

1 Supporting Statement A

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

OMB Control Number 1028-0103

Terms of Clearance: None

Justification

1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection.

The mission of the Department of the Interior (DOI) includes the mandate to protect and manage the Nation’s natural resources and provide scientific and other information about those resources. To meet its stewardship responsibilities, as conveyed by numerous legislative authorities, the DOI is mandated to estimate the availability and abundance of fish and wildlife resources, determine the distribution and abundance of migratory and resident birds, conduct inventories of all public lands and their resources, and implement programs for endangered and threatened wildlife and plants, among other responsibilities. DOI relies upon biological monitoring information to achieve its mission, measure its success in responding to these legislative mandates, and determine its progress toward meeting DOI resource protection goals. In turn, the USGS mission includes requirements to collect natural resource information and conduct systematic analyses and investigations to inform natural resource decision-making. USGS continues to improve the quality and usefulness of its long-term data sets, and where appropriate works with partners (other federal, state, tribal, and local governments; academic and research institutions; and private organizations) to acquire the necessary data.

The USA National Phenology Network (USA-NPN), established in 2007 by USGS in collaboration with other governmental and non-governmental organizations, is a national-scale science and monitoring initiative focused on phenology (i.e., the study of seasonal life-cycle events such as leafing, flowering, reproduction and migration) as a tool to understand how plants, animals and landscapes respond to environmental variation and change. Information collected by the USA-NPN through its national observing system, *Nature’s Notebook*, is used by researchers and federal, state and local agencies and resource managers to: inform management and assessment of habitats and plant and animal species; identify, assess, and forecast change in ecosystems and effects of climatic variation and change; identify relationships between environments and wildlife and human health; integrate data and products for science-based stewardship of natural resources; and provide opportunities

for public stewardship and engagement.

Relevant acts include the Fish and Wildlife Act, 1956; Migratory Bird Conservation Act, 1900; Federal Land Policy and Management Act, 1976.

2. Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection. Be specific. If this collection is a form or a questionnaire, every question needs to be justified.

Information collected through *Nature's Notebook* is used by scientists, resource managers, educators, communication specialists, non-profit organizations, human health organizations, science networks and the public to make science-based decisions about resource management and to adapt to variable and changing climates and environments. Information on the timing of phenological events is important for human health (allergens and infectious diseases), human recreation (wildflower displays and fall colors), agriculture (planting and harvest times, pest control), management of natural resources (water and timber), understanding hazards (monitoring and prediction of drought and fire risk), and conservation (abundance and diversity of plants and animals).

For all species, we collect data on the onset, duration, peak and end of phenophases. For plants, the primary phenophases are: leaves (which informs understanding of plant physiology, carbon cycling and feedbacks to climate change), flowers (which sheds light on pollination, resource availability, and reproduction), and fruits (which elucidates reproductive success and food availability for animals, including humans). For animals, the primary phenophases are: activity (which contributes to understanding distribution and migration), feeding (which sheds light on trophic interactions) and reproduction (which clarifies timing and success of reproduction).

One hundred publications leveraging contemporary or legacy lilac and honeysuckle data, have been published. Data from *Nature's Notebook* has supported advances in understanding changes in the timing of spring, plant physiology, plant-bird interactions, as well as contributed to the development of models to predict phenology from climate and weather data. Natural resource management agencies use data collected and stored in *Nature's Notebook* to schedule field seasons, time flooding to favor target species and slow the spread of invasives as well as to understand historic and projected changes in leaf out and flowering dates. City managers rely on data on the timing of leaf fall to schedule street sweeping, thereby preventing eutrophication of local lakes.

While we have made observation of many species possible through our system, we focus observer effort on the most useful species at the national scale, through a series of campaigns, described on the project website.

3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also describe any consideration of using information technology to reduce burden and specifically how this collection meets GPEA requirements.

USA-NPN developed and maintains the program Nature's Notebook by which observers participate in this national phenology observation and reporting system for both plants and animals. Participants may contribute phenology information to Nature's Notebook through a browser-based web application or via mobile applications for iPhone and Android operating systems, meeting GPEA requirements. The web application interface consists of several components: user registration, a searchable list of 1,262 plant and animal species which can be observed; a "profile" for each species that contains detailed information about the species including its description and the appropriate monitoring protocols; a series of interfaces for registering as an observer, registering a site, registering plants and animals at a site, generating datasheets to take to the field, and a data entry page that mimics the datasheets. Datasheets and species profiles are generated automatically from a database for efficiency and accuracy. Participants can choose to collect information using data sheets on a day-by-day basis for one species or they may collect information species-by-species for one day. Regardless of which method respondents choose, questions on both datasheets are identical. The mobile interfaces have the same functionality, though they do not generate datasheets (because they are not needed as data are entered directly into the application). In all aspects of developing our program and associated infrastructure we have endeavored to maximize use of online and mobile technologies to facilitate efficient data entry and dissemination. We do not accept paper data submissions.

Our user interfaces are dynamic and growing, as is the underlying database, because we are continuously enhancing them for efficiency, simplicity and in response to stakeholder needs. For example, we receive requests to develop profiles and monitoring protocols for new species each year, so the number of unique datasheets is growing on a species by species basis. This said, we ask a standard set of questions on all forms, and there are redundancies across forms depending on the type of organism (to enable phenological comparisons across similar taxa). For example, most deciduous trees (such as red maple and sugar maple) have the same observation protocols. To simplify OMB review, we have appended a spreadsheet naming the **112 unique observation protocols** across all taxa.

4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in Item 2 above.

No other organization gathers phenological information across taxa with the scientifically rigorous approach and scale of the USA National Phenology Network. There are numerous other phenology monitoring efforts that capitalize on volunteers or "citizen scientists," or that

integrate professional and volunteer monitoring as does *Nature's Notebook*. However, these efforts focus on specific taxa (e.g., eBird and the Bird Banding Lab focus on birds; Frogwatch USA and the North American Amphibian Monitoring Program focus on amphibians), particular life stages (e.g., Journey North focuses on migration; Nestwatch focuses on reproduction) or particular geographic regions (e.g., Western Hummingbird Partnership). Broadly, phenological responses to environmental variation occur across taxa and life stages, and vary through time and across space. The USA-NPN was established to complement existing efforts (with a unique multi-taxa, continental-scale approach) and to fill gaps in available information, to support our understanding of biological response to environmental variation and change.

5. If the collection of information impacts small businesses or other small entities, describe any methods used to minimize burden.

This information does not affect small businesses or other small entities.

6. Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.

Not collecting this information would leave the Federal Government unable to characterize the status, trends and phenological processes for many native organisms, including migratory and resident birds, mammals, reptiles and amphibians, and fishes and their food resources and habitats, which would constrain its ability to explore the causes of changes in species abundance and/or distribution. Thus the Secretary of the Interior would be unable to fulfill the legal requirements under the Acts listed in Question 1.

7. Explain any special circumstances that would cause an information collection to be conducted in a manner:

- * **requiring respondents to report information to the agency more often than quarterly;**
- * **requiring respondents to prepare a written response to a collection of information in fewer than 30 days after receipt of it;**
- * **requiring respondents to submit more than an original and two copies of any document;**
- * **requiring respondents to retain records, other than health, medical, government contract, grant-in-aid, or tax records, for more than three years;**
- * **in connection with a statistical survey that is not designed to produce valid and reliable results that can be generalized to the universe of study;**
- * **requiring the use of a statistical data classification that has not been reviewed and approved by OMB;**

- * **that includes a pledge of confidentiality that is not supported by authority established in statute or regulation, that is not supported by disclosure and data security policies that are consistent with the pledge, or which unnecessarily impedes sharing of data with other agencies for compatible confidential use; or**
- * **requiring respondents to submit proprietary trade secrets, or other confidential information, unless the agency can demonstrate that it has instituted procedures to protect the information's confidentiality to the extent permitted by law.**

The information collection is consistent with all OMB guidelines. While observers tend to provide information more often than quarterly, ongoing submission burden is low, and participation is not required at any specified interval.

- 8. If applicable, provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8(d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and in response to the PRA statement associated with the collection over the past three years, and describe actions taken by the agency in response to these comments. Specifically address comments received on cost and hour burden.**

Describe efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and recordkeeping, disclosure, or reporting format (if any), and on the data elements to be recorded, disclosed, or reported.

Consultation with representatives of those from whom information is to be obtained or those who must compile records should occur at least once every three years — even if the collection of information activity is the same as in prior periods. There may be circumstances that may preclude consultation in a specific situation. These circumstances should be explained.

The 60-day FRN was published 10/31/2018 at 83 FR 54772.

One comment received endorses the USA-NPN, and affirms the quality and utility of the information collected.

We consulted with the individuals listed in the table to obtain their views on the information presented in our instrument. Several modifications to the format and design of the instrument were suggested during the pilot period and these have been incorporated. For example, we modified protocols to accommodate drought-deciduous trees (allowing multiple instances of peak leaf out during the year), based on pilot work in California. Several usability studies, one led by Suzanne Allard, resulted in major changes to the interfaces, including changes to website language, workflow and page layout.

Table 1: Collaboration on Design

Professor of Ecology and Evolutionary Biology University of California, Santa Barbara	Distinguished Professor of Geography University of Wisconsin-Milwaukee
Professor of Information Science University of Tennessee	

9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.

Non-monetary awards (valued less than \$15.00) and thank-you cards are occasionally provided to participants in acknowledgement of their efforts. These tokens of appreciation are provided in accordance with best practices for citizen science, to support retention of observers.

10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.

No assurance of confidentiality is given to respondents

11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be given to persons from whom the information is requested, and any steps to be taken to obtain their consent.

The collection does not include sensitive or private questions.

12. Provide estimates of the hour burden of the collection of information. The statement should:

- * **Indicate the number of respondents, frequency of response, annual hour burden, and an explanation of how the burden was estimated. Unless directed to do so, agencies should not conduct special surveys to obtain information on which to base hour burden estimates. Consultation with a sample (fewer than 10) of potential respondents is desirable. If the hour burden on respondents is expected to vary widely because of differences in activity, size, or complexity, show the range of estimated hour burden, and explain the reasons for the variance. Generally, estimates should not include burden hours for customary and usual business practices.**

- * **If this request for approval covers more than one form, provide separate hour burden estimates for each form and aggregate the hour burdens.**
- * **Provide estimates of annualized cost to respondents for the hour burdens for collections of information, identifying and using appropriate wage rate categories. The cost of contracting out or paying outside parties for information collection activities should not be included here.**

We anticipate approximately 7,581 users will register each year and estimate that it takes 13 minutes to complete the registration form. We anticipate 7,581 users will read the guidelines for observing, which takes an estimated 10 minutes to complete. We estimate that 10% of users watch the complete set of training videos (758 users viewing 83 total minutes of content). We expect to receive 3,676,505 observation records from members of the public and 408,498 records from state and local government workers, with observation and reporting time averaging 2 minutes for each data record. In total, we expect to receive 4,093,342 responses and 138,857 hours. Time estimates in each case are based on informal trials of new users and/or staff; user and response numbers are estimated future 3-year averages, based on linear projections of data submitted since 2012.

We estimate the dollar value of the annual responder burden hours to be \$4,956,332, as calculated using information from Bureau of Labor Statistics USDL-18-1499, Employer Cost for Employee Compensation, published September 18, 2018. BLS reported employee compensation for Private Industry averaged \$34.19 per hour and for state and local government employees averaged \$49.23 per hour. These values include benefits and overtime.

Table 2: Responder Burden

	Number of Responses	Minutes per response	Burden Hours	Burden Cost
All Users (Responders)	7,581			
Members of the Public (Civilian workers; 90% of all users) Responders	6,823			
Register	6,823	13	1,478	\$50,533
Watch training videos	682	83	943	\$32,241
Report data	3,676,505	2	122,550	\$4,189,950
Subtotal	3,684,010		124,971	\$4,272,724
State and local government workers (10% of all users) Responders	758			
Register	758	13	164	\$8,074
Watch training videos	76	83	105	\$5,169
Report data	408,498	2	13,617	\$670,365
Subtotal	409,332		13,886	\$683,608
Total	4,093,342		138,857	\$4,956,332

13. Provide an estimate of the total annual non-hour cost burden to respondents or recordkeepers resulting from the collection of information. (Do not include the cost of any hour burden already reflected in item 12.)

- * The cost estimate should be split into two components: (a) a total capital and start-up cost component (annualized over its expected useful life) and (b) a total operation and maintenance and purchase of services component. The estimates should take into account costs associated with generating, maintaining, and disclosing or providing the information (including filing fees paid for form processing). Include descriptions of methods used to estimate major cost factors including system and technology acquisition, expected useful life of capital equipment, the discount rate(s), and the time period over which costs will be incurred. Capital and start-up costs include, among other items, preparations for collecting information such as purchasing computers and software; monitoring, sampling, drilling and testing equipment; and record storage facilities.
- * If cost estimates are expected to vary widely, agencies should present ranges of cost burdens and explain the reasons for the variance. The cost of purchasing or contracting out information collection services should be a part of this cost burden estimate. In developing cost burden estimates, agencies may consult with a sample of respondents (fewer than 10), utilize the 60-day pre-OMB submission public

comment process and use existing economic or regulatory impact analysis associated with the rulemaking containing the information collection, as appropriate.

- * Generally, estimates should not include purchases of equipment or services, or portions thereof, made: (1) prior to October 1, 1995, (2) to achieve regulatory compliance with requirements not associated with the information collection, (3) for reasons other than to provide information or keep records for the government, or (4) as part of customary and usual business or private practices.

We estimate the total annual non-hour burden cost to be \$11,485.

Although most observers participating in Nature’s Notebook typically already possess skills and materials necessary for participation, respondents are encouraged to “mark” the items they are observing to ensure consistency over time. The items below are suggested for observers to use to mark their sites or plants, as well as other materials they may chose to use to facilitate data collection.

Non-Hour Cost Burden			
	Cost*	Estimated Number of Respondents Expected to Use	Non-Hour Burden Cost
Clipboard	\$2.23	4,245	\$9,467
Pencils	\$0.10	4,245	\$425
Flags*	\$0.05	1,516	\$76
Markers	\$0.10	1,516	\$152
Stakes	\$0.30	1,516	\$455
Tags	\$0.30	1,516	\$455
Popsicle Sticks	\$0.30	1,516	\$455
Average Marking Material Cost	\$0.19		
Cost Per Response	\$2.52	Total Non-Hour Burden Cost	\$11,485

*Unit costs estimated from officedepot.com

**We estimate that 56% of our users will collect data using pencil and paper, whereas the remaining 44% will use the mobile application (3-year average from 2019-21 projections)

***We estimate one-fifth of our observers will use either flags, markers, stakes, tags, or popsicle sticks.

14. Provide estimates of annualized cost to the Federal government. Also, provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff), and any other expense that would not have been incurred without this collection of information.

The total annual cost to the Federal Government is **\$366,151**. This includes salary and benefits for one federal employee to process the responses. We used the Office of Personnel Management Salary Table 2019-RUS (https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/salary-tables/pdf/2019/GS_h.pdf) to determine the hourly rate (Table 2). We multiplied the hourly rate by 1.6 to account for benefits (as implied by the BLS news release USDL-16-1150).

Table 3: Federal Labor Table

Position	Grade /Step	Hourly Rate	Annu Hrs by Fed	Fully Loaded Hr Rate (x 1.6)	Total Labor Value
Program Coordinator	14/5	48.53	208	77.65	\$16,151
TOTALS					\$16,151

Table 4: Other Federal Government Expenses

Cooperative agreement with University of Arizona	\$350,000
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In addition to the above salary for one federal employee, program infrastructure and development are conducted via a 4-year Cooperative Agreement with the University of Arizona. The annual estimated expense for implementation and maintenance of *Nature's Notebook* via the Cooperative Agreement is \$350,000. Cooperator salaries and operational expenses include planning and management, development of IT infrastructure (programming, database management, server maintenance), partnership development, as well as recruitment, training and retention of observers.

Total Annual Cost to the Federal Government	
Program Coordinator	\$16,151
Operational Costs	\$350,000
Total	\$366,151

15. Explain the reasons for any program changes or adjustments in hour or cost burden.

We have updated estimates of participation in terms of number of participants and number of records submitted, based on activity during the 2015-18 period. We adjusted hourly costs based on updated compensation information.

16. For collections of information whose results will be published, outline plans for tabulation and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection of information, completion of report, publication dates, and other actions.

Organismal phenology data are available since 2008, though historical datasets integrated into the database include data from as early as 1956. All raw, summarized and quality control flagged data are readily and publicly available, and are presented in an electronic format on the project web site. Peer-reviewed publications created by project staff and collaborators are described above. Summary reports are published in scientific journals or other USGS outlets (e.g., open-file reports); published reports are compliant with USGS Fundamental Science Practice; reports are produced at periodic intervals, every 1 to 5 years. Presentations are made at scientific conferences as appropriate.

17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

Not applicable for this request.

18. Explain each exception to the topics of the certification statement identified in "Certification for Paperwork Reduction Act Submissions."

There are no exceptions to the certification statement.