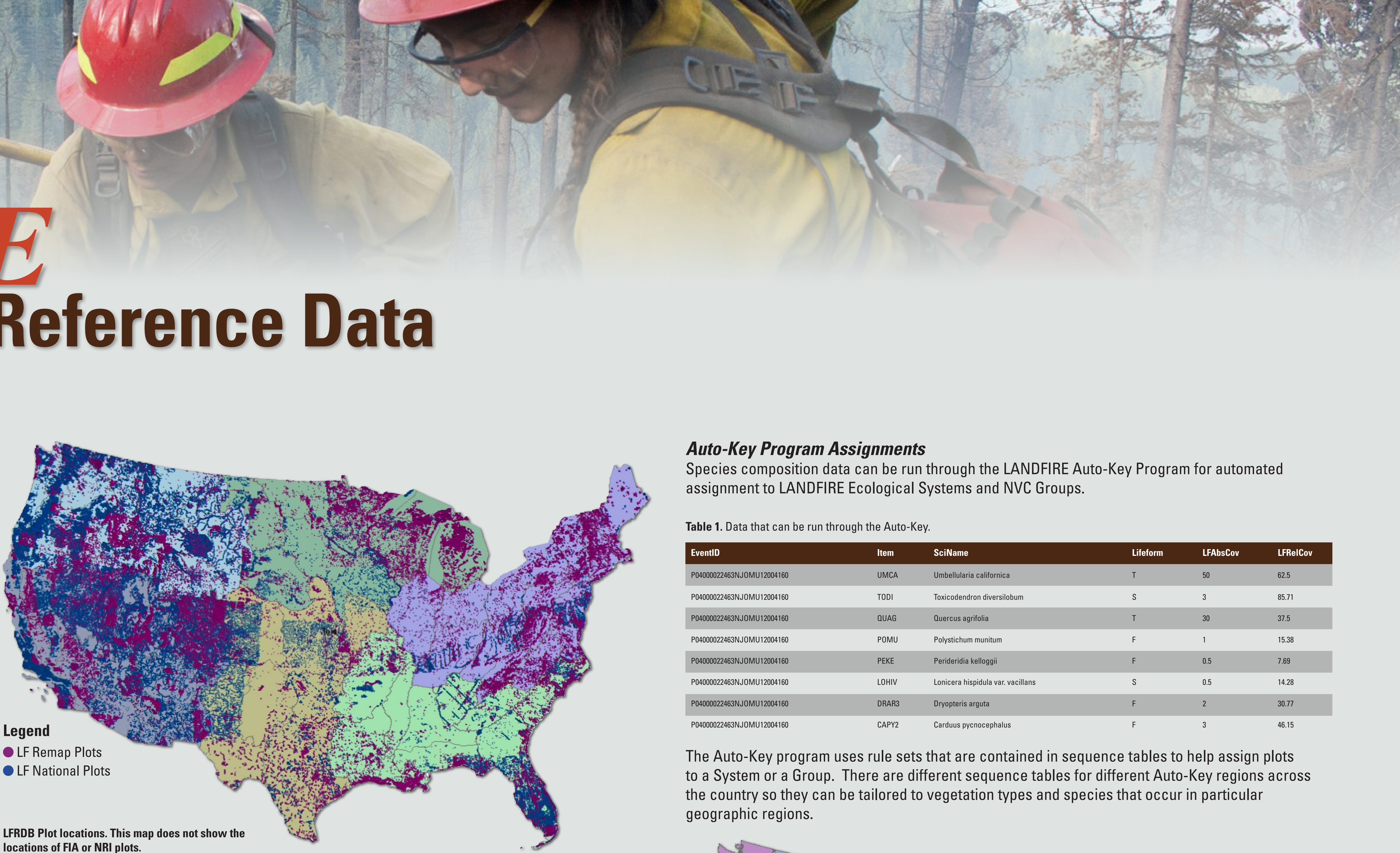
Data Contributions by Agency: Percent of all CONUS LFRDB plots accredited to the different agencies.

Plot Counts and Distribution

There are 1,265,929 geo-referenced plots in the CONUS LFRDB. LANDFIRE added 666,763 plots to CONUS for Remap.

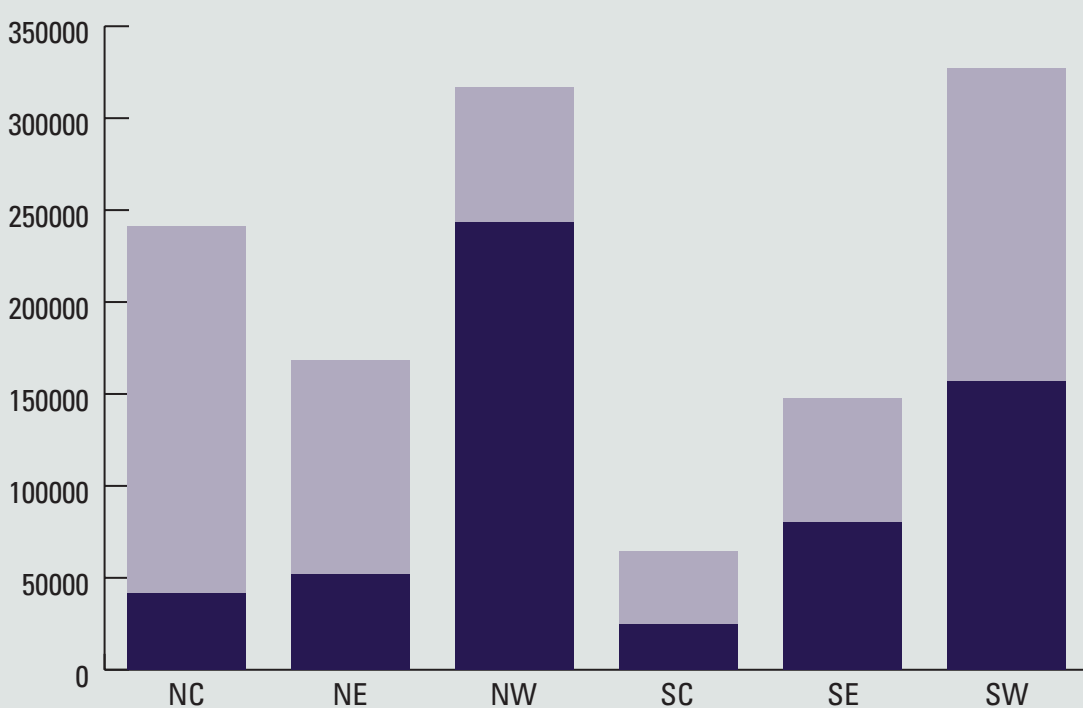


Collecting field data on plant species.



Legend
● LF Remap Plots
● LF National Plots

LFRDB Plot locations. This map does not show the locations of FIA or NRI plots.



● LF Remap Plots
● LF National Plots

The number of plots we have for each GeoArea. We were able to add a significant amount data to some areas that were underrepresented during LF National.

LFRDB Format

Data contributions are converted into the LFRDB format.

The LFRDB is a relational PostGre database that consists of 22 data tables and 36 look up tables. There are 457 different attributes associated with the 22 data tables

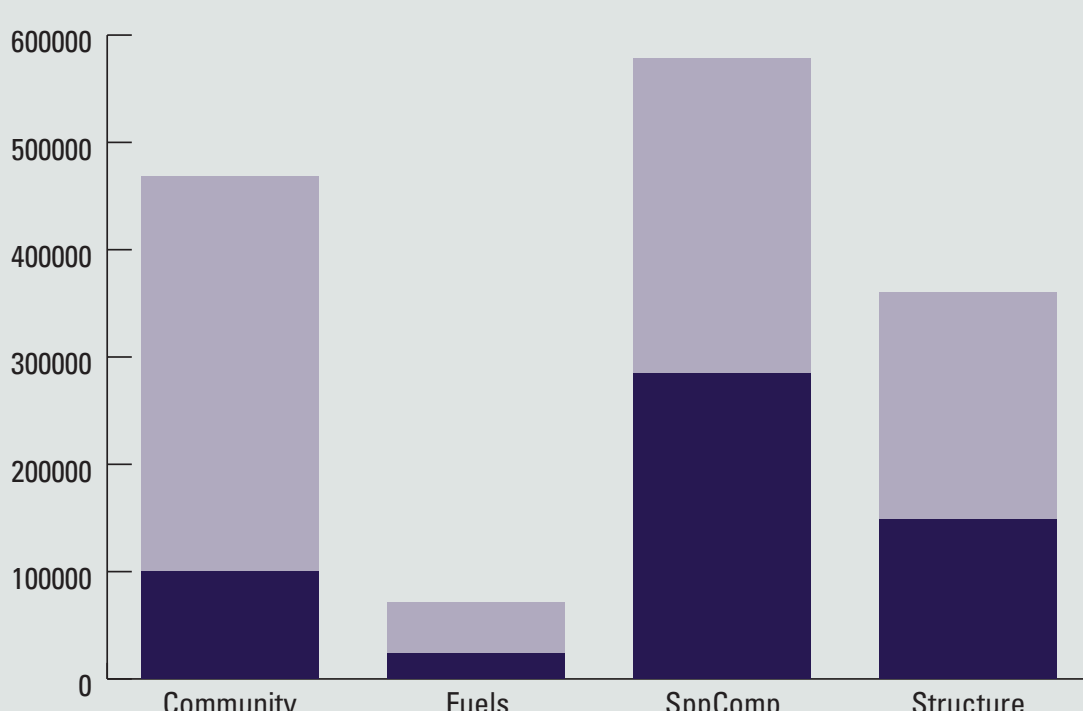
Data tables contain information on plant communities, vegetation structure, species composition, tree and seedling data, surface and canopy fuels, exotics plants, disturbances and treatments, and ancillary data derived from spatial overlays.

There are many data tables and attributes to accommodate the wide variety of data formats that LANDFIRE compiles and to meet the mapping and modeling needs of LANDFIRE.

Data Types

The main types of data stored in the LFRDB are:

- Species Composition – list of plant species with cover estimates
- Vegetation Structure Data - information on plant height
- Community Element Occurrence Data – plots that only have cover type or existing vegetation type labels
- Fuels Data – information on fuels that are relevant to fire-behavior modeling and fire-effects modeling



The number of total plots that have information about each data type.

Ecological System and NVC Group Assignments

LANDFIRE attributes plots in the LFRDB with both Ecological Systems and NVC Group so they can be used to inform vegetation type mapping and modeling. These Ecological Systems and NVC Group labels can be assigned by the Auto-Key program or they can be cross-walked by experts.

The Auto-Key program is a python-based program that compares species and lifeform cover information on a plot to the sequence table criteria to determine what Ecological System or NVC Group should be assigned to each plot.

The auto-key provides a consistent, repeatable method for attributing plots with vegetation types based on floristic composition.

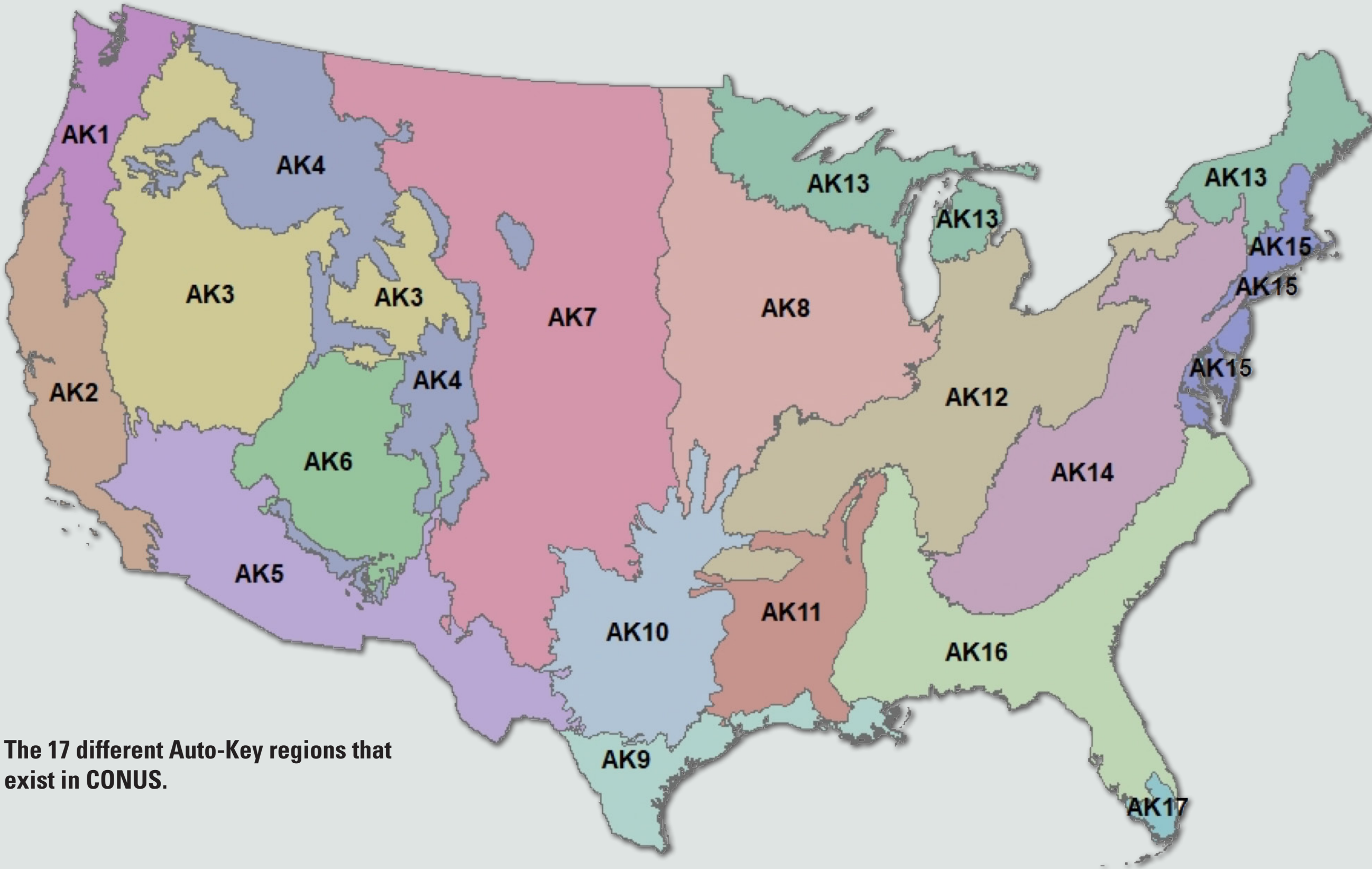
Auto-Key Program Assignments

Species composition data can be run through the LANDFIRE Auto-Key Program for automated assignment to LANDFIRE Ecological Systems and NVC Groups.

Table 1. Data that can be run through the Auto-Key.

EventID	Item	SciName	Lifeform	LFabsCov	LFrelCov
P04000022463NJOMU12004160	UMCA	Umbellularia californica	T	50	62.5
P04000022463NJOMU12004160	TODI	Toxicodendron diversilobum	S	3	85.71
P04000022463NJOMU12004160	QUAG	Quercus agrifolia	T	30	37.5
P04000022463NJOMU12004160	PDMU	Polystichum munitum	F	1	15.38
P04000022463NJOMU12004160	PEKE	Perideridia kelloggii	F	0.5	7.69
P04000022463NJOMU12004160	LOHIV	Lonicera hispidula var. vacillans	S	0.5	14.28
P04000022463NJOMU12004160	DRAR3	Dryopteris arguta	F	2	30.77
P04000022463NJOMU12004160	CAPY2	Carduus pycnocephalus	F	3	46.15

The Auto-Key program uses rule sets that are contained in sequence tables to help assign plots to a System or a Group. There are different sequence tables for different Auto-Key regions across the country so they can be tailored to vegetation types and species that occur in particular geographic regions.



The 17 different Auto-Key regions that exist in CONUS.

Each sequence table contains a list of Ecological Systems and NVC Groups that exist in the representative geographic region. Each System or Group has a set of lifeform cover criteria and a set of species and associated relative cover criteria that a plot must meet.

Table 2. Example of Sequence table rule sets for Ecological Systems.

EcoSys Code	EcoSys Name	Total	Woody	Tree	Conifer	Shrub	PHerb	Grass	spp1	relcov1	spp2	relcov2
7125	Inter-Mountain Basins Big Sagebrush Steppe	>10%	>10%			10-60%	>15%	>10%	Artemisia tridentata ssp. tridentata, Artemisia tridentata, Chrysothamnus, Symphoricarpos	>50%	Artemisia tridentata ssp. tridentata, Artemisia tridentata	>25%
7149	Western Great Plains Shortgrass Prairie	>10%		<10%		<35%	>25%	>25%	Artemisia frigida, Bouteloua, Elymus, Eragrostis, Koeleria, Lycurus, Hesperostipa, Muhlenbergia arenacea, Muhlenbergia torreyi, Pascopyrum, Pleuraphis jamesii, Schizachyrium scoparium, Scleropogon brevifolius, Sporobolus airoides, Sporobolus cryptandrus	>10%	Aristida, Bouteloua, Elymus, Eragrostis, Koeleria, Lycurus, Hesperostipa, Muhlenbergia arenacea, Muhlenbergia torreyi, Pascopyrum, Pleuraphis jamesii, Schizachyrium scoparium, Scleropogon brevifolius, Sporobolus airoides, Sporobolus cryptandrus	>25%
7166	Middle Rocky Mountain Montana Douglas-fir Forest and Woodland	>10%		>10%					Juniperus scopulorum, Pseudotsuga menziesii, Pinus flexilis	>75%	Pseudotsuga menziesii	>45%
7166	Middle Rocky Mountain Montana Douglas-fir Forest and Woodland	>10%		>10%					Pseudotsuga menziesii	>60%	Abies, Alnus viridis ssp. sinuata, Betula papyrifera, Cornus sericea, Larix, Pinus monticola, Populus angustifolia, Taxus brevifolia, Thuja, Thuja plicata	absent

Auto-Key Improvements for LF Remap

- NatureServe updated and improved the sequence tables used to key to Ecological Systems.
- NatureServe developed sequence tables that key to NVC Groups.
- NatureServe updated and improved the sequence tables for ruderal or disturbed vegetation types.

Cross-walk EVT Assignments

Community Element Occurrence Data is data that only contains an existing vegetation/cover type label. NatureServe uses their expertise to crosswalk these cover type labels to Ecological Systems and NVC Groups. NatureServe cross walked 347,133 new CONUS plots for LF Remap.

Public LFRDB

A public version of the (LFRDB) is available on our website (<https://www.landfire.gov>) where you can download the data by GeoArea. The Public LFRDB contains a subset of the data and attributes used for LF production. Proprietary and/or sensitive data were removed in the public database. The Public LFRDB is served in an Access database by GeoArea; however, only data used for LF National are currently available. We will be releasing an updated version of the Public LFRDB at the end of LF Remap.