



Agreement of cooperation and data policy

February 2023

Article 1 – Purpose and Objectives

PhenObs is an international network of botanical gardens. Our aim is to investigate the phenology of herbaceous species and how phenology is affected by global change. This knowledge will help us to improve our understanding of the implications of phenological shifts for biodiversity, ecosystem functions and services. We will achieve our aims through the collection of phenological and trait data across a global range of sites using standardised protocols. Specifically, our main research questions are:

- How does the phenology i.e. distinct phenological phases of herbaceous species vary at regional and global scale?
- What are the drivers of variation in plant phenology in herbaceous species across the growing season and in response to variation in climate?
- Can plant phenology be predicted from species' trait composition, provenance, position and extent of the distribution range and species' phylogeny (as proxy for their eco-physiological adaptation)?
- What are the implications of this variation with respect to species performances and assembly, biotic interactions as well as ecosystem processes and services under changing land-use and climate?

Here, we define the network structure and establish policies for communication, data use and publication.

Article 2 – The members

2.1 The PhenObs network consists of members who conduct phenological monitoring and take trait measurements on herbaceous species in Botanical Gardens following the PhenObs protocol using their own funds. In addition, the PhenObs network comprises the members of the first PhenObs Workshop that launched the global network at the German Research Centre for Integrative Biodiversity Research Halle-Jena-Leipzig (iDiv) in Leipzig in November 2018. PhenObs members strictly adhere to the PhenObs protocols for data collection and share data associated with the project in the common PhenObs repository. A list of members is available on the PhenObs website.

2.2 PhenObs aims to be inclusive and new contributing network partners may enter the network at any time, if the steering committee agrees.

2.3 Membership in the network can be ended by the member or by the steering committee if the member withdraws his/her data entirely. Membership can also be terminated by a two-thirds decision of the steering committee if a member has seriously failed to observe the policies outlined here, or if a member has been inactive for a longer period.

Article 3 – The steering committee and network coordination

3.1 The steering committee is responsible for developing the network and defining its general scope, as well as for establishing guidelines. The steering committee shall represent the network with regards to communication with the contributing gardens, decides upon the membership, co-ordinates compilation and management of the dataset and the handling of data requests. The steering

committee currently consists of the eight members: Christine Römermann (PI, Friedrich-Schiller University Jena & iDiv), Isabell Hensen (PI, Martin-Luther University Halle-Wittenberg & iDiv), the PhenObs coordinator and data manager (Robert Rauschkolb, Friedrich-Schiller University Jena & iDiv), Birgit Nordt (Botanical Garden & Botanical Museum Berlin, Freie University Berlin), Martin Freiberg (Leipzig University & iDiv), Solveig Franziska Bucher (Friedrich-Schiller University Jena), Barbara Knickmann (Core Facility Botanical Garden Vienna) and Aletta Bonn (Friedrich-Schiller University Jena & iDiv & UFZ).

3.2 The network is coordinated by the PhenObs team based at the Plant Biodiversity Group, Institute of Ecology and Evolution, Friedrich-Schiller University Jena, which includes the data manager and coordinator who will communicate with members for the duration of the network. The coordinating team is responsible for overseeing the everyday business of the PhenObs Network.

3.3 The steering committee will meet two to three times per year. All network members are welcome to join the meeting and to suggest agenda points.

Article – 4 Data collection

4.1 All data contributed to the common data set will remain intellectual property of the individual data owners and may be withdrawn at any time unless they were free to access published or included in publications.

4.2 When collecting and contributing data, all participating gardens must follow the monitoring protocol defined by the steering committee. This will be distributed via email and is also available on the PhenObs website.

4.3 Data will be collected via the PhenObs Web Interface (<https://phenobsapp.idiv.de>). Where this is not possible, it will be collected and curated in a first step by the contributing network partner using provided templates and then be sent to the data manager. The data manager will collate and clean (where necessary) and in every case back up the common data set.

Article – 5 Data publication

5.1 At the end of one calendar year, the data manager creates a file containing all data for all species and gardens that have been submitted to the PhenObs database. This data set is uploaded to the iDiv data repository (<https://idata.idiv.de/>) and remains restricted for two years but can be provided on request (see 6.1). After two years, the data becomes freely accessible.

5.2 All data remains property of the data owners (e.g. persons responsible for the monitoring in the respective gardens). All data owners are listed in the metadata of the dataset uploaded to the iDiv data repository.

Article – 6 Data requests

6.1 During the two years of access-restriction, data requests are possible. Each request is considered and approved individually by the steering committee. A data request should be submitted to the steering committee (phenobs@uni-jena.de) using this pdf form (<https://cloud.uni-jena.de/s/kcwA8cy2bAtM8j9>) and consists of (i) the applicant's name and affiliation, (ii) the names of

all potential co-authors, (iii) the preliminary title, (iv) an abstract, (v) the estimated time of manuscript submission, (vi) a specification of the data needed (including a species list as .csv file in accordance to the species' names of this list: <https://cloud.uni-jena.de/s/HHMN5Fkj6Dppabc>), (vii) information whether members of the network will be involved as co-authors.

6.2 The PhenObs steering committee will send the approved data request together with an overview on requested data to all PhenObs members. The members can then declare their willingness to join the paper project as active co-authors during a period of two months (opt-in papers).

6.3 All individuals and institutions given access to the PhenObs data must confirm that the data will not be shared with anyone not listed as a co-author and not be used for other purposes than stated in the original data request submitted to the steering committee.

6.4 When PhenObs data are used, regardless of whether on request or as open access, the data users are obliged to give appropriate credit to PhenObs, acknowledging all bodies that supported PhenObs financially and that data were made available through the PhenObs network (For a standardised acknowledgement see: <https://www.idiv.de/en/phenobs/protocols-data-policy.html>). Furthermore, core publications must be cited as specified on the PhenObs homepage.

6.5 Upon publication, researchers are invited to send the paper(s) using PhenObs data to the PhenObs data manager (phenobs@uni-jena.de). Links to these papers will be added to the PhenObs website and researchers can be invited to present their work in the monthly PhenObs seminar.

Article 7 – Authorship

7.1 All data owners who have contributed PhenObs data, which lies under the two-year access-restriction, must be invited to contribute as co-author to any publication.

7.2 Even if the data are freely available after two years, co-authorships should be offered to the data owners if the data had not been used for publication before and/or are relevant for a main message and tables or figures of the publication. For questions and as a contact between data users and data owners, the PhenObs coordination is available (phenobs@uni-jena.de).

7.3 PhenObs adheres to established good practices on scientific publication. In case of uncertainty on the co-authorship arrangements, inclusive rather than exclusive principles should be applied.

Article 8 – Statement of Consent

If a data owner has officially submitted data for inclusion in the PhenObs dataset to the PhenObs data manager, this is considered an implicit agreement with these policies and rules. Data owners also agree to having their names published on the PhenObs member list on the PhenObs website.

By request, we can provide this agreement as a bilateral document that is signed by a representative of the steering committee and the member.

Jena, 10 February 2023

The PhenObs Steering Committee (www.idiv.de/en/phenobs/members.html)