**Title:**

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

**Authors:** Evan A. Perkowski1,\* and Nicholas G. Smith1

**Author Affiliations:**

1Department of Biological Sciences, Texas Tech University, Lubbock, TX, USA

**Corresponding Author:**

\*2901 Main St.

Lubbock, TX 79409

**E-mail:** [evan.a.perkowski@ttu.edu](mailto:evan.a.perkowski@ttu.edu)

**Open Research statement:**

### Class I. Data Set Descriptors

1. **Data set identity:** TXecoN: leaf functional trait dataset for herbaceous forb and graminoid species of Texan grasslands
2. Data set identification code: Database accession numbers or site-specific codes used to uniquely identify data set
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: Location (spatial scale), time period and sampling frequency (temporal scale), theme or contents (thematic scale)

### 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: Location (e.g., latitude/longitude), size
      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: Site management practices, disturbance history, etc.
      7. Climate: Descriptive summary of site climatic characteristics
   2. Experimental or sampling design
      1. Design characteristics: Description of statistical/sampling design
      2. Permanent plots: Permanent plots were not established
      3. Data collection period, frequency, etc.: Information necessary to understand temporal sampling regime
   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, access was granted to private land by private landowners
      5. Legal/organizational requirements: Relevant laws, decision criteria, compliance standards, etc.
   4. Project personnel: Principal and associated investigator(s), technicians, supervisors, students

### Class III. Data set status and accessibility

1. Status
   1. Latest update: Date of last modification of data set
   2. Latest archive date: Date of last data set archival
   3. Metadata status: Date of last metadata update and current status
   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
   2. Contact persons: Evan Perkowski; evan.a.perkowski@ttu.edu
   3. Copyright restrictions: Whether copyright restrictions prohibit use of all or portions of the data set
   4. Proprietary restrictions: There are no proprietary restrictions for using this dataset
      1. Release date: N/A
      2. Citation: N/A
      3. Disclaimer(s): Any disclaimers that should be acknowledged by secondary users
   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
   2. Size: Number of records, record length, total number of bytes, etc.
   3. Format and storage mode: File type (e.g., ASCII, binary, etc.), compression schemes employed (if any), etc.
   4. 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)]
   5. Alphanumeric attributes: Mixed, upper, or lower case
   6. Special characters/fields: Methods used to denote comments, flag modified or questionable data, etc.
   7. Authentication procedures: Digital signature, checksum, actual subset(s) of data, and other techniques for assuring accurate transmission of data to secondary users
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: Log of who requested data, for what purpose, and how data set was actually used
   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: Questionable or unusual data discovered by secondary users; limitations or problems encountered in specific applications of data; unresolved questions or comments

Literature Citations