**Unit I: On-line Collections-Based Hypothesis Testing Project**

The availability of specimen meta-data in online databases gives us the opportunity to address questions about their biology, distribution, ecology, population genetics and more. This short project will give you a chance to propose a question and answer it using the information available in specimen databases. I strongly encourage you to use this project to explore a place that is important to you. Maybe you want to know how species composition has changed in the country you grew up in, or the place you are moving to after graduation, or right here in Wayne County, IN. This is a low-key, fun project to introduce you to the power of digitized collections. Ask as many questions as you need, and explore the available resources!

**Types of data available:**

Sex

Weight

Size of ovaries/testes

Wing span, body length, etc.

Date of collection

Location of collection

Map of collection sites

*Sometimes available:*

Stomach contents

Parasites

DNA sequences

**Selecting a Database:**

Some databases are better than others to address certain questions. For instance, iDigBio generates a map of all georeferenced specimens for you, while VertNet includes more metadata like body weight or size of reproductive organs. You may need to download all the records and organize them in excel to be able to use the metadata.

**Comprehensive list of databases:**

<http://www.aim-up.org/resources/databases>

**iDigBio Portal** (creates maps of specimen records for you!) Tutorial <https://www.idigbio.org/portal/tutorial>

**How to complete the Assignment.**

1. **Identify a question** that uses the available data for a species you are interested in. Post the question in the Moodle homework assignment and receive approval or revise according to Heather’s suggestions. (e.g. Has the distribution of the golden-mantled ground squirrel in Yosemite park changed between 1900-1910 and 2000-2010 as reflected in collection records? Are collected male and female robins significantly different in size [i.e. weight] using all robins collected from 1980-2000 in Indiana?)
2. **Download the necessary data** from the above-listed database or databases.
3. Use excel or another statistics program to **analyze the data**. Use a graph or map to answer your question.
4. Bring your answer to class on **Monday, Sep 15th** and be prepared to explain the question, your methods and your answer.