**Title:** TXeco: leaf functional trait dataset for herbaceous forb and graminoid species of Texan grasslands

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**Open Research statement:**

1. **Data set identity:** TXeco: leaf functional trait dataset for herbaceous forb and graminoid species of Texan grasslands
2. Data set identification code: N/A
3. Data set description
   * + 1. Originators: Evan A. Perkowski and Nicholas G. Smith. Department of Biological Sciences, Texas Tech University, 2901 Main St., Lubbock, TX, USA

2. Abstract: Descriptive abstract summarizing research objectives, data contents (including temporal, spatial, and thematic domain), context and potential uses of data set. This abstract can be a maximum of 350 words.

1. Key words/phrases: Texas grasslands, 2020-2021, graminoid, herbaceous, leaf nitrogen, climate

### Class II. Research origin descriptors

1. Overall project description: *[Note: This section may be essential if data set represents a component of a larger or more comprehensive database; otherwise, relevant items may be incorporated into II.B.]*
   1. Identity: Drivers of plant nutrient acquisition and allocation strategies and their influence on plant responses to environmental change
   2. Originators: E.A. Perkowski and N.G. Smith, Texas Tech University
   3. Period of study: August 2018 – May 2023
   4. Objectives: The project and associated data included here represents one of E.A. Perkowski’s dissertation chapters, where the primary objective was to investigate effects of edaphic and climatic characteristics on nitrogen-water use tradeoffs across broad climatic and edaphic gradients.
   5. Abstract: Descriptive abstract summarizing broader scientific scope of overall research project
   6. Sources of funding: Braun & Gresham, PLLC.; US National Science Foundation (DEB-2045968), Texas Tech University
2. Specific subproject description
   1. Site description
      1. **Site type**: Descriptive (e.g., short-grass prairie, blackwater stream, etc.)
      2. **Geography**: Sites scattered along east-west transect in Texas, USA
      3. Habitat: Detailed characteristics of habitats sampled
      4. Geology, landform: Soils, slope/elevation/aspect, terrain/physiography, geology/lithology
      5. Watersheds, hydrology: Size, boundaries, receiving streams, etc.
      6. **Site history**: Free from human-caused disturbance (e.g., mowing) and herbivore disturbance (e.g., feral hog presence)
      7. Climate: Descriptive summary of site climatic characteristics
   2. Experimental or sampling design
      1. **Design characteristics**: Three leaf samples of the five most abundant species were sampled in random locations at each site across the environmental gradient. At least five soil samples were collected from 0-15cm at random points at each site that mimicked leaf sampling locations. Soil samples were pooled into one composite soil sample by hand-mixing.
      2. **Permanent plots**: Permanent plots were not established
      3. **Data collection period, frequency, etc.**: In 2020, data from XX sites collected during one sampling period between XX and XX, with data from 5 sits within original 14 sites collected again between XX and XX. In 2021, data from XX sites collected during one sampling period between XX and XX, with data from 5 sits within original 14 sites collected again between XX and XX.
      4. **Information necessary to understand temporal sampling regime**: N/A
   3. **Research methods**
      1. Field/laboratory: Description or reference to standard field/laboratory methods
      2. Instrumentation: Description and model/serial numbers
      3. Taxonomy and systematics: References for taxonomic keys, identification, and location of voucher specimens, etc.
      4. Permit history: No permits necessary for field collections
      5. Legal/organizational requirements: Access to properties were facilitated through contracts between landowner and researchers, mediated through Braun & Gresham, PLLC.
   4. **Project personnel**: E.A. Perkowski, N.G. Smith facilitated all field and lab work related to project. Risa McNellis, Jorge Ochoa, and Peter Eludini provided help in the field. Abigail Bell, Christine Vanginault, Jose Villeda, Hannah German, and Gwendolyn Wagner provided additional lab assistance.

### Class III. Data set status and accessibility

1. Status
   1. Latest update: February 16, 2023
   2. Latest archive date: Date of last data set archival
   3. Metadata status: February 16, 2023
   4. Data verification: Status of data quality assurance checking
2. Accessibility
   1. **Storage location and medium**: The dataset will be permanently stored in a GitHub repository ([www.github.com/TXeco](http://www.github.com/TXeco)). The Zenodo snapshot DOI for this release is XXX. Any issues or problems with the dataset can be recorded on the GitHub repository or through direct correspondence with Evan Perkowski at [evan.a.perkowski@ttu.edu](mailto:evan.a.perkowski@ttu.edu)
   2. **Contact persons**: Evan Perkowski ([evan.a.perkowski@ttu.edu](mailto:evan.a.perkowski@ttu.edu) or [eaperkowski@gmail.com](mailto:eaperkowski@gmail.com))
   3. **Copyright restrictions**: N/A
   4. **Proprietary restrictions**: There are no proprietary restrictions for using this dataset
      1. **Release date**: N/A
      2. **Citation**: N/A aside from the citation used for this data paper
      3. Disclaimer(s): N/A
   5. **Costs**: There are no costs associated with accessing this material

### Class IV. Data structural descriptors

1. **Data set file**
   1. **Identity**: TXeco\_data.csv (data set file); TXeco\_dictionary.csv (metadata file)
   2. **Size**: 350 KB (data set file) and 8 KB (metadata file)
   3. **Number of records, record length, total number of bytes, etc.:** 504 observations
   4. **Format and storage mode**: Single .csv data file with associated metadata .csv file (“TXeco\_dictionary.csv”)
   5. **Header information**: Description of any header data or information attached to file [Note: may include elements related to variable information (IV.B.); if so, could be linked to appropriate section(s)]
   6. **Alphanumeric attributes**: lowercase
   7. **Special characters/fields**: N/A
   8. **Authentication procedures**: N/A
2. Variable information
   1. Variable identity: Unique variable name or code
   2. Variable definition: Precise definition of variables in data set
   3. Units of measurement: Units of measurement associated with each variable
   4. Data type
      1. Storage type: Integer, floating point, character, string, etc.
      2. List and definition of variable codes: Description of any codes associated with variables
      3. Range for numeric values: Minimum, maximum
      4. Missing value codes: Description of how missing values are represented in data set
      5. Precision: Number of significant digits
   5. Data format
      1. Fixed, variable length
      2. Columns: Start column, end column
      3. Optional number of decimal places
3. Data anomalies: Description of missing data, anomalous data, calibration errors, etc.

### Class V. Supplemental descriptors

1. **Data acquisition**
   1. **Data forms or acquisition methods**: Description or examples of data forms, automated data loggers, digitizing procedures, etc.
   2. **Location of completed data forms**
   3. **Data entry verification procedures**: Procedures employed to verify that digital data set is free of errors
2. **Quality assurance/quality control procedures**: Identification and treatment of outliers, description of quality assessments, calibration of reference standards, equipment performance results, etc.
3. **Related materials**: References and locations of maps, photographs, videos, GIS data layers, physical specimens, field notebooks, comments, etc.
4. **Computer programs and data-processing algorithms**: Description or listing of any algorithms used in deriving, processing, or transforming data
5. **Archiving**
   1. **Archival procedures**: Description of how data are archived for long-term storage and access
   2. **Redundant archival sites**: Locations and procedures followed
6. **Publications and results**: Electronic reprints, lists of publications resulting from or related to the study, graphical/statistical data representations, etc.
7. **History of data set usage**
   1. **Data request history**: N/A
   2. **Data set update history**: Description of any updates performed on data set
   3. **Review history**: Last entry, last researcher review, etc.
   4. **Questions and comments from secondary users**: N/A

Literature Citations