

DATA PAPER

Co-mast: Harmonized seed production data for woody plants across US long-term research sites

Katherine M. Nigro¹  | Jessica H. Barton²  | Diana Macias³ |
 V. Bala Chaudhary⁴ | Ian S. Pearse⁵  | David M. Bell⁶  | Angel Chen⁷ |
 Natalie L. Cleavitt⁸  | Elizabeth E. Crone⁹ | David F. Greene¹⁰ |
 E. Penelope Holland¹¹ | Jill F. Johnstone¹²  | Walter D. Koenig¹³ |
 Nicholas J. Lyon⁷  | Tom E. X. Miller¹⁴  | Mark Schulze¹⁵ |
 Rebecca S. Snell¹⁶  | Jess K. Zimmerman¹⁷ | Johannes M. H. Knops¹⁸ |
 Stacy McNulty¹⁹  | Robert R. Parmenter²⁰  | Mark A. Winterstein¹² |
 Roman I. Zlotin²¹ | Jalene M. LaMontagne^{2,22,23}  | Miranda D. Redmond³

Correspondence

Katherine M. Nigro
 Email: katienigro83@gmail.com

Present address

Katherine M. Nigro, Oak Ridge Institute
 for Science and Education, USA Forest
 Service, Rocky Mountain Research
 Station, Fort Collins, Colorado, USA.

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Handling Editor: Hao Ye**Abstract**

Plants display a range of temporal patterns of inter-annual reproduction, from relatively constant seed production to “mast seeding,” the synchronized and highly variable interannual seed production of plants within a population. Previous efforts have compiled global records of seed production in long-lived plants to gain insight into seed production, forest and animal population dynamics, and the effects of global change on masting. Existing datasets focus on seed production dynamics at the population scale but are limited in their ability to examine community-level mast seeding dynamics across different plant species at the continental scale. We harmonized decades of plant reproduction data for 141 woody plant species across nine Long-Term Ecological Research (LTER) or long-term ecological monitoring sites from a wide range of habitats across the United States. Plant reproduction data are reported annually between 1957 and 2021 and based on either seed traps or seed and/or cone counts on individual trees. A wide range of woody plant species including trees, shrubs, and lianas are represented within sites allowing for direct community-level comparisons among species. We share code for filtering of data that enables the comparison of plot and individual tree data across sites. For each species, we compiled relevant life history attributes (e.g., seed mass, dispersal syndrome, seed longevity, sexual system) that may serve as important

Roman I. Zlotin, deceased 26 February 2023.

For affiliations refer to page 2

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predictors of mast seeding in future analyses. To aid in phylogenetically informed analyses, we also share a phylogeny and phylogenetic distance matrix for all species in the dataset. These data can be used to investigate continent-scale ecological properties of seed production, including individual and population variability, synchrony within and across species, and how these properties of seed production vary in relation to plant species traits and environmental conditions. In addition, these data can be used to assess how annual variability in seed production is associated with climate conditions and how that varies across populations, species, and regions. The dataset is released under a CC0 1.0 Universal public domain license.

KEYWORDS

community dynamics, long-term data, LTER, mast fruiting, mast seeding, masting, plant reproduction, plant traits, synchronous reproduction, USA

AFFILIATIONS

¹Department of Forest and Rangeland Stewardship, Colorado State University, Fort Collins, Colorado, USA

²Department of Biology, University of Missouri – St. Louis, St. Louis, Missouri, USA

³Department of Environmental Science, Policy, and Management, University of California Berkeley, Berkeley, California, USA

⁴Environmental Studies Department, Dartmouth College, Hanover, New Hampshire, USA

⁵U.S. Geological Survey, Fort Collins Science Center, Fort Collins, Colorado, USA

⁶Pacific Northwest Research Station, USDA Forest Service, Corvallis, Oregon, USA

⁷Long Term Ecological Research Network Office, National Center for Ecological Analysis and Synthesis, University of California Santa Barbara, Santa Barbara, California, USA

⁸Department of Natural Resources and the Environment, Cornell University, Ithaca, New York, USA

⁹Department of Evolution & Ecology, University of California Davis, Davis, California, USA

¹⁰Department of Forestry, Fire, and Range Management, Cal Poly Humboldt, Arcata, California, USA

¹¹Department of Biology, University of York, York, UK

¹²Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, Alaska, USA

¹³Hastings Reservation, University of California Berkeley, Carmel Valley, California, USA

¹⁴Department of BioSciences, Rice University, Houston, Texas, USA

¹⁵H.J. Andrews Experimental Forest, Blue River, Oregon, USA

¹⁶Department of Environmental and Plant Biology, Ohio University, Athens, Ohio, USA

¹⁷Department of Environmental Sciences, University of Puerto Rico, San Juan, Puerto Rico, USA

¹⁸Department of Health and Environmental Sciences, Xi'an Jiaotong-Liverpool University, Suzhou, Jiangsu, China

¹⁹Adirondack Ecological Center, State University of New York College of Environmental Science and Forestry, Newcomb, New York, USA

²⁰Department of Biology, University of New Mexico, Albuquerque, New Mexico, USA

²¹Department of Geography, Indiana University, Bloomington, Indiana, USA

²²Whitney R. Harris World Ecology Center, University of Missouri – St. Louis, St. Louis, Missouri, USA

²³Science and Conservation Division, Missouri Botanical Garden, St. Louis, Missouri, USA

DATA AVAILABILITY STATEMENT

The dataset is available as [Supporting Information](#) and in Dryad at <https://doi.org/10.5061/dryad.69p8cz98q>. Code is available in Zenodo at <https://doi.org/10.5281/zenodo.10582903>.

ORCID

Katherine M. Nigro  <https://orcid.org/0000-0001-5852-3814>

Jessica H. Barton  <https://orcid.org/0000-0002-2016-4278>

Ian S. Pearse  <https://orcid.org/0000-0001-7098-0495>

David M. Bell  <https://orcid.org/0000-0002-2673-5836>

Natalie L. Cleavitt  <https://orcid.org/0000-0003-0425-2486>

Jill F. Johnstone  <https://orcid.org/0000-0001-6131-9339>

Nicholas J. Lyon  <https://orcid.org/0000-0003-3905-1078>

Tom E. X. Miller  <https://orcid.org/0000-0003-3208-6067>
Rebecca S. Snell  <https://orcid.org/0000-0002-2456-405X>
Stacy McNulty  <https://orcid.org/0000-0003-1572-942X>
Robert R. Parmenter  <https://orcid.org/0000-0002-2099-6824>
Jalene M. LaMontagne  <https://orcid.org/0000-0001-7713-8591>

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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