



NatureMapping Program in Washington
http://depts.washington.edu/natmap

Mobile Technology to Monitor Biodiversity

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Open Data Kit
<http://opendatakit.org>

CyberTracker and NatureMapping

In 2001, NatureMapping began working with CyberTracker to develop a biodiversity data collection "sequence" for citizen scientists, schools, and field scientists:

1. Icon-driven and intuitive
2. Consistent data collection/reporting
3. Instant feedback via laptop
4. Flexible: a complete field notebook for researchers but with NatureMapping's required attributes
5. Export easily to GIS

CyberTracker is greenware and is constantly being updated with new "features" (e.g., requests from users)

A recent new feature for NatureMapping: Desktop data entry for users monitoring at the same location without the need for a handheld

Schools, Citizen Scientist Projects, and Bio-blitzes

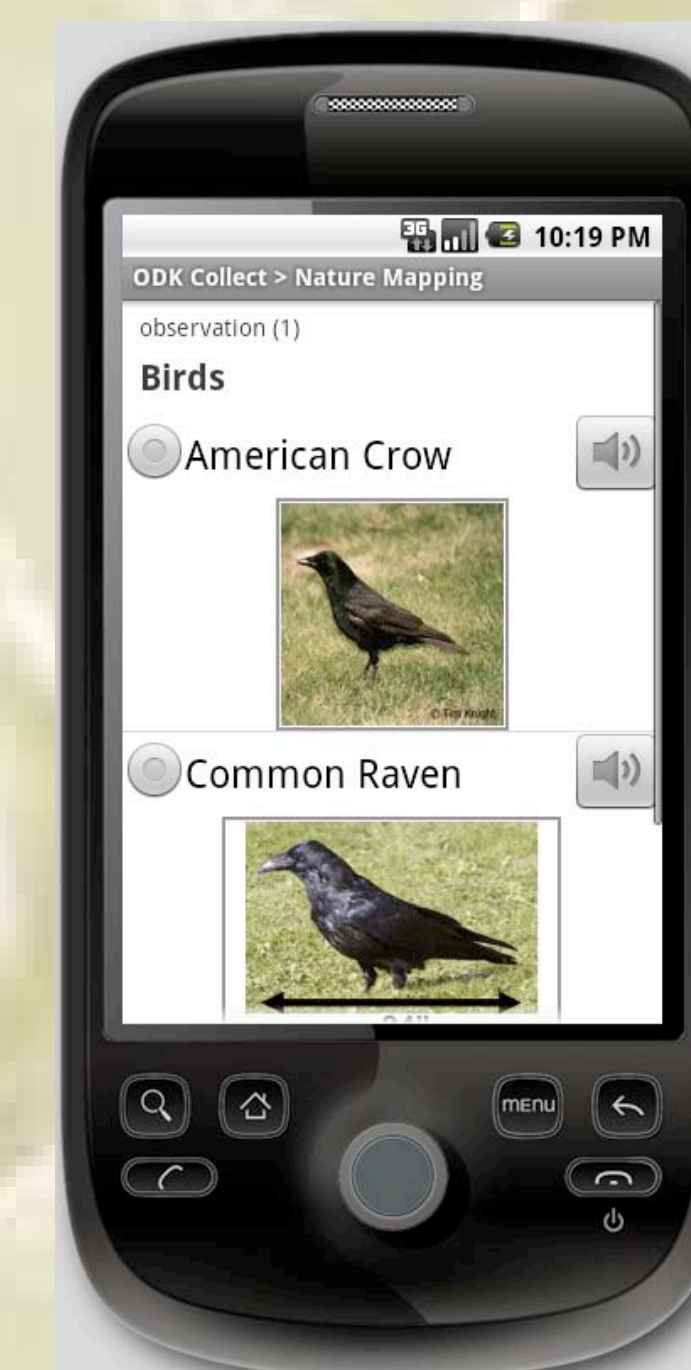
NatureMapping develops icons for all wildlife, fish, land and aquatic invertebrates, plants using Jon Young's North American mammal sequence



CyberTracker – Data collection "sequence" of icons on PDA/GPS units for illiterate but expert Kalahari Bushmen trackers

Merge efforts and name the NatureMapping sequence NatureTracker

Add state specific species lists and associated id codes for natural resource agencies (currently for: AR, CA, IA, MA, MI, NY, PA, TX, VA, and WA)



Open Data Kit (ODK)

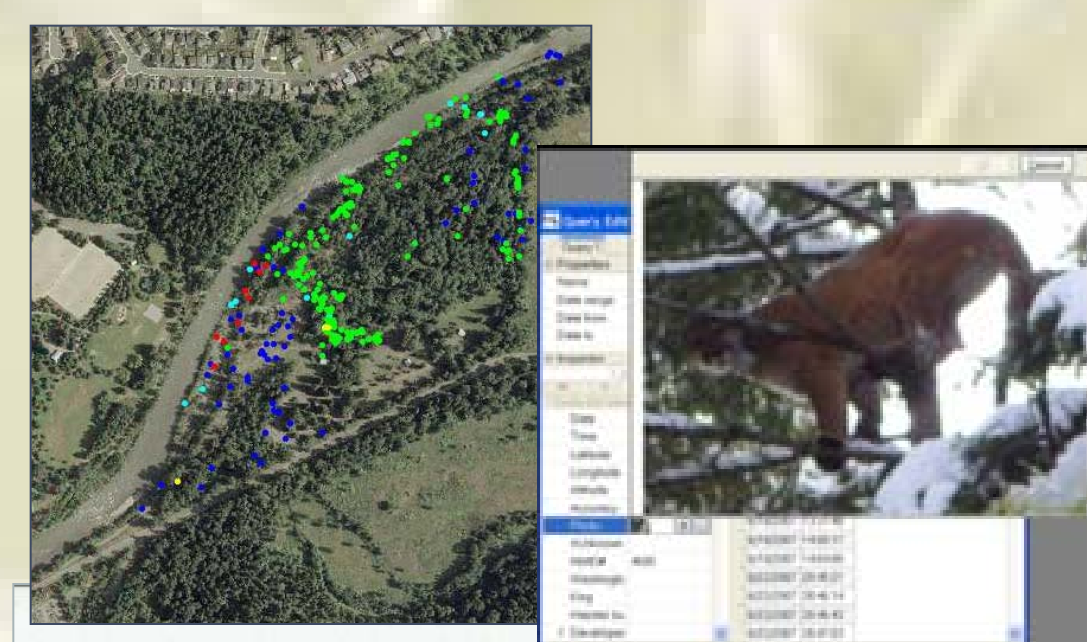
In 2008, Open Data Kit began as an open source project to develop a flexible mobile data collection tool based on open standards and the capabilities of new Android smartphones:

1. Xforms with multi-media and branching logic
2. GPS, photo, barcode, video, audio data
3. Asynchronous operation with multiple transfer methods (GPRS, SMS, WiFi, Sdcard)
4. Cloud service to aggregate data
5. Export easily to .csv, spreadsheets, and KML

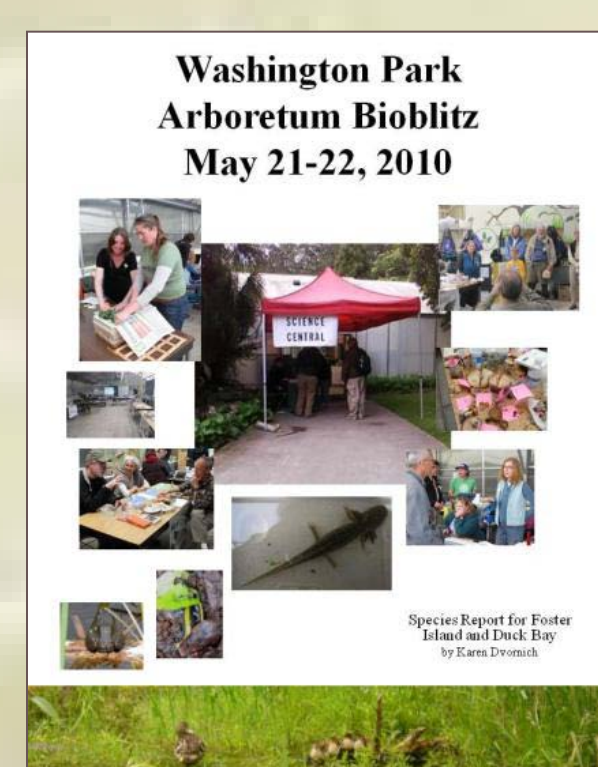
ODK originally motivated by community health workers in sub-Saharan Africa, now in application for human rights monitoring, forest carbon sequestration, connected to OpenMRS medical record system, and many others

Community of software developers is generating new features and modules that get incrementally incorporated into ODK

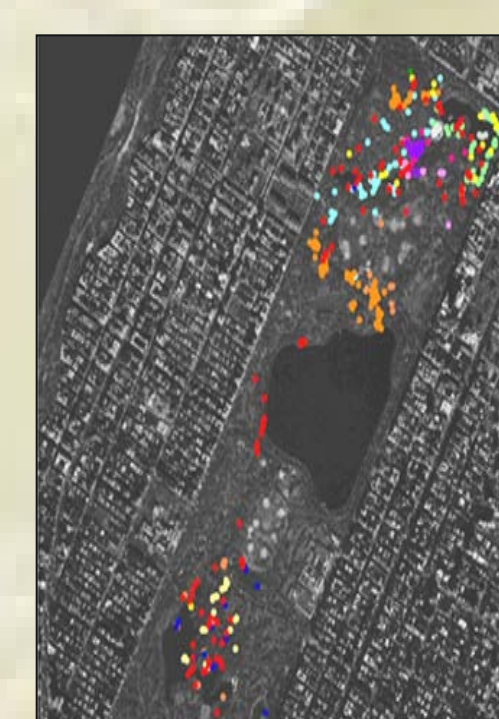
Public Health NGOs, Forest Services, and Crowd-sourcing



BioBlitz discovers abundance of life along the Lower White River corridor
More than 575 species confirmed from survey
Fifty biologists, botanists and citizen scientists recently converged on the Lower White River to climb to approximately 600 species of life after data for this analysis, officials said. The total is an increase from last year's confirmed number of 550 species of life. Many of the same species were confirmed within the period.



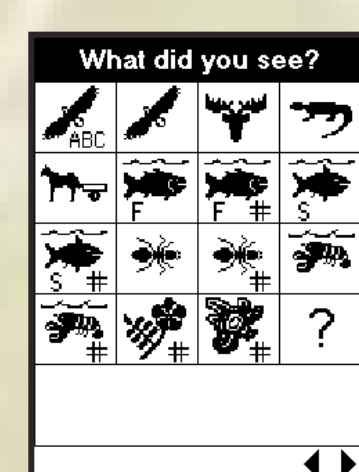
Washington Park Arboretum Bioblitz May 21-22, 2010
Data available 1 hour after the completion of the bioblitz



Central Park Bioblitz 2005 All species



Central Park Bioblitz 2005 Non-native plants



Citizen Scientists: Bio-blitzes Monitoring Projects

Schools Districts: Bio-blitzes Community Projects

Mobile Devices and their Limitations

- PDAs with attached GPS units
- Handheld PCs
- Smart phones

Equipment quickly becomes obsolete
Expensive for schools and NatureMapping Centers
Not water/dust proof
Cheap phones limited to cell tower location

Evolution of CyberTracker to Android smartphones easily accessible to everyone

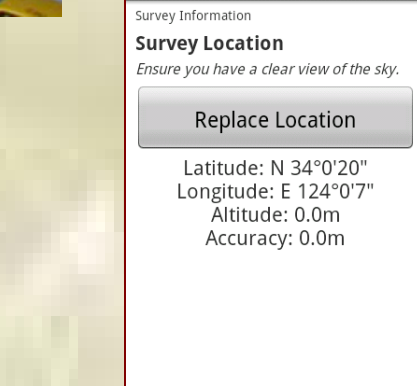
Open Data Kit (ODK) contributes Xform rendering on Androids with integrated GPS/multi-media and cloud services for aggregation



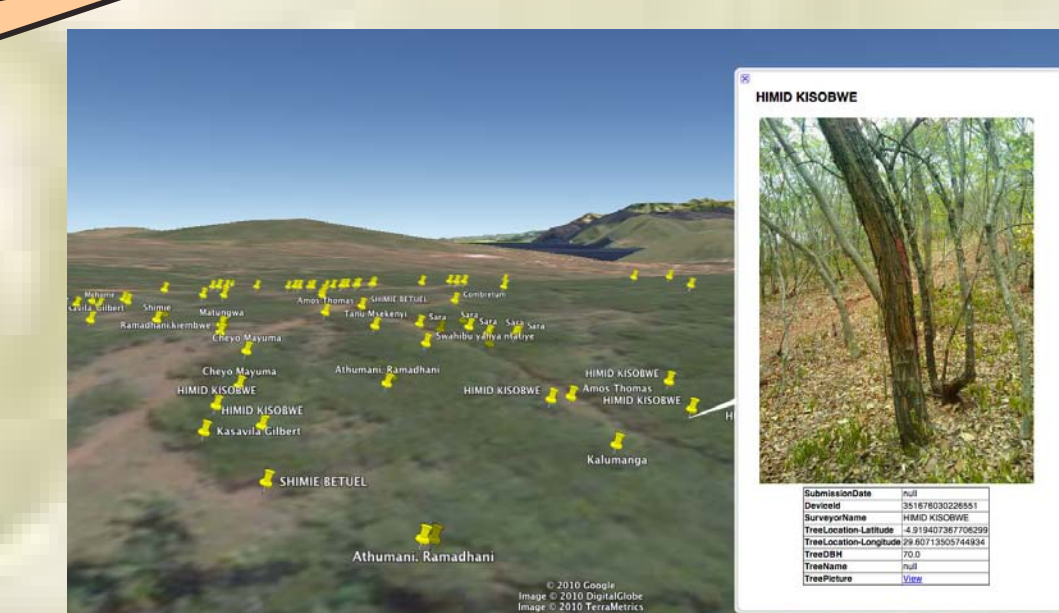
Scanning bar codes of HIV patients in Western Kenya



Monitoring forest's carbon content in the Amazon



| Survey Location | Register Location | 1) Before this service... | 2) Would you...? | 3) This service provides... | 4) Would you...? | 5) Please record... | 6) Please record... | 7) Please record... | 8) Please record... | 9) Please record... | 10) Please record... | 11) Please record... | 12) Please record... | 13) Please record... | 14) Please record... | 15) Please record... |
|-----------------|-------------------|---------------------------|------------------|-----------------------------|------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
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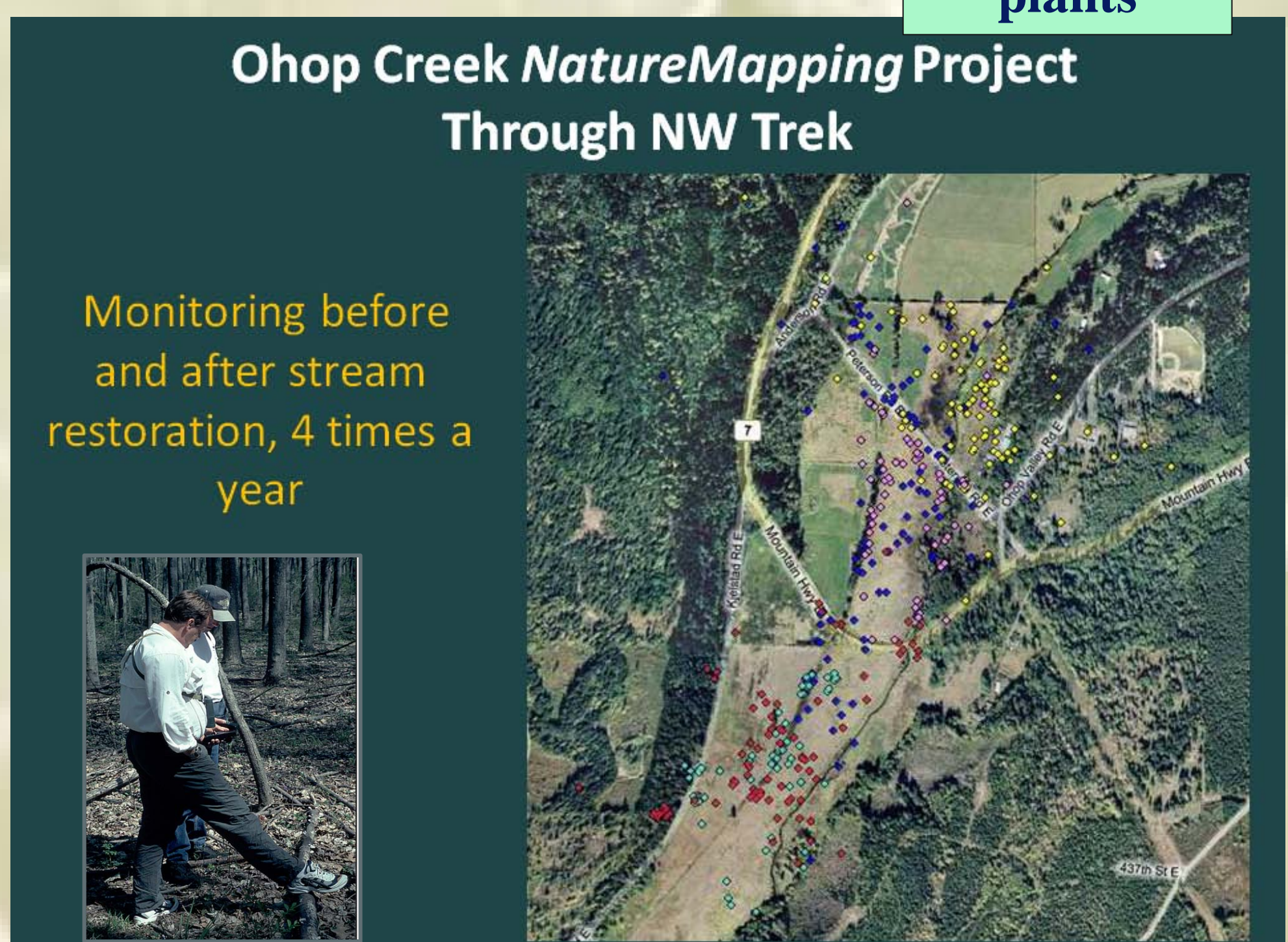
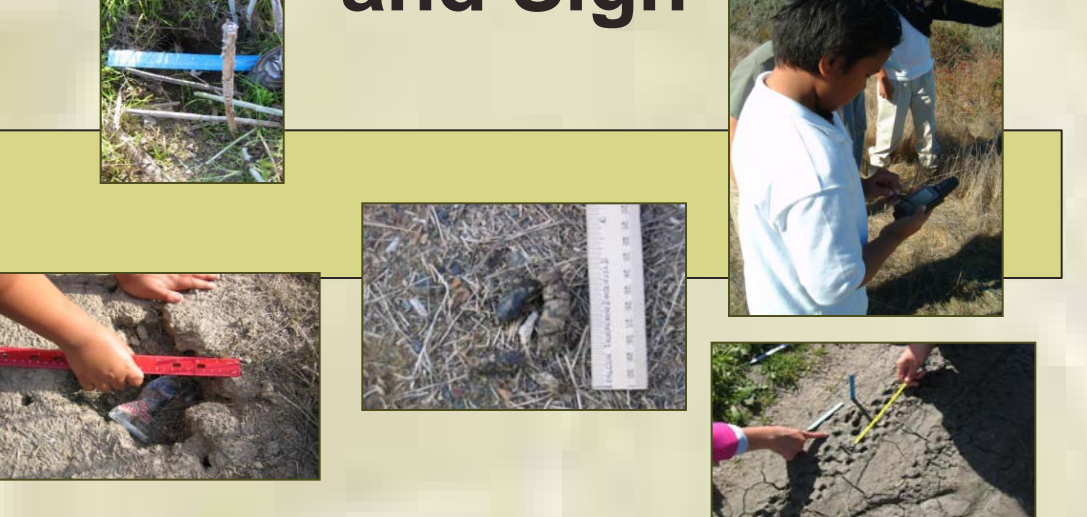


ODK will allow NatureMapping to

1. Inform users of common mistakes (e.g., screech owls identified as baby Great-horned owls)
2. Show detailed range distribution maps for similar species
3. Allow users to take photo's that automatically attach to the observation adding to the credibility of the record.



Measuring Tracks, Scat, and Sign



Ohop Creek NatureMapping Project Through NW Trek
Monitoring before and after stream restoration, 4 times a year