



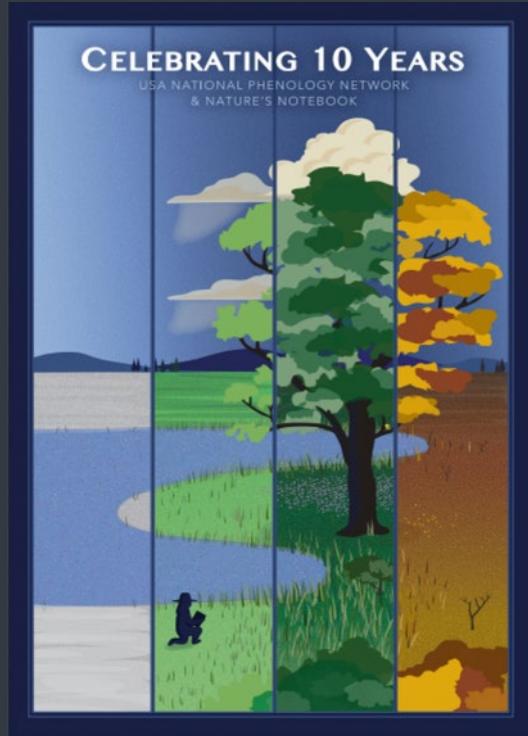
The USA National Phenology Network: Data, tools, and resources to support science, management, and outreach

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 @TheresaCrimmins



USA National Phenology Network



Collect • Store • Share
Phenology data and information

Advance Science
Inform Decisions

Communicate & Connect
Grow an Equitable and Inclusive
Network

Comprehensive community science program

- Standardized protocols for ~1,400 species of plants and animals
- Extensive training materials & support
- Mobile apps



Nature's Notebook engagement



- 500+ partners contributing data
- Active community – forum, monthly calls
- Formal training: >150 certified leaders



Plants Animals Site-visit Details

Observation Date 2021-5-19

desert willow-front yard

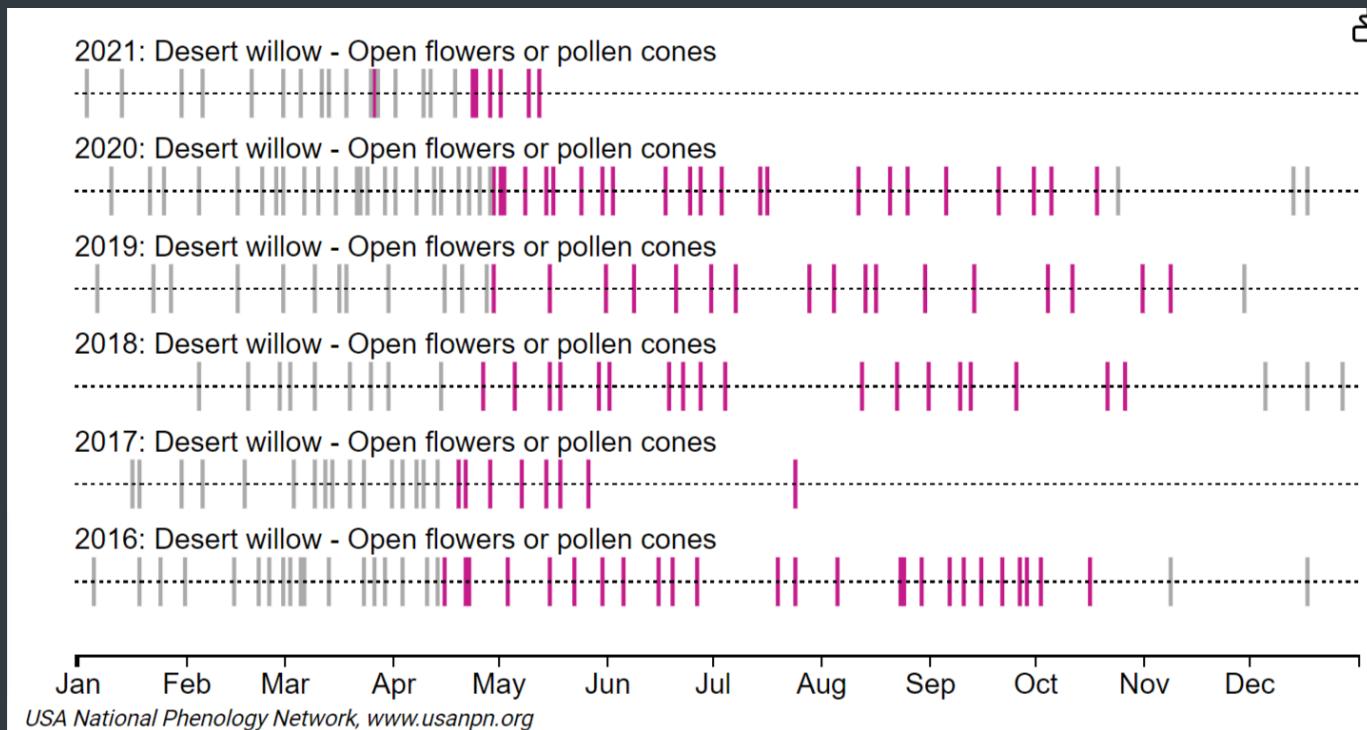
Young leaves	Y	N	?
	101 to 1,000		
Leaves	Y	N	?
	75-94%		
Colored leaves	Y	N	?
Falling leaves	Y	N	?
Flowers or flower buds	Y	N	?
	1,001 to 10,000		
Open flowers	Y	N	?
	25-49%		

Save Data Next Plant



Data access, visualization

- Data query tool
- Extensive documentation
- R package



Data collection campaigns



Green Wave



Flowers for Bats



Nectar Connectors



Pest Patrol



Southwest Season Trackers



Lilacs & Dogwoods



Southwest
Season Trackers



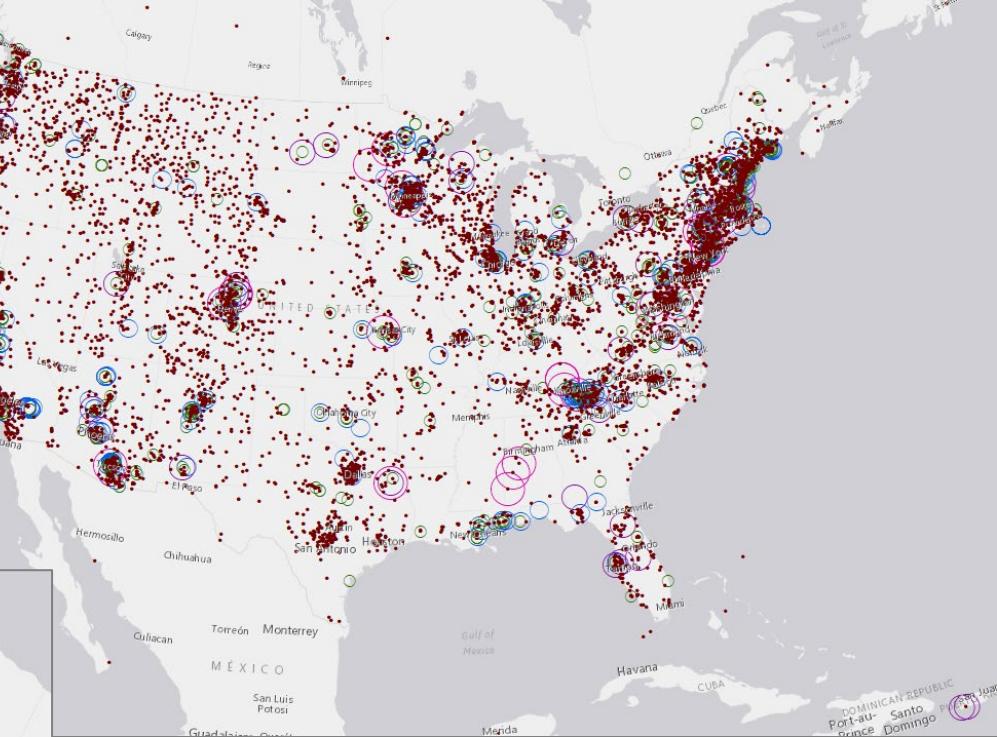
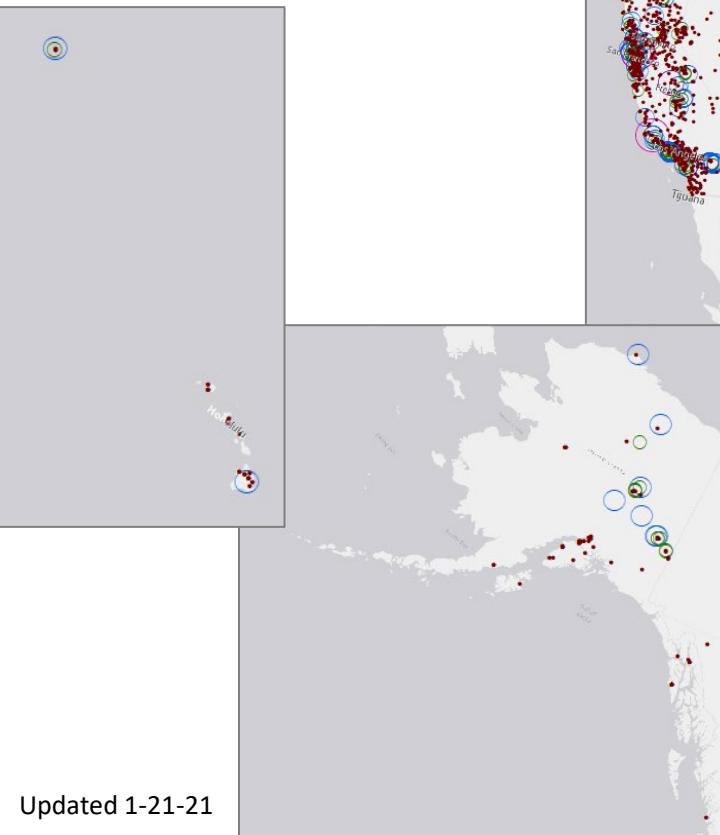
Mayfly Watch



PopClock



Pesky Plant
Trackers



25M records
20K observers
16K sites



National Ecological Observatory Network

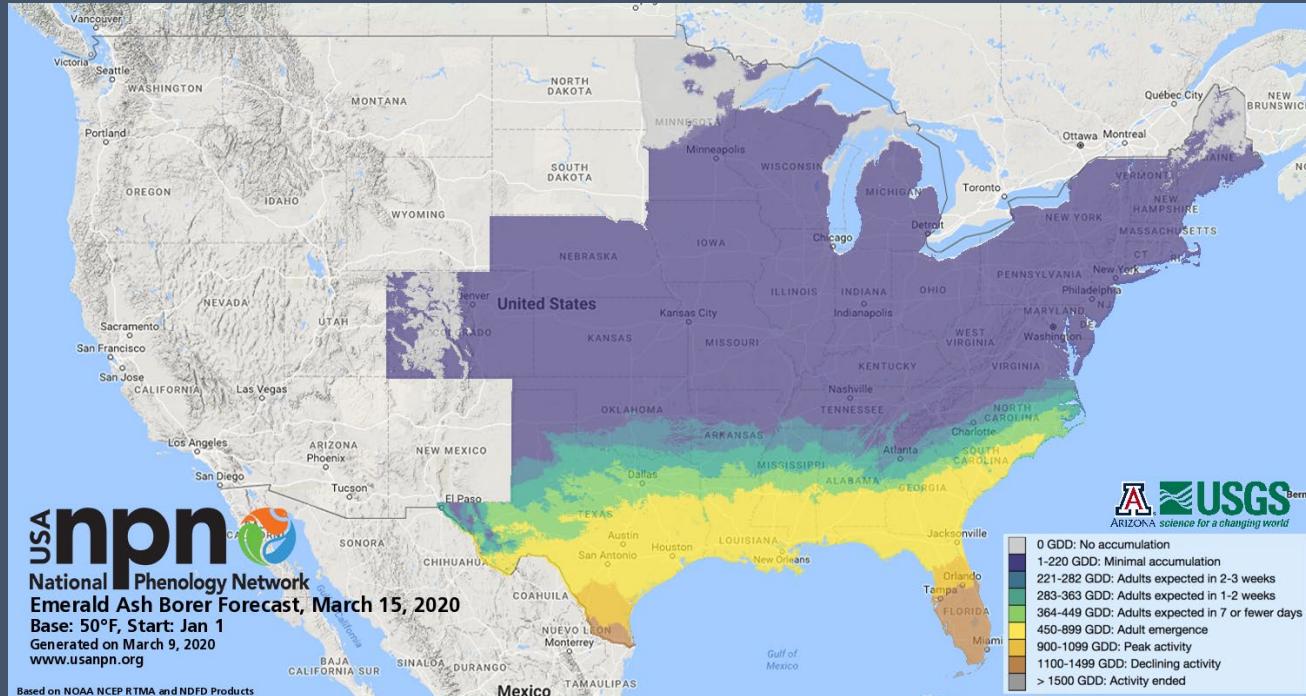


ARIZONA



National Phenology Network

Delivering forecasts for seasonal events



Crimmins et al. 2020
Annals Ento Soc America

Delivering forecasts for seasonal events



- Apple maggot – adult emergence
- Asian longhorned beetle – adult emergence
- Bagworm – caterpillar emergence
- Bronze birch borer – adult emergence
- Buffelgrass – green-up
- Eastern tent caterpillar – caterpillar emergence
- Emerald ash borer – adult emergence
- Gypsy moth – caterpillar emergence
- Hemlock woolly adelgid – presence of eggs, active nymphs
- Lilac borer – adult emergence
- Magnolia scale – crawler emergence
- Pine needle scale – crawler emergence
- Winter moth – caterpillar emergence
- Winter wheat – vegetative development

www.usanpn.org



hins et al. 2020
Entomol Soc America

Thank you!

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and the entire USA-NPN team

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