# Vegetation Species Reference (FIFE)

## Summary:

The Konza Natural Research Area is a tallgrass prairie in a biologically heterogeneous environment that is rich in native plant species. Species composition is extremely variable over sites because of the effects of both natural and anthropological factors. The FIFE Vegetation Species Reference Data Set is used to associate the plant species found on the Konza Prairie with both their common and Latin names, and to translate the species codes found in the FIFE vegetation data sets to their Latin and common names.

## Table of Contents:

## 1. Data Set Overview:

### Data Set Identification:

Vegetation Species Reference (FIFE).

### Data Set Introduction:

The FIFE Vegetation Species Reference Data Set is used to associate the plant species found on the Konza Prairie with both their common and Latin names, and to translate the species codes found in the FIFE vegetation data sets to their Latin and common names.

## Objective/Purpose:

The purpose was to provide a look-up table for plant species so that plant type and species information (common and taxonomic names) could be readily encoded and decoded.

## Summary of Parameters:

Common and Latin names of plant species and their LTER codes.

## Discussion:

The Konza Natural Research Area is a tallgrass prairie in a biologically heterogeneous environment that is rich in native plant species. Species composition is extremely variable over sites because of the effects of both natural and anthropological factors. This reference data is used to associate the plant species found on the Konza Prairie with both their common and Latin names, and to translate the species codes found in the FIFE vegetation data sets to their Latin and common names.

## Related Data Sets:

- Vegetation Species and Cover Abundance.
- Biophysical Properties of Vegetation.
- Leaf Angle Data.
- Root Biomass.
- Vegetation Biomass, Production and Consumption at Selected Sites.
- Exotect Surface Reflectances for the Mowing Experiment.

## FIS Data Base Table Name:

VEG_SPECIES_REF.

# 2. Investigator(s):

## Investigator(s) Name and Title:

Staff Science.

## Title of Investigation:

Staff Science Data Acquisition Program.

**Contact Information:**

**Contact 1:**
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Kansas State University
Manhattan, KS
(913) 532-6629
Email: jmb@andro.konza.ksu.edu

**Requested Form of Acknowledgment.**

The Vegetation Species Reference data was provided by the staff of the Konza Prairie Long-Term Ecological Research program at Kansas State University.

# 3. Theory of Measurements:

Not applicable.

# 4. Equipment:

**Sensor/Instrument Description:**

Not applicable.

**Collection Environment:**

Not applicable.

**Source/Platform:**

Not applicable.

**Source/Platform Mission Objectives:**

Not applicable.

**Key Variables:**

Not applicable.

**Principles of Operation:**

Not applicable.

**Sensor/Instrument Measurement Geometry:**

Not applicable.

**Manufacturer of Sensor/Instrument:**

Not applicable.

## Calibration:

**Specifications:**

Not applicable.

**Tolerance:**

Not applicable.

**Frequency of Calibration:**

Not applicable.

**Other Calibration Information:**

Not applicable.

# 5. Data Acquisition Methods:

The reference data were acquired from the Konza Prairie Long-Term Ecological Research program at Kansas State University. This data set was assembled using the species lists that occur at the LTER site and the taxonomic reference manual for the Konza Prairie. The taxonomic and common names for each species were then arbitrarily assigned a three digit code.

# 6. Observations:

**Data Notes:**

Not available.

**Field Notes:**

None.

# 7. Data Description:

## Spatial Characteristics:

The FIFE study area, with areal extent of 15 km by 15 km, is located south of the Tuttle Reservoir and Kansas River, and about 10 km from Manhattan, Kansas, USA. The northwest corner of the area has UTM coordinates of 4,334,000 Northing and 705,000 Easting in UTM Zone 14.

### Spatial Coverage:

This list represents the species and their codes which were found within the Konza LTER area.

### Spatial Coverage Map:

Not available.

### Spatial Resolution:

Not applicable.

### Projection:

Not available.

### Grid Description:

Not available.

## Temporal Characteristics:

### Temporal Coverage:

This species list and codes were compiled for the 1987 field experiment year and remained constant throughout FIFE (1987-1989).

### Temporal Coverage Map:

Not available.

### Temporal Resolution:

The species list is reviewed yearly and revised as necessary.

## Data Characteristics:

The SQL definition for this table is found in the VEG_REF.TDF file located on the CD-ROM Volume 1.

| Parameter/Variable Name | | |
|---|---|---|

| Parameter/Variable Description | Range | Units |
|---|---|---|
| **Source** | | |

LATIN_NAME
| The Latin name of the plant.<br>Abutilon to ZiZia | 468 Names from | FIS |
|---|---|---|

SPECIES_NAME
| The common name of the plant.<br>Almond-Leaf to<br>Yellowfruit | 457 Names from | FIS |
|---|---|---|

LTER_SPECIES_CODE
| The LTER species code of the plant.<br>max = 489 | min = 1, | FIS |
|---|---|---|

LTER_TYPE
| The LTER type of the plant.<br>max = 11 | min = 1, | FIS |
|---|---|---|

LTER_NAME
| The LTER name of the plant.<br>Annual and<br>Biennial to Woody<br>Plants | 11 names from | FIS |
|---|---|---|

DESCRIPTION
| The description of the plant. | | FIS |
|---|---|---|

COMMENTS
| Any comments that pertain to the<br>data set as a whole (i.e., missing<br>data, incorrect data). | | FIS |
|---|---|---|

## Sample Data Record:

| LATIN_NAME | SPECIES_NAME |
|---|---|
| ABUTILON THEOPHRASTI | VELVET LEAF |
| AESCULUS GLABRA ARGUTA | WESTERN BUCKEYE |

```
AGROSTIS HYEMALIS              TICKLEGRASS
AMORPHA FRUTICOSA              FALSE INDIGO
ANDROPOGON GERARDII            BIG BLUESTEM
AMBROSIA ARTEMISIIFOLIA        COMMON RAGWEED
ANDROPOGON ISCHAEMUM           TURKESTAN BLUESTEM
ANEMONE CAROLINIANA            CAROLINA ANEMONE
ASCLEPIAS TUBEROSA             BUTTERFLY MILKWEED
ASTER DRUMMONDII               DRUMMONDS ASTER
BAPTISIA BRACTEATA             PLAINS WILD INDIGO
CAREX BLANDA                   WOODLAND SEDGE
CAMPANULA AMERICANA            AMERICAN BELLFLOWER
CARYA CORDIFORMIS              BITTERNUT HICKORY
CEANOTHUS HERBACEOUS           INLAND CEANOTHUS
CELTIS OCCIDENTALIS            COMMON HACKBERRY
CORNUS DRUMMONDII              ROUGH-LEAVED DOGWOOD
DALEA CANDIDA CANDIDA          WHITE PRAIRIE-CLOVER
    LTER_SPECIES_CODE     LTER_TYPE    LTER_NAME
-----------------    ----------   ------------------------------
325          7     ANNUAL AND BIENNIAL C3 FORBS
307          9     WOODY PLANTS
150          2     PERENNIAL C3 GRASSES
240          7     ANNUAL AND BIENNIAL C3 FORBS
2        9     WOODY PLANTS
211          4     PERENNIAL C4 TALL GRASSES
462          5     PERENNIAL C4 MEDIUM GRASSES
48         3     ANNUAL C4 GRASSES
57         8     PERENNIAL C3 FORBS
399          8     PERENNIAL C3 FORBS
66         8     PERENNIAL C3 FORBS
35         8     PERENNIAL C3 FORBS
282          7     ANNUAL AND BIENNIAL C3 FORBS
309          2     PERENNIAL C3 GRASSES
41         9     WOODY PLANTS
200          9     WOODY PLANTS
164          9     WOODY PLANTS
106          9     WOODY PLANTS
    DESCRIPTION                          COMMENTS
----------------------------------    -----------------------------
```

# 8. Data Organization:

### Data Granularity:

This list represents the species and their codes which were found within the Konza LTER area.

A general description of data granularity as it applies to the IMS appears in the EOSDIS Glossary.

### Data Format:

The CD-ROM file format consists of numerical and character fields of varying length separated by commas. The character fields are enclosed with a single apostrophe. There are no spaces

between the fields. Each file begin with five header records. Header records contain the following information:

Record 1 Name of this file, its table name, number of records in this file, and principal investigator name. Record 2 Path and filename of the previous data set, and path and filename of the next data set. (Path and filenames for files that contain another set of data taken at the same site on the same day.) Record 3 Path and filename of the previous site, and path and filename of the next site. (Path and filenames for files of the same data set taken on the same day for the previous and next sites, sequentially numbered by SITEGRID.) Record 4 Path and filename of the previous date, and path and filename of the next date. (Path and filenames for files of the same data set taken at the same site for the previous and next date.) Record 5 Column names for the data within the file, delimited by commas. Record 6 Data records begin.

Each field represents one of the attributes listed in the chart in Section 8.2 and described in detail in the TDF file (see Section 8.1). These fields are in the same order as in the chart.

# 9. Data Manipulations:

## Formulae:

### Derivation Techniques and Algorithms:

Not applicable.

## Data Processing Sequence:

### Processing Steps:

Not applicable.

### Processing Changes:

Not applicable.

## Calculations:

### Special Corrections/Adjustments:

Not applicable.

### Calculated Variables:

Not applicable.

**Graphs and Plots:**

None.

# 10. Errors:

## Sources of Error:

Error can originate during the compilation of the table, and Latin names may be incorrectly assigned to common names and vice versa. Codes are arbitrarily assigned to the Latin and common names. There is also the potential for human error during the translation and the entry of codes and names.

## Quality Assessment:

### Data Validation by Source:

Not available at this revision.

### Confidence Level/Accuracy Judgment:

Not available at this revision.

### Measurement Error for Parameters:

Not available at this revision.

### Additional Quality Assessments:

Not available at this revision.

### Data Verification by Data Center:

The data verification performed by the ORNL DAAC deals with the quality of the data format, media, and readability. The ORNL DAAC does not make an assessment of the quality of the data itself except during the course of performing other QA procedures as described below.

The FIFE data were transferred to the ORNL DAAC via CD-ROM. These CD-ROMs are distributed by the ORNL DAAC unmodified as a set or in individual volumes, as requested. In addition, the DAAC has incorporated each of the 98 FIFE tabular datasets from the CD-ROMs into its online data holdings. Incorporation of these data involved the following steps:

- Copying the entire FIFE Volume 1, maintaining the directory structure on the CD-ROM;
- Using data files, documentation, and SQL code provided on the CD-ROM to create a database in Statistical Analysis System (SAS); and

- Creating transfer files to transfer the SAS metadata database to Sybase tables.

Each distinct type of data (i.e. "data set" on the CD-ROM), is accompanied by a documentation file (i.e., .doc file) and a data format/structure definition file (i.e., .tdf file). The data format files on the CD-ROM are Oracle SQL commands (e.g., "create table") that can be used to set up a relational database table structure. This file provides column/variable names, character/numeric type, length, and format, and labels/comments. These SQL commands were converted to SAS code and were used to create SAS data sets and subsequently to input data files directly from the CD-ROM into a SAS dataset. During this process, file names and directory paths were captured and metadata was extracted to the extent possible electronically. No files were found to be corrupted or unreadable during the conversion process.

Additional Quality Assurance procedures were performed as follows:

- Statistical operations were performed to calculate minimum and maximum values for all numeric fields and to create a listing of all values of the character fields. During this process, it was determined that various conventions were used to represent missing values. (Note: no modifications were made to any data by the DAAC). In most cases, missing value identification conventions were discussed in the accompanying .doc file. Based on a visual check of the minimum and maximum values, no glaring errors or holes were identified that might indicate errors introduced during CD-ROM mastering by the FIFE project or data ingest by the DAAC.
- Some minor inconsistencies and typographical errors were identified in some of the character fields and column labels, however, no modifications were made to the data by the DAAC.
- Some conversions of ASCII data were necessary to move the data from a DOS platform to a UNIX platform. Standard operating system conversion utilities were used (e.g., dos2unix).
- Much of the metadata required for archival is imbedded in the narrative documentation accompanying the data sets and extracted manually by DAAC staff who have read the .doc files provided on the CD-ROM and have hand entered this information into the metadata database maintained by the DAAC. QA procedures have been performed on these metadata to identify and eliminate typographical errors and inconsistencies in naming conventions, to ensure that all required metadata is present, and to ensure the accuracy of file names and paths for retrieval.
- Data requested for distribution to users are checked to verify that files copied from disk to other media remain uncorrupted.

As errors are discovered in the online tabular data by investigators, users, or DAAC staff, corrections are made in cooperation with the principal investigators. These corrections are then distributed to users. CD-ROM data are corrected when re-mastering occurs for replenishment of CD-ROM stock.

# 11. Notes:

**Limitations of the Data:**

Not available.

**Known Problems with the Data:**

Not available at this revision.

**Usage Guidance:**

To determine the species at a site, use the species code in this data set to translate the species code in the vegetation data sets of interest (see Section 8.5 for a list of vegetation data sets.)

**Any Other Relevant Information about the Study:**

None.

# 12. Application of the Data Set:

This data set can be used to associate the plant species found on the Konza Prairie with both their common and Latin names, and to translate the species codes found in the FIFE vegetation data sets to their Latin and common names.

# 13. Future Modifications and Plans:

The FIFE field campaigns were held in 1987 and 1989 and there are no plans for new data collection. Field work continues near the FIFE site at the Long-Term Ecological Research (LTER) Network Konza research site (i.e., LTER continues to monitor the site). The FIFE investigators are continuing to analyze and model the data from the field campaigns to produce new data products.

# 14. Software:

Software to access the data set is available on the all volumes of the FIFE CD-ROM set. For a detailed description of the available software see the *Software Description Document*.

# 15. Data Access:

**Contact Information:**

ORNL DAAC User Services
Oak Ridge National Laboratory

Telephone: (865) 241-3952

Email: ornldaac@ornl.gov

## Data Center Identification:

ORNL Distributed Active Archive Center
Oak Ridge National Laboratory
USA

Telephone: (865) 241-3952
FAX: (865) 574-4665

Email: uso@daac.ornl.gov

## Procedures for Obtaining Data:

Users may place requests by telephone, electronic mail, or FAX. Data is also available via the World Wide Web at http://daac.ornl.gov.

## Data Center Status/Plans:

FIFE data are available from the ORNL DAAC. Please contact the ORNL DAAC User Services Office for the most current information about these data.

# 16. Output Products and Availability:

Vegetation Species Reference data are available on FIFE CD-ROM Volume 1. The CD-ROM filename is as follows:

\DATA\BIOLOGY\VEG_REF\1987MULT.VSR

# 17. References:

## Satellite/Instrument/Data Processing Documentation.

Freeman, C.C., L.C. Hulbert. 1985. An annotated list of the vascular flora of Konza Prairie Research Natural Area. Kansas Trans. Kansas Academy of Sciences. 88(3-4):84-115.

## Journal Articles and Study Reports.

Bark, D. 1987. Konza Prairie Research Natural Area, Kansas. p 45-50, In: D. Greenland (ed.) The Climates of the Long-Term Ecological Research Sites. Institute of Artic and Alpine Res. Occasional Paper. No. 44, Univ. of Colorado, Boulder.

## Archive/DBMS Usage Documentation.

Contact the EOS Distributed Active Archive Center (DAAC) at Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee (see the *Data Center Identification Section*). Documentation about using the archive and/or online access to the data at the ORNL DAAC is not available at this revision.

# 18. Glossary of Terms:

A general glossary for the DAAC is located at Glossary.

# 19. List of Acronyms:

BPI Byte per inch CCT Computer Compatible Tape CD-ROM Compact Disk-Read Only Memory DAAC Distributed Active Archive Center EOSDIS Earth Observing System Data and Information System FIFE First ISLSCP Field Experiment ISLSCP International Satellite Land Surface Climatology Project LTER Long-term Ecological Research ORNL Oak Ridge National Laboratory SQL Structured Query Language URL Uniform Resource Locator UTM Universal Transverse Mercator

A general list of acronyms for the DAAC is available at Acronyms.

# 20. Document Information:

April 28, 1994 (citation revised on October 14, 2002).

This document has been reviewed by the FIFE Information Scientist to eliminate technical and editorial inaccuracies. Previous versions of this document have been reviewed by the Principal Investigator, the FIFE scientist generally familiar with the data. It is believed that the document accurately describes the data as collected and as archive on the FIFE CD-ROM series.

**Document Review Date:**

January 7, 1997.

**Document ID:**

ORNL-FIFE_VEG_REF.

**Citation:**

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Strebel, D. R. Landis, K. F. Huemmrich, and B. W. Meeson (eds.), Collected Data of the First ISLSCP Field Experiment, Vol. 1: Surface Observations and Non-Image Data Sets. CD-ROM. National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, Maryland, U.S.A. (available from ORNL DAAC Home ).

## Document Curator:

DAAC Staff

## Document URL:

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