An Introduction to iNaturalist

14 May 2020

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Outline

• Data Needs and Types
• Crowdsourced and Citizen Science Data
• About iNaturalist
• Using the iNaturalist app
• Projects
• Applications
The Need for Data

• The Biodiversity Crisis

• Causes
  • Habitat loss / modification
  • Overexploitation
  • Pollution
  • Climate Change
  • Introduced Species
  • Disease

• “Without quality data, problems go undetected” – Todd Wilkinson
The Need for Data

• Need more current information on the occurrence and distribution of nongame species to identify conservation problems.

• Examples:
  
  • Idaho State Wildlife Action Plan (IDFG)
  
  • ESA Listing Decisions (US FWS)
    • Columbia Spotted Frog
    • Western Toad
    • Northern Leopard Frog
Where do biodiversity data come from?

- Literature
- Museums
- Surveys
- Contributed Observations
  - Terminology
    - Traditional
    - Citizen Science
    - Crowdsourced
  - Problems
    - Identification accuracy
    - Location accuracy
    - Convenience of submission
Crowdsourced and Citizen Science Data

- The practice of obtaining needed data by soliciting contributions from a large group of people and especially from the online community (modified from Merriam Webster).

- Examples
  - iNaturalist
  - eBird

- The collection and analysis of data relating to the natural world by members of the general public, typically as part of a collaborative project with professional scientists (Dictionary.com).

- Examples
  - Anecdata
  - Survey 123 for ArcGIS
Contributed Observations

- Problems and Solutions
  - Identification accuracy - Photographs
  - Location accuracy - GPS
  - Convenient submission via mobile device applications

- Crowdsourced data are becoming increasingly important.
Where are biodiversity data stored and managed?

- Museums
  - VertNet
  - iDigBio
- Agency and NGO Databases
  - State Natural Heritage Databases
  - Nature Serve
  - NPSpecies
- Global Biodiversity Information Facility (GBIF)
About iNaturalist

- Started as a Master’s project at UC Berkeley in 2008.

- Acquired by the California Academy of Sciences in 2014.

- Cosponsored by the National Geographic Society in 2018.

- Uses mobile devices to document observations of organisms.

- Observations consist of photographs, recordings, geographic coordinates, tentative identifications, and comments.

- Observations are easily shared with other people and organizations.
About iNaturalist

Mobile Apps

iOS

Android

Website

Blog

July 06, 2018

Identify Suggestions on Obs Detail Page

We're running a test of using the Suggestions from the Identify tool on the observation detail pages on the web instead of the IdentifyIcon (click the button at the bottom of any obs detail page). On the plus side, you don't have to leave the page, you can look at options from observations and vision in addition to just checklists, and you get a little more info about each taxon. On the minus side, no more quirky name, can't peruse a lot of maps at once, no color filtering (not that that was really working). Mostly just posting here as a way to solicit bug reports.

Anyway, if nothing really bad turns up in a few days we'll make this the default. Holler if you find any problems.

Posted on July 06, 2018 04:38 PM by kendra | 0 comments | Leave a comment
Using the iNaturalist Mobile App

- Creating an account
- Learning iNaturalist
Tips on Using the iNaturalist Mobile App

• Be sure to save the coordinates while you are at the site of the observation.

• Set the geoprivacy to obscure if you don’t want the precise coordinates to be public.

• Identify your subject to the extent that you can.

• Try Computer Vision for help with ID.

• I don’t use automatic upload. I upload observations later.

• Remember, you can always edit any part of an observation later.
How to take better photos for iNaturalist

• You will have better control using the smartphone camera app.

• Take photos that are technically good (e.g., sharp and properly exposed)

• Shoot multiple distances and angles, e.g.,
  • flowers and leaves
  • body and head

• Get closer ... but not too close!

• Habitat shots are useful with animal photos.

• You can also upload photos from your camera via the website
About iNaturalist: Projects

• You can create and curate projects within iNaturalist. You need at least 50 observations to create a place.

• Projects can be defined in various ways (e.g., by types of organisms, places, events, or groups)

• You control project membership.

• Examples
  • The Idaho Flora Project
  • The Idaho Amphibian and Reptile Project
  • Portneuf Watershed Biodiversity Project
  • Edson Fichter Nature Area Project
  • NPS Bioblitzes
  • Zoo Idaho
Australasian Fishes: Observations since 2016

Slide from Tony Iwane
Edson Fichter Nature Area

About
The goal of this project is to document the biodiversity of the Edson Fichter Nature Area in Pocatello, Idaho. For more information or questions, contact the Southeast Idaho Regional Fish and Game Office at 208-232-4703. Thank you for your visit!

Read More

Overview

- 318 Observations
- 136 Species
- 115 Identifiers
- 36 Observers

Stats

Bald Eagle (Haliaeetus leucocephalus)

duanedyer
868 observations

Observed:
Apr 22, 2020 - 8:57 AM MDT
Submitted:
Apr 22, 2020 - 2:11 PM MDT

Location:
Bannock County, ID, USA
Idaho Amphibian and Reptile iNaturalist Project

- Initiated in June of 2016 by the ISU Herpetology Lab
- Funded by an NSF Idaho EPSCoR Program MILES: Managing Idaho’s Landscapes for Ecosystem Services.
- Covers all of the species of amphibians and reptiles breeding in Idaho.
Idaho Amphibian and Reptile Guides

- The guides can be viewed on-line and downloaded as pdfs.
- There is also an e-book PDF available.
Observations by Species

Number of Observations Per Salamander Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starred Tiger Salamander</td>
<td>6</td>
</tr>
<tr>
<td>Long-toed Salamander</td>
<td>11</td>
</tr>
<tr>
<td>Idaho Giant Salamander</td>
<td>3</td>
</tr>
<tr>
<td>Coastal Pine Salamander</td>
<td>4</td>
</tr>
<tr>
<td>Rough-skinned Newt</td>
<td>7</td>
</tr>
</tbody>
</table>

Number of Observations Per Anuran Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Observations</th>
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<tbody>
<tr>
<td>Rocky Mountain Spotted Frog</td>
<td>31</td>
</tr>
<tr>
<td>Western Toad</td>
<td>2</td>
</tr>
<tr>
<td>Woodhouse’s Toad</td>
<td>7</td>
</tr>
<tr>
<td>Sonoran Desert Tree Frog</td>
<td>32</td>
</tr>
<tr>
<td>Sonoran Tree Frog</td>
<td>3</td>
</tr>
<tr>
<td>Great Basin Tree Frog</td>
<td>13</td>
</tr>
<tr>
<td>American Bullfrog</td>
<td>11</td>
</tr>
<tr>
<td>Northern Leopard Frog</td>
<td>28</td>
</tr>
</tbody>
</table>

Number of Observed Species Per Lizard Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Alligator Lizard</td>
<td>2</td>
</tr>
<tr>
<td>Great Basin Collared Lizard</td>
<td>6</td>
</tr>
<tr>
<td>Pinyon-Striped Lizard</td>
<td>2</td>
</tr>
<tr>
<td>Greater-Striped Lizard</td>
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</tr>
<tr>
<td>Desert Horned Lizard</td>
<td>2</td>
</tr>
<tr>
<td>Common Side-blotched Lizard</td>
<td>20</td>
</tr>
<tr>
<td>Western Fence Lizard</td>
<td>16</td>
</tr>
<tr>
<td>Western Whiptail</td>
<td>6</td>
</tr>
<tr>
<td>Western Whiptail</td>
<td>6</td>
</tr>
<tr>
<td>Tree Whiptail</td>
<td>6</td>
</tr>
</tbody>
</table>

Number of Observations Per Snake Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Banded Snake</td>
<td>6</td>
</tr>
<tr>
<td>Sonoran Rattlesnake</td>
<td>20</td>
</tr>
<tr>
<td>Sonoran Rattlesnake</td>
<td>4</td>
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<tr>
<td>Sonoran Rattlesnake</td>
<td>61</td>
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<td>Sonoran Rattlesnake</td>
<td>6</td>
</tr>
<tr>
<td>Northern Rattlesnake</td>
<td>7</td>
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<td>Western Rattlesnake</td>
<td>22</td>
</tr>
<tr>
<td>Western Rattlesnake</td>
<td>1</td>
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</table>
Spatial Distribution of Observations

- > 3000 Observations
- High Observation Areas
- Individual observer effects
Possible Uses of iNaturalist Observations

- Occurrence / Inventory
- Spatial Distribution
- Status and Trends
- Activity Patterns and Behavior
- Habitat Relationships
- Effects of Weather and Climate
- Effects of Disturbances
- Health / Mortality
Specific examples of how observations are used

- Idaho Herp Project Website
- USGS - Reptile Distribution Modeling
- US FWS Western Toad ES Assessment
- US FWS – Camas NWR Reptile Survey
- IDFG Wildlife Information System
  - Species Diversity Database
  - Idaho Roadkill Project
Linking iNaturalist Observations to Agency Databases
Questions and Comments

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