

Effects of Landscape Change on Amphibian and Reptile Occurrence in Idaho

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Introduction

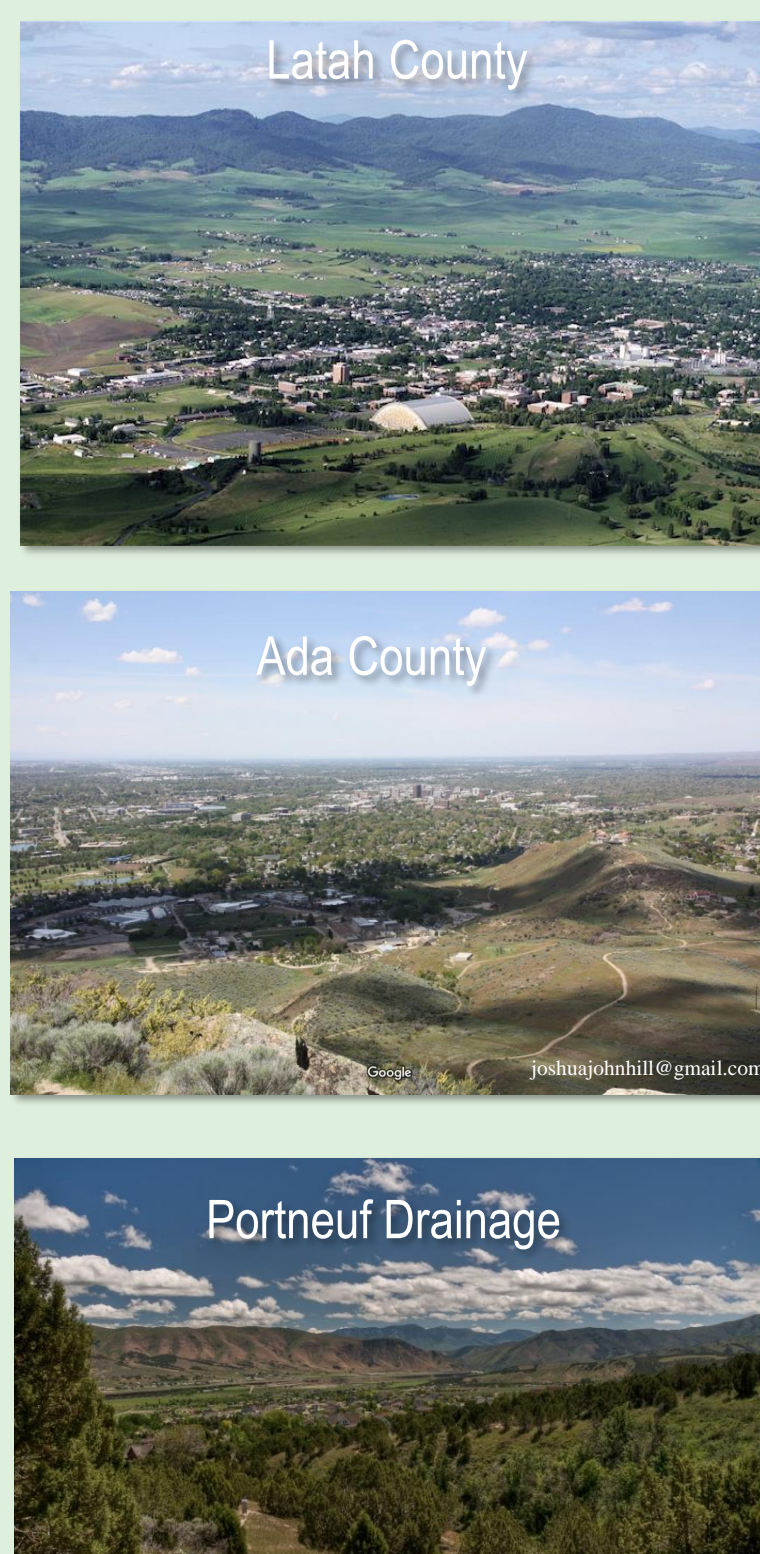
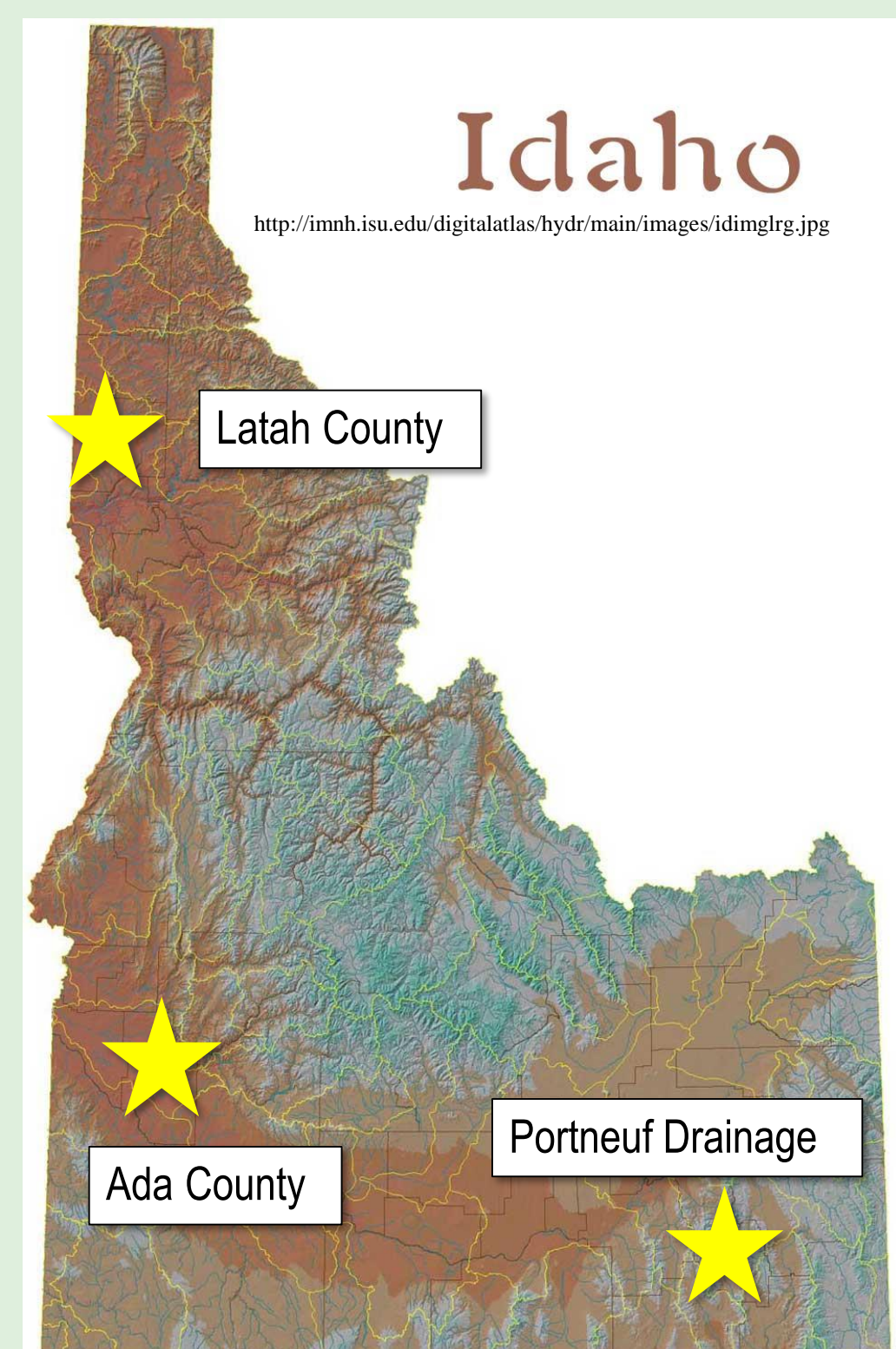
Goal

The goal of this project is to determine how landscape changes have affected the occurrence of amphibians and reptiles in three Idaho landscapes over the past century and the probable causes of those changes.

Importance

1. Provide information on the status and trends of amphibian and reptile populations to the Idaho Department of Fish and Game for improving the State Wildlife Action Plan.
2. Help evaluate the possible changes in ecosystems services due to changes in amphibian and reptile populations in Idaho. These services include the roles of amphibians and reptiles in food webs, as indicators of ecosystem function, and wildlife viewing opportunities.

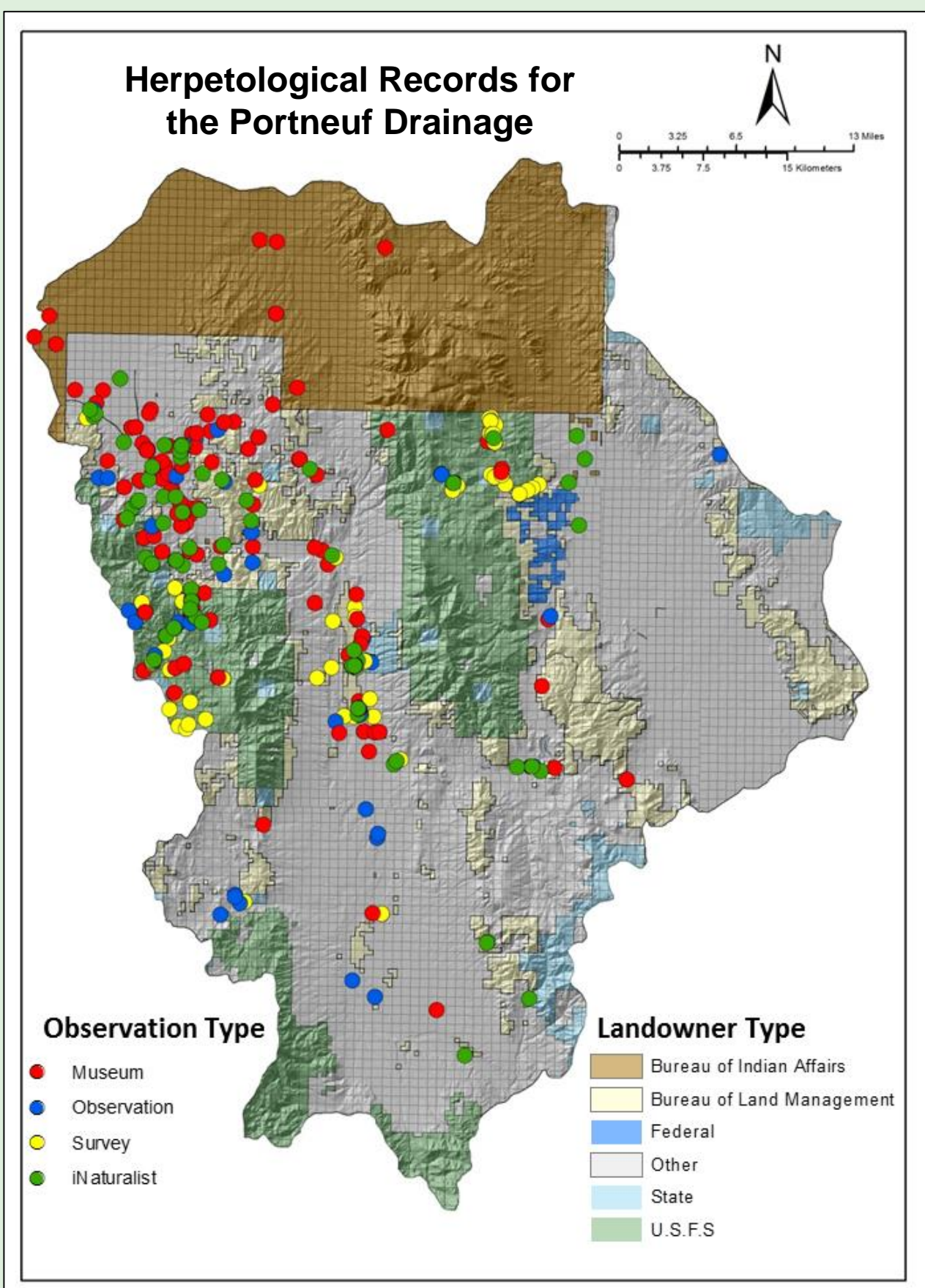
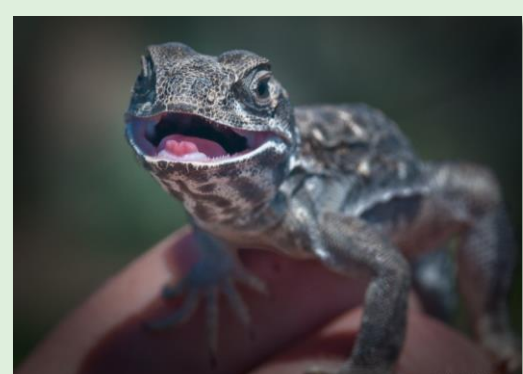
Study Areas



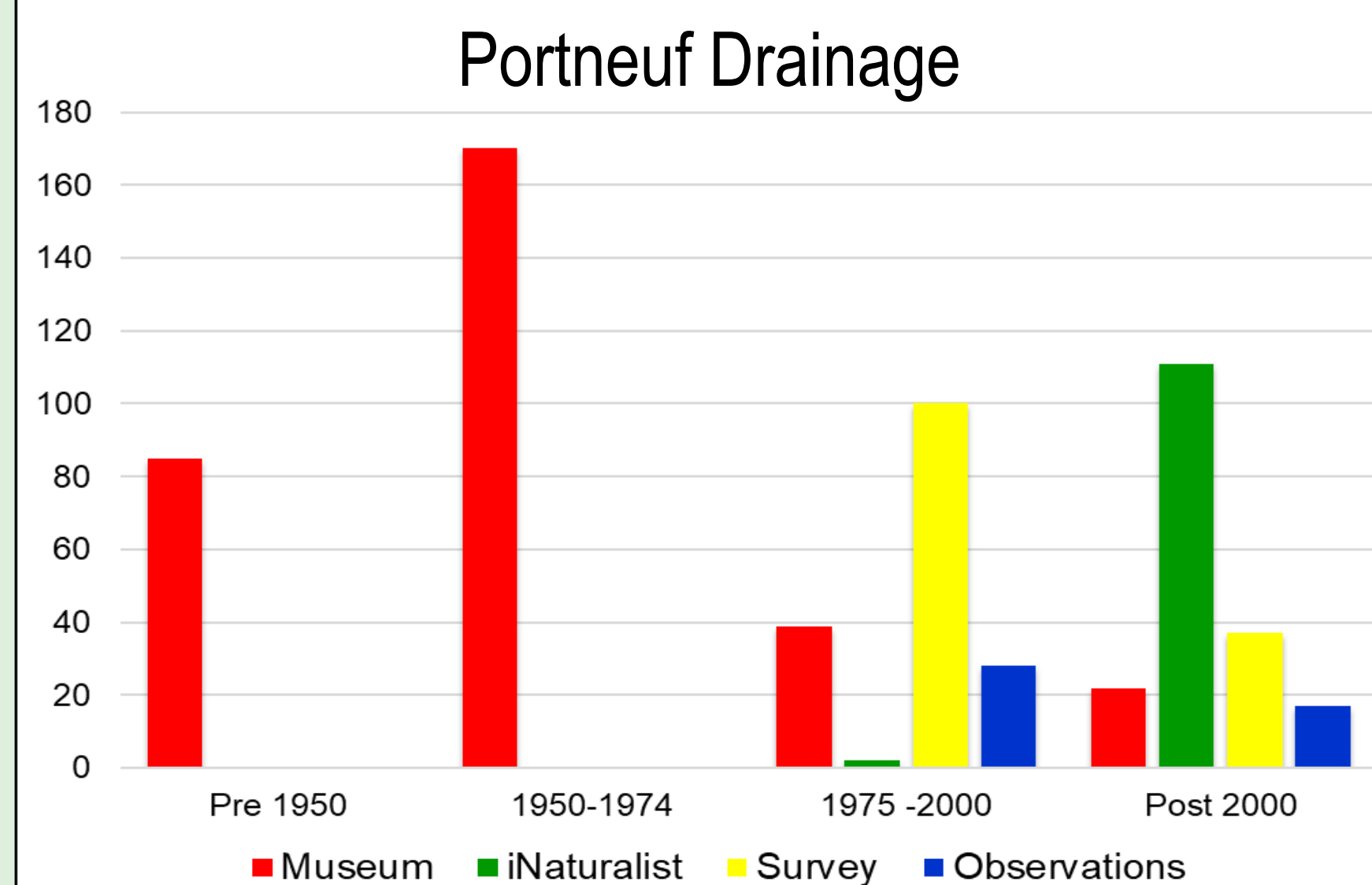
Methods

- We assembled amphibian and reptile occurrence records from museum specimens, surveys, Idaho Department of Fish and Game records, and contributed observations.

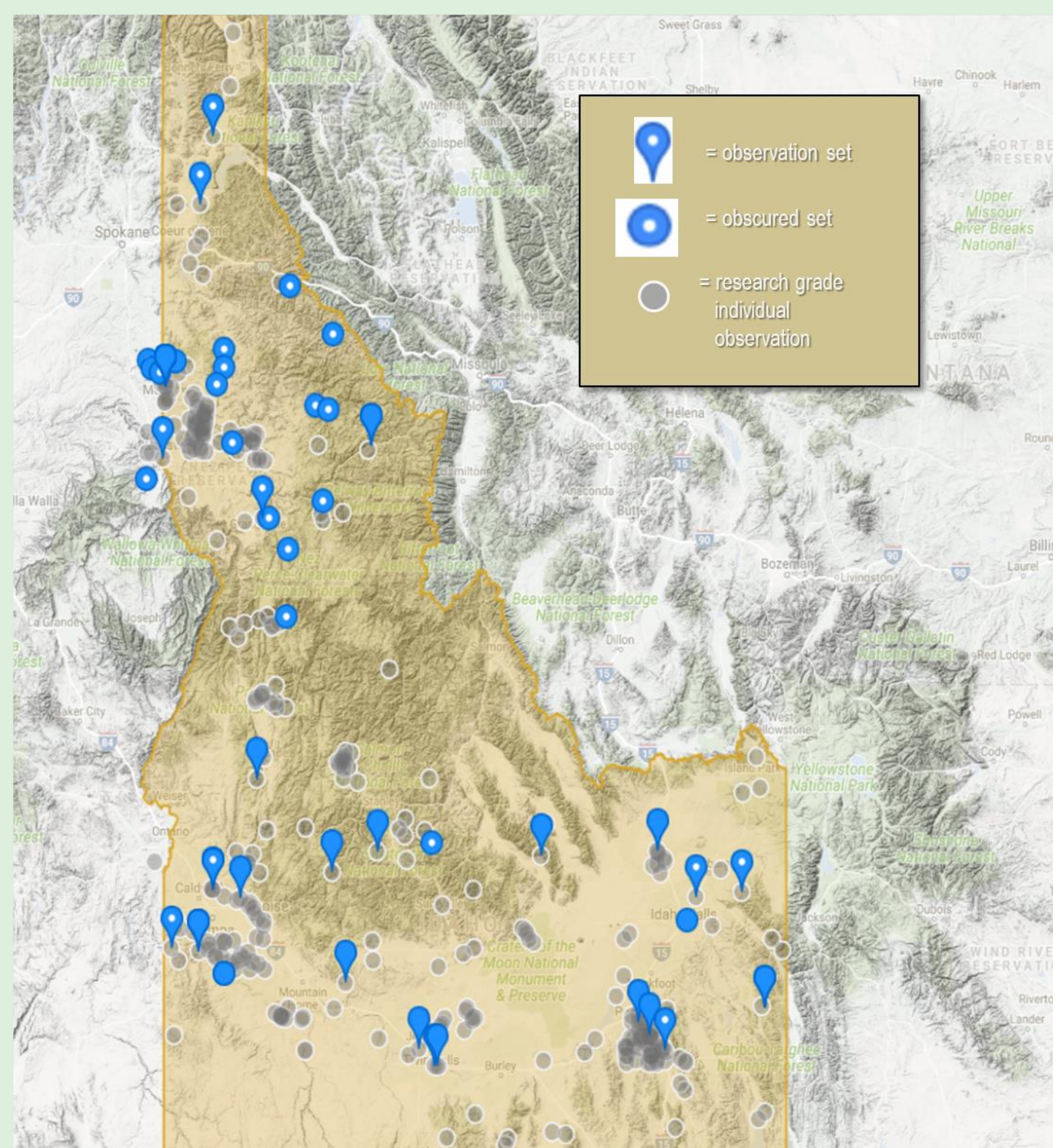
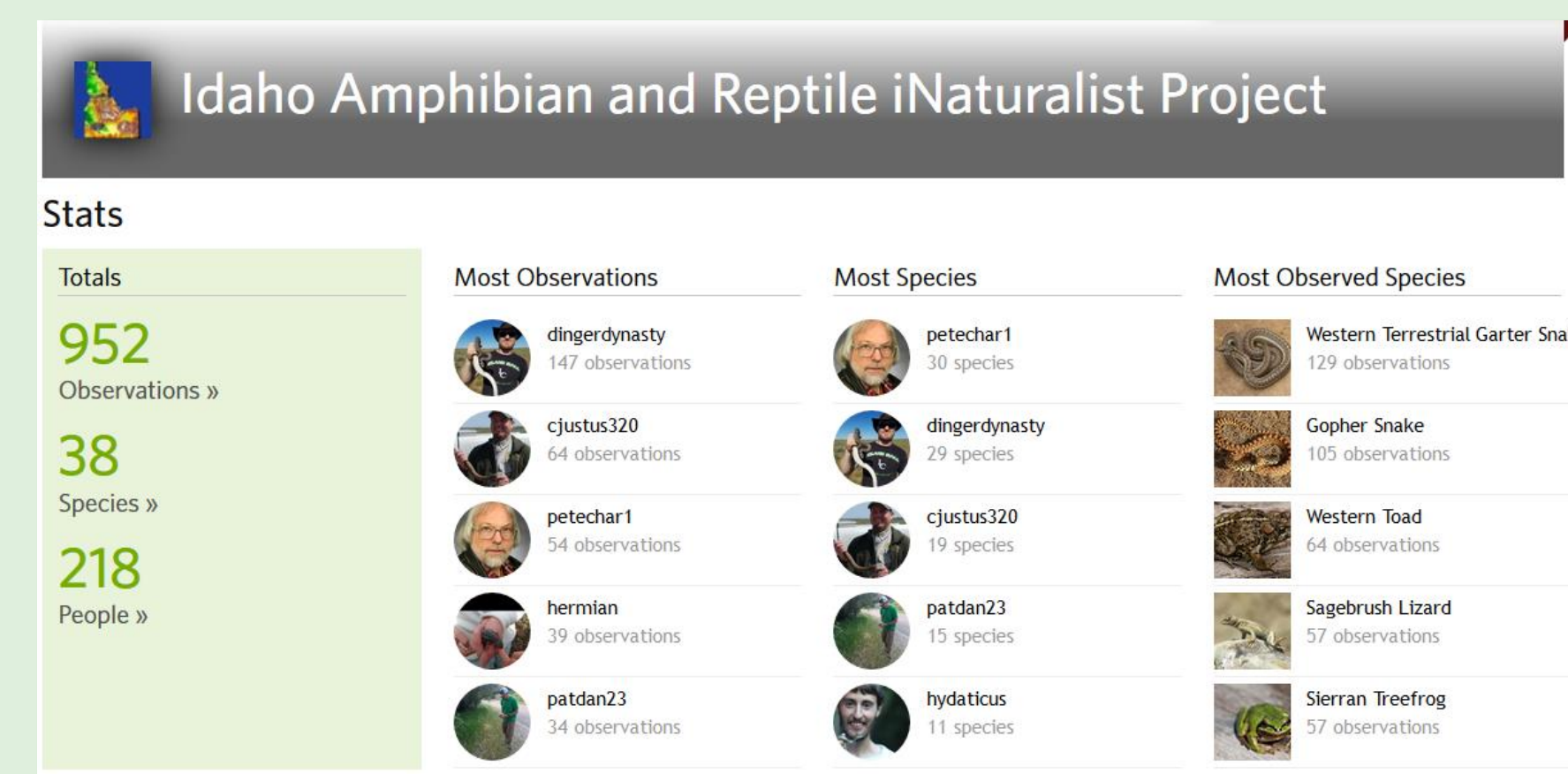
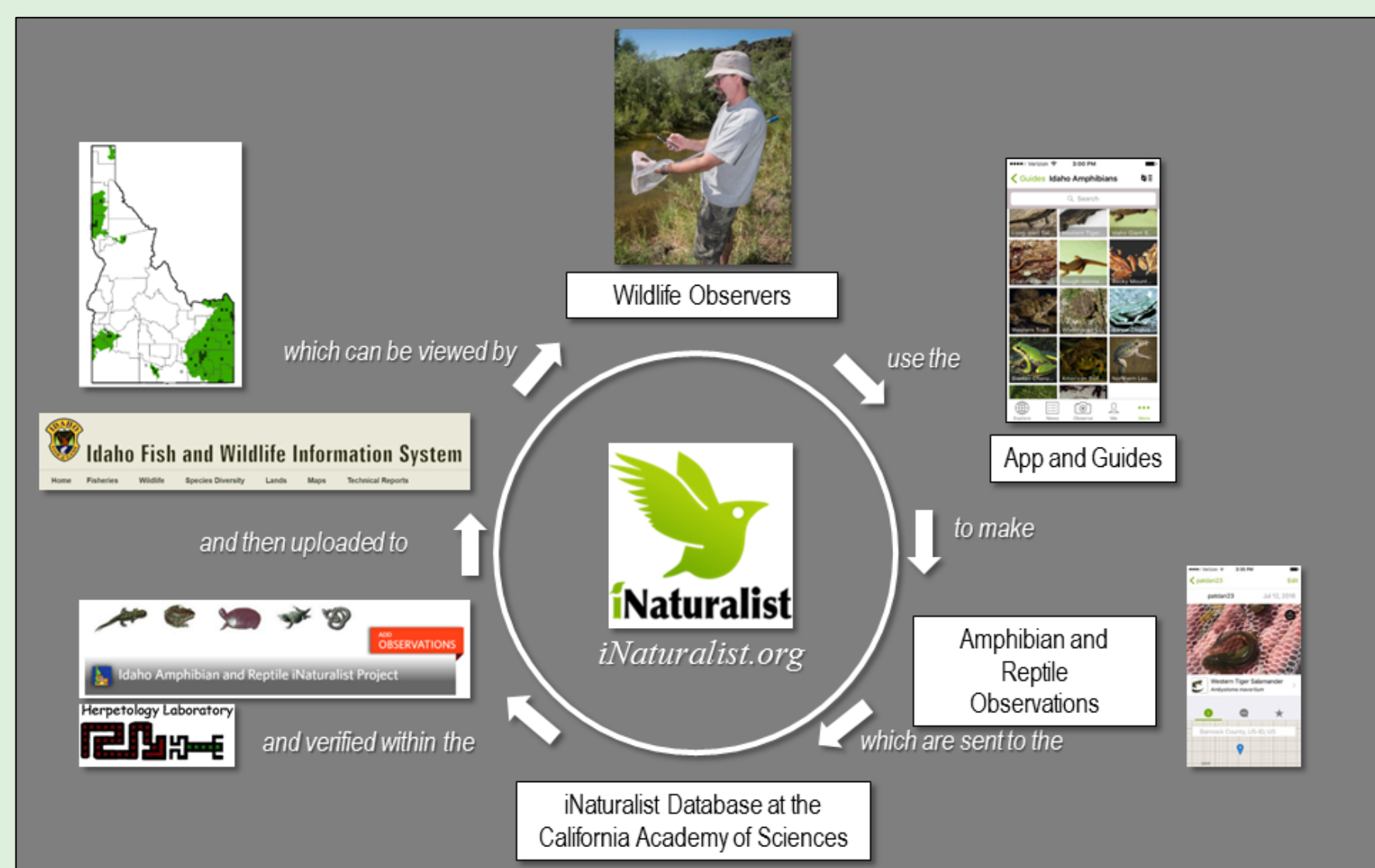
- We used the data to generate dot-distribution maps overlaid on maps indicating topography, cover type, hydrology, and land ownership.



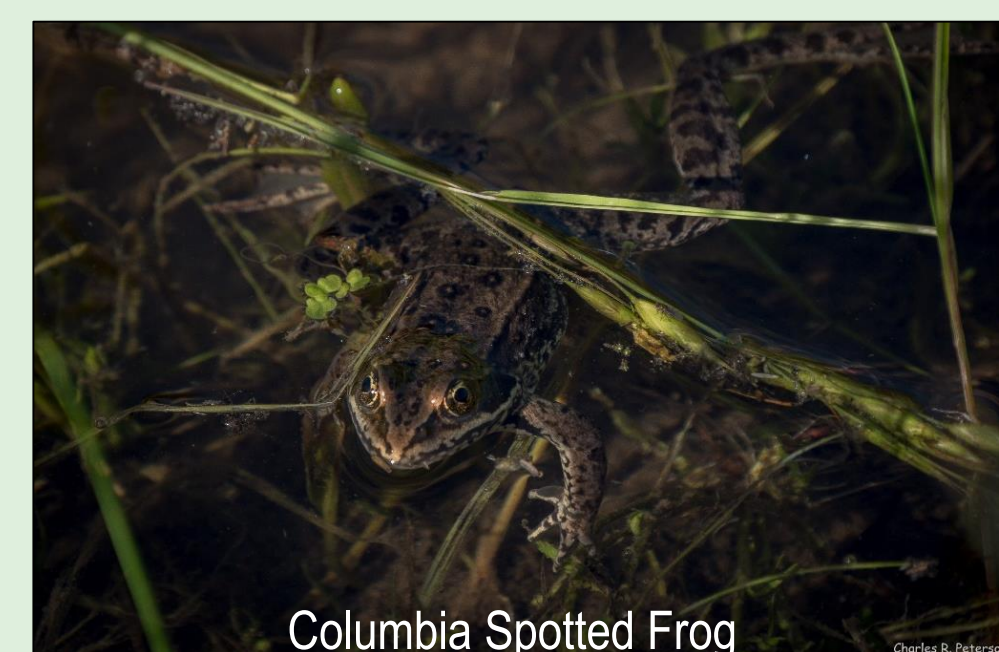
Data Types Over Time



- All of the pre 1975 records are from museum specimens and from 1975-2000 most of the records were from surveys.
- Because of the lack of post 2000 records, we initiated a project to gather crowdsourced data using *iNaturalist* in 2016.
- Most of the records after 2000 are from *iNaturalist* observations gathered within the last 2 years.



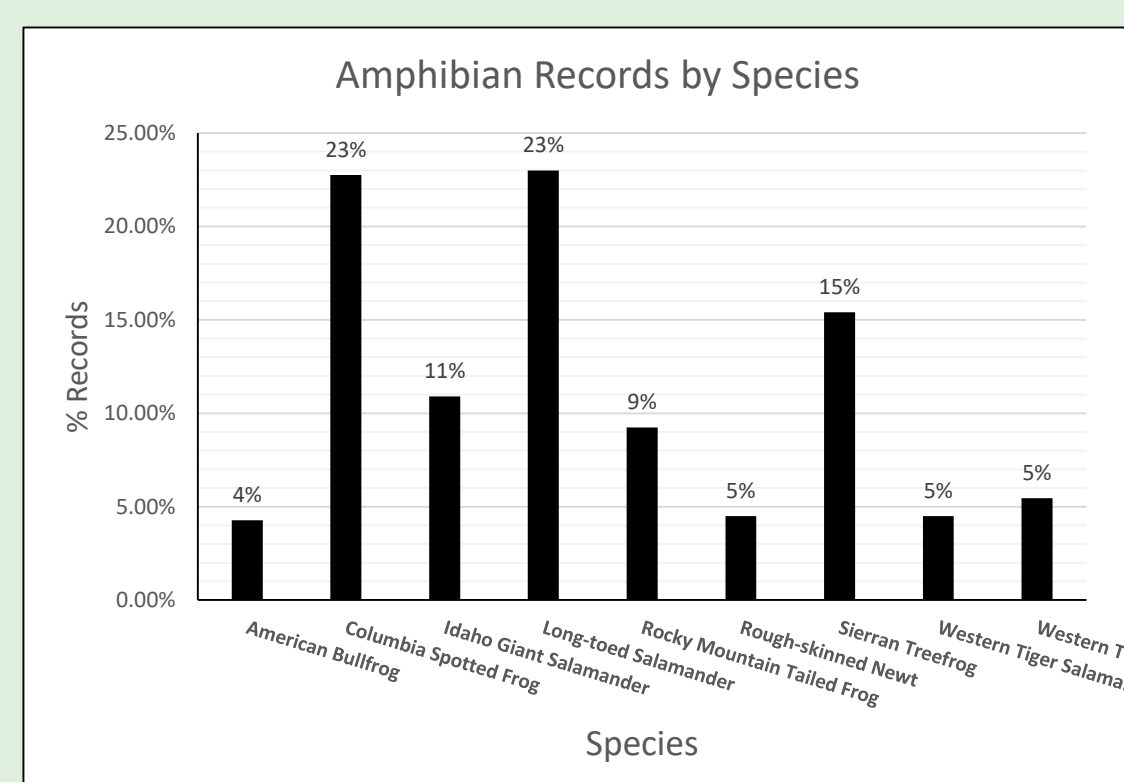
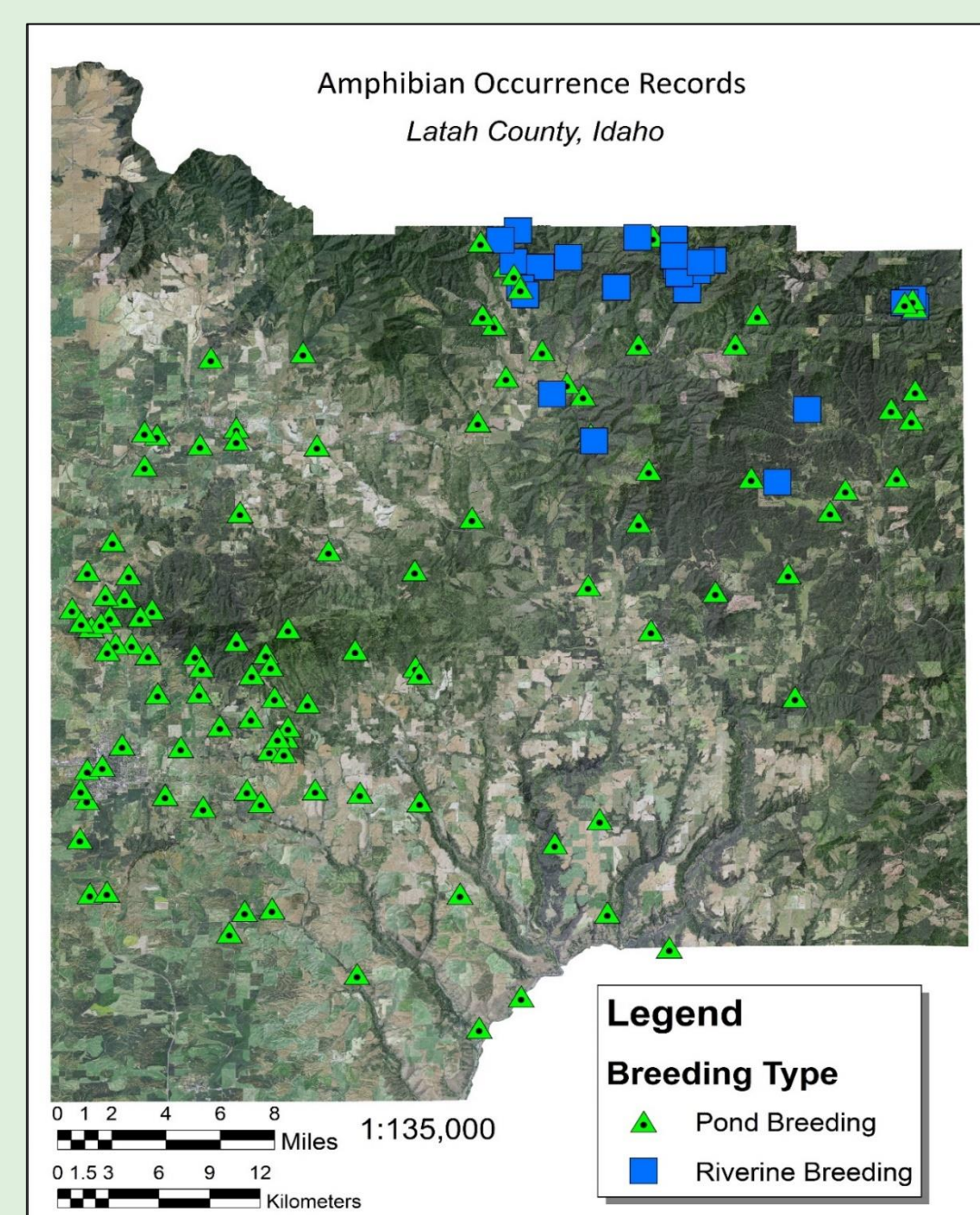
Latah County Amphibians



Columbia Spotted Frog

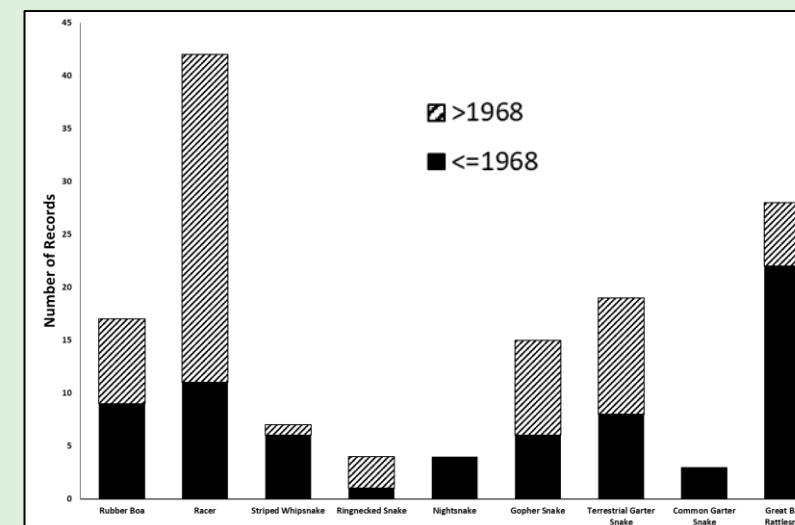
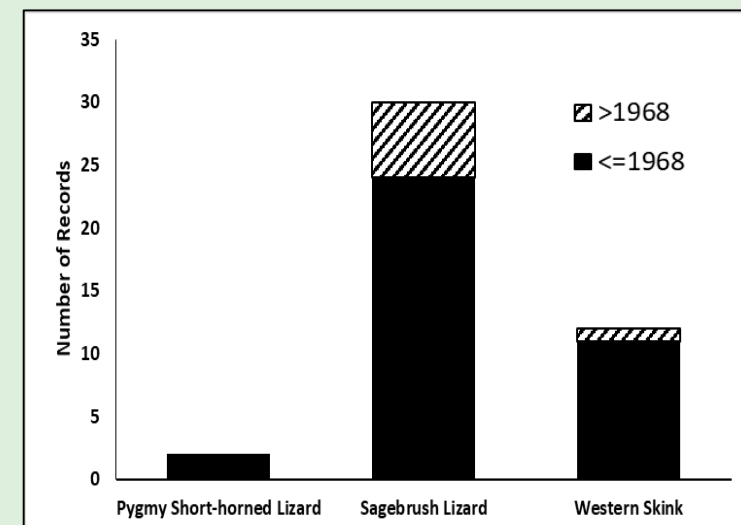
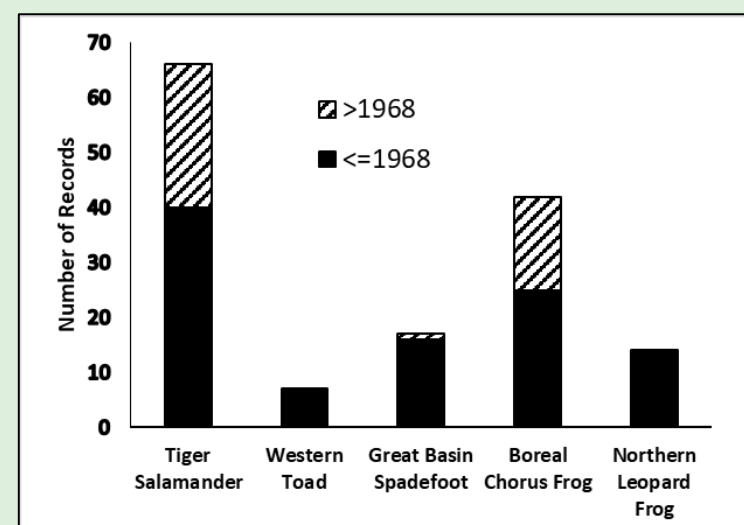


Idaho Giant Salamander



- All native species appear to have persisted in Latah County even with the extensive modification of original habitat.
- This is likely due to the construction of many man made ponds.

Portneuf Amphibians and Reptiles



- Two of the 5 species of amphibians native to the Lower Portneuf Drainage have disappeared, probably due to a combination of disease and habitat loss (e.g., river channelization and changes in irrigation).
- The Pygmy Short-horned Lizard, 1 of the 3 species of lizards in the Portneuf Drainage seems to have disappeared, probably because of habitat loss due to urban expansion.
- Three of 9 species of snakes have declined or disappeared, probably due to habitat loss and fragmentation. The apparent disappearance of Common Gartersnakes from the Lower Portneuf is probably due to the loss of one of its main prey species, the Northern Leopard Frog.



Barred Tiger Salamander

Current Study: Ada County



- We are just beginning a study of the changes in the occurrence of amphibians and reptiles over time for Ada County.
- This landscape has the highest reptile species richness in the state.
- Because of urban development, this area has undergone the greatest amount of landscape change of our study areas.

Summary

- iNaturalist turned out to be an effective way to obtain information for Idaho's amphibians and reptiles and should provide a major source of future data.
- All native amphibian species appear to have persisted in Latah County even with the extensive modification of original habitat. This is likely due to the construction of many man-made ponds.
- In contrast, in the Portneuf Drainage, habitat loss due to river channelization, changes in irrigation, and urban expansion appear to have decreased species richness by 12-24%.

Future Work

- We would like to extend our approach to several other areas in Idaho with considerable amphibian and reptile data records.
- These landscapes include:
 - The Idaho National Laboratory site
 - The Frank Church - River of No Return Wilderness
 - The Morley Nelson Birds of Prey National Conservation Area

Acknowledgments

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- All iNaturalist users who contributed observations to this project.