EMPOWERING CITIZEN SCIENTISTS THRU GIS
MDIFW’S 2017 CS PROJECT GOALS

• To increase the quantity and geographic extent of data

• Centralize and visualize data collected by citizen scientists across multiple programs

• Create a pleasant user experience to engage citizens and educate them about MDIFW programs

• Track volunteer time in order to match funds for federal grants

• Easily capture the “what”, “where”, “when”, and “who”

• Allow MDIFW to manage citizen scientists across programs
## Focused on the User

### River Bird
- Heron
- Amphibian & Reptile
- Breeding Bird
- Bat Exit
- Rare Animal Atlas

<table>
<thead>
<tr>
<th>Category</th>
<th>User</th>
<th>User Story</th>
<th>Assumptions &amp; Notes</th>
<th>Questions &amp; Comments</th>
<th>Priority</th>
<th>Star Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Image Marque</td>
<td>All</td>
<td>As the Public, CS, or Biologist, I want to see multiple images in a marquee, so that I can get excited about the programs features on the portal</td>
<td></td>
<td></td>
<td>Low</td>
<td>2</td>
</tr>
<tr>
<td>2 News</td>
<td>All</td>
<td>As the Public, CS, or Biologist, I want to see the latest Program News, so that I can be informed on changes and successes across the Maine Programs</td>
<td>A feed sorted by most recent, <em>view more</em> may link to original blog</td>
<td>will there blog have an RSS feed exposed? this would be handled on the front end: <a href="http://www.maine.gov/wdep/">http://www.maine.gov/wdep/</a></td>
<td>Medium</td>
<td>5</td>
</tr>
<tr>
<td>3 News</td>
<td>Biologist</td>
<td>As a Biologist, I want to publish news on the site, so I can keep site visitors informed on the latest changes.</td>
<td>Biologists will be responsible for keeping their IFW social feeds active with news items posted through an external blog</td>
<td>will there blog have an RSS feed exposed? this would be handled on the front end... <a href="http://www.maine.gov/wdep/">http://www.maine.gov/wdep/</a></td>
<td>Medium</td>
<td>0</td>
</tr>
<tr>
<td>4 About</td>
<td>All</td>
<td>As the Public, CS, or Biologist, I want to read about the Citizen Science web application, so I know how to utilize the site.</td>
<td>Static text and images related to an over arching theme of Citizen Science in Maine &amp; the portal</td>
<td></td>
<td>High</td>
<td>2</td>
</tr>
<tr>
<td>5 About</td>
<td>All</td>
<td>As the Public, CS, or Biologist, I want to view highlevel Citizen Science web application stats/data, so I see trends and activity across the state &amp; townships</td>
<td>Could be more &quot;read only&quot; visualization (summarizing across programs). Story includes sounding numbers on the backend.</td>
<td></td>
<td>Medium / Low</td>
<td>5</td>
</tr>
<tr>
<td>6 Sign in</td>
<td>Citizen, Scientist, Biologist</td>
<td>As a CS or Biologist, I would like to sign into the web portal using my username and password, so I can access my program(s) and permissions</td>
<td>Username = email address</td>
<td></td>
<td>High</td>
<td>5</td>
</tr>
<tr>
<td>7 Sign in</td>
<td>Citizen, Scientist, Biologist</td>
<td>As a CS or Biologist, I would like to be redirected to my program on completing signin, so I can quickly start surveys or other actions.</td>
<td>What happens when participating in two programs? does not include a user setting &quot;primary program&quot; for redirect</td>
<td></td>
<td>Medium</td>
<td>2</td>
</tr>
<tr>
<td>8 Sign in</td>
<td>Citizen, Scientist, Biologist</td>
<td>As a CS or Biologist, I would like to reset my password, so I am able to access my account</td>
<td></td>
<td></td>
<td>Medium</td>
<td>3</td>
</tr>
</tbody>
</table>
“HYBRID” ARCHITECTURE

TG PROD

TG ARC GIS SERVER

ArcSDE

TG SQL Server

Maine DB Schema

ASP.NET Identity Schema

MVC

WEB APP

map

App consumes secure Feature Service for CRUD via proxy token auth readwrite

App authenticates citizen scientist user with ASP.NET Identity

App consumes read-only Map Service for map display

Maine-app-agis-user-me

maine-app-agis-user-wo

SURVEYORS

- Register in app via ASP.Net identity
- Only create tabular records

MAINE

Maine AGOL

Maine User in Maine AGOL

Web Map based on TG AGS FS

WebApp based on Web Map

Biologist Reports

WebApp1

WebApp2

Maine - built custom WebApp

Biologist 1

Biologist 2

Biologist 3

Biologist 4

TG Admin User

Citizen Scientist

Biologist User Group

Maine Biologists access TG AGS via Agol app in their Agol. ReadWrite for tabular & geometry

EC2

IMAGES

TIMMONS GROUP
THE END PRODUCT!
SUCCESS!
SUCCESS IS AN ICEBERG

What people see: SUCCESS

What really happens:
- FAILURE
- SETBACKS
- NAYSAYERS
- DOUBTS
- HARD WORK
- MORE HARD WORK
- MORE FAILURES
- SACRIFICES
- RISKS
- LATE NIGHTS
- EARLY MORNINGS
- COURAGE
- PERSISTENCE
- ACTION

FEARLESMOTIVATION.COM
Double Down

• Develop a Conservation Action Tracker (collection, reporting and analysis)
• Needs to engage 100 + conservation partners in the Northeast
• Wishlist of high-level requirements
• Must be user-friendly to engage partners
• Voluntary reporting / data entry
• Keep it going - “Use the ‘platform’ you built”
• Fixed fee grant (NTE 55K)
Will the CS wheels work for CAT?
Need to dig in…

start here

Desirable

Will people want it?

Feasible

Can we build it?

Viable

Is it financially sustainable?
MINI DISCOVERY
The Vision for CATS

The Conservation Action Tracker (CAT) will enable MDIFW staff and their 100+ conservation partners, who share a vision to conserve priority wildlife species and habitats, to collect, track, and report on wildlife action plan-related conservation action efforts in a way that facilitates outreach, encourages synergies among partners and other related efforts, and promotes maximum species and habitat coverage.
Goals

Information Gathering

✓ Collect data from partners on wildlife action plan related efforts

Outreach and Reporting

✓ Provide reports to USFWS and others on wildlife action plan progress

✓ Track wildlife action plan implementation to understand what actions/habitats/species are not being addressed

✓ Provide partners, advisory councils, legislators, USFWS, and the public information about wildlife action plan conservation projects

✓ Identify conservation action synergies and common efforts to facilitate collaboration among partners and other related efforts
# Personas

<table>
<thead>
<tr>
<th><strong>Patty Public</strong></th>
<th><strong>Peter Partner</strong></th>
<th><strong>Betsy Biologist</strong></th>
</tr>
</thead>
</table>
| **What does Patty Do?** | - Could be anything from very experienced with conservation to no experience  
- Could be school teachers and children writing school reports | **What does Peter Do?** | - Works on conservation projects for a partner organization  
- Looks for partners to help with working on grants | **What does Betsy Do?** | - Wildlife action plan coordinator  
- Wildlife action plan subject matter expert |
| **What does Patty need and want?** | - | **What does Peter need and want?** | - | **What does Betsy need and want?** | - Track internal SWAP implementation  
- Identify engaged partners vs. partners that they need to do more outreach with  
- Prioritize upcoming projects  
- Provide updates to partners, various user groups, the public, advisory councils, and USFWS  
- Provide information about SWAP and progress  
- Respond to inquires  
- Add actions from internal project and view partner conservation action projects  
- High level summaries of implementation and what department is doing and has accomplished  
- Identify potential partners for grants | - | - | - |
| **How is Patty with technology?** | - | **How is Peter with technology?** | - | **How is Betsy with technology?** | - Betsy has basic computer competency skills and some GIS experience |
## Mapping the Stories

<table>
<thead>
<tr>
<th></th>
<th>Access CAT</th>
<th>Home page</th>
<th>Conservation Action Projects</th>
<th>Conservation Action Project Analytics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administer accounts</td>
<td>Access system</td>
<td>Learn more</td>
<td>Explore map</td>
<td>Inquiry</td>
</tr>
</tbody>
</table>

### Unscheduled

1. User management
2. Log in
3. Log out
4. Reset password?
5. Spotlight on conservation action projects
6. Summary information about SWAP and conservation action projects
7. Map of conservation action projects
8. Choose base layers
9. Map themes
10. Search location
11. Zoom and Pan
12. Measuring tool?
13. Print capability
14. Submit an inquiry
15. View projects on map
16. View project details
17. View uploaded documents
18. View project list
19. Draw project site (polygon)
20. Drop a point on a map
21. Select a shape
22. Upload existing shape?
23. Add project details
24. Project details instructions
25. Upload documents
26. Edit projects
27. Edit any project
28. Delete project
29. Delete any project
30. Report by species
31. Report by habitat
32. Report by threat/stressors
33. Report by conservation action
34. Annual Summary Map
35. Download data
Understanding the Flow
Wireframes / Mockups

State Wildlife Action Plan
Conservation Action Tracker

ABOUT CONSERVATION ACTIONS

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Looking for More Details?

Conservation Map
Click here to view conservation projects!

Partner Access
For registered users only - log in required.
Wireframes / Mockups
IDEATE ON THE NUTS AND BOLTS
Custom

CUSTOM DASHBOARDS
(POWER BI, D3.JS, KPI)

CUSTOM UX
(BRANDING, MESSAGING, STORY-TELLING)

CUSTOM INTEGRATIONS
(CMS, PROJECT SPOTLIGHTS)

CUSTOM REPORTING
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Start Year</th>
<th>Primary stress/threat addressed</th>
<th>Secondary stress/threat addressed</th>
<th>Primary Habitat</th>
<th>Secondary Habitat</th>
<th>SGCN Species Addressed</th>
<th>Conservation Action</th>
<th>Project Type</th>
<th>Project Status</th>
<th>Project Description</th>
<th>Project Scope/Outcomes</th>
<th>Additional Information</th>
<th>GlobalID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada Lynx</td>
<td></td>
<td></td>
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<tr>
<td>Golden Eagle</td>
<td></td>
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<tr>
<td>Peregrine Falcon</td>
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Technical Requirements

Device Support: Mobile responsive web application

Platforms: Esri Web App Builder and Amazon Web Services (AWS)

Storage: ArcGIS Online and AWS S3 and RDS

Authentication: ArcGIS for Server

GIS: Enterprise Geodatabase with Editor Tracking and Ownership based feature editing
User navigates to DNS record that points to CloudFront distribution to download the site files to browser.

Site files make requests to API gateway for stats.

AGOL web app interfaces with Hosted Feature Service. User provides AGS creds.

User clicks link to AGOL to be taken to the web app builder app.
MINI DISCOVERY

WE ARE HERE!
work in progress
Questions