

Online Data Management and Training for Collaborative Conservation

Presented by: Greg Newman
September 10th 2009

Bridging the Gap:
Collaborative Conservation from the Ground Up



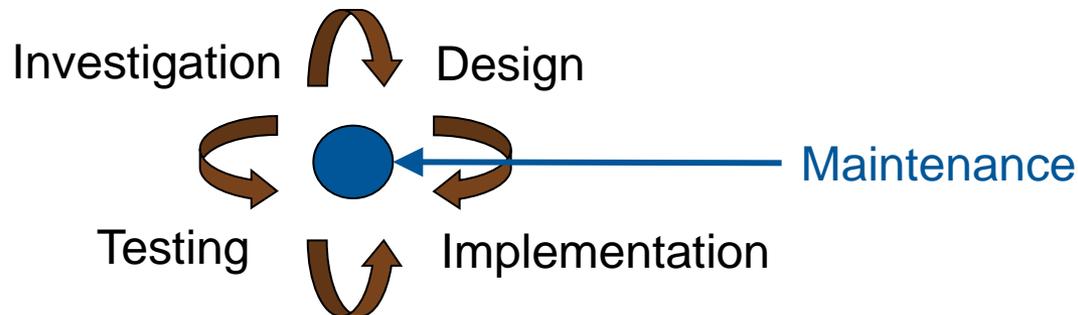
Context

“Community-based, collaborative conservation efforts are seeking ways to bridge the gap between conservation and livelihood goals. Yet, it is hard to sustain these efforts over time...”

- Sustaining these efforts can be assisted by effective online data management tools and training resources

Introduction

- Online data management & training tools
 - Driven by stakeholder needs
 - Guided by collaboratively created needs assessment
 - Focused by requirements specification
- Software Development Lifecycle





Introduction

- So, we asked what people needed...
- ... and built this website... www.citsci.org ...
- ...only to realize people need an understanding of GIS, GPS, and DSS applications to use it!
 - There is a growing need to evaluate the usability of online data management and training resources
 - Online tutorials are needed to help educate, motivate, and resonate with volunteers and participants
 - We need to evaluate the effectiveness of different communication approaches for online tutorials
- So... what's the problem?



The Problem Is...

- ... that we do not know how to develop effective online data management tools and trainings that better reach and resonate with collaborative stakeholders

We collected our data...

...and we want to "spread the wealth"...

...but now what?





Background

- Citizen Science - Christmas Day 1900
- Over 15 million bird watchers
- ~4,221 organizations
 - Invaders of Texas
 - Great Lakes Worm Watch
 - Wisconsin Nature Mapping
- Poised to save biodiversity...
 - Rare ladybeetle
 - Invasive crab



Frank Chapman



Citizen Scientists





Citizen Scientists





Citizen Scientists





Objectives

- Create online data management tools and trainings in support of citizen science
- Evaluate the usability of these online resources
- Evaluate the effectiveness of different training approaches
- Assess data quality collected by citizen scientists trained differently compared to experts



Methods

- Interdisciplinary approach needed (mixed methods)
- **Qualitative methods**
 - Help formulate research questions
 - Tease apart learning gain differences from motivation/perception differences
 - Uncover emerging patterns and themes
- **Quantitative methods**
 - Compare task completion times
 - Compare pre and post training evaluations
- Usability test & training evaluation experiments



Methods - Usability

- Purposeful sample of 16 citizen scientists
- Given \$25 honorarium
- Provided with a series of tasks in 4 scenarios using an iterative design
- Delivered by a moderator
- Video-taped and timed
- Answered post-usability evaluation survey



Methods - Training Evaluations

Online (n=70)

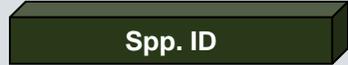
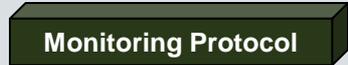


Pre-Test

Static HTML



Multimedia

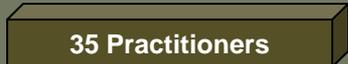


Post-Test

Results

Field Experience Outcomes

Pre-Test



Face-To-Face (n=70)



Pre-Test

PowerPoint



PowerPoint

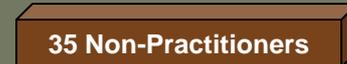


Post-Test

Results

Field Experience Outcomes

Pre-Test

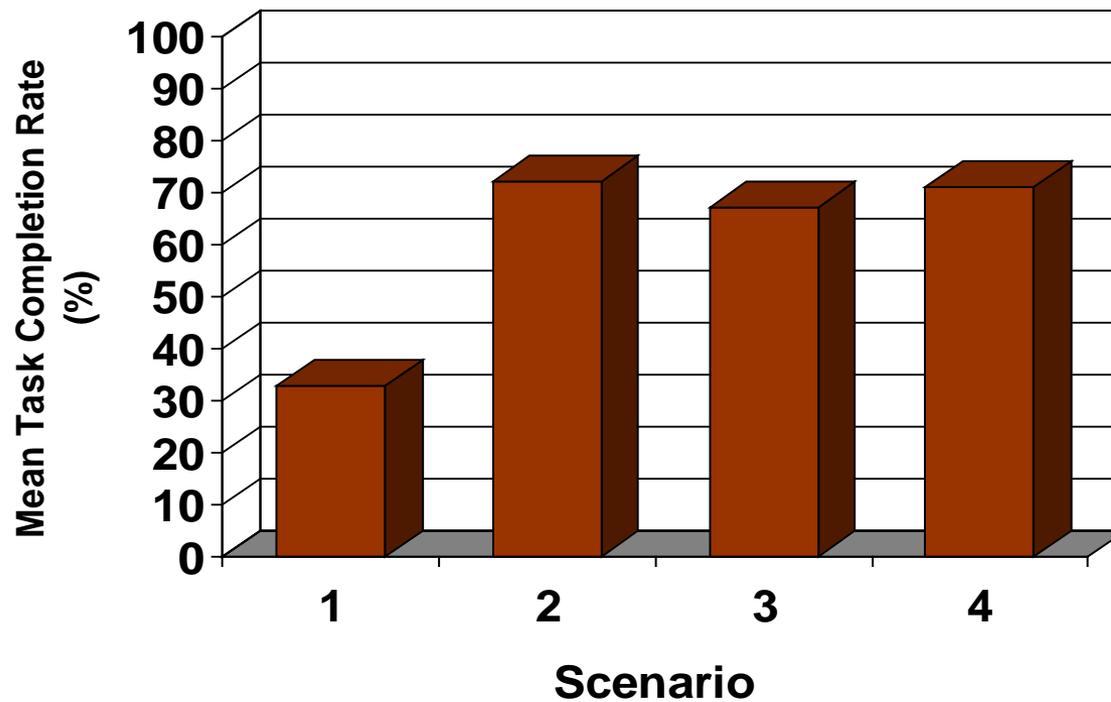


Control; No Training (n=70)



Usability Results

- Participants averaged 1:58 minutes to complete tasks





Usability Results

Login Welcome guest My Profile March 10th 2008

CitSci.org Fighting invasive species... ... through citizen science

Home
About Us

Species List
Project List
Get Software
Tutorials
My Map

Contact Us
Register
Login

About invasive species



How you can help

is mapping program that allows citizens, school groups, and professionals to enter invasive species
base. The observations are then used for natural resource management, scientific studies, and
.org provides an opportunity for students and volunteers to perform field studies that contribute to our
You may submit your observations to our online database using our field tools.

Register link too small and hard to find...

[Project #94](#)
[All Projects](#)

Featured Species
[Tamarix](#)



New Discoveries
Coming soon...



Usability Results

Logout Welcome Linda My Profile March 10th 2008

CitSci.org Fighting invasive species... through citizen science

Linda Stapel's User Profile [Help](#)

Home
About Us

Species List
Project List
Get Software
Tutorials
My Map

Contact Us
My Profile
Logout

My Profile

<p>Name: Linda Stapel</p> <p>Email: linda.stapel@colostate.edu</p> <p>Phone: 9704912289</p> <p>Country: United States</p> <p>City: Johnstown</p> <p>State/Province: Colorado</p> <p>Zip Code: 80534</p> <p>Early Warnings: Your email alert setting is ON.</p>	<p>User Level:</p>  <p>Instigator</p>
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Options: [Edit my profile](#) | [Change my password](#) | [Request a new user level](#)

My Projects

Initiative: Marine Invasive Species Monitoring Organization	Contributor requested
Initiative: Marine Invasive Species Monitoring Organization	Contributor requested
ment of transportation	Contributor

Registered User Options:

To change email alert setting...

Users had to first click "edit my profile" and then change it



Usability Results

Logout Welcome Linda My Profile March 11th 2008

CitSci.org Fighting invasive species... ... through citizen science

Information for *Apis mellifera* [Help](#)

Species Profile	
No Photo Available	Taxonomic Serial #: 154396
	Scientific Name: <i>Apis mellifera</i>
	Taxonomic Rank: Species
	Common Name(s): honey bee
	Synonym(s):
Tools:	Sightings County List Map Occurrences Projects
Habitat:	
Unique Features:	
Invasion History:	
Life History:	
Controls:	
Images:	Google Images
Request to become an expert	

A GODM website Updated 2/16/2007

User levels unclear

Terminology unclear and hard to find among other features



Usability Results

The screenshot shows the CitSci.org website interface. At the top, there is a navigation bar with "Logout Welcome Linda" on the left and "My Profile March 10th 2008" on the right. The main header features the "CitSci.org" logo and a tagline "... through citizen science". Below the header, there are several toolbars and a central map. The left sidebar contains links for "Home About Us" and "Species List". The central map displays a geographical view of North America with pink data points. The right sidebar includes a legend with checkboxes for "Apis mellifera", "States", and "Background". At the bottom, there is a "Refresh Map" button and the text "Current Project: colorado department of transportation".

Annotations on the screenshot include:

- A callout box pointing to the top navigation bar: "Load Icon & Term unclear Save & Print Icon & Terminology effective".
- A callout box pointing to the left sidebar: "Most Icons and Terms unfamiliar to non-GIS users".
- A callout box pointing to the right sidebar legend: "Add Layer Icon and Terminology confusing".
- A callout box pointing to the bottom right area: "Users wanted to be able to click on icon to change color".



Usability Results

Project Name

Navigation **Terrain** **Satellite** **Hybrid** Options Help

Location Show Hide

Legend Add / Remove / Edit Layers

Plants [Add a plant](#)

Cheatgrass Leafy spurge Zebra mussels

Animals

Diseases

Models

Map Type:



Initial Evaluation Results

- Traditional and multimedia tutorials were received differently by different individuals
- All participants benefitted from the hands-on field exercises
- Certain subjects lend themselves better to online trainings than others and some better suited to multimedia than others



Discussion

- Tools are needed
 - Data management and mapping systems
- Training is needed
 - Reach more people
- Evaluation is needed
 - Logistics, logistics, logistics
 - Small sample sizes
 - Limited able to generalize
- All of these developments need to be stakeholder driven from the ground up



Your Turn...

- What are your online data management and training needs?
- Share grey literature reports in online forum? Who can access?
- What data, information, knowledge, or wisdom would you like to have readily accessible to you online?



Thanks!

Melinda Laituri, Don Zimmerman, Linda Stapel, Tom Stohlgren, Jim Graham, Alycia Crall, Catherine Jarnevich, Tracy Davern, Paul Evangelista, Sara Simonson, Sunil Kumar, Lee Casuto, Mariah Coler, Rick Shory, Dave Barnett, Geneva Chong, NREL.

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