



# ED53A-3464 Using the Citizen Science Picture Post Project as the Foundation for Campus Environmental Monitoring by Undergraduate Student Researchers

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## Abstract

Penn State Brandywine is utilizing the citizen science Picture Post network as a foundation for collecting campus environmental data and for undergraduate student research investigations. The Picture Post is an environmental monitoring project a part of Digital Earth Watch, a citizen science initiative funded by NASA. Picture Post creates opportunities for educators and community members to take digital photos from octagonal platforms on posts registered as part of the Picture Post national network and then share these photos online. Penn State Brandywine joined the Picture Post project May 27, 2014, to begin a long-term monitoring program, starting with an environmental baseline of the campus landscape. Four post locations were selected on campus based upon projected major construction projects. Photos at each post are being taken by students on a weekly basis and uploaded to the Picture Post website. The campus community and beyond are also being encouraged to take their own photos to upload to the website. Instructional signage has been placed on each post, and a Penn State Brandywine Picture Post website (<http://sites.psu.edu/picturepost/>) has been created to explain the project and campus objectives in more detail. This project was started by a student as part of her undergraduate summer research experience and will continue to be managed by students in future semesters. With just a half-year of Picture Post photos, it is evident that there are documented changes in the environment because of construction and expected seasonal variations. The Picture Post photos have provided enough data for an initial undergraduate research project with a student analyzing and comparing the variations in the greenness factor of the photos with supplemental temperature and precipitation data. This project will continue to provide opportunities for citizen contributions to the network as well as data for student investigations of the changing campus environment.

## What is Picture Post

The screenshot shows the Picture Post website interface. It features a map of North America with red dots indicating post locations. Below the map is a grid of small thumbnail images labeled '1 - 27 of 27'. A yellow 'Tip' box says 'Easy upload - zip up your picture sets into a single upload file! Learn how.' To the right, there's a note about the greenness index and a section for 'Photographer's note: Week 27 Photo Set 2, taken by Kimmie Bowen'.

## Why Picture Post at Penn State Brandywine

- Starting long-term monitoring on campus, local data
- Document environmental changes due to construction & climate
- Provide undergraduate research opportunities onsite

## Why Four Locations

### Post # 1 Lion Has His Eyes on You

- Center of campus buildings
- High student and faculty traffic
- Capture environmental changes
- Current landscaping modifications

### Post #2 Wild for Wildflowers

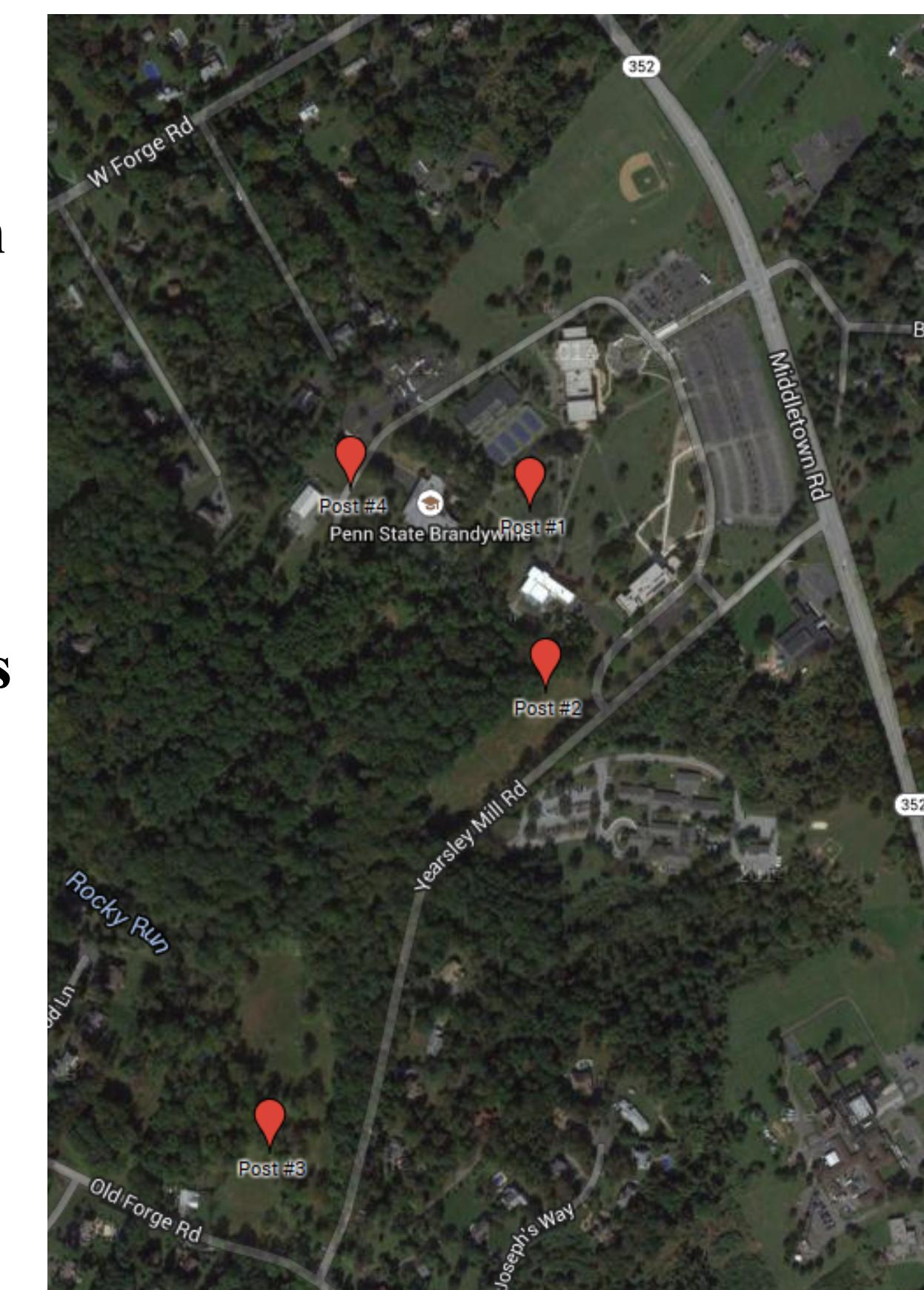
- No buildings or student foot traffic
- Beautiful field of wildflowers
- Environmental changes

### Post # 3 Davis Property & Stream

- Furthest away from campus
- Stream, no human traffic
- Possible future campus garden

### Post # 4 Heritage Rocks and Trees

- Construction of dormitories
- Current landscaping activities
- Environmental changes



Above: Map of locations of all four campus posts

The screenshot shows a specific post location with a wooden sign and a 360-degree view of the surrounding area. Below the 360-degree view is a grid of thumbnail images labeled '2014-11-24 11:20' and '2014-11-18 12:36'. A note at the bottom says 'Photographer's note: Week 27 Photo Set 2, taken by Kimmie Bowen'.

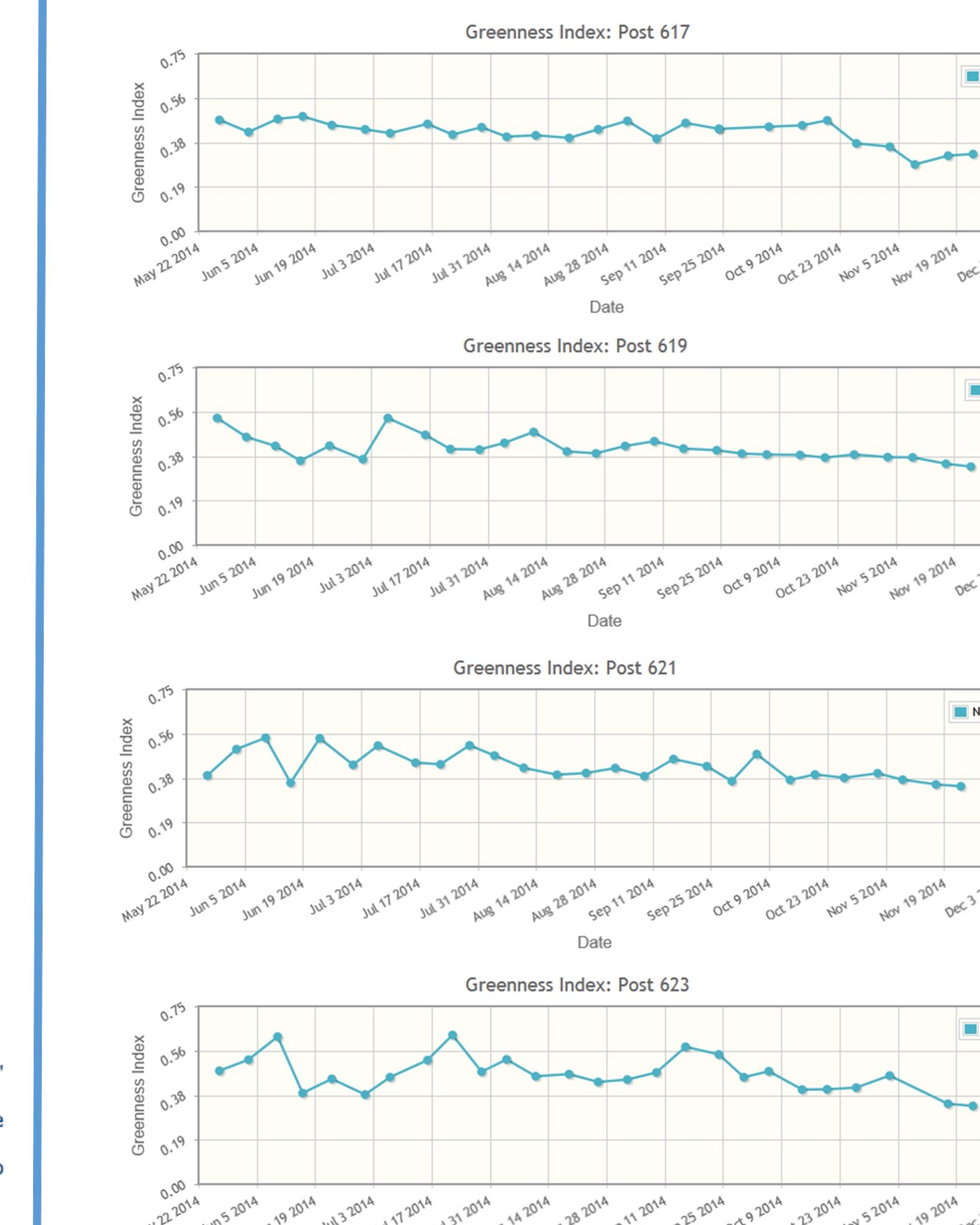
## Project Methods

- Installation of posts
- Started weekly photos
- Creation of our own website
- Began analysis of data
- Collecting daily precipitation and weather data



Above: Kimmie Bowen demonstrating how the photos are being taken on the octagonal platform attached to the posts

## Initial Data



## Future Plans

- GigaPan – Creates 360 degree panoramas where viewers can zoom into different places of the photos
- Go Pro – Capturing video while walking to the distant post on campus and capturing visual cues for citizen scientists
- More student participation – Increase the number of people on campus that independently take and upload photos
- Time lapse video - Displaying changes over time through video
- Weather data comparison – Look at features on the greenness graphs to compare with meteorological patterns (temperature, precipitation)

The screenshot shows the 'Picture Post Project' website. It features a large image of a post with a camera on it, a search bar, and a QR code. The page includes links for 'HOME', 'MEET THE STUDENT RESEARCHERS', 'CAMPUS PICTURE POSTS', 'PROJECT MILESTONES', 'PARTICIPATE', and 'CONTACT US'.



To learn more about our work, scan this QR Code (<http://sites.psu.edu/picturepost/>)