Supporting Statement B

USA National Phenology Network – The Nature's Notebook Plant and Animal Observing Program

OMB Control Number 1028-0103

Collections of Information Employing Statistical Methods

The agency should be prepared to justify its decision not to use statistical methods in any case where such methods might reduce burden or improve accuracy of results. When the question "Does this ICR contain surveys, censuses, or employ statistical methods?" is checked "Yes," the following documentation should be included in Supporting Statement B to the extent that it applies to the methods proposed:

1. **Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.**

Statistical methods are not used in the selection of respondents. Qualified participants (i.e., individuals with the ability and inclination to observe and record species' phenologies) are found via targeted media outlets, collaborations with on-the-ground partners (e.g., Cooperative Extension, botanical gardens, the National Park Service), public talks and word-of-mouth.

We project that 7,581 responders will register each year with *Nature's Notebook*, and of those 758 will watch the training videos. The same 7,581 responders will contribute 4,093,342 annual responses.

Over the prior period (2015-17) an average of 4,805 responders registered each year with *Nature's Notebook,* and of those we estimate that 481 watched the training videos. Those 4,805 responders contributed an average of 2,319,302 observation records each year. We averaged 2,324,588 annual responses in the prior collection period.

2. **Describe the procedures for the collection of information including:**
   * **Statistical methodology for stratification and sample selection,**
   * **Estimation procedure,**
   * **Degree of accuracy needed for the purpose described in the justification,**
   * **Unusual problems requiring specialized sampling procedures, and**

*   Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Statistical methods are not used during the selection of respondents, sample location, or sample species. Participants opt-in, and choose and/or adjust the intensity of their participation at their will (e.g., number of sites, number and type of species at a site, type of phenological observations, and frequency of observation). However, the project website provides suggestions, guidelines and criteria for observation protocols, and substantial quality assurance/quality control tools are implemented automatically. Training materials are provided on the project website, participants self-report their training, background and interests.

The conceptual framework for participation is described in Supporting Statement A. Once an observer has registered and described their background, completed optional training, selected, marked and described a site, selected plant individuals or animal species to observe, and either printed datasheets or downloaded a mobile application, they are encouraged to make observations at least weekly. During each sampling bout, the observer records the status of plant phenophases (e.g., leafing, flowering) as either "Yes" = occurring; "No" = not occurring, "?" = uncertain, or blank if s/he did not check for the phenophase. Similarly, for animals, during each sampling bout the observer uses one of four predefined observation methods, records whether the animal species was observed or heard, and then records the status of each animal phenophase (Y, N, ?, or blank). For the majority of these plant or animal phenophases, the observer can also enter the estimated canopy development or abundance (as proportions or counts). Data are recorded onto datasheets for later entry into the web application, or can be recorded directly into the mobile device. Guidelines and best practices for observation and data entry are extensive, are supplemented by FAQs, and are provided on the project website.

Additional details on sampling methodology can be found in:
- The USA National Phenology Network Protocols (Denny et al., 2014)
- USA National Phenology Network Observational Data Documentation (Rosemartin et al., 2018)
- Organizing Phenological Data Resources to Inform Natural Resource Conservation (Rosemartin et al., 2014)
- US National Park Service Phenology Monitoring Protocols for the Northeast Temperate I&M Network and the California Phenology Project.

Phenological status and abundance data are used to understand patterns of organismal activity, development and abundance at a given site on a given date (including negative/absence data). Both raw data, and estimated dates of phenophase onset and end are provided by the USA-NPN, with important ancillary information (e.g., negative data reports, quality control flags). These summarized data can be used to understand spatiotemporal patterns of organismal response along environmental gradients. In addition to data download, researchers and observers can also engage with several dynamic data visualizations (e.g., calendars, graphs, maps). Academic researchers and other data end users, are able to explore and download well-formatted and described data, and are primarily conducting the data analysis and interpretation.

3. **Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.**

Respondents voluntarily decide to participate and report; response rates have increased (based on a variety of metrics, including number of active observers, number of observations and number of species observed; see our Data Dashboard for more information). Several engagement tactics support continued participation and reduce non-response; these include campaigns to focus and sustain engagement through the season, and newsletters with appreciation, motivation and results delivered to participants. In addition, recent years have seen robust growth in the number of "Local Phenology Projects," with on-the-ground training, engagement and support for participants provided by local volunteer leaders. The "status" monitoring approach enables us to determine the frequency of field visits by all participants, as well as to estimate the potential and realized error around particular events (e.g., first leaf). We have also developed pheno-climatic models to predict phenological events using climate data (e.g., the Gridded Spring Indices); in this context we are estimating the sample size required to estimate a particular event for a given species, at a given level of error. We describe and document all existing QA/QC tools and approaches, and provide annual metrics of QA/QC assessments, on the Data Quality page on the project website.

4. **Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.**

Not applicable; we do not test our observers, though we have conducted informal usability studies to improve efficiency and reduce burden.

5. **Provide the names and telephone numbers of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.**

Statistical consultants
    Dr. Katharine Gerst, USA-NPN Research Associate; 520-621-1740
    Dr. Abraham Miller-Rushing, Science Coordinator, Acadia National Park; 207-288-1338
    Dr. John Gross, National Park Service (formerly Inventory & Monitoring Program; currently Climate Change Response Program); 970-267-2111

Collection and analysis agency:
    Dr. Theresa Crimmins, University of Arizona; 520-621-8523
    Dr. Toby Ault, Cornell University, 607-255-1509
    Dr. John Sauer; USGS Patuxent Wildlife Research Center; 301-497-5662

[OMB-OIRA has produced a number of documents that may serve as useful reference material for completing Supporting Statement B. These can be found at: http://www.whitehouse.gov/omb/inforeg_statpolicy]