Metadata for the recompiled Inouye long-term flowering dataset at Gothic, Colorado, USA

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Preface

This document describes the features of David Inouye's long-term flowering dataset from Gothic, Colorado, USA. This dataset was recompiled from original Excel files in 2017 by Jane Ogilvie with help from Leithen M'Gonigle, Brian Inouye, and Nora Underwood. This recompilation of the Gothic flowering dataset is the most complete—previous versions have had some missing species, missing data within plot-years, and anomalous data due to inconsistent sampling and notation. The dataset is housed at the Open Science Framework, which can be cited when mentioning the dataset:
https://doi.org/10.17605/osf.io/jt4n5

Project description

David Inouye and colleagues have been collecting data on the abundance and timing of flowers of plants that fall within fixed plots at the Rocky Mountain Biological Laboratory (RMBL), in Gothic, Colorado, USA, from 1974 to present. During the growing season, flowers of each species are counted approximately every other day in mostly meadow plots, measuring 2 x 2 m. In some years, the start and/or end of flowering were missed and data were not collected in 1978 and 1990. A core set of 23 2 x 2 m plots have been followed 1974-present (excluding 1978 and 1990), and additional plots have been added through the years: two in 1985 (GH1-2), three in 1998 (GH3-5), and two in 2004 (MDW, STR). Data are now collected in a total of 30 plots. Up to 135 plant species have been recorded in the plots, and flowering grasses and some sedges have been included in the data collection consistently since 2010. The floral unit counted for each species and further data collection details are described in a separate metadata file.

Dataset description

1. Each row is a floral count for a particular species, plot, and day of year within the growing season (flower count is summed within a plot for a plant species). Zeros are not included in the dataset; because all flowers are counted in a plot on each sampling day, an absence of a species on a date should be considered a zero. Day of year ("doy") begins with January 1st as 1. "cumsum" is the cumulative sum of flowers of a particular species in each plot-year.

2. Plot names are descriptive: Aspen Forest (AF8-9), Erythronium Meadow (EM1-2), Green House (GH1-5), Meadow (MDW), Willow-Wet Meadow Interface (INT1-5), Rocky Meadow (RM1-7), Stream (STR), Veratrum Removal (VR1-2), and Wet Meadow (WM1-5). The plots could be broadly grouped into three habitats: dry rocky meadow (RM1-7), wet meadow (EM1-2, GH1-5, MDW, STR, VR1-2, WM1-5), and aspen forest understory (AF8-9).

3. Plant nomenclature follows the local plant key: Weber WA and Wittmann RC (2012) Colorado flora: western slope. University Press of Colorado, Boulder.

4. The flowering of some species has not been followed consistently since the beginning of the project. Such species include grasses and plants with inconspicuous flowers. The flowering of *Bromopsis inermis* and *Poa pratensis* appears inconsistently followed prior to 2010 but there are still many years of data. *Chenopodium album* has inconspicuous flowers and its flowering was likely missed in some

years. Note that for all of these species, missing years prior to 2010 may not be true absences of flowering.

5. In some earlier years (between 1974 and 2000), the "upper" (RM and AF) and "lower" (EM, GH, INT, VR, WM) plots were counted mostly or sometimes on alternate days. This will affect measurements using pooled plot counts on particular days (such as peak abundance across all plots). Additionally, sometimes a set of plots was sampled on extra days. Jane Ogilvie has R code to correct these issues (feel free to request it).