The *NatureMapping* Program

NEW TOOLS FOR CITIZEN SCIENTISTS

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NatureMapping Foundation

Washington *NatureMapping*

Agencies needed data:

WA-GAP data (dates 1800's – 1996):

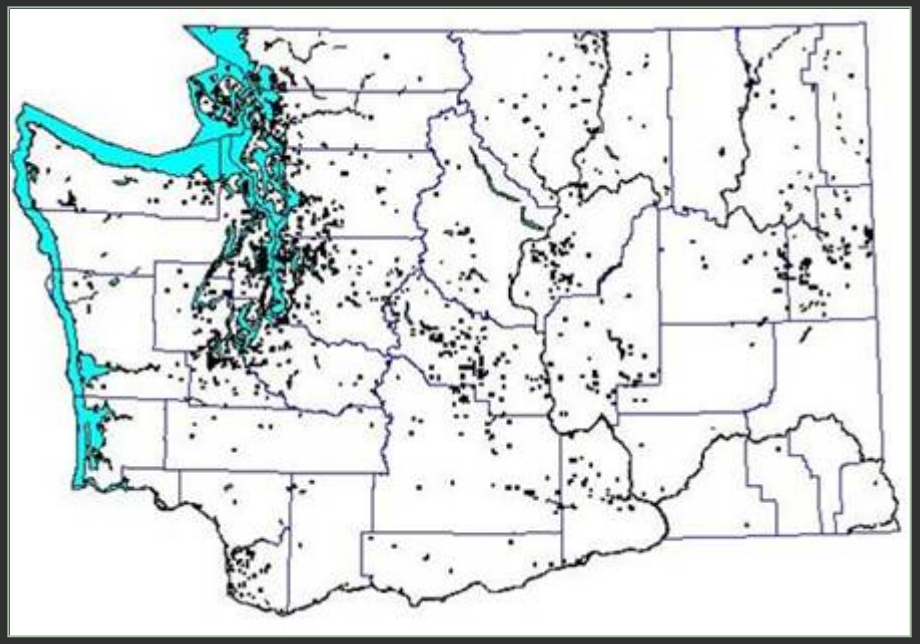
- **Collected over 360,000 records**
- **Used 62% of expert data**
- **Mammals (126 species) – 50% species < 100 records**
- **Amphibians (27 species) – 50% species < 100 records**
- **Reptiles (25 species) – 50% species < 100 records**
- **Birds (403 species) – 72 species with 0 records**

NatureMapping **(1992 -)**

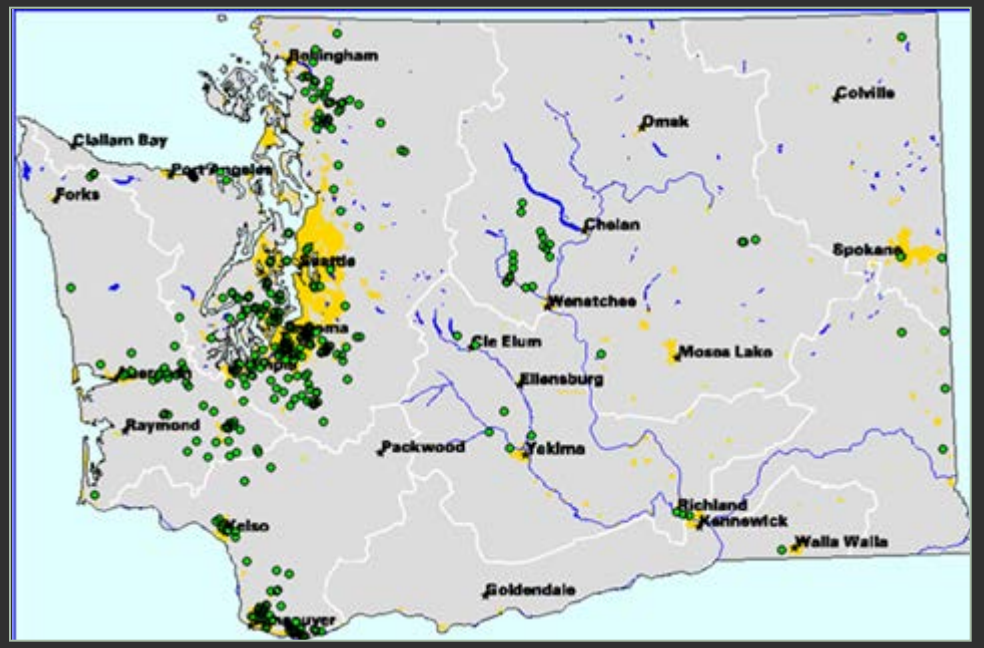
Asking the public for help

"Tell us what you see and where you see it"

NatureMapping Public Database
(1906 -)



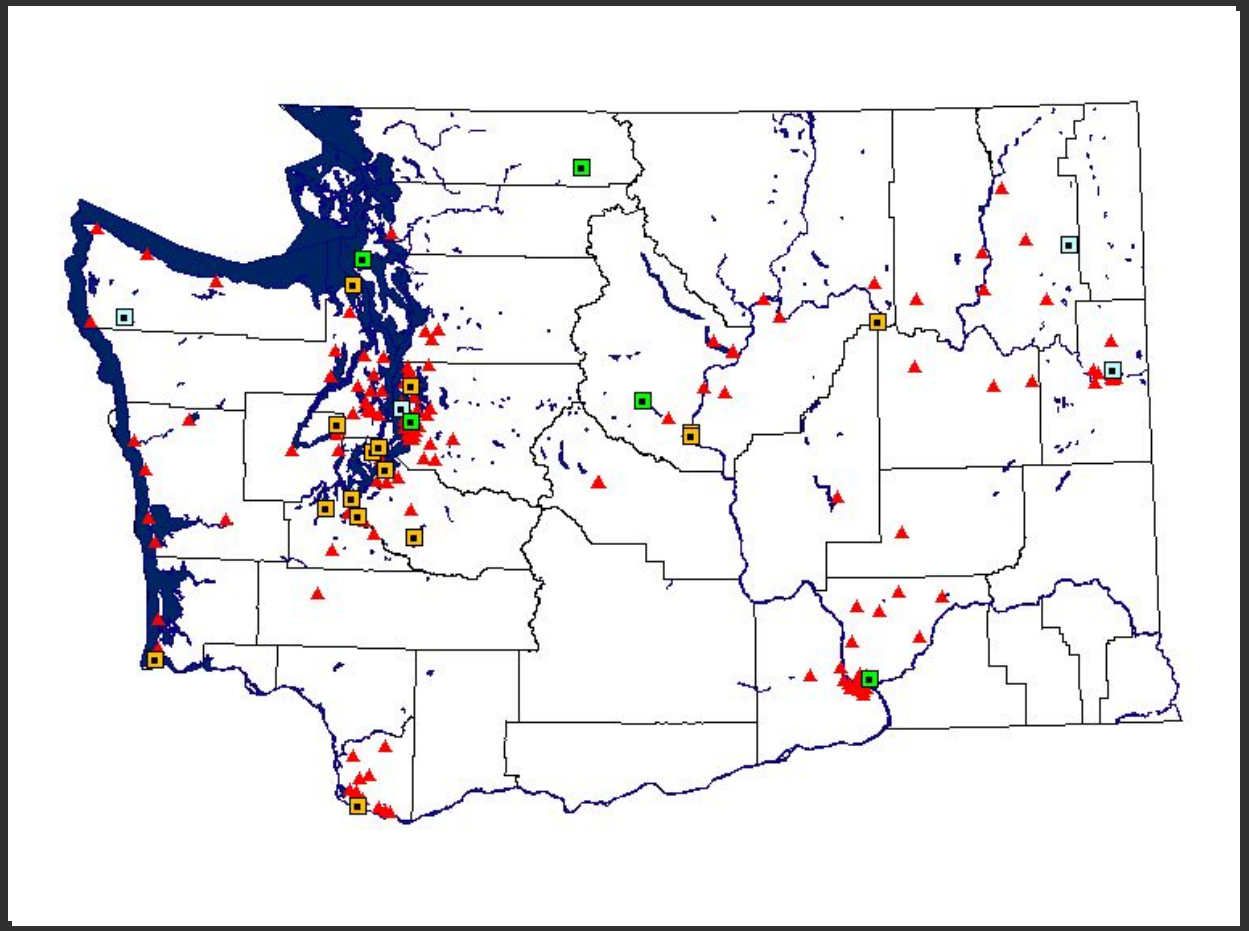
110,000 records for 420 vertebrate species reported in 36 of the 39 counties submitted to PNW Re-GAP



435 water quality data collection sites in 27 counties

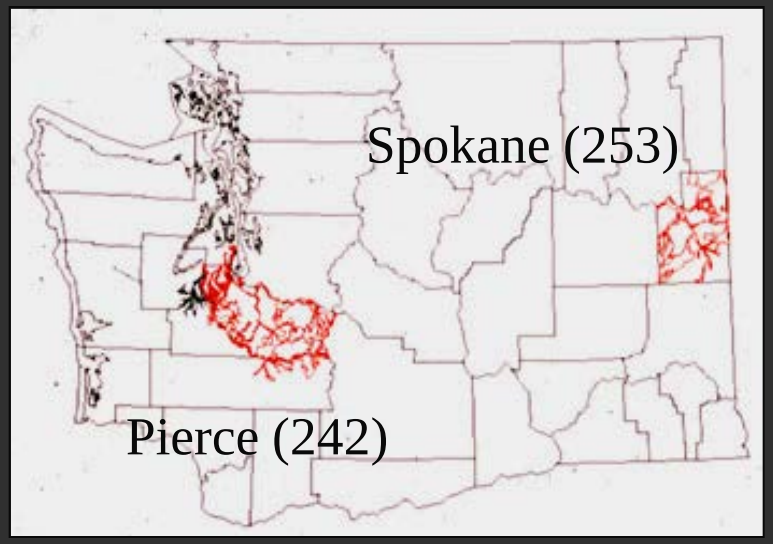
The *NatureMapping* Program

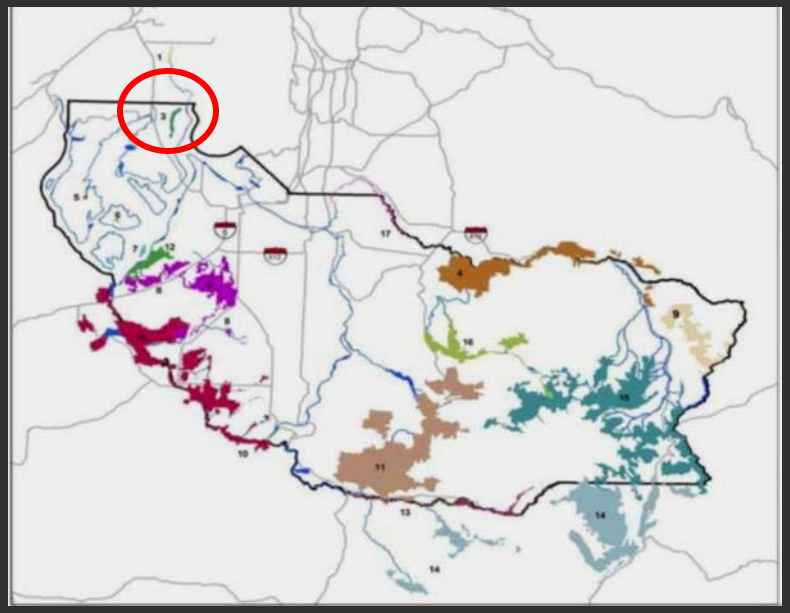
- Develop a *Network* **of** Informal Education Centers to train and mentor schools and communities



The *NatureMapping* Program

- Train NatureMappers how to *apply their research data* for local conservation efforts





What is Community Remote Sensing?

LOOSE DEFINITION

Community reflects the role of *decentralized* individuals rather than *centralized* systems - either common citizens or volunteer professionals

Remote Sensing reflects use or collection of data from a distance - activities that differ from strict mapping or in-situ data collection

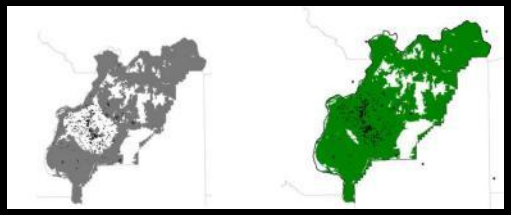
RELATED FIELDS

- Volunteered Geographic Information (VGI)
- Participatory GIS
- Citizen Science
- Citizens as Sensors
- Community Mapping
- Geo-Social Networking

Driving Technologies

- Global high-bandwidth internet access
- Social networks
- Digital cameras
- Location-based (GPS) mobile phones
- Mobile phone cameras
- Low-cost data storage
- Cloud computing

Applications For Biodiversity



Inventory Validation

NatureMapping - UW

Systematic Monitoring

Picture Post - UNH

Invasive Species ID

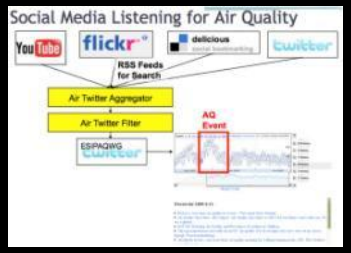
What's Invasive! App - UCLA

Forest Inventory

World Forest Observatory - RFF

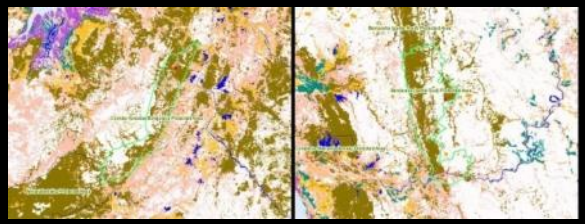
Tool Validation

Yaqui Valley Wheat Farming - Stanford



Event Detection

Air Twitter – Washington U



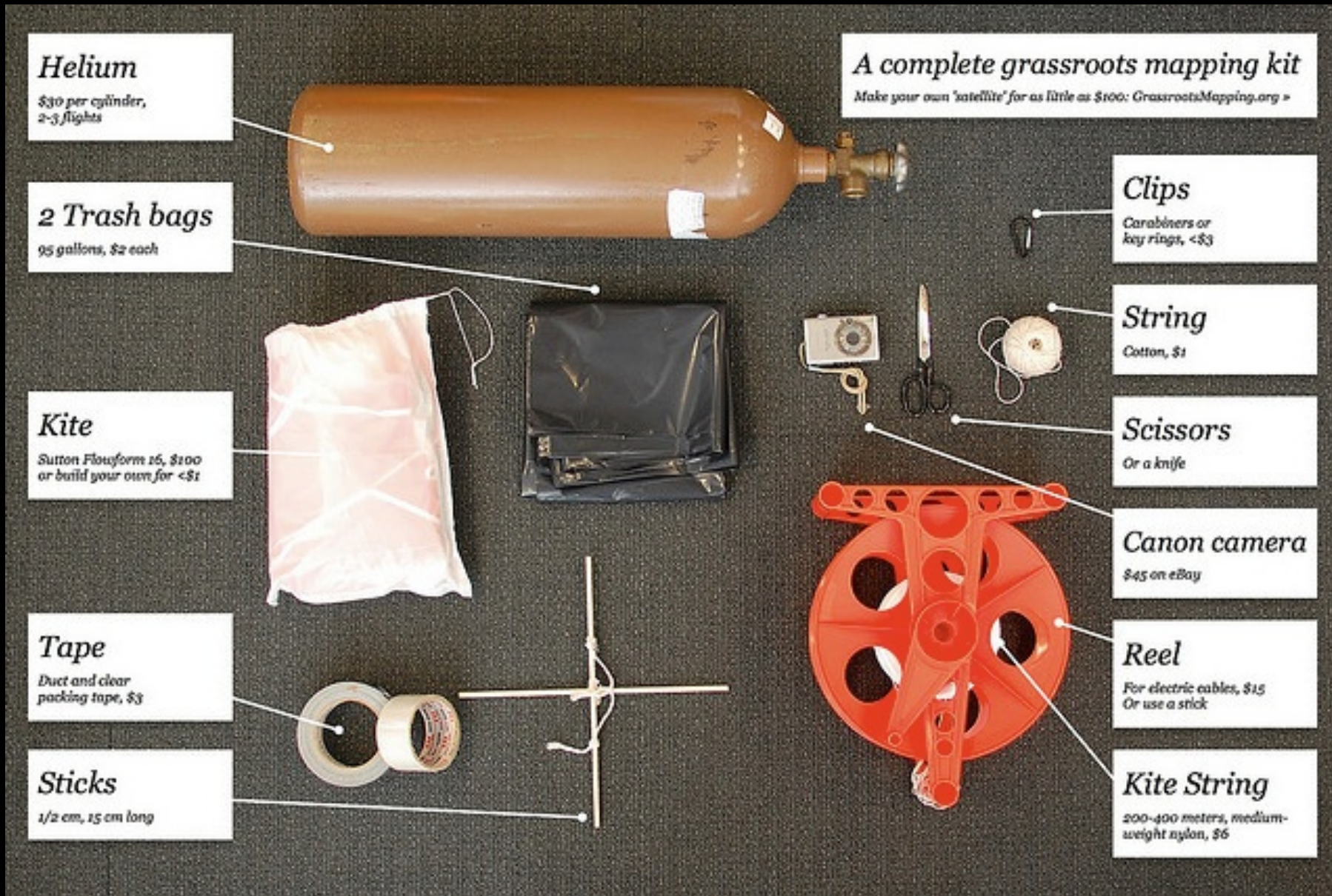
Habitat Management

Fire Alert System – Conservation International

Detailed Assessment

Coral Reef Habitat Mapping – U Queensland

Grassroots Mapping Tools



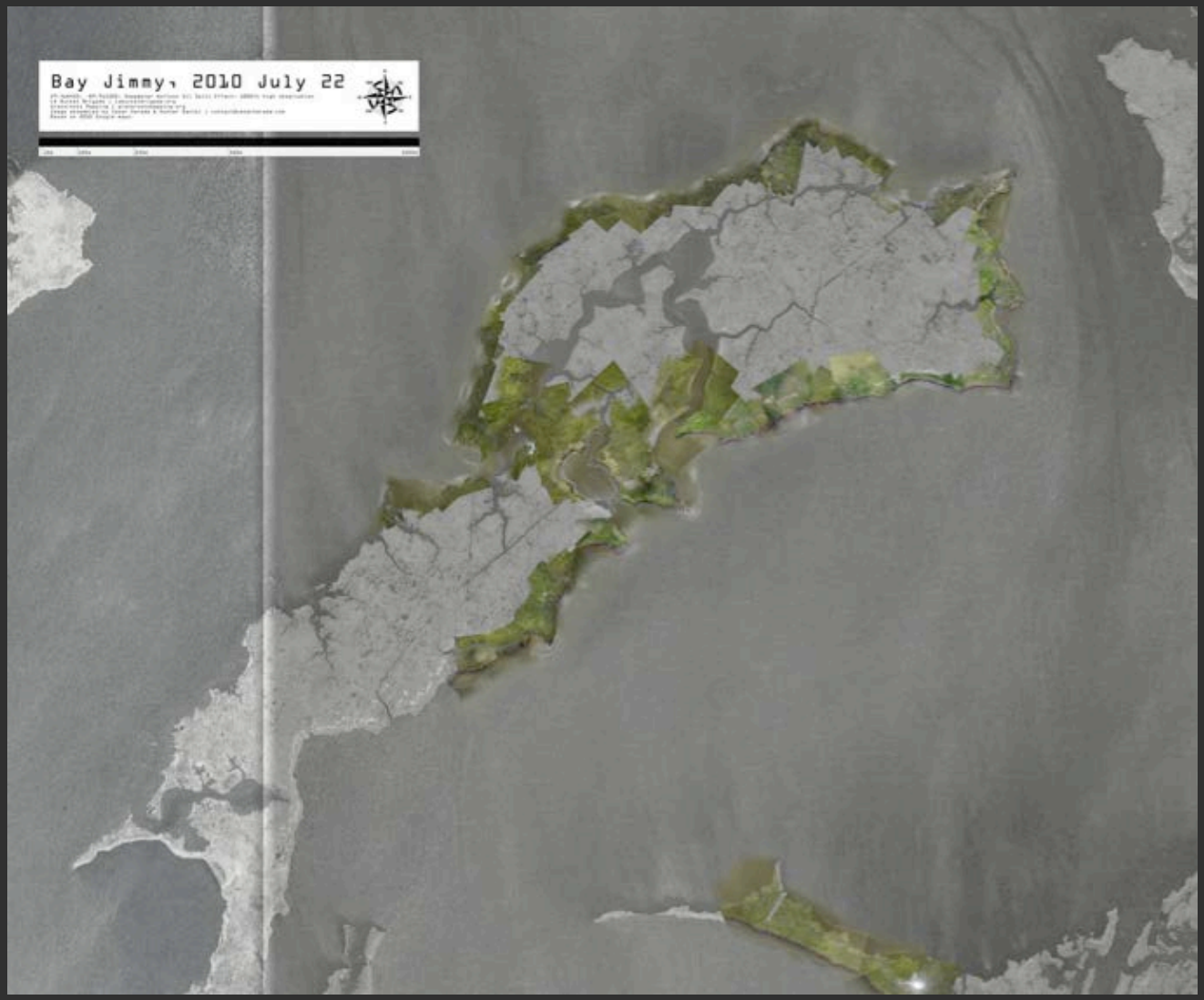
Community Participation


Kite
Camera

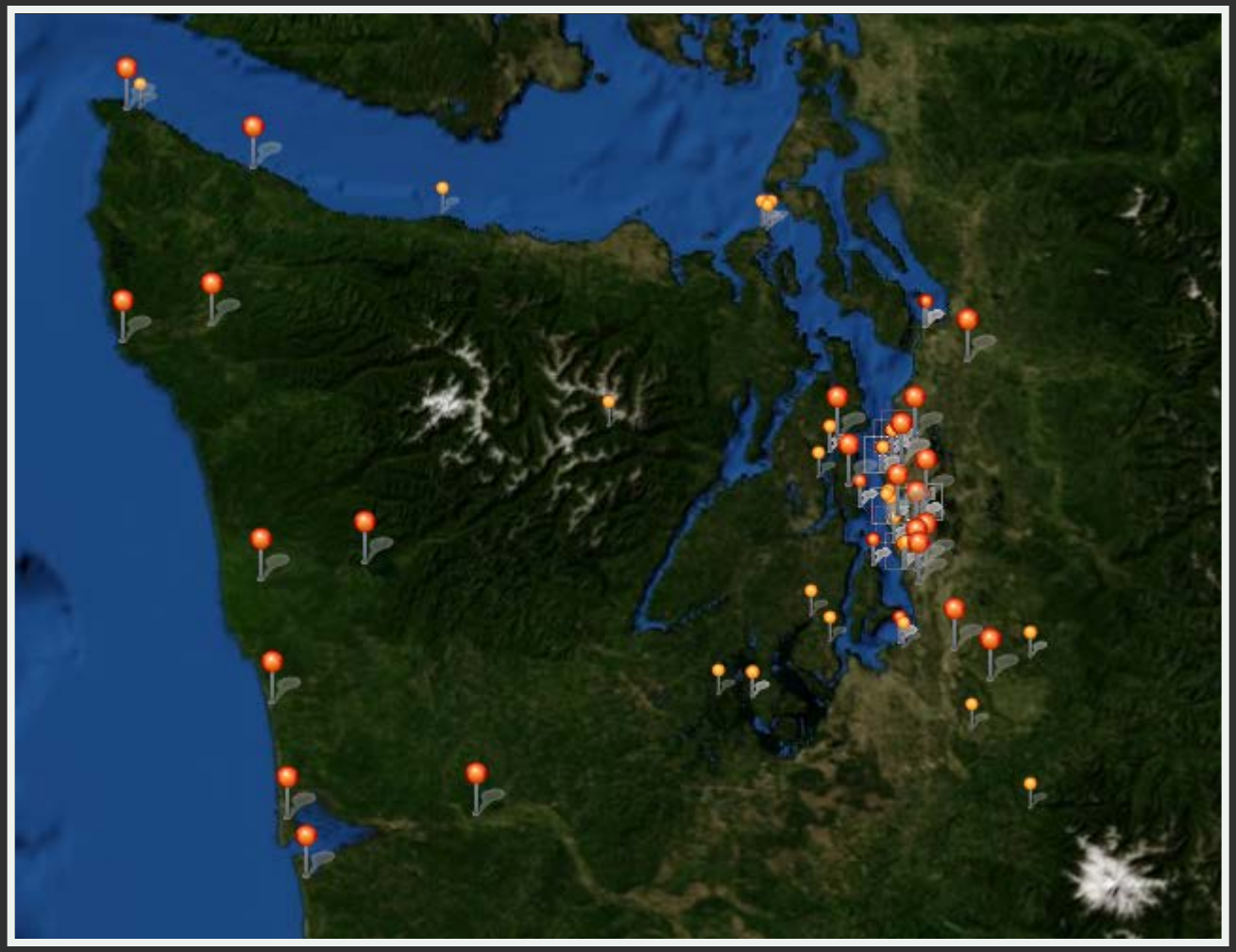
Monitoring while Mapping

Finished and Stitched Products

Contribution to Google Earth Imagery

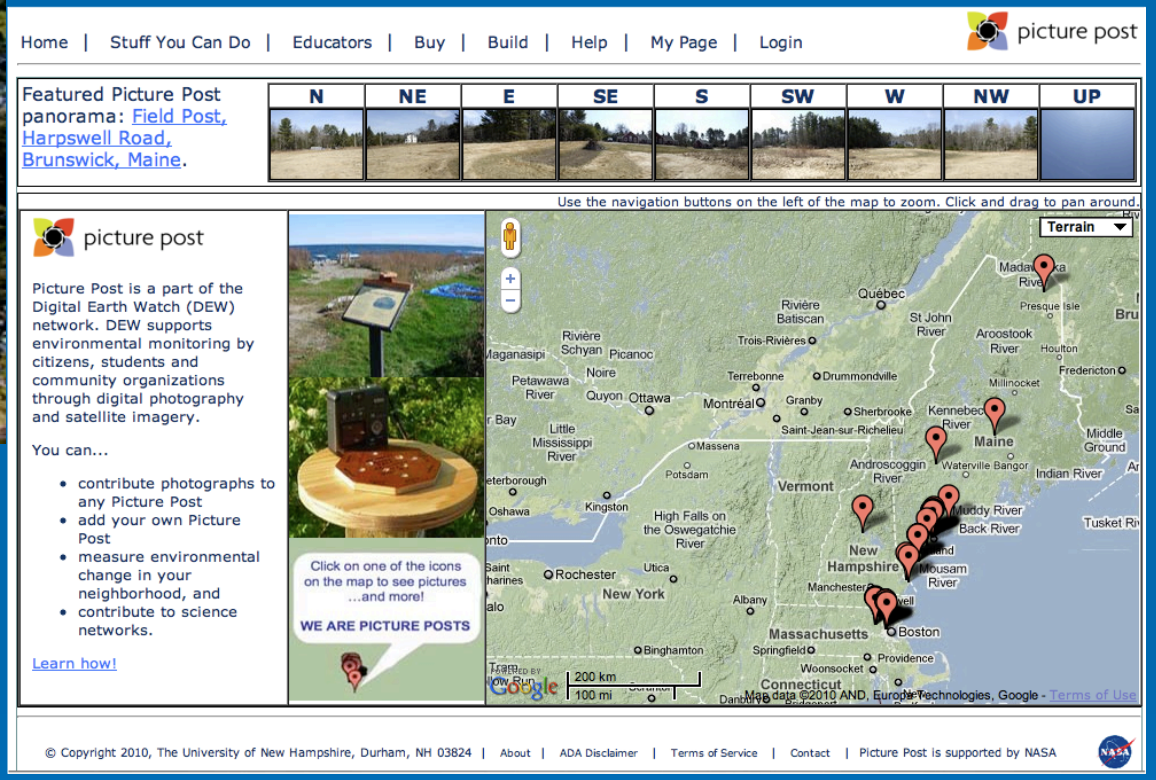


NatureMapping Public Database
(Nearshore 2009 -)



2,500 records from schools and informal education centers

Photo Monitoring – Univ. of New Hampshire



1. Choose your site
2. Install your post
3. Register on the website
4. Photograph away!

The Nature Conservancy – McCarthy Creek

Learn about Location

HOME | EXPLORE | PARTICIPATE | SUBMIT PHOTOS | IRIS

Witnessing Change

EXPLORE MCCARTNEY CREEK MEADOW

1 Select a Monitoring Location | 2 Learn about Location | 3 Explore Photo Points

About McCartney Creek Meadow

McCartney Creek Meadow is a shrub steppe and freshwater habitat in Moses Coulee, managed by **The Nature Conservancy**, with 3 photo points monitored in spring and fall for changes in native vegetation.

About the Land Manager

Chuck Warner, *Moses Coulee Conservation Area Program Director* for The Nature Conservancy. Chuck may be reached at 509-665-9920 or **by email**.

At the Trailhead

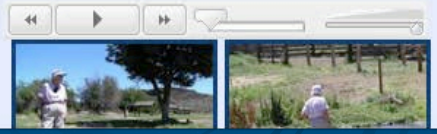
Description of trailhead coming soon.

You are standing in the riparian area of McCartney Creek, within a meadow in Moses Coulee, part of the vast Columbia Basin shrub steppe ecosystem. The landscape you see was formed by a series of lava flows that laid down layer after layer of thick basalts. The coulee was carved by massive ice age floods, the largest floods known to science.

This landscape has been inhabited by humans for at least the last 10,000 years, tribes known today as the Wanapum, Yakima, Umatilla, and others. These meadows were homesteaded and farmed by a European American family, the McClures.

"The Conservancy is working to restore a healthy riparian system at this 35-acre site that will provide habitat for a diverse array of native plants and animals and opportunities for community learning."

Mary O'Brien tells about growing up near McCartney Creek Meadow



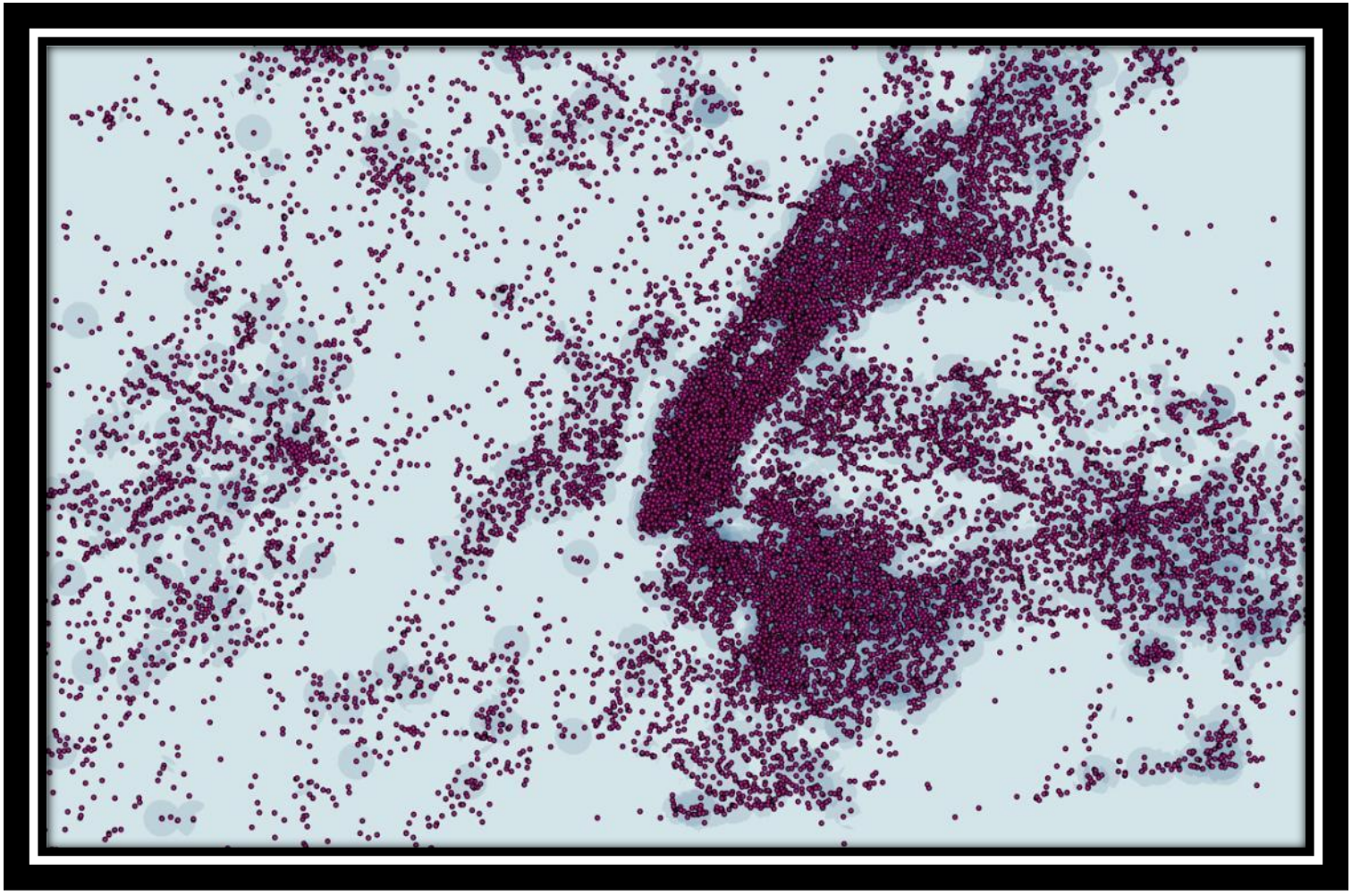
Preparing for Your Trip

- Walk-in access
- April - August
- Daylight hours
- Please leave dogs at home.

Driving Directions

- From Wenatchee, follow US-2 North to Waterville.
- From Waterville, go East on US-2 about 20 miles to Moses Coulee Rd SE.

Locating the messages



New York

University of Washington eScience Institute Students App for *NatureMapping*

Field work

8 interviews

13 questionnaires

43 surveys

We found that:

1) Being able to learn more about animals from the application and having fun through a competition or social feature are equally wanted incentives.
2) Users want to know how and where their data submissions are being used to benefit nature and organizations.

Species are ranked: Most common higher ranking
Highest points: Free download of a song for iPod

2008
3.7 million hits
390,000 visits

2009
4.4 million hits
446,000 visits

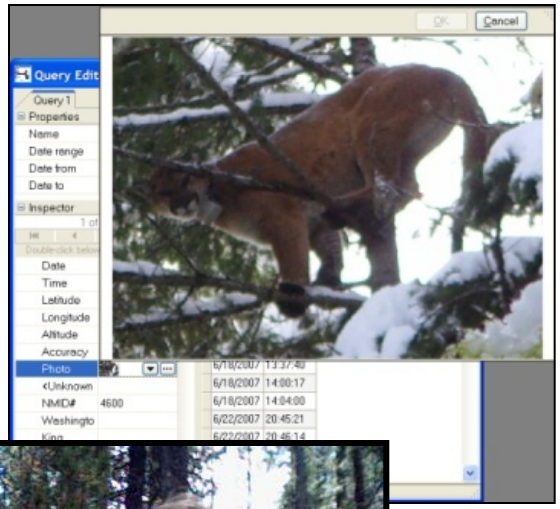
2010
8 million hits
837,000 visits

2011
1 million hits per month

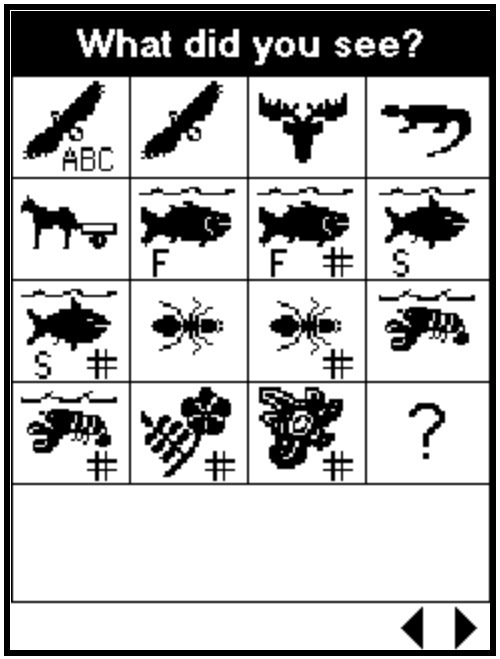
~35,000 unique visitors each month

NatureTracker (2001)

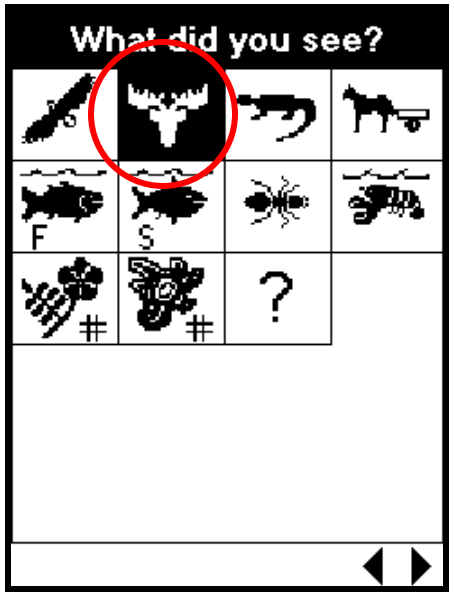
- Mobile units/ Smart phones /Androids
- Icon driven
- Attach digital photos
- Use plant/invertebrate lists
- See data on own PC immediately

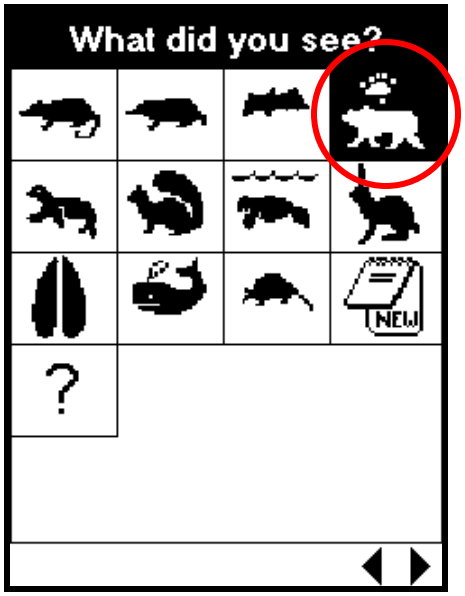


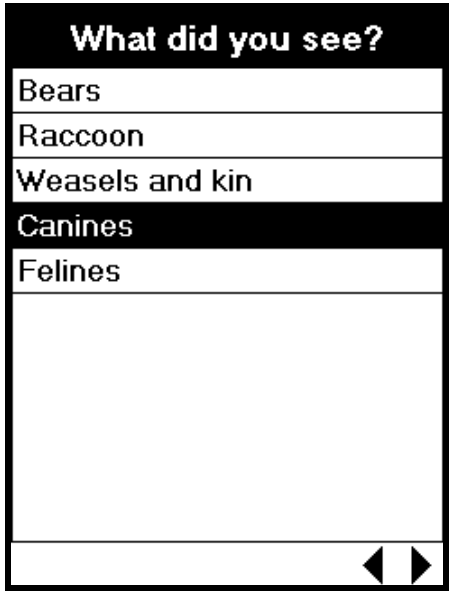
Mammals

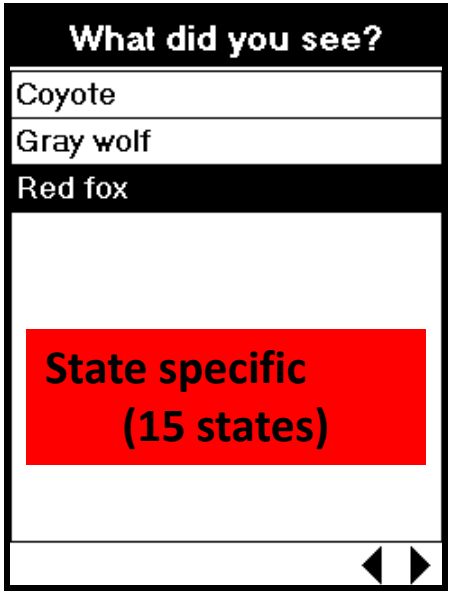


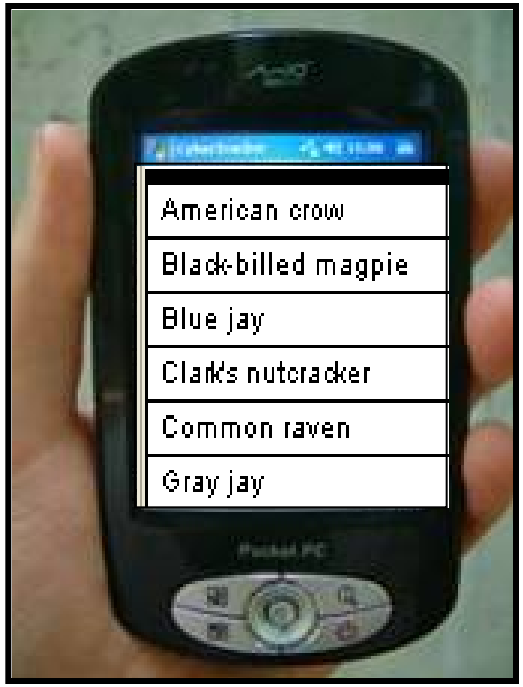
Birds
Reptiles & Amphibians
Domestics
Fresh and Saltwater Fish
Terrestrial/Aquatic Invertebrates
Plants
Other misc. lifeforms











NatureTracker vs Other Apps

Teaches novices how to select correct species

Flexible - A complete field notebook allowing novices/experts to record other variables such as weather, signs/behaviors, habitats, for ALL taxa.

Can use a PC with screen simulator with stored online maps to seize the GPS coordinates without internet or cell towers.

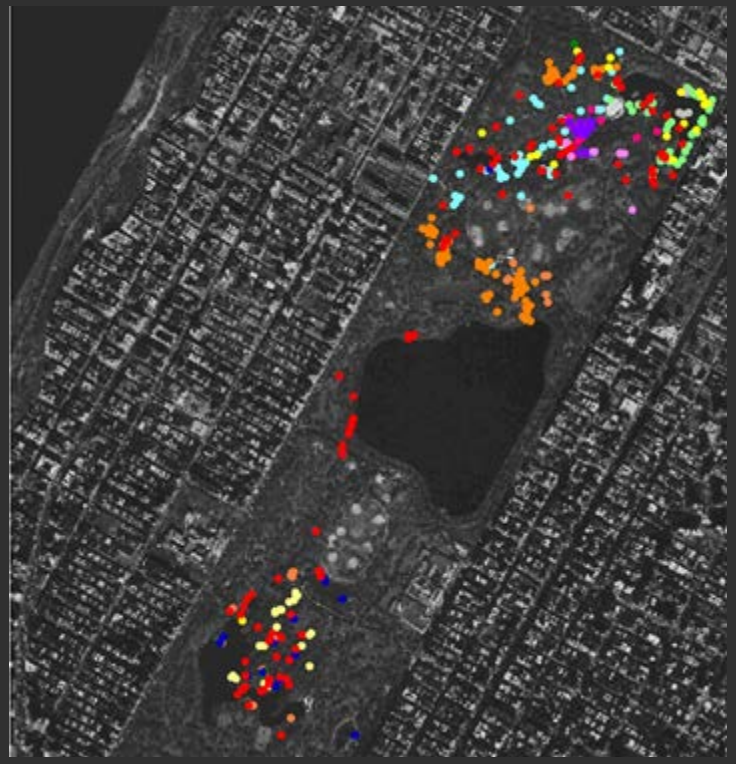
Expects user to know their species

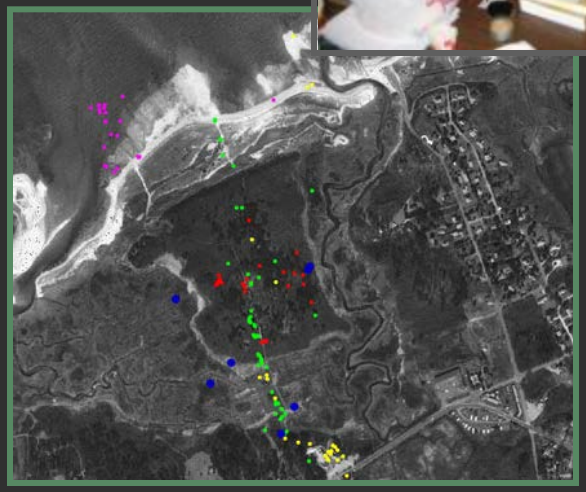
Specific to a taxonomic group such as eBird, BudBurst

Need a phone and cell tower connection

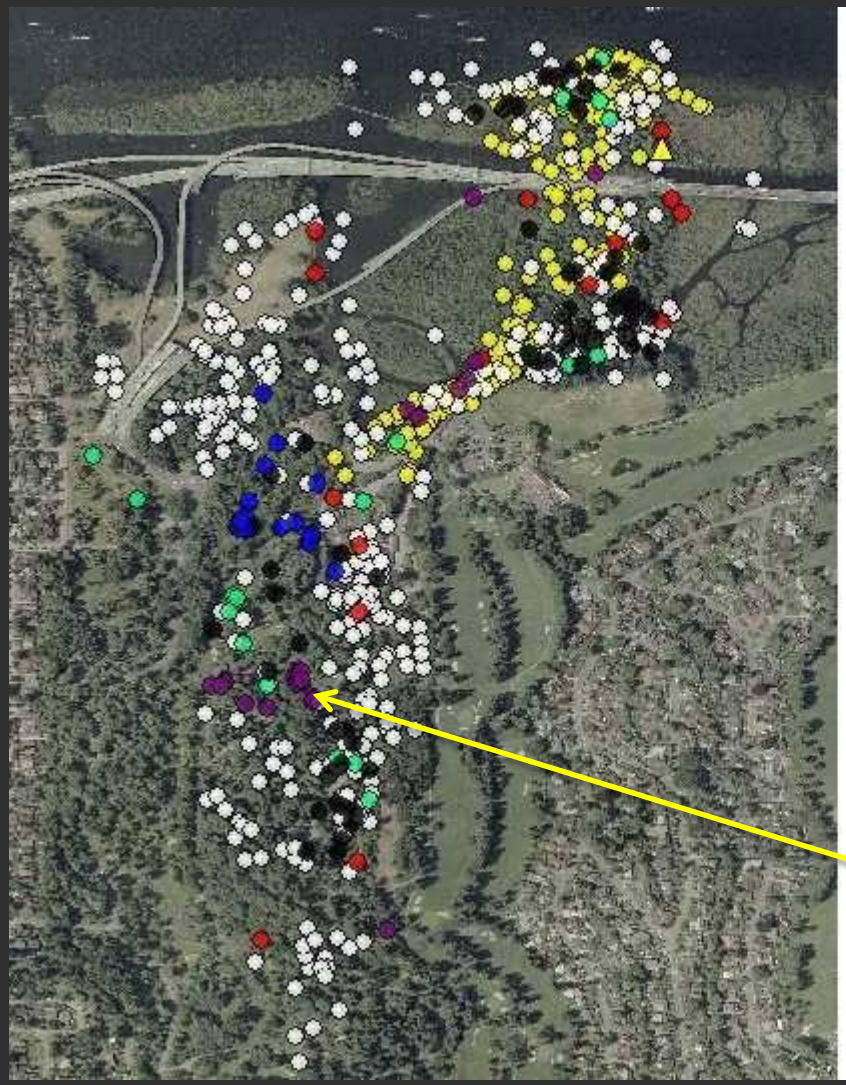
We don't have enough experts, so let's give novices the tools to become experts.

Bioblitz: 24-hour Rapid Assessment





Washington Park Arboretum Bioblitz



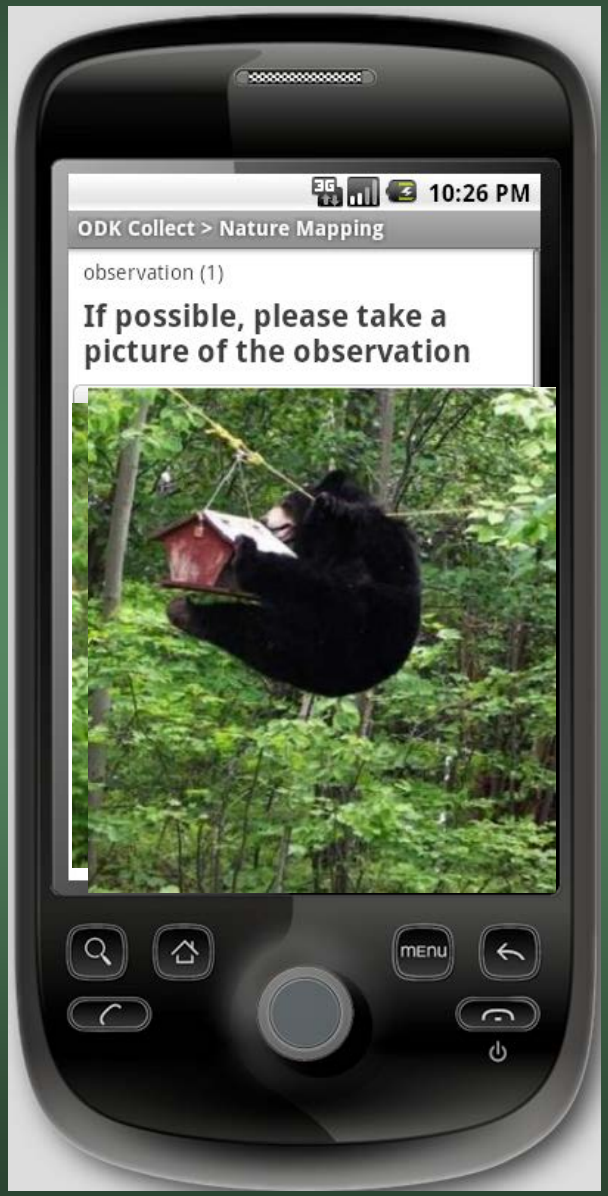
Plants
Birds
Mammals
Reptiles/Amphibians
Fungi
Bats (none found)
Invertebrates
Lichen

Point
Point
Point
Point
Point
Point
Point
Point

NatureTracker and ODK

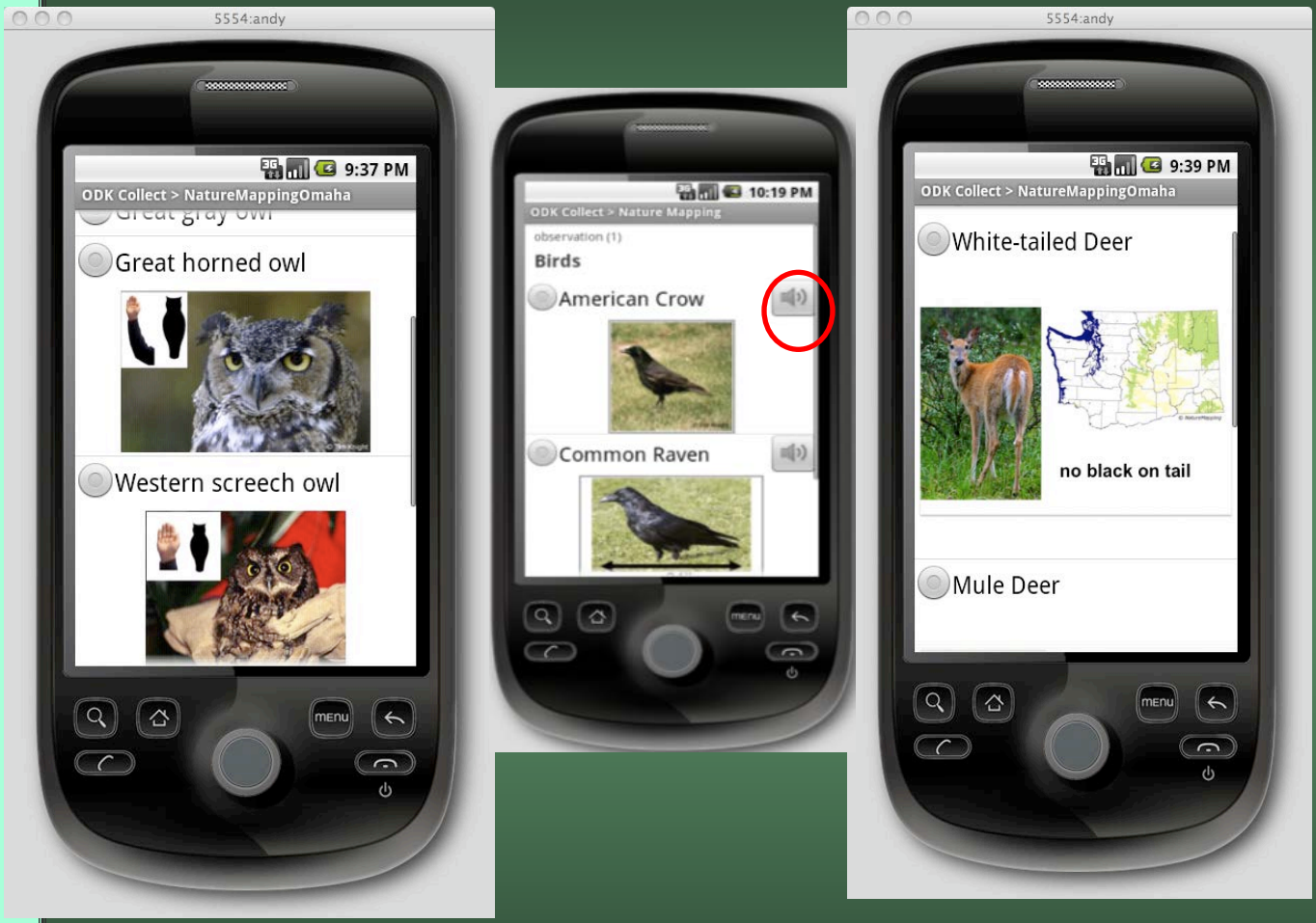
Open Data Kit (ODK) is an open source project to develop flexible mobile data collection tool based on open standards and capabilities on Android smartphones

Developed at University of Washington and UCLA



New Tools for *NatureMapping*

1. Prevent common mistakes *(e.g., Screech owls identified as baby Great-horned owls)*
2. Vocalizations & size differences
3. Range maps for similar species



New Tools for *NatureMapping* (Cont'd)

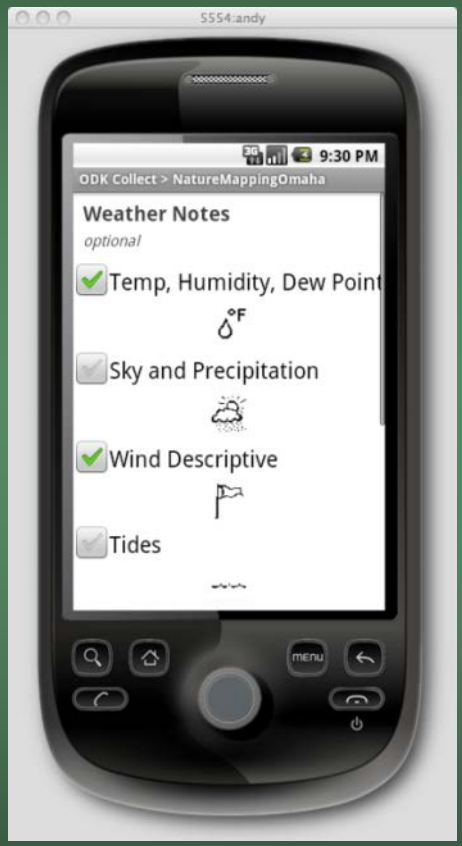
Turtles

Unknown turtle
Florida spiny softshell turtle
Green sea turtle
Leatherback sea turtle
Loggerhead sea turtle
Olive ridley sea turtle
Painted turtle Photo
Red-eared slider Photo
Snapping turtle
Spiny softshell turtle
Western pond turtle

Painted turtle
(red on belly and sides)

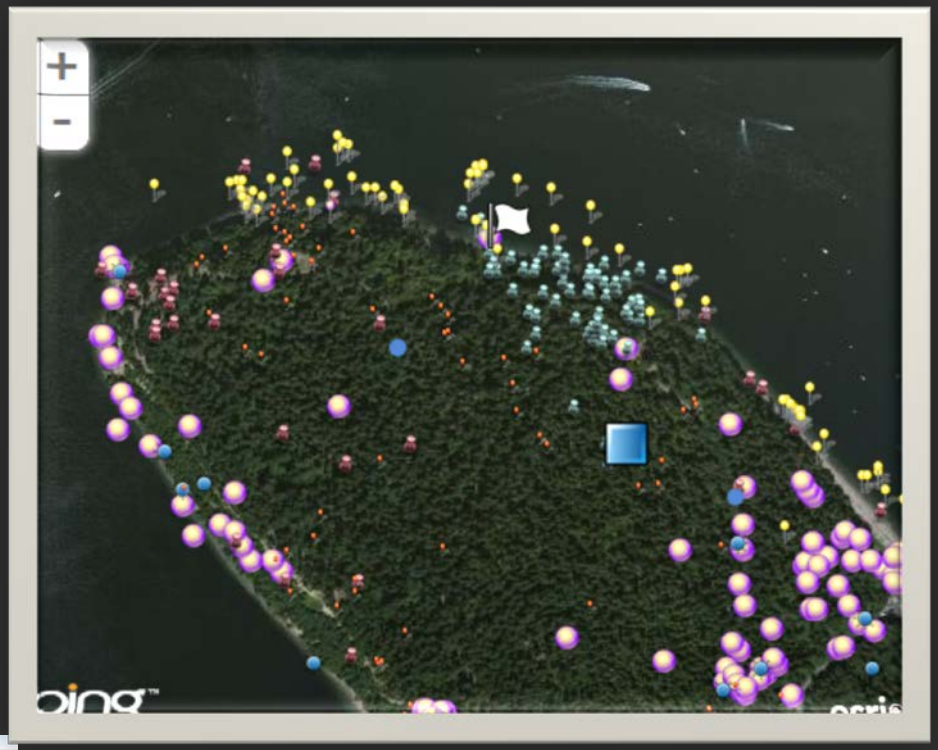
Red-eared (Pond) slider
(red on neck) – Non-native

Weather
Climate change

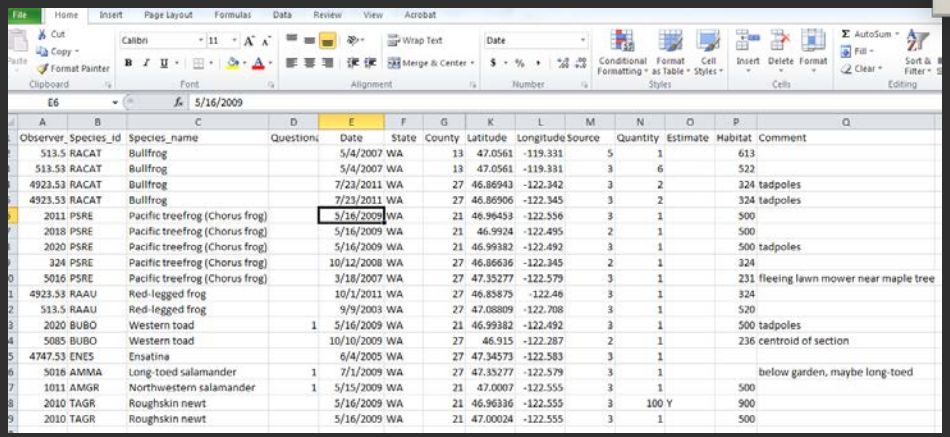


ArcGIS Online

Free!
Public or Private
Link to websites
***NatureMapping* 1-day training workshop**



Spreadsheet



Observer	Species_Id	Species_name	Question	Date	State	County	Latitude	Longitude	Source	Quantity	Estimate	Habitat	Comment
513.5	RACAT	Bullfrog		5/4/2007	WA	13	47.0561	-119.331	5	1		613	
513.53	RACAT	Bullfrog		5/4/2007	WA	13	47.0561	-119.331	3	6		522	
4923.53	RACAT	Bullfrog		7/23/2011	WA	27	46.86943	-122.342	3	2		324	tadpoles
4923.53	RACAT	Bullfrog		7/23/2011	WA	27	46.86906	-122.345	3	2		324	tadpoles
2011	PSRE	Pacific treefrog (Chorus frog)		5/16/2009	WA	21	46.96453	-122.556	3	1		500	
2018	PSRE	Pacific treefrog (Chorus frog)		5/16/2009	WA	21	46.9924	-122.495	2	1		500	
2020	PSRE	Pacific treefrog (Chorus frog)		5/16/2009	WA	21	46.99382	-122.492	3	1		500	tadpoles
324	PSRE	Pacific treefrog (Chorus frog)		10/12/2008	WA	27	46.86636	-122.345	2	1		324	
5016	PSRE	Pacific treefrog (Chorus frog)		3/18/2007	WA	27	47.35277	-122.579	3	1		231	fleeing lawn mower near maple tree
4923.53	RAAU	Red-legged frog		10/1/2011	WA	27	46.85875	-122.46	3	1		324	
513.5	RAAU	Red-legged frog		9/9/2003	WA	27	47.08809	-122.708	3	1		520	
2020	BUBO	Western toad	1	5/16/2009	WA	21	46.99382	-122.492	3	1		500	tadpoles
5085	BUBO	Western toad		10/10/2009	WA	27	46.915	-122.287	2	1		236	centroid of section
4747.53	ENES	Ensatina		6/4/2005	WA	27	47.34573	-122.583	3	1			
5016	AMMA	Long-toed salamander	1	7/1/2009	WA	27	47.35277	-122.579	3	1			below garden, maybe long-toed
1011	AMGR	Northwestern salamander	1	5/15/2009	WA	21	47.0007	-122.555	3	1		500	
2010	TAGR	Roughskin newt		5/16/2009	WA	21	46.96336	-122.555	3	100	Y	900	
2010	TAGR	Roughskin newt		5/16/2009	WA	21	47.00024	-122.555	3	1		500	

www.naturemappingfoundation.org