

## 2023 Phenology Activity Report

Arlington Regional Master Naturalists: Local Phenology Project  
Arlington VA

Submitted by Rosemary Jann, Local Project Leader

### **Program Goals and Organization**

In 2022, the Arlington Regional Master Naturalists (ARMN) chapter in Arlington, VA began a multiyear phenology monitoring project. By tracking the timing of life cycle changes in plants and animals over time, phenological data can provide important evidence of the effects of climate change. Our goals are to further the understanding of phenology by chapter members, to extend our chapter's volunteer service in Citizen Science by collecting phenological data of benefit to researchers, natural resource managers, and other decision makers, and to produce evidence that we can incorporate into our public education efforts on the impacts of climate change.

ARMN's group monitoring activity is constituted as a Local Phenology Project (LPP) under the auspices of Nature's Notebook ([https://www.usanpn.org/natures\\_notebook](https://www.usanpn.org/natures_notebook)), the database monitoring tool sponsored by the USA National Phenology Network (<https://www.usanpn.org/>). In addition to producing its own reports, the NPN makes its phenological data available to government agencies, resource management professionals, scientists, and the general public.

Our LPP is set up to monitor plants at three different sites: the native plant garden at Arlington Central Library, the native plant garden at Potomac Overlook Park, and at Marcey Park, which adjoins Potomac Overlook. The project was grateful for the support provided by Yu-hsin Hsu, head gardener at the Central Library garden, and by Joanne Hutton, head gardener at the Potomac Overlook garden.

To maximize the usefulness of our data, we chose plants from pre-existing Nature's Notebook campaigns, which identify a subset of species of particular interest to scientists, planners, and resource managers. The "Nectar Connectors" campaign tracks the availability of nectar for monarch butterflies and other pollinators. We chose three swamp milkweeds (*Asclepias incarnata*), one butterfly milkweed (*Asclepias tuberosa*), two common buttonbushes (*Cephalanthus occidentalis*), and two cardinal flowers (*Lobelia cardinalis*) from the Nectar Connectors list. The "Green Wave" campaign tracks flowering and color change in oaks, maples, and poplars to further understanding of the timing of pollen season and fall color change. From the Green Wave list, we chose three northern red oaks (*Quercus rubra*), one white oak (*Quercus alba*), one red maple (*Acer rubrum*), one sugar maple (*Acer saccharum*), one Norway maple (*Acer platanoides*), and one silver maple (*Acer saccharinum*). In addition, we chose two *Cercis canadensis* to contribute to a new Nature's Notebook campaign to better understand the phenology of the eastern redbud.

The Central Library site is relatively urban and surrounded by hardscape; the other two sites are in parkland, with limited amounts of hardscape 20 feet or more away from our plants. By monitoring some plants of the same species at different sites we hope eventually to be able to determine whether/how these different habitats influence plant development. One redbud is at the Central Library site, and one

is in the Potomac Overlook native plant garden; two swamp milkweeds are at the library, and one is at Potomac Overlook; and one northern red oak is at the Library and two are in Marcey Park. We may also be able to determine whether/how an invasive like the Norway maple outperforms our native maples.

**Observation Schedule and Quantity**

The project schedule was set up for once-a-week monitoring during the active growing season, with as-needed biweekly visits in periods of rapid change. Four volunteers at Central Library (Noreen Hannigan, Ginger Hays, Elise Milstein, and Katherine Wychulis) and four volunteers making joint visits to Potomac Overlook and Marcey Park (Carol Abel, David Evans, Gary Shinnors, and Carol Weldon) took turns making weekly site visits in 2023. The Local Project Leader filled in as needed to cover shifts. At each visit, the monitor for that week would determine the presence or absence of a particular phenophase (like open flowers or colored leaves) and attempt to gauge the intensity of that phase (how far advanced it was). They then logged their observations into our project observation deck in Nature’s Notebook.

The Central Library Team logged 51 site visits between January and December 2023; the other team paid 41 site visits to Marcey Park and 41 site visits to the Potomac Overlook native plant garden. We accumulated 7544 individual phenophase records (one for each phenophase for which a “Yes,” “No,” or “?” was recorded). The observers at Potomac Overlook/Marcey Park contributed more total observation records than those at Central Library, as would be expected since that group was monitoring 8 trees/shrubs and 3 forbs, compared to 4 trees/shrubs and 3 forbs at the library site.

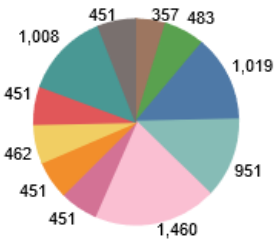
**Phenology records, ArlingtonRegionalMN, 2023**

Site Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Total
Marcey Park	66	66	198	197	330	132	330	198	264	286	329	330	2,726
Arlington Central Libr..	133	124	327	354	249	310	248	248	309	248	310	310	3,170
Potomac Overlook Gar..	84	49	126	126	185	77	182	119	161	154	196	189	1,648
Grand Total	283	239	651	677	764	519	760	565	734	688	835	829	7,544

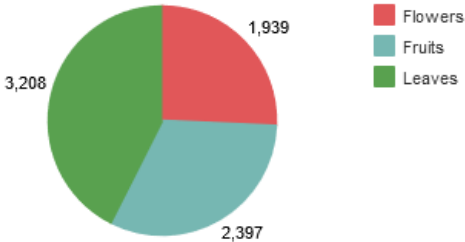
The highest number of records was collected for those species represented by multiple individuals (1008 for our three swamp milkweeds; 1019 for our two common buttonbush; 951 for our two eastern redbuds; and 1460 for our three northern red oaks). As would be expected, given that 12 of the total 18 plants monitored were trees or shrubs, and that the Leaf category for deciduous trees and shrubs contains 5 phenophases (compared with 2 leaf phases for forbs), the project collected proportionately more observation records for leaves than for flowers and fruits. However, it was also the case that observers experienced more difficulty seeing flowers and fruit on most of our trees, given their size.

**Records by species**

Hover for more information



**Records by phenophase category**

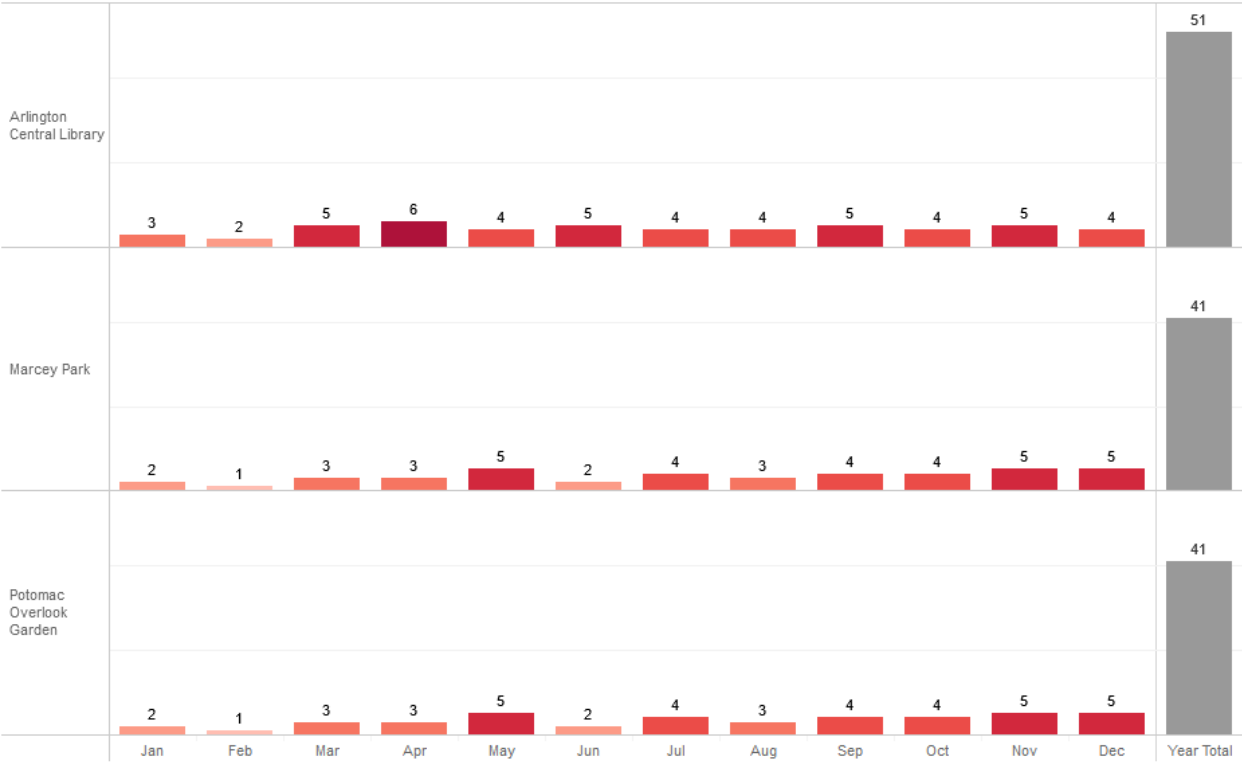


The number of site visits was fairly consistent during the growing season, averaging 4 per month.

**Site visits by month, ArlingtonRegionalMN, 2023**

(count of unique dates each site was visited within each time period)

Site N... [?](#)



As of the end of 2023, nine volunteers have collectively made 133 site visits and contributed over 170 Master Naturalist volunteer service hours to our chapter (our data shows 2 additional observers, but they were not officially part of the project team). ARMN's LPP was recognized by Nature's Notebook for submitting the fifth highest number of observations for the Nectar Connectors campaign in 2023. We plan to continue this project for two to five more years. The team hopes to add a few new plants for 2024 (more individuals in species we are already monitoring). Current team members are all committed to continuing as observers in 2024.

### **Education and Outreach**

The LPL submitted a blog on the project to ARMN.org, our chapter's public-facing website. The team has discussed but have not yet formulated a plan to design signage with QR codes at our sites to link the general public to explanations of what phenology is and why it is significant. This activity report will also be submitted to our chapter governance board.

### **Lessons Learned and Next Steps**

Team members require frequent reminders of what they should be looking for on settling tricky points in phenophase identification, like when to stop reporting Yes for "increasing leaf size." Field sessions, where we go out as a group and practice intensity measures, have helped (we scheduled three of these in 2023: leaf ID at Central Library; spring refresher for Marcey Park and Potomac Overlook, and leaf color change intensities at Marcey Park). We plan more of these for 2024.

Our biggest challenge remains finding effective ways for team members to communicate their results with the next person on the schedule, since they were not able to view one other's results in our project database. The Central Library team developed a plan to share screen shots of their observations (and photographs in some cases) via email with others on the team. But this is cumbersome and takes additional time and effort. The Potomac Overlook/Marcey Park team will be encouraged to do the same in 2024. It would be a big help if there were a way for observers to use the NN website to see the observations submitted by the person the week before (especially true for "recent fruit or seed drop.")

We continued to experience problems with animals browsing our plants. Deer at Potomac Overlook topped cardinal flower 1, and caterpillars stripped the rest. At Central Library, swamp milkweed 1 became overrun by neighboring plants and difficult to find. We need to be proactive about providing structures to protect plants and communicate more often with the volunteers who run the rest of the native plant garden at Central Library to make sure our monitored plants are protected.

### **Location of Project Components**

All data are (or have been) entered online via Nature's Notebook and are stored in the USA-NPN National Phenology Database, available for download via the Phenology Observation Portal at [www.usanpn.org/results/data](http://www.usanpn.org/results/data).

Submitted: 28 January 2024 by Rosemary Jann, LPL