

How Do You Get There?

Digital Mapping in a Garden Setting

Donna Tremonte, The Arnold Arboretum of Harvard University

Nick D'Addezio, Longwood Gardens

Jen Fazekas, Longwood Gardens

Devin Dotson, United States Botanic Garden



The **ARNOLD**
ARBORETUM
of HARVARD UNIVERSITY



LONGWOOD
GARDENS



UNITED STATES
BOTANIC GARDEN

Arboretum Explorer

A custom-built, responsive web app

Donna Tremonte, Web Developer/Applications Programmer



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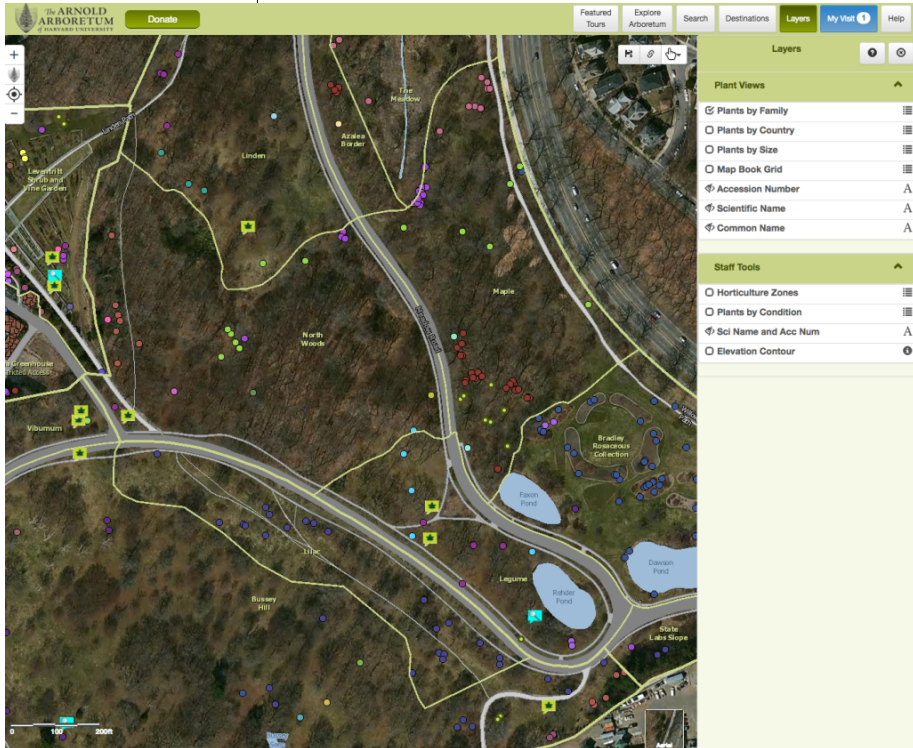
About the Arboretum

- Established in 1872 and planned and designed in collaboration with [Frederick Law Olmsted](#)
- Arnold Arboretum is a National Historic Landmark and one of the best preserved of Olmsted's landscapes
- Founded as a public-private partnership between the [City of Boston](#) and [Harvard University](#), the Arnold Arboretum is a unique blend of respected research institution and beloved public park in [Boston's Emerald Necklace](#).
- Occupying [281 acres](#), the Arboretum's [living collection](#) of trees, shrubs, and woody vines is recognized as one of the most comprehensive and best documented of its kind in the world.
- The living collection is supported by comprehensive curatorial documentation, [herbaria](#) containing more than 1.3 million specimens, extensive [library](#) and archival holdings, and a 43,000-square-foot state-of-the-art research center.



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The Technology



Arboretum Explorer is a responsive web application built using HTML5, JavaScript, [AngularJS 1.12.16](#), and [Bootstrap 3.2.0](#).

The mapping components are written using the [ArcGIS Server JavaScript API](#), and the application uses Web Mercator projection.

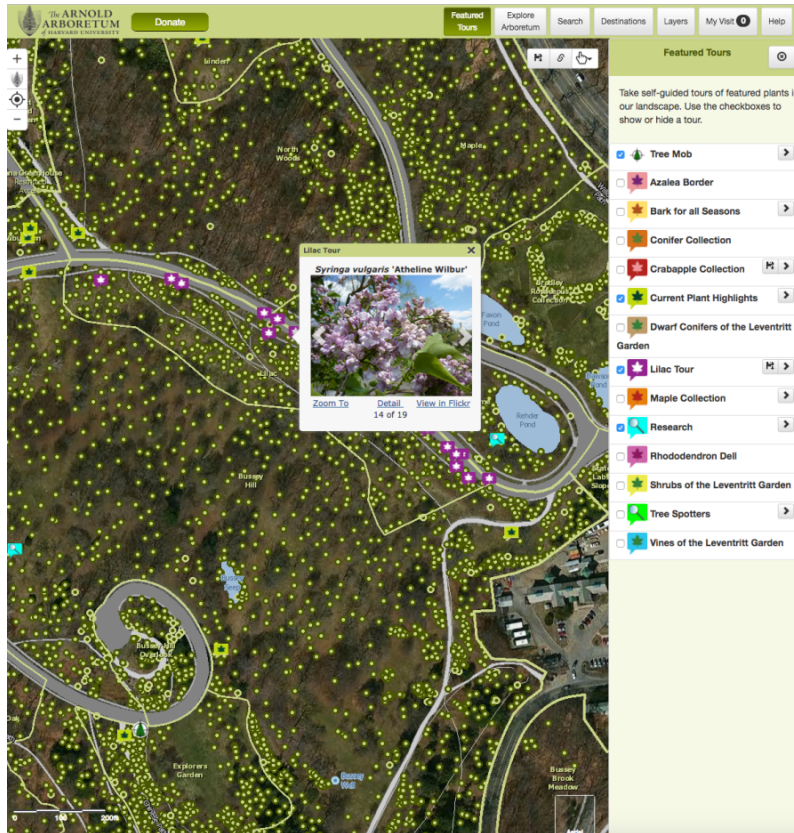
Our GIS data are available through [ArcGIS Server REST services](#).

Moved from XML-based map to Flickr API for the tours and plant images, Flickr Geotagged Photosets
<http://www.flickr.com/photos/28082034@N05/sets/>

ESRI Map Services
<http://server.arcgisonline.com/ArcGIS/rest/services>

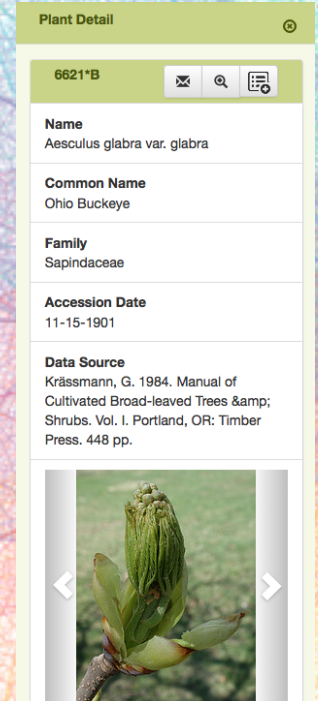
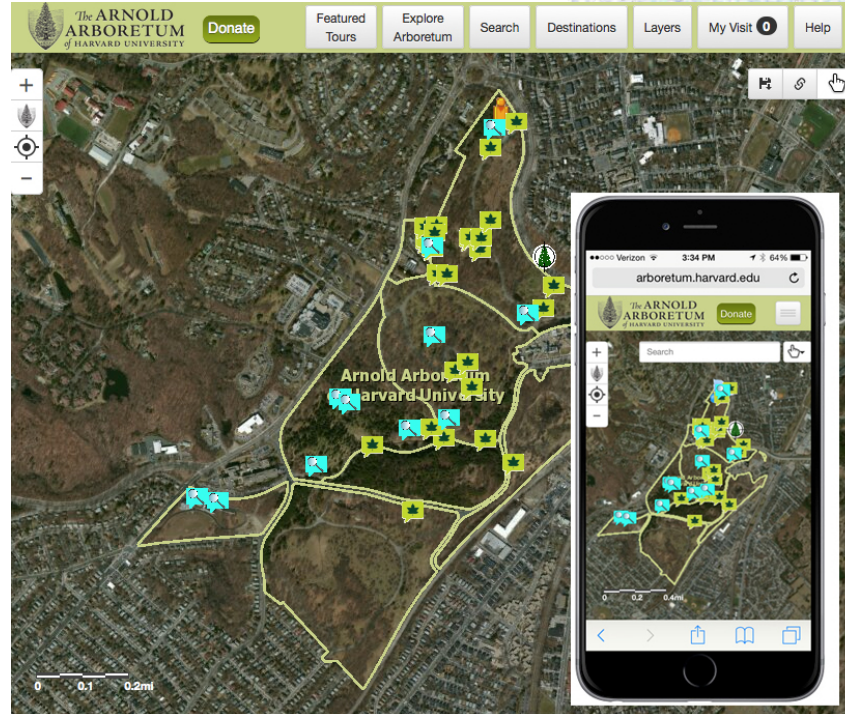
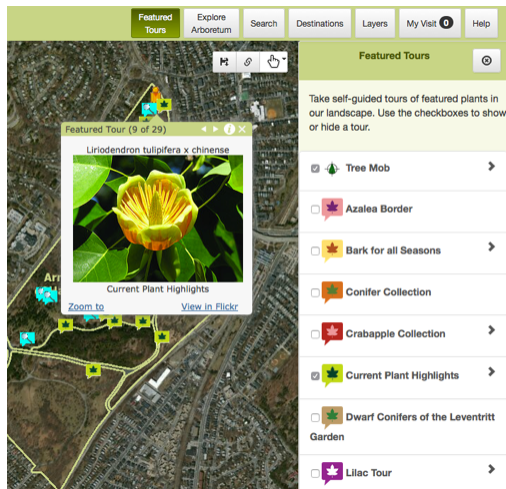
Arnold Arboretum Map Services
<http://map.arboretum.harvard.edu/ArcGIS/rest/service/CollectionResearcher>

Usage



- Over 15,000 plants in our *BG-BASE* database
- Virtual tours of featured plants
- A way to explore our collections in the landscape
- Search our collections and export data files
- A tool to catalog and produce maps of the locations of plants in the landscape
- Used by garden staff, visitors, citizen scientists, and researchers alike for applications both inside and outside of the office
- Over 3000 visitors a month to the page

Web and Mobile - Responsive



<http://arboretum.harvard.edu/explorer>



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Demo (live) ...or Plan B

Donna Tremonte, Web Developer/Applications Programmer



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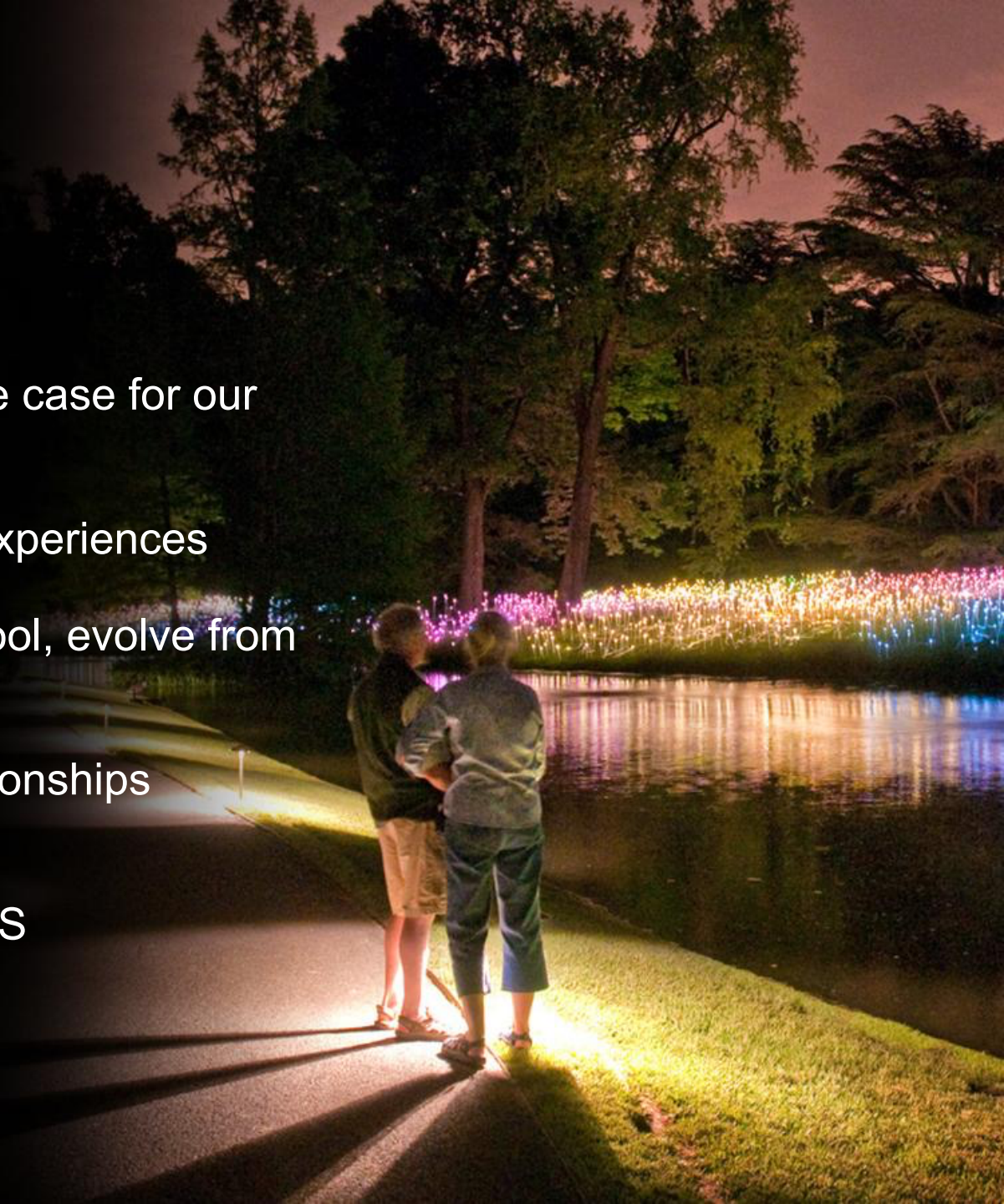


Longwood Gardens Interactive Map

Jennifer Fazekas, New Media Strategist

Goals

- Assist with wayfinding
- Build the “in-Garden” use case for our website
- Prioritize and organize experiences
- Provide an interpretive tool, evolve from wayfinding to storytelling
- Strengthen content relationships throughout website
- Leverage the Drupal CMS



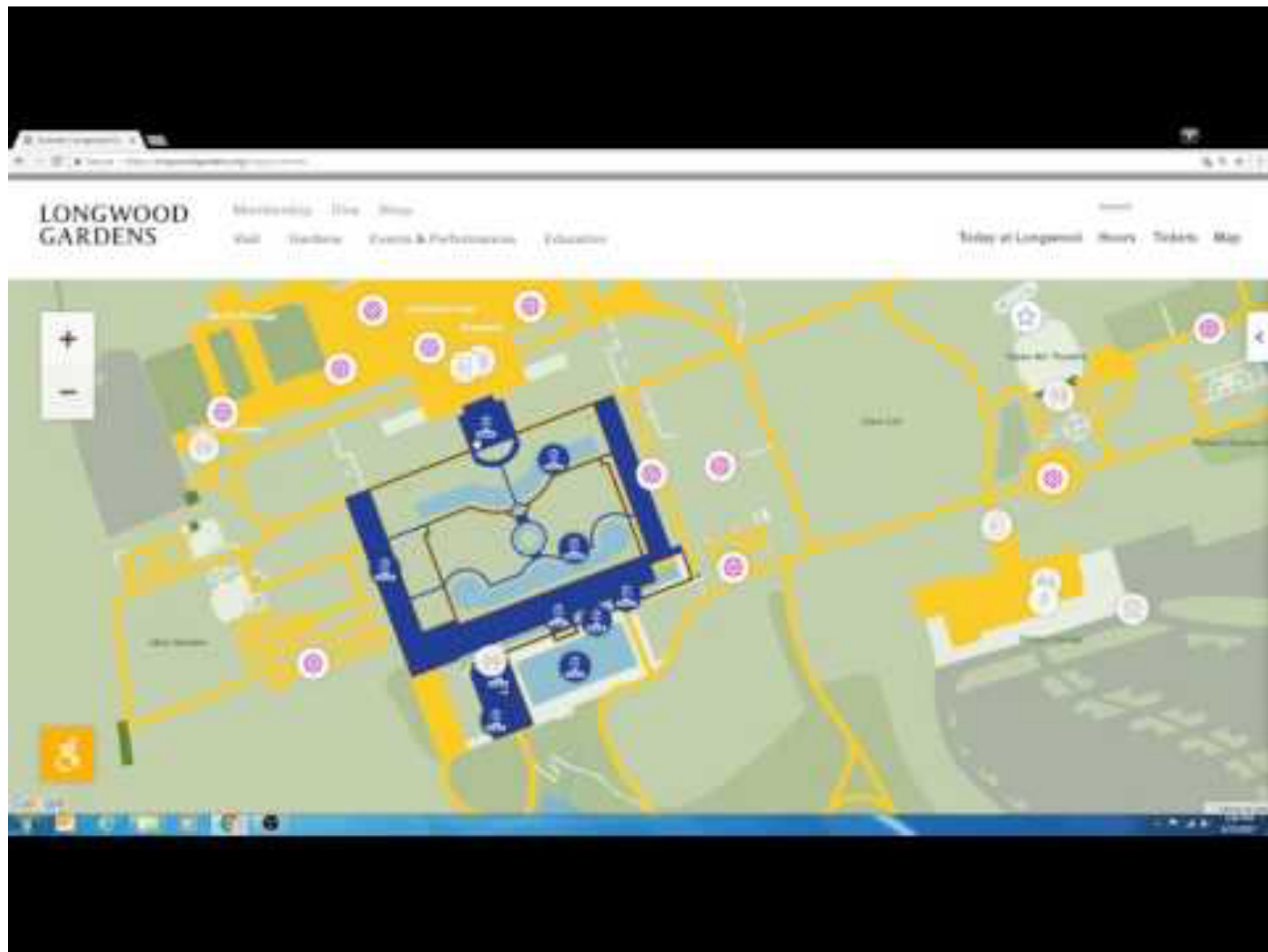
An aerial photograph of a formal garden, likely the Dutch Garden at the Palace of Versailles. The garden features a precise grid of rectangular flower beds separated by narrow, straight paths. The beds are filled with various plants, including vibrant red and yellow tulips, green hedges, and white flowers. Several people are seen walking along the paths, providing a sense of scale. In the upper right, there are trees with pink blossoms and a wooden bench. The overall scene is well-maintained and visually striking due to its geometric layout and seasonal colors.

Challenges

- Scale/size of Gardens
- Indoor/Outdoor
- Seasons – capturing seasonality, capturing what's in bloom and natural events that don't run on a set schedule
- Time of Day – bright sunlight and low light conditions
- Connectivity

Approach

- 2 months design and development
- Responsive web technology
- Javascript map elements, integrates with a JSON feed provided by the Drupal back-end
- Google Maps Javascript API determines the map functionality
- MapTiler - generates map tiles that scale to the dynamic google map
- Progressive loading - laterally (more map as you move across), and deeply (higher res as you zoom in)



<https://longwoodgardens.org/maps/summer>

<https://www.youtube.com/watch?v=aYdh62lr6bo>

Usage of a Percentage of Visitation

Nightscape – 33%

August 3-October 29, 2016

A Longwood Christmas – 10%

November 24, 2016-January 8, 2017

Orchid Extravaganza – 10%

January 21-March 31, 2017

Spring Blooms - 11%

April 1-May 26, 2017

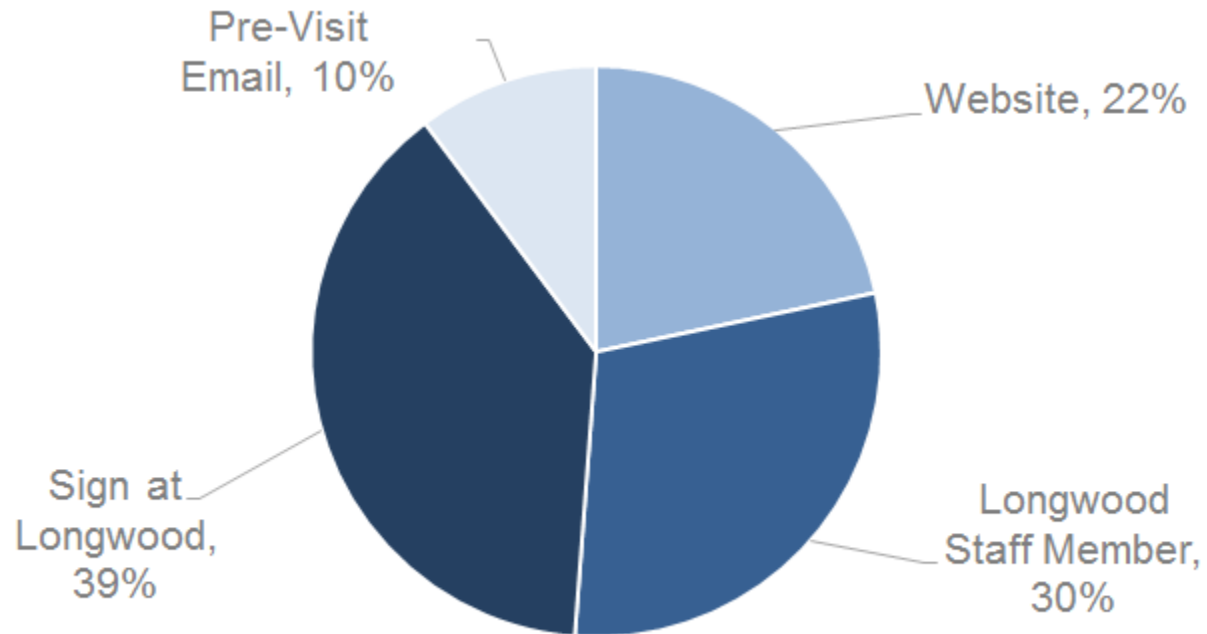
Summer of Spectacle - 13%

May 27 to present

Survey Results

- 81% - helped them find their way through exhibit
- 78% - enhanced their visit
- 39% - helped find something they would have missed
- Overall impression of map, from a scale of 1-10 was 7.58
- 12% - had trouble accessing map
- 10% - had trouble loading/connecting outside
- 7% - had trouble loading/connecting inside

Onboarding





UNITED STATES BOTANIC GARDEN



- Founded 1820
- Continuous operation since 1850
- 1.3 million+ visitors annually



UNITED STATES
BOTANIC GARDEN





The Challenge

- 50+ NPS site models in holiday show
- Difficult to take it all in
- Some places not well known





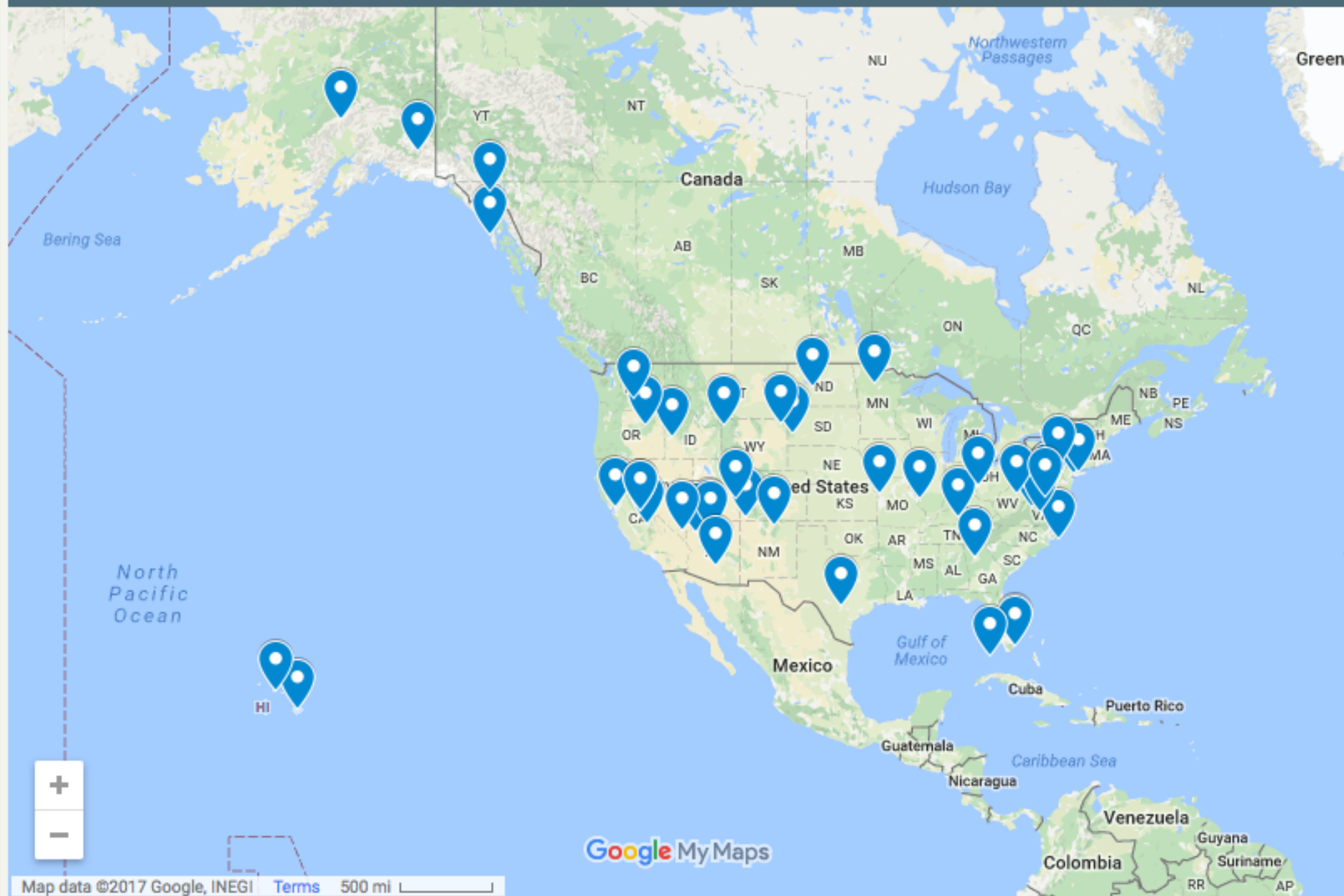


The Solution

- Created interactive online map
- Shows geographic diversity well
- Background info
- Photos



Season's Greenings 2016 ☆



Map of all National Parks and Historic Sites models in the show



← Freedom Tower National Histo... ↗

Model at U.S. Botanic Garden

Freedom Tower National Historic
Landmark

STATE

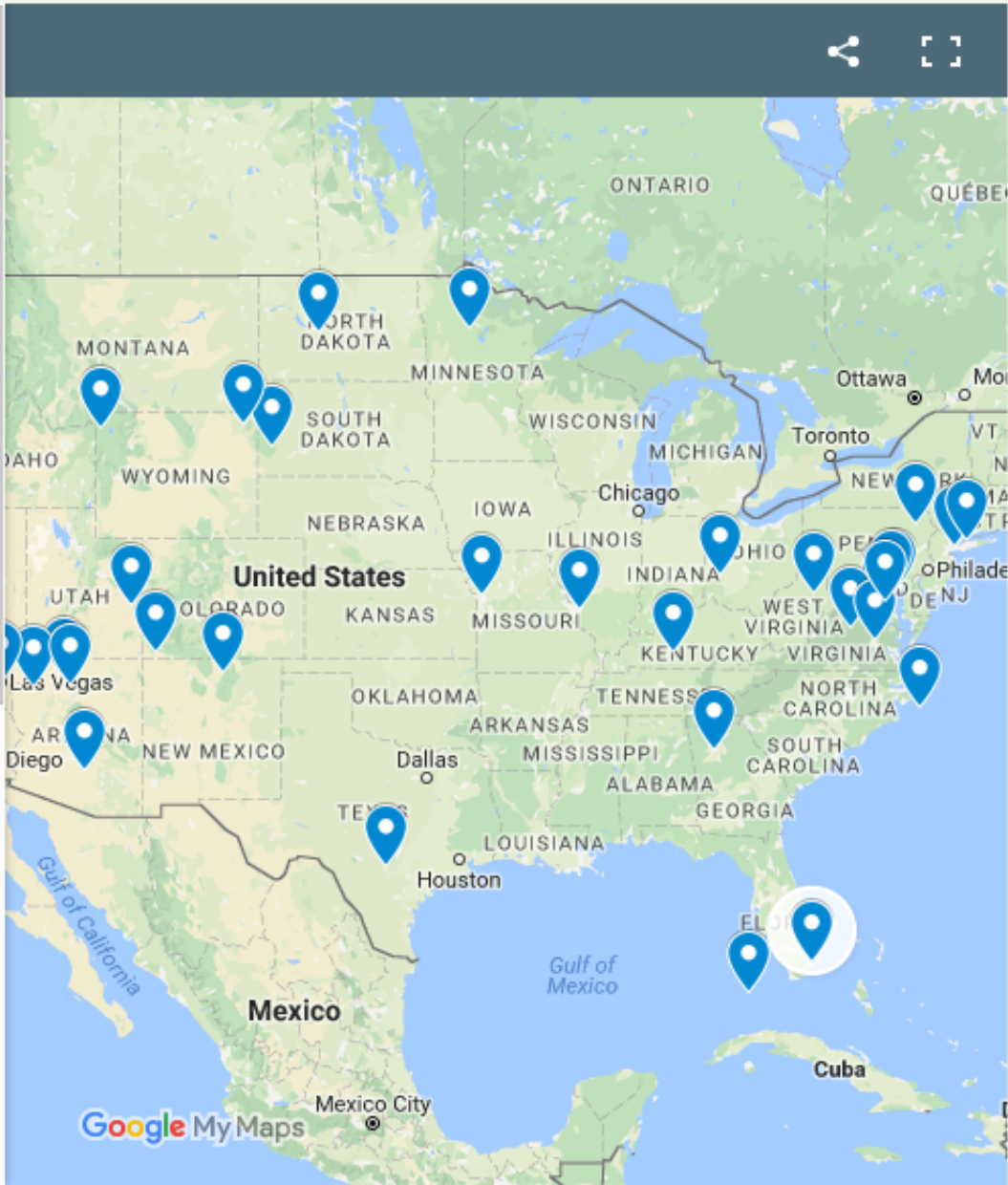
Florida

YEAR PLACED UNDER NPS

1979

Description

In 1925, this Mediterranean revival, 17-story building was originally used as the headquarters for Miami Daily News and Metropolis (Miami News). Several decades later, Florida's history would take a turning point when Cuba's new leader Fidel Castro would drastically





← Wawona Tree [fallen]



Model at U.S. Botanic Garden

Wawona Tree [fallen]

STATE

California

PARK / SITE NAME

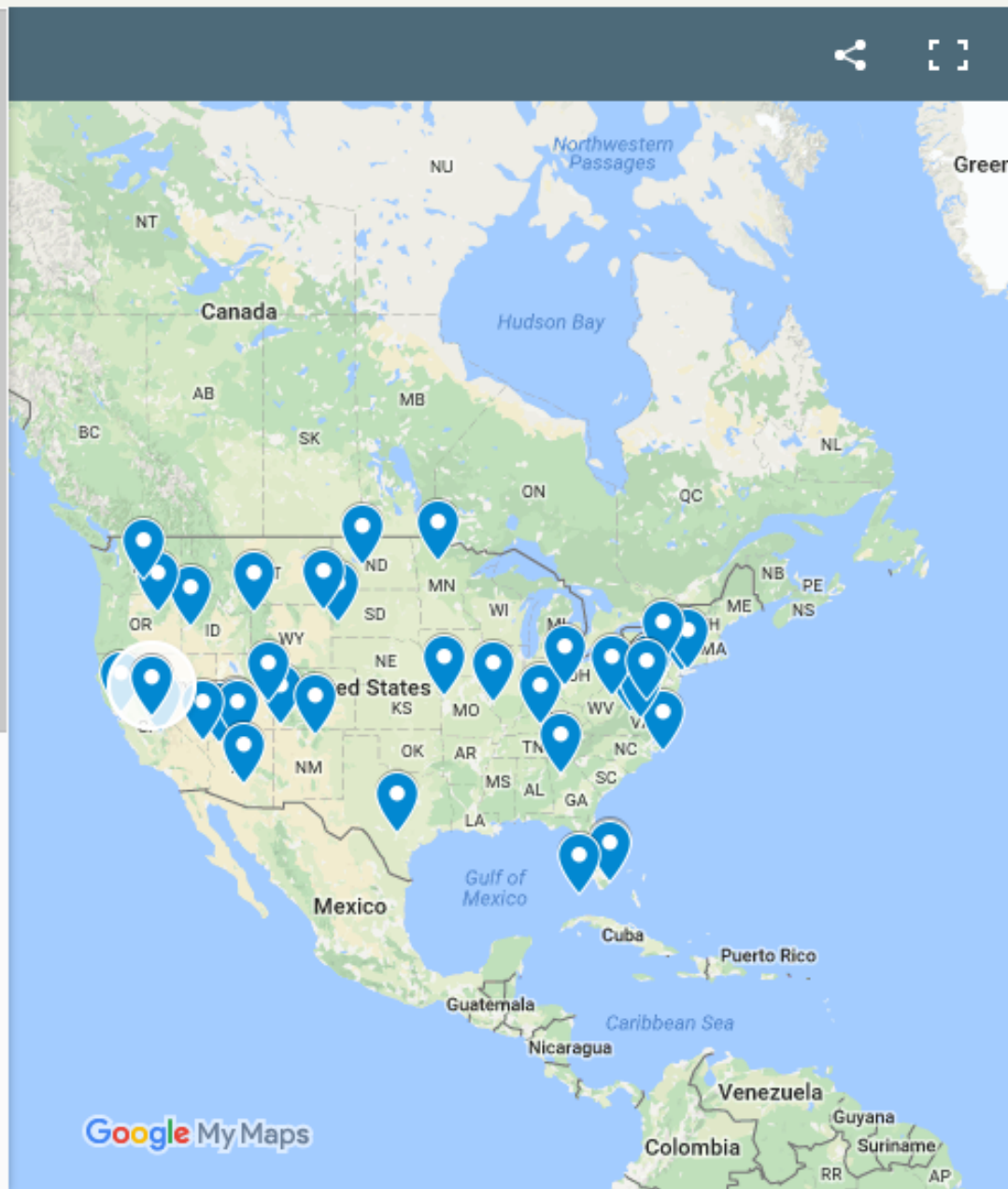
Yosemite National Park

YEAR PLACED UNDER NPS

1890

Description

Yosemite's famous Wawona Tree tunnel was created in 1881 as a tourist attraction. The second standing sequoia to be tunneled (the first, a dead tree, still stands in the Tuolumne Grove in



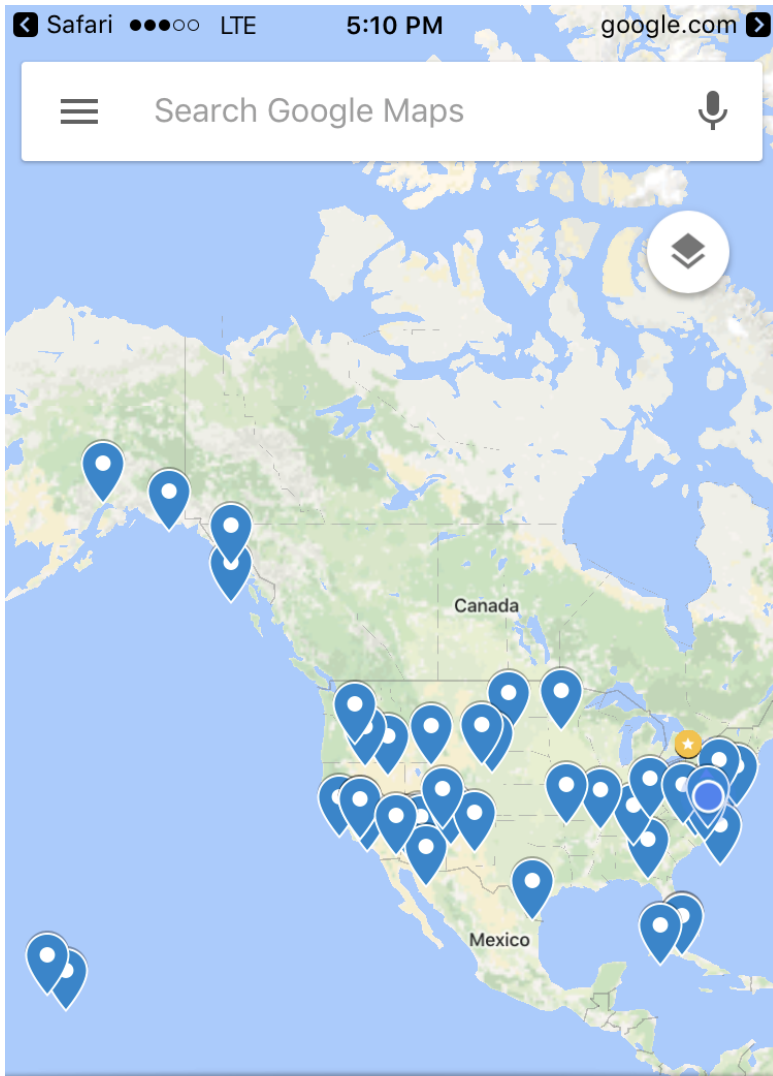




United States Botanic Garden

- www.USBG.gov/SeasonsGreenings

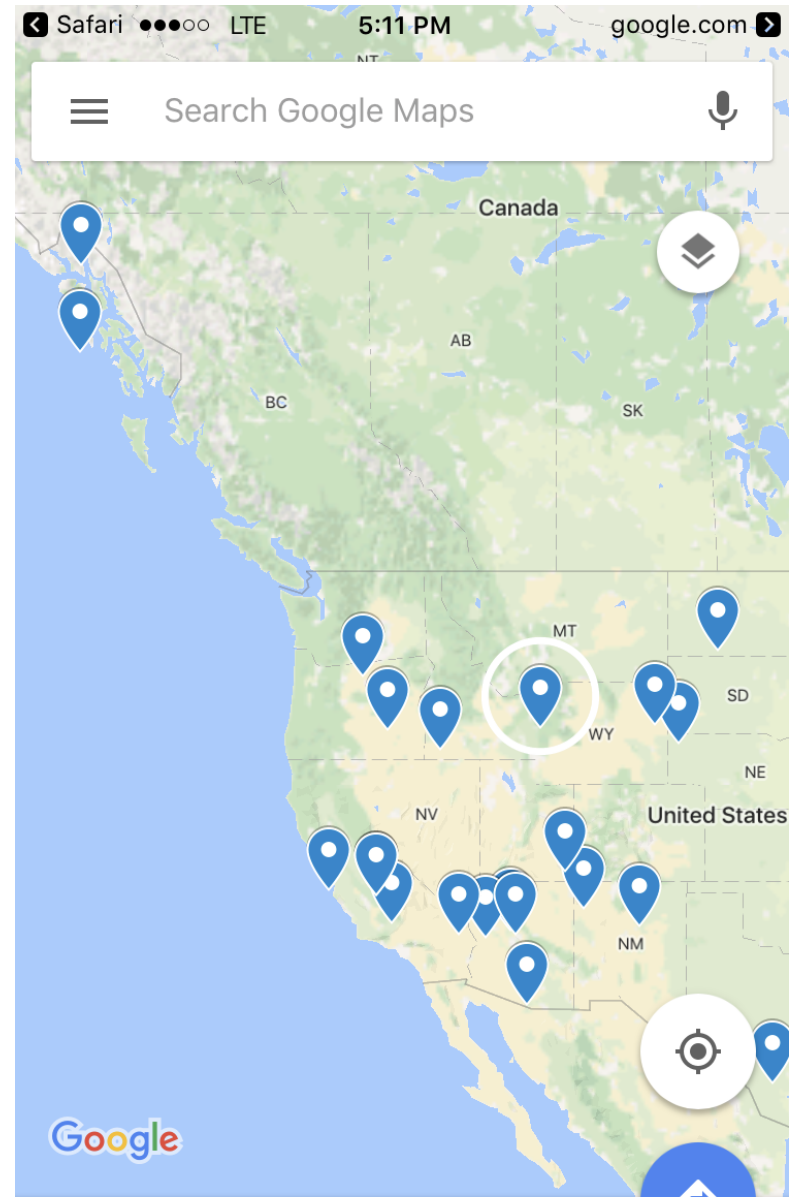




Season's Greenings 2016

"National Parks and Historic Places" in our 2016 holiday exhibit

[VIEW MAP LEGEND](#)



Old Faithful Inn and Old Faithf...

 Season's Greenings 2016

[Route](#)

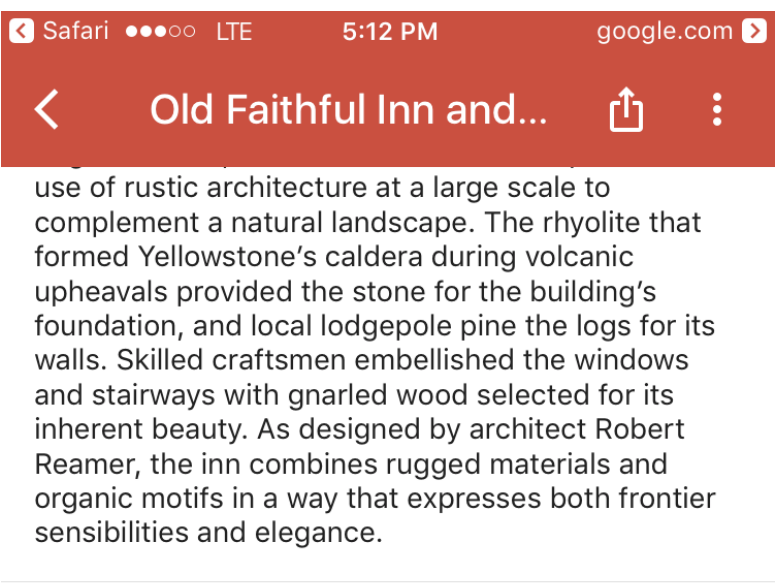


VIEW MAP LEGEND

Model list for USBG holiday show 2016 for map.xlsx

Description The Old Faithful geyser earned its name from its daily predictable eruptions. Eruptions occur in 60 to 110 minute intervals, shooting up to 184 feet and lasting between 90 seconds to five minutes. Located in Yellowstone National Park, the cone geyser was named in 1870 by the Washburn-Langford-Doane Expedition. It is one of many geysers, part of the vast hydrothermal system in Yellowstone National Park.

Named for the aevser near which its construction



PARK / SITE NAME Yellowstone National Park

YEAR PLACED UNDER NPS Inn: 1973, Park: 1872

STATE Wyoming





1 of 6



2 of 6





3 of 6



Benefits of using Google Maps

- Free
- Quick to learn
- Upload excel file as base
- Just need GPS
- Can pull from online images
- Can upload own photos
- Easy to edit database
- Mobile responsive

Outcomes

- 18,000+ views
- Used by a staffer stationed in the exhibit to answer visitor questions

Discussion

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Care for the Rare Mobile App

- georeferenced tour stops
- multi-site scope
- looking for interested gardens to pilot the mobile app

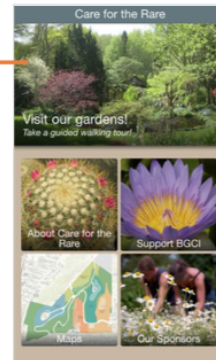
Abby Meyer, Executive Director
Botanic Gardens Conservation
International U.S.
www.bgci.org/usa
(308) 293-1782
abby.meyer@bgci.org

User's Guide for the BGCI Care for the Rare mobile app

A **demo app** is currently available for testing through the following app services:
For iPhone/iPad: requires invitation (by BGCI-US) to download TestFlight app and test Care for the Rare app
For Android: search 'BGCI' in Google Play Store: <http://play.google.com/store/apps/details?id=org.bgci.c4r>

App structure and guidelines

Main



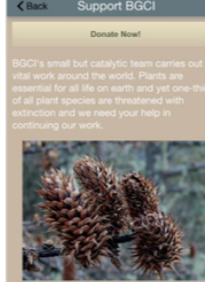
- Tap the upper image box to view a list of gardens and tours.
- Tap the four lower image boxes to view other supporting pages.

Draft supporting pages include (note, 'Maps' link and all page content yet to be finalized):

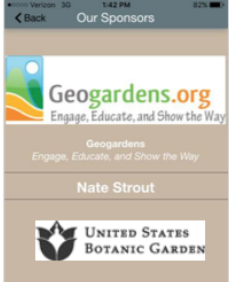
About Us



To be: Get Involved



To be: Partners

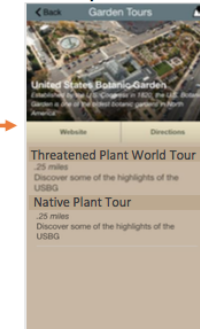


Garden List



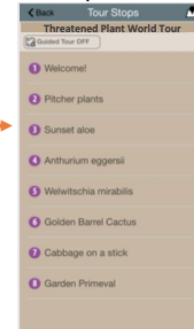
- Garden list sorted by proximity to your location (note *miles away* listed).
- Tap a garden image box to view a list of tours for each garden (example gardens added for demonstration).

Tour List per Garden



- Tap *top right* icon for garden map.
- External links in *center*.
- Tap a tour box to begin tour.

Tour Stops List



- Tap *top right* icon for tour map.
- Toggle 'guided tour' on/off.
- Tap any tour stop to explore.

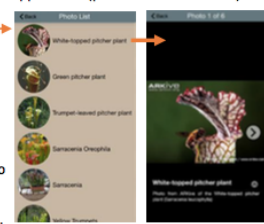
Multimedia Tour Stop



- Optional audio (left), image (center), and video (right) links at bottom.
- Swipe or use arrows to view stops.
- Tap *top right* icon for tour map.
- Next tour stop will queue as you approach it (phone will also vibrate).



- Tap any tour stop (numbered circles) to explore tour stop content.
- Your current location will be highlighted as you go (GPS must be on).



Conversation

Connectivity / wifi needs

App vs mobile

Beacons

What's next?