

Zoo Idaho Science Talk  
Pocatello, Idaho

# An Introduction to iNaturalist

14 May 2020



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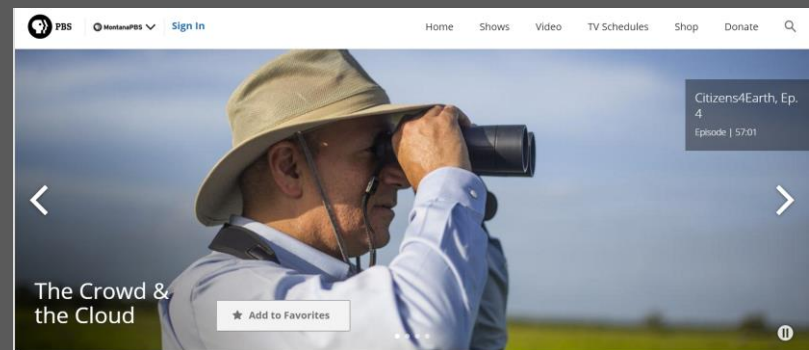
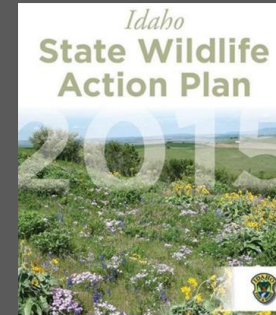
Idaho Museum of Natural History

Idaho State University

[petechar@isu.edu](mailto:petechar@isu.edu)

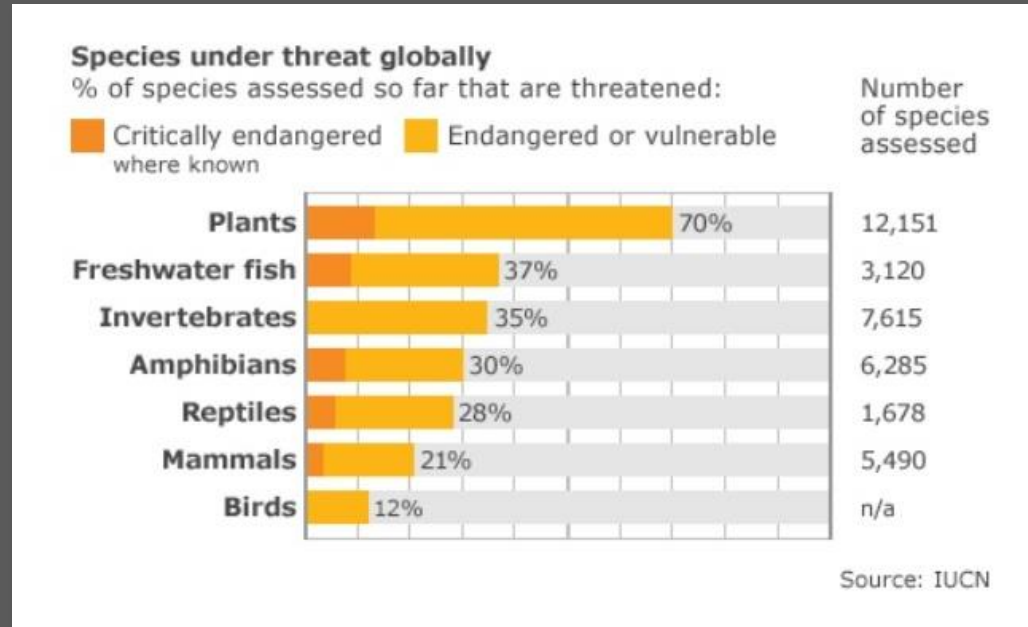
# Outline

- Data Needs and Types
- Crowdsourced and Citizen Science Data
- About iNaturalist
- Using the iNaturalist app
- Projects
- Applications



# The Need for Data

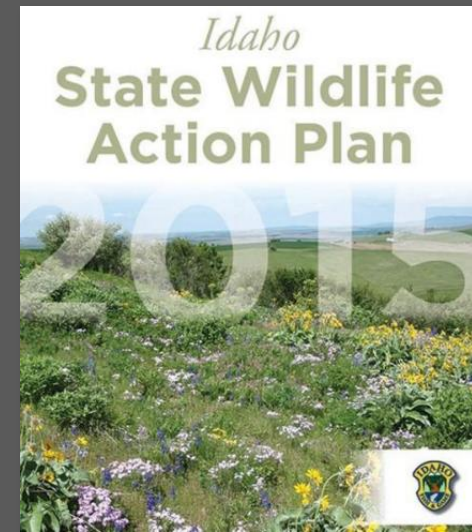
- The Biodiversity Crisis
- Causes
  - Habitat loss / modification
  - Overexploitation
  - Pollution
  - Climate Change
  - Introduced Species
  - Disease



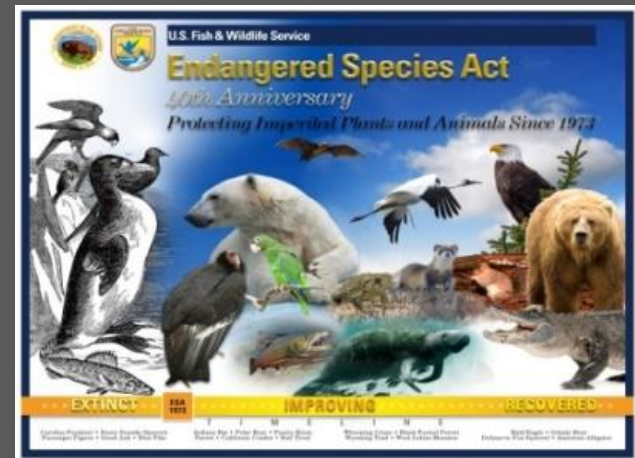
- “Without quality data, problems go undetected” – Todd Wilkinson

# 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



2005 / 2015



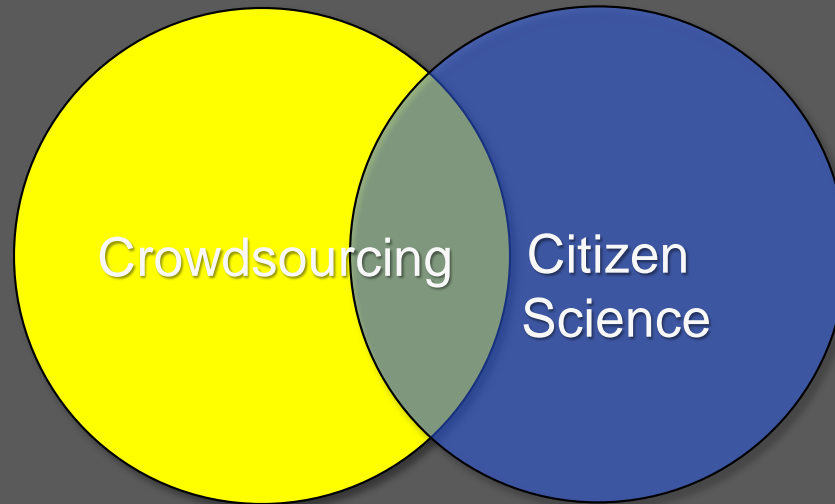


# Where do biodiversity data come from?

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



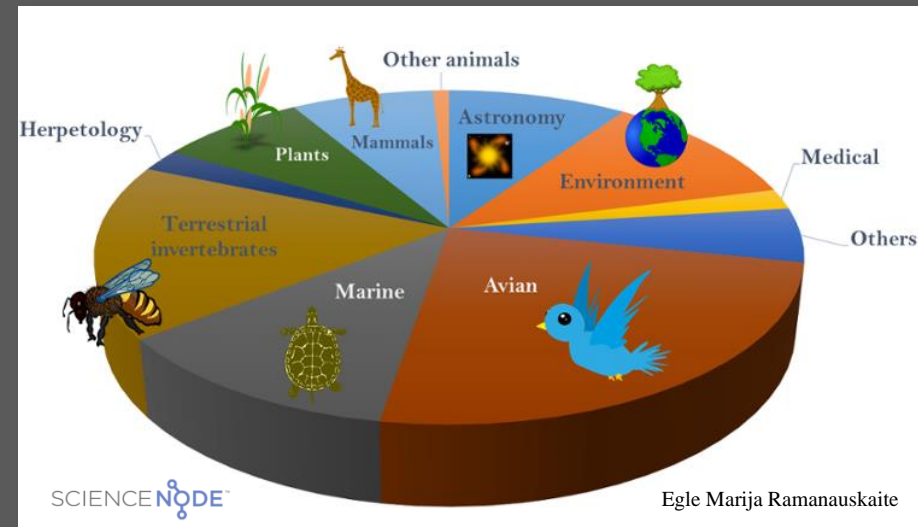
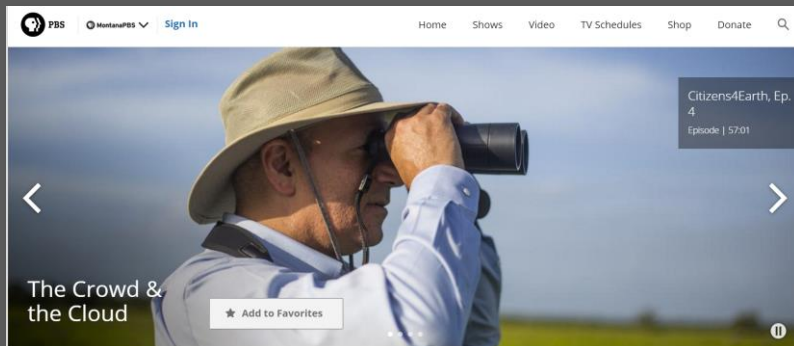
# Crowdsourced and Citizen Science Data



- 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

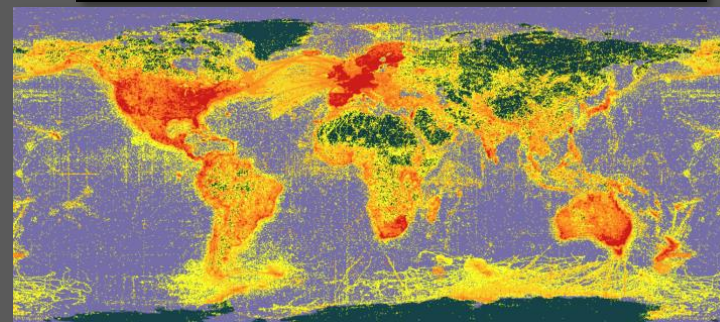
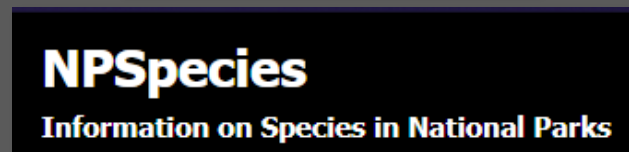


- Agency and NGO Databases

- State Natural Heritage Databases
- Nature Serve
- NPSpecies



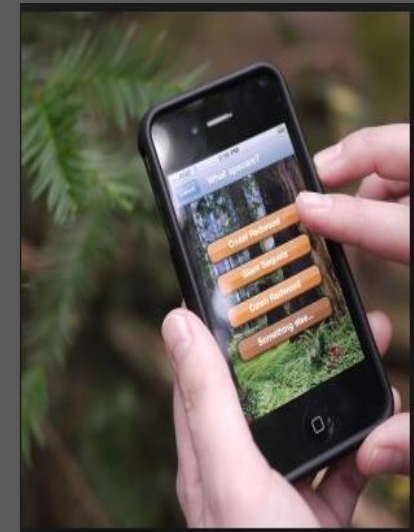
- Global Biodiversity Information Facility (GBIF)



GBIF | Global Biodiversity Information Facility

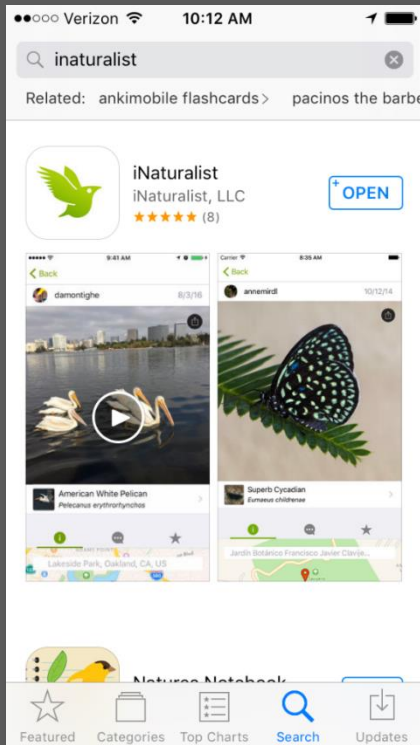
# About iNaturalist

- 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.

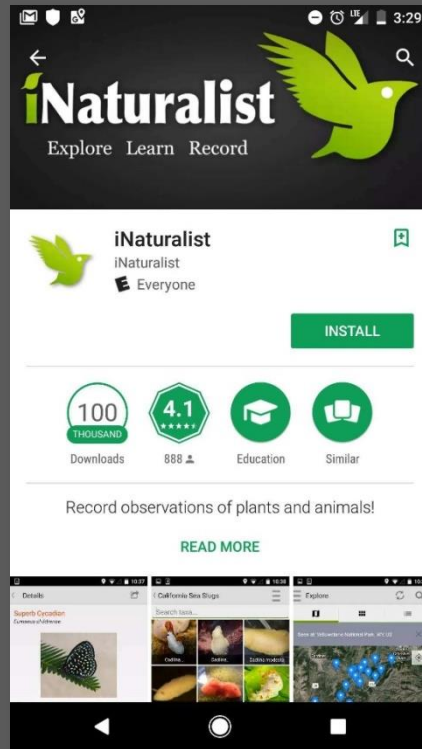


# About iNaturalist

## Mobile Apps

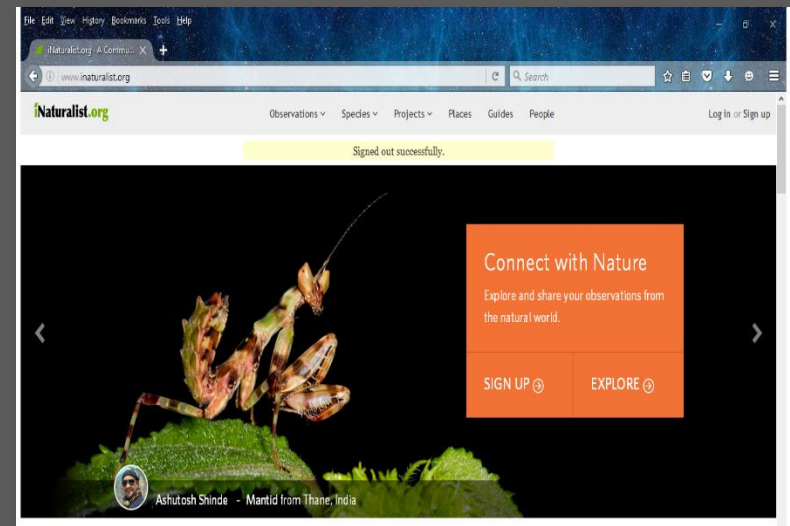


iOS



Android

## Website



## Blog

 [iNaturalist.org](https://www.inaturalist.org)  
Official 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 Identotron (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 [kueda](#) | 0 comments | [Leave a comment](#)



# Observations



Species

Location

Go

Filters

The World

35,056,751  
OBSERVATIONS

271,269  
SPECIES

120,916  
IDENTIFIERS

941,117  
OBSERVERS

Map


Grid

List



Places of Interest

ul ng  
sse (ena)  
nsy 23/2019  
ear



19m

+

-

1

Map controls: Home, Full Screen, Refresh



**Julia Heliconian**  
(*Dryas iulia*)  
Peacef... • 4/23/2020



19m



**Lazuli Bunting**  
(*Passerina amoena*)  
Pennsy... • 4/23/2019



19m



**Clovers**  
(Genus *Trifolium*)  
Железн... • 4/23/2020



19m



**Paper Birch**  
(*Betula papyrifera*)  
Llewel... • 4/5/2020



19m



**Altamira Oriole**



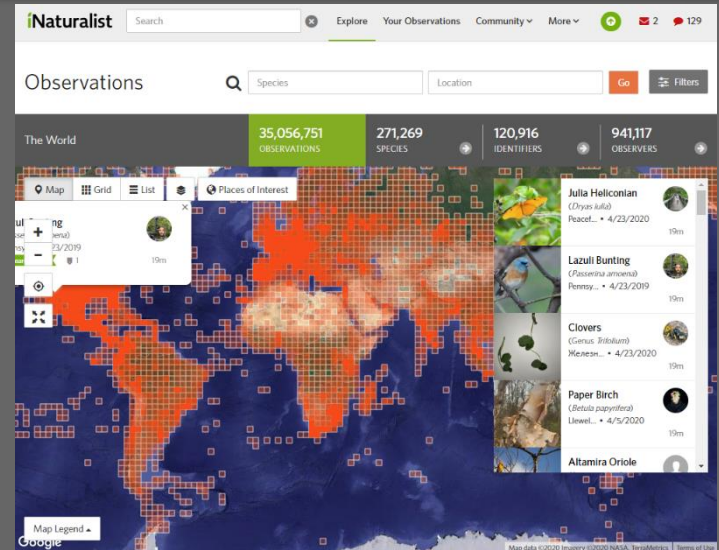
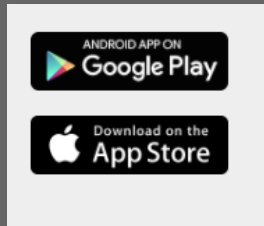
22 April 2020

Map Legend

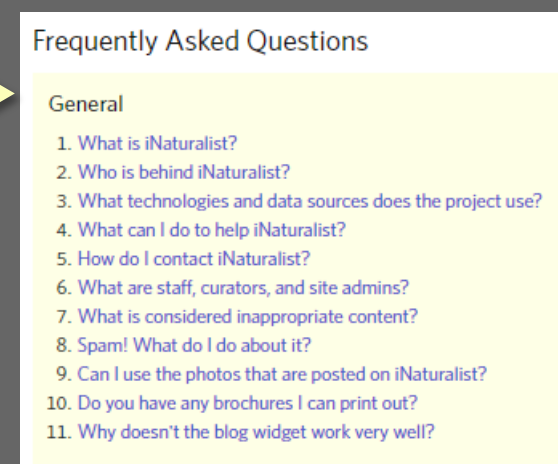
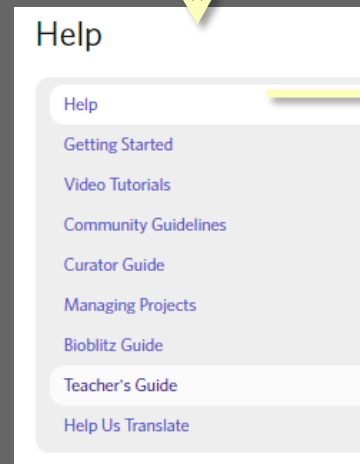
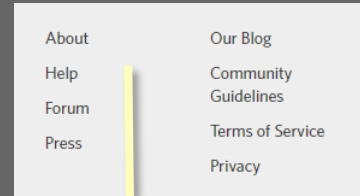


# Using the iNaturalist Mobile App

- Creating an account

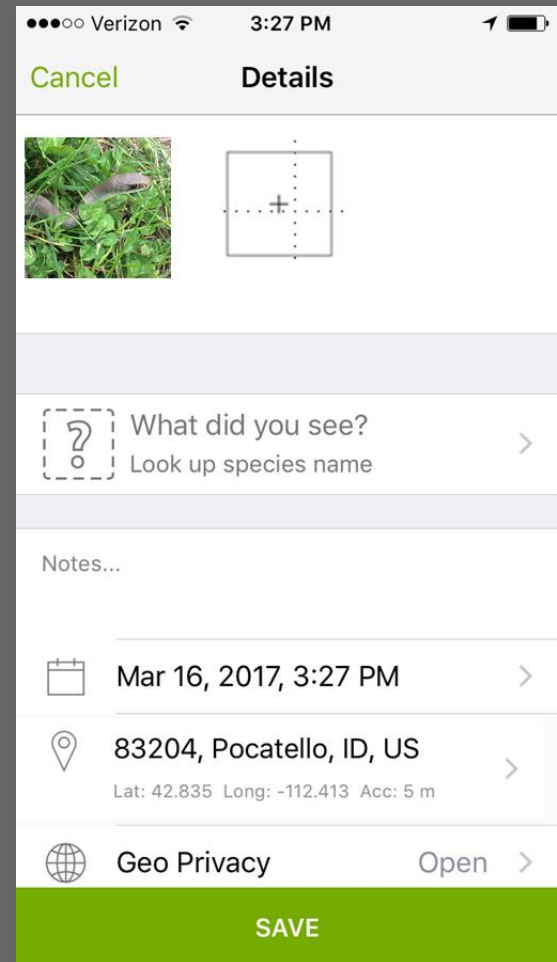


- Learning iNaturalist



# 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 ?







## Stats

Totals	Most Observations	Most Species	Most Observed Species
<p><b>25987</b> Observations »</p> <p><b>1810</b> Species »</p> <p><b>896</b> People »</p>	<p> <b>ralfmagee</b> 2106 observations</p> <p> <b>richardling</b> 1871 observations</p> <p> <b>sascha_schulz</b> 1679 observations</p> <p> <b>eschlogl</b> 1585 observations</p> <p> <b>ianbanks</b></p>	<p> <b>ralfmagee</b> 779 species</p> <p> <b>eschlogl</b> 576 species</p> <p> <b>sascha_schulz</b> 456 species</p> <p> <b>johnsear</b> 441 species</p> <p> <b>johnturnbull</b></p>	<p> <b>Bigbelly Seahorse</b> 242 observations</p> <p> <b>Eastern Shovelnose Stingaree</b> 224 observations</p> <p> <b>New Zealand Eagle Ray</b> 222 observations</p> <p> <b>Luderick</b> 178 observations</p>

# Australasian Fishes: Observations since 2016

# Idaho Flora Project

« Projects

## Idaho Flora

### 22 April 2020

[Terms & Rules](#) | [Leave this project](#)

[Add Observations to This Project](#)

## Stats

Totals

24232

Observations »

1598

Species »

1156

People »

### Most Observations



mhays

3168 observations



rick\_williams

1072 observations



mountainmanmiller

754 observations



frenchlimonade

616 observations



rosemary\_smith

562 observations

### Most Species



mhays

967 species



pam\_reschke

233 species



rick\_williams

231 species



chaetura

223 species



rudeeric

179 species

### Most Observed Species



Common Sagebrush

310 observations



Arrowleaf Balsamroot

281 observations



Great Mullein

228 observations



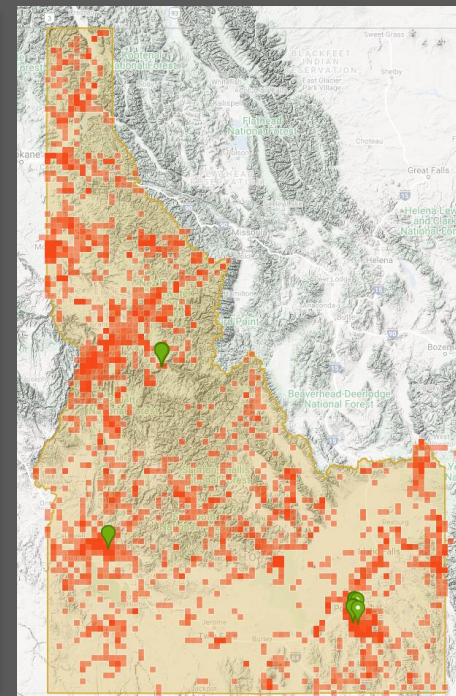
Golden Currant

226 observations



Creeping Mahonia

225 observations



### Recent observations [View All »](#)

Grid List

 Whitebark Raspberry	 Amal Janneer	 Sierra Bell Orchid	 Slender Path Rush
 Dagger Rush	 Tadpole Rush	 Whitman Star-Johns Wort	 Ocean Spray





# Edson Fichter Nature Area



## About

Leave 8

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 >](#)

# 22 April 2020

Project Journal

Overview

**318**  
OBSERVATIONS

**136**  
SPECIES

**115**  
IDENTIFIERS

**36**  
OBSERVERS

Stats

### Most Observations

<b>1st</b> duanedyer	92
rick_williams	77
rudeeric	36
frenchlimonade	12
abigailpearson	10
petechar1	10

[View All](#)

[View Yours](#)

### Most Species

<b>1st</b> duanedyer	68
rudeeric	24
rick_williams	23
petechar1	10
abigailpearson	9
frenchlimonade	7

[View All](#)

[View Yours](#)

### Most Observed Species

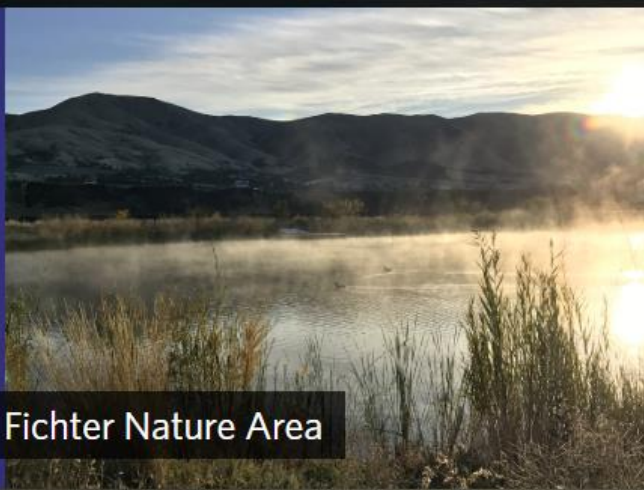
Russian Olive	10
Red-winged Blackbird	9
Mallard	6
Hound's-Tongue	6
Broadleaf Cattail	6
Great Mullein	6

[View All](#)

[View Yours](#)



## Edson Fichter Nature Area



## About

Leave

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[Read More >](#)

Project Journal

Overview

**318**  
OBSERVATIONS

**136**  
SPECIES

**115**  
IDENTIFIERS

**36**  
OBSERVERS

Stats



## Bald Eagle (*Haliaeetus leucocephalus*)

Follow



duanedyer

868 observations



Observed:

Apr 22, 2020 - 8:57 AM MDT

Submitted:

Apr 22, 2020 - 2:11 PM MDT



Google

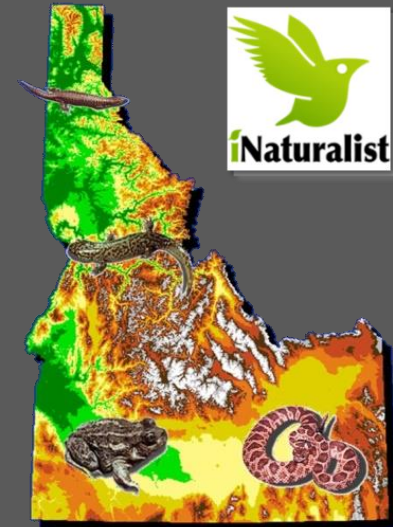
Bannock County, ID, USA

[Details](#)



# 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

## Idaho Amphibians

Idaho's native salamander and anuran species.

All 14

### TAGS

Class: Amphibia 14

Family: Ambystomatidae 2

Family: Ascaphidae 1

Family: Bufonidae 2

Family: Dicamptodontidae 1

Family: Hylidae 2

Family: Plethodontidae 1

Family: Ranidae 3

Family: Salamandridae 1

Family: Scaphiopodidae 1

Order Caudata 5

Order Anura 9

### TAXONOMY

Frogs and Toads 9  
Order Anura

Salamanders 5  
Order Caudata

## Idaho Reptiles

Idaho's native lizard, snake and turtle species.

All 24

### TAGS

Class: Reptilia 24

Family: Anguillidae 1

Family: Boidae 1

Family: Colubridae 9

Family: Crotophytidae 2

Family: Emydidae 1

Family: Phrynosomatidae 6

Family: Scincidae 1

Family: Teiidae 1

Family: Viperidae 2

Order Squamata 23

Order Testudines 1

Sub-Species: *Crotalus oreganus lutosus* 1

Sub-Species: *Crotalus oreganus oreganus* 1

Sub-Species: *Wandering Garter Snake* 1

### TAXONOMY

Lizards and Snakes 23  
Order Squamata

Turtles and Tortoises 1  
Order Testudines

Search [ ] Search [ ] Sort [ ] Grid [ ] Card [ ]

Northern Alligator Lizard<sup>1</sup>  
*Elegia conradi*

Great Basin Collared Lizard<sup>1</sup>  
*Crotaphytus bicinctores*

Long-nosed Leopard Lizard<sup>1</sup>  
*Gambusia wislizeni*

Common Side-blotched Lizard<sup>2</sup>  
*Uma stansburiana*

Sagebrush Lizard<sup>1</sup>  
*Sceloporus graciosus*

Western Fence Lizard<sup>1</sup>  
*Sceloporus occidentalis*

Pycmy Short-horned Lizard<sup>4</sup>  
*Phrynosoma douglasii*

Greater Short-horned Lizard<sup>1</sup>  
*Phrynosoma hernandesi*

Guides / Idaho Reptiles / Great Basin Collared Lizard

## Great Basin Collared Lizard

*Crotaphytus bicinctores*

Copy Edit Prev Next

### Characteristics<sup>4</sup>

At maturity, the Great Basin Collared Lizard can reach 328mm (12.9in) in total length. The species namesake comes from the two distinct collars around the neck. Body scales are small and sexual dimorphism can be seen in larger, more colorful males.

### Sources and Credits

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4. Adapted by Patrick (Dan) Giltz from a work by (c) Patrick (Dan) Giltz, some rights reserved (CC BY-SA)

### More Info

- iNat taxon page
- Biodiversity Heritage Library
- CalPhotos
- The Reptile Database
- Tree of Life
- WikiSpecies

### Range Map

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



22 April 2020

ADD  
OBSERVATIONS



# Idaho Amphibian and Reptile iNaturalist Project

## Stats

### Totals

**3194**  
Observations »

**38**  
Species »

**642**  
People »

### Most Observations

 **kjparker**  
570 observations

 **dingerdynasty**  
165 observations

 **cjustus320**  
148 observations

 **aletaquinn**  
91 observations

 **petechar1**  
75 observations

### Most Species

 **petechar1**  
33 species

 **dingerdynasty**  
29 species


 **cjustus320**  
21 species

 **patdan23**  
17 species

 **johngsalamander**  
15 species

### Most Observed Species

 **Gopher Snake**  
508 observations

 **Western Terrestrial Garter Snake**  
394 observations

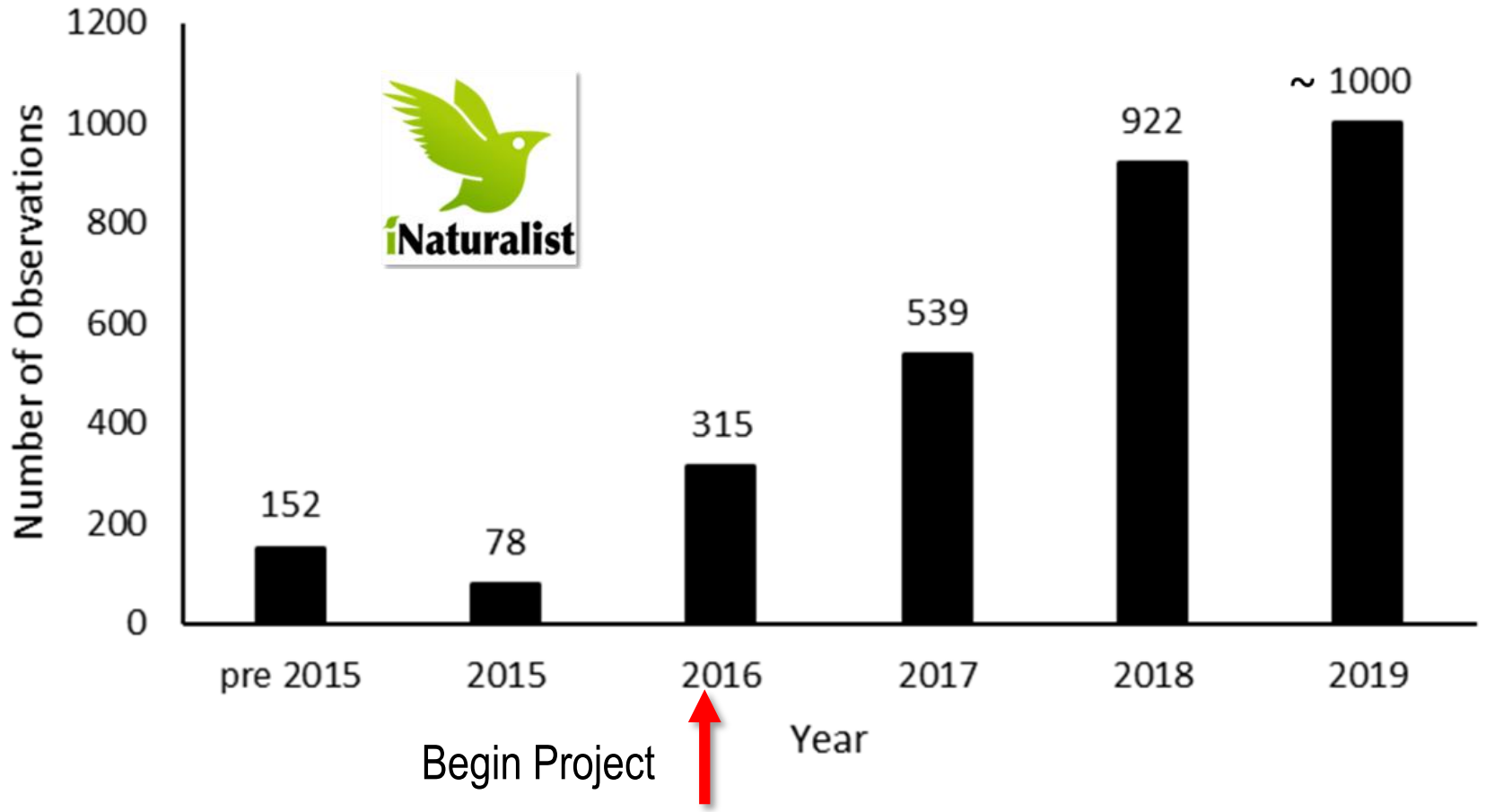
 **Western Rattlesnake**  
209 observations

 **Columbia Spotted Frog**  
177 observations

 **Sierran Tree Frog**  
168 observations

# Number Observations Per Year

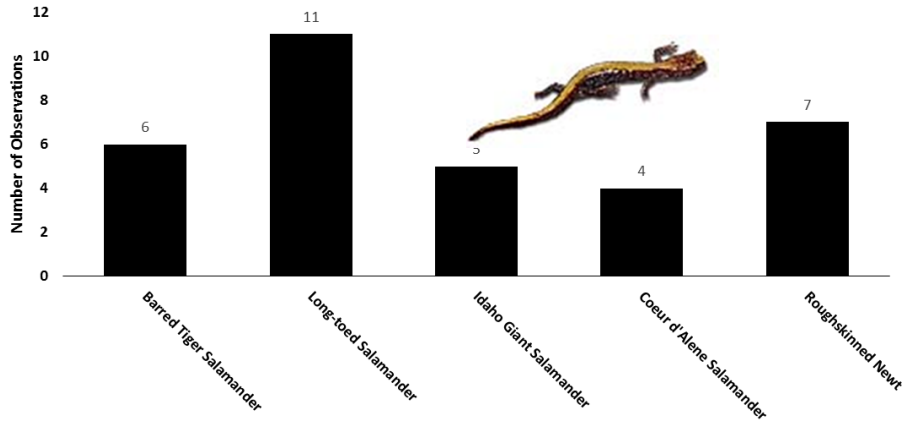
Observations per Year



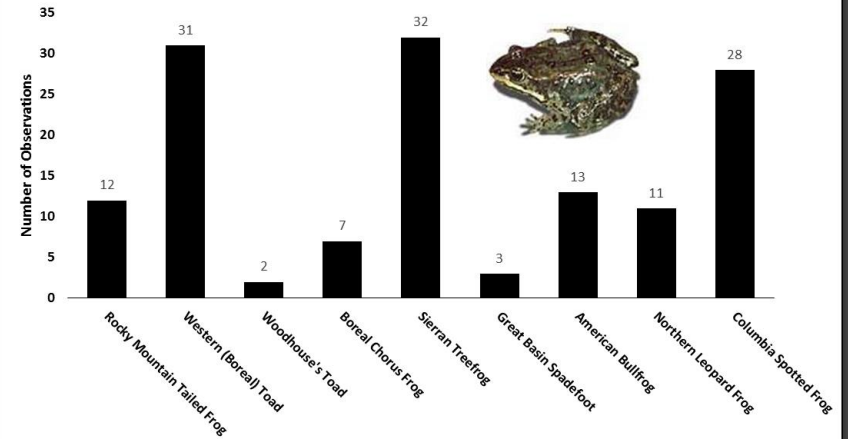


# Observations by Species

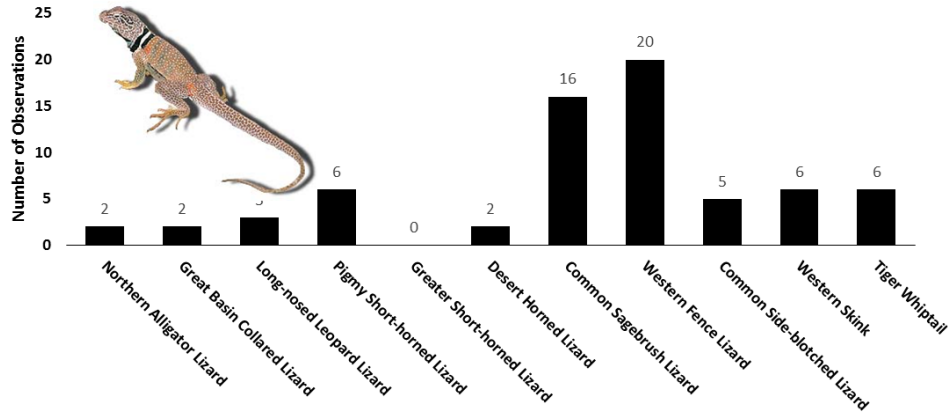
## Number of Observations Per Salamander Species



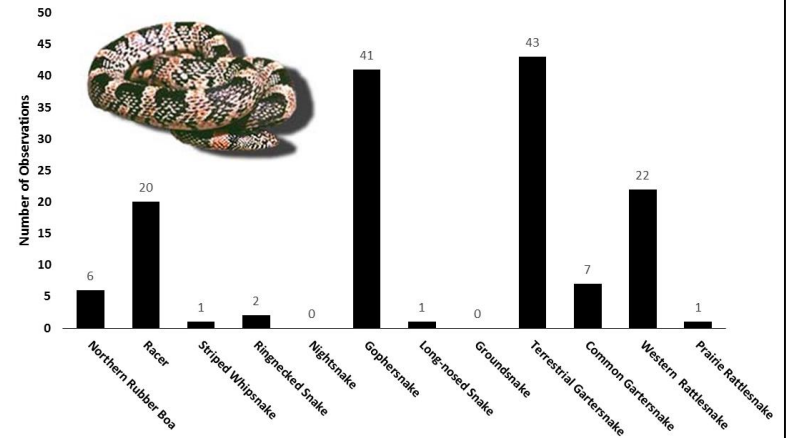
## Number of Observations Per Anuran Species



## Number of Observed Species Per Lizard Species



## Number of Observations Per Snake Species



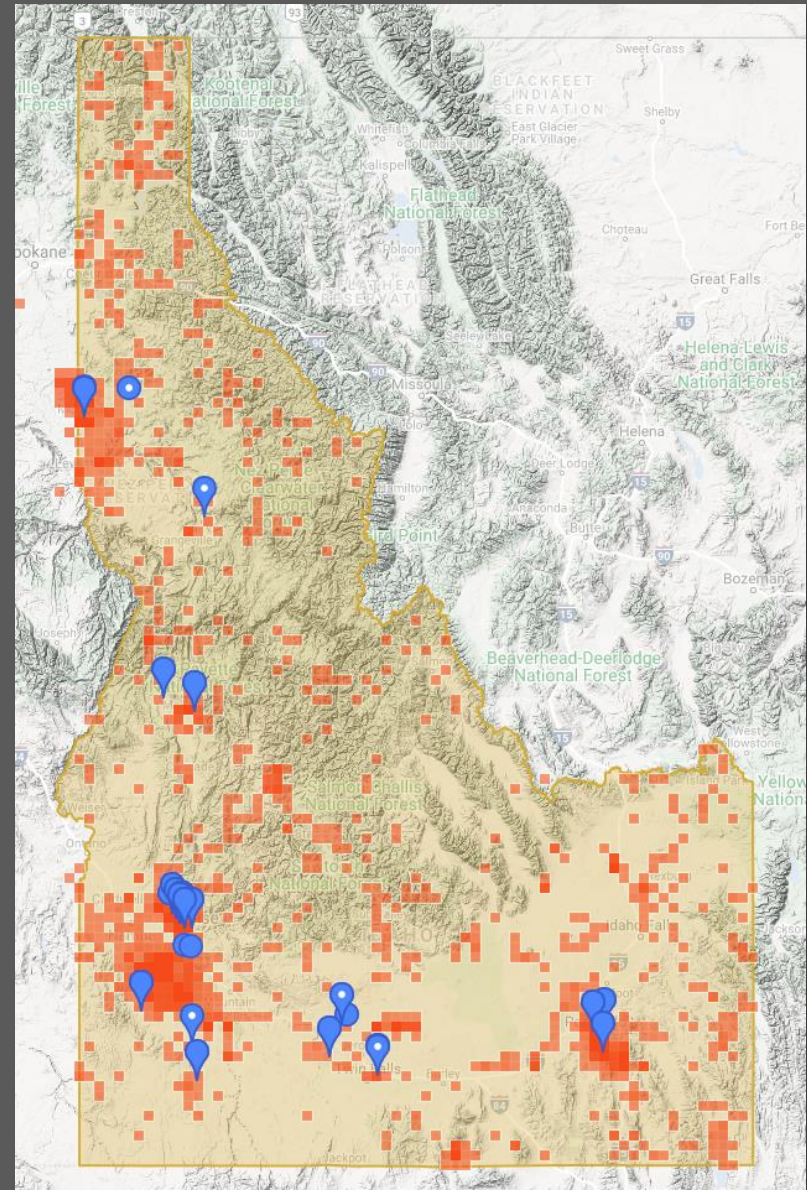
# Spatial Distribution of Observations

- > 3000 Observations
- High Observation Areas
- Individual observer effects



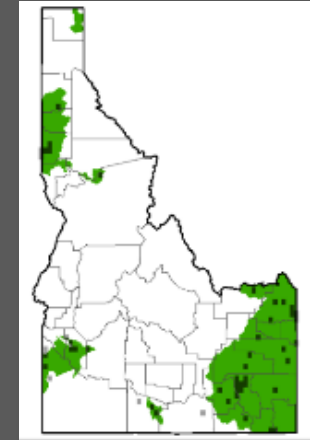
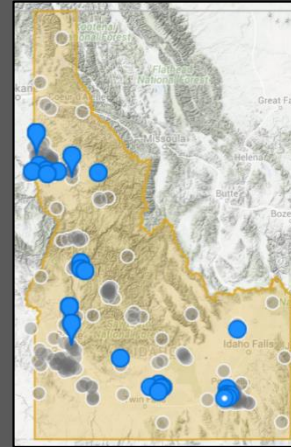
Alex Heimerdinger

Senior biology major at Lewis-Clark State College in Lewiston, ID.



# 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



Garter Snake Mating Ball – 1 April 2017 © rpiscitella



<https://i.ytimg.com/vi/6fUczvOPjUg/maxresdefault.jpg>

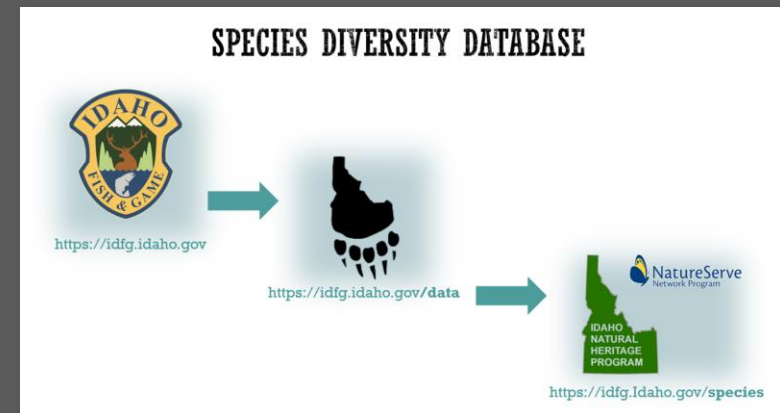


DOR Western Toad



# 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





# Questions and Comments

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