

Crowdsourcing Early Detection

Story written by Ana Casillas Brownson, Biological Science Technician with the [National Park Service](#) and the [Eastern Rivers and Mountains Network](#)

The Eastern Rivers and Mountain Network has tapped into iNaturalist as a way to harness the power of the park visitor to look for invasive species. Program platforms are easy to set up and use, and some early invaders have already been spotted. However, as with many new tools, iNaturalist comes with some limitations.

Many of us in the invasive species community know that early detection and rapid response (EDRR) is the best way to control invasive species. We find problematic species quickly and nip them in the bud, or at least that's the plan. Though EDRR is a good goal for natural resource managers to have, finding and eradicating invasive species before they become established can be difficult, especially for groups with limited capacity.

We at the [Eastern Rivers and Mountains Inventory Network](#) of the National Park Service (NPS) make it a priority to look for new invasive species as we go about our forest monitoring work. However, there are only four of us and we work in nine different parks, in three different states, over the span of four months. Biologists and park managers are also on the lookout for invaders, but they too have limited time and numbers. The conundrum: How can we do a better job of looking for early invaders without being everywhere all at once? The answer: Crowdsource it!

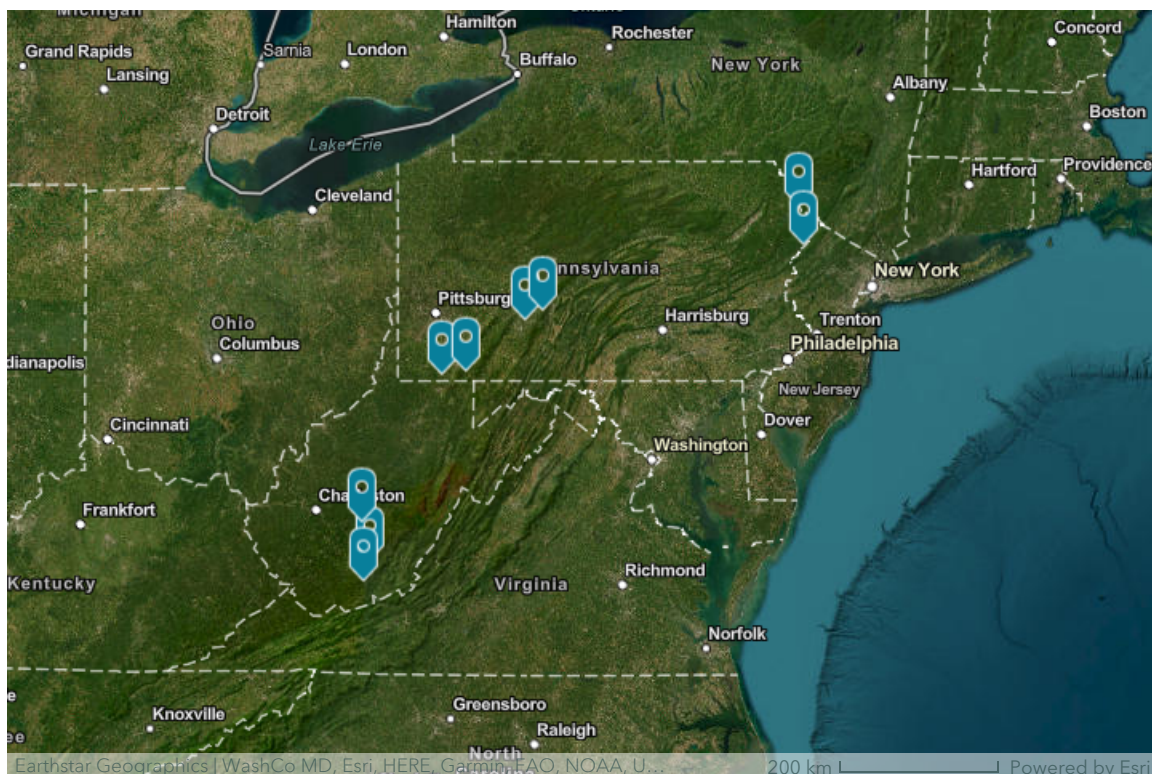


Grandview Overlook panorama at the New River Gorge National Park and Preserve (Beaver, WV)

By harnessing the power of the park visitor, we hope to increase our chances of finding recently arrived invasive species before they become established. To start, we created an email alert using [EDDMapS](#). This was useful as it provided us with periodic notifications of invasive species that were found in our parks, or in surrounding areas. We also set up email alerts using [iMapInvasives](#) which allowed us to set digital buffers around our Pennsylvania parks. This unique feature will keep us updated on invasive species that are spotted in and near these locations.

Because our scope is regional in nature, we initially relied on our EDDMapS alerts since iMapInvasives does not have active programs that manage invasive species data in New Jersey or West Virginia. Then [iNaturalist](#) came to our attention. Here was a well-run platform with millions of active users just waiting for us to tap into! For those not already familiar with iNaturalist, this is a free online platform used by people to upload pictures or audio recordings and map and share observations of organisms found throughout the world.

We now have a project set up in iNaturalist for each of our nine parks which gathers all observations of invasive species from visitors to our parks that fall within the park boundaries. ([View park project list.](#)) For reference, a map and list of our nine regional parks is provided below.





Allegheny Portage Railroad National Historic Site

The first railroad to circumvent the Allegheny Mountains, the Allegheny Portage Railroad was the finishing piece of the Pennsylvania Main Line Canal. "The Portage" opened in...



Bluestone National Scenic River

The Bluestone River and the rugged and ancient gorge it has carved is a richly diverse and scenic area of the southern Appalachians. Bluestone National Scenic River is preserved ...



Delaware Water Gap National Recreation Area

Situated within the most densely populated region of the United States, Delaware Water Gap National Recreation Area provides a unique opportunity to experience tranquil...



Fort Necessity National Battlefield

The battle at Fort Necessity in the summer of 1754 was the opening action of the French and Indian War. This war was a clash of British, French and American Indian cultures. L...



Friendship Hill National Historic Site

Albert Gallatin is best remembered for his thirteen year tenure as Secretary of the Treasury during the Jefferson and Madison administrations. In that time he reduced the...



Gauley River National Recreation Area

The 25 miles of free-flowing Gauley River and the six miles of the Meadow River pass through scenic gorges and valleys containing a wide variety of natural and cultural...



Johnstown Flood National Memorial

The South Fork dam failed on Friday, May 31, 1889 and unleashed 20,000,000 tons of water that devastated Johnstown, PA. The flood killed 2,209 people but it brought the...



New River Gorge National Park and Preserve

A rugged, whitewater river flowing northward through deep canyons, the New River is among the oldest rivers on the continent. The park encompasses over 70,000 acres of lan...

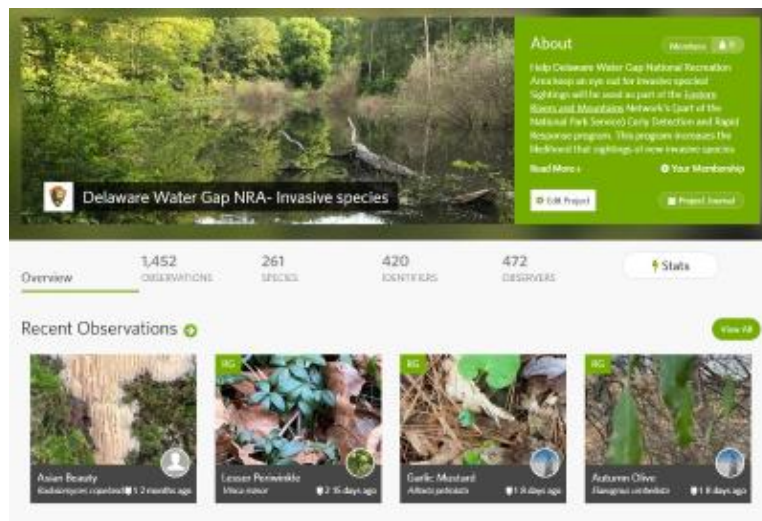


Upper Delaware Scenic and Recreational River

Canoe through rapids and quiet pools as the Delaware River winds its way through a valley of swiftly changing scenery or fish amid rolling hills and riverfront villages in one...

It is possible to create a species list within an iNaturalist project so that only target species show up in your project. However, we decided to set our project to include any and all invasive species. This way, if a species that wasn't on our radar showed up in a park, it wouldn't get lost in a filter.

About once a month, we check our project pages to see what's been spotted. We also created iNaturalist guides that list the species on our early detection lists so people can see which species are of concern and how to identify them. (See an [example guide](#) for the Allegheny Portage Railroad National Historic Site.)



The NPS set up an [iNaturalist project](#) to track invasive species found in the Delaware Water Gap National Recreation Area.

One of the best things about the iNaturalist projects is that the park visitor does not have to know about our project at all! Any observation made that meets our criteria is automatically added to our projects, and that goes for observations made before the project was even set up. Also, the observer does not need to know how to identify a species since identification is part of the crowdsourcing of iNaturalist. As needed, identification can be verified by park staff.

In April of 2022, an iNaturalist user observed [jetbead](#) (*Rhodotypos scandens*) growing in Friendship Hill National Historic Site in Port Marion, PA. Jetbead, a native to eastern Asia, invades forested areas and creates a shrubby thicket that displaces native shrub species and can shade out understory species. After seeing the observation on iNaturalist, we alerted park staff who then surveyed the area for the extent of the plant. In July, the park gathered a group of eight volunteers from the West Virginia University Science Adventure School to cut and pull jetbead from an area approximately 30 square feet in size. Park staff plan to revisit the area to monitor, treat any resprouts with herbicide, and restock with native species in 2023.



Left: Closeup of [jetbead](#) in flower. | Middle: Closeup of jetbead with berries. | Right: A forest in Virginia with an understory of jetbead.



Volunteers from the West Virginia University Science Adventure School cut and pull jetbead from an area approximately 30 square feet in size at Friendship Hill National Historic Site.

iNaturalist has also alerted us to populations of [lesser celandine](#) (*Ficaria verna*) and [Japanese angelica tree](#) (*Aralia elata*) growing in the Delaware Water Gap National Recreation Area. Those observations were passed along to the Northeast Invasive Plant Management Team and treated with herbicide.

iNaturalist is a great way to gather data from many users, but of course, it's no silver bullet. Small parks in our network unfortunately haven't had many observations reported in them over the years. Sometimes months go by without a single new observation. On the other hand, bigger parks are getting many new observations daily, but large areas of particular parks are not easily or often accessed by the public and therefore have few or no observations.

We are trying to increase participation of invasive species data collection in our parks by making visitors more aware of our iNaturalist projects. As an end-of-year roundup for 2021, we wrote brief journal posts thanking visitors for their observations in the parks, explaining what we are trying to do, which species were most commonly observed, and tagging

each participant so they will be alerted to the journal post. We hope that visitors that frequent the parks will be more likely to look for invasives and post them to iNaturalist, once they are aware of our projects. We also linked the journal posts to the early detection guides so park visitors can learn about the less common invasive species and keep an eye out for them.



Video: "How to use iNaturalist as a citizen scientist to help protect park biodiversity"

Finally, we are trying to use social media platforms to get the word out as well. The network parks in West Virginia partnered with us to create videos that were shared on NPS park Facebook pages as well as uploaded to YouTube. These videos introduce viewers to iNaturalist, explain our intent, and encourage participation.

Also, after jetbead was found in Friendship Hill National Historic Site, we used that as an opportunity to get the word out and posted on the park Facebook page about the sighting and encouraged visitors to use iNaturalist.

iNaturalist has been a good addition to our toolset for detecting early invaders. It has allowed us to utilize data from hundreds of observers with minimal effort, but we acknowledge its limitations. Moving forward, we will keep recruiting new observers and continue the never-ending task of looking for new invaders.

Notes: The iMapInvasives program currently partners with iNaturalist by offering a special map layer (directly in the iMapInvasives database) of the most recent five years of data sourced from iNaturalist.



Video: "Using iNaturalist to help park scientists track invasive species"

iMapInvasives also allows its registered users to set email alerts that will source data from both iMapInvasives and iNaturalist.

About the Author

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the forest health monitoring crew through the forests of Pennsylvania, New Jersey, and West Virginia.

Ana and her husband love to travel the world looking for new hikes to go on and awesome plants to admire.

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