Designcraft for experiments

cjlortie

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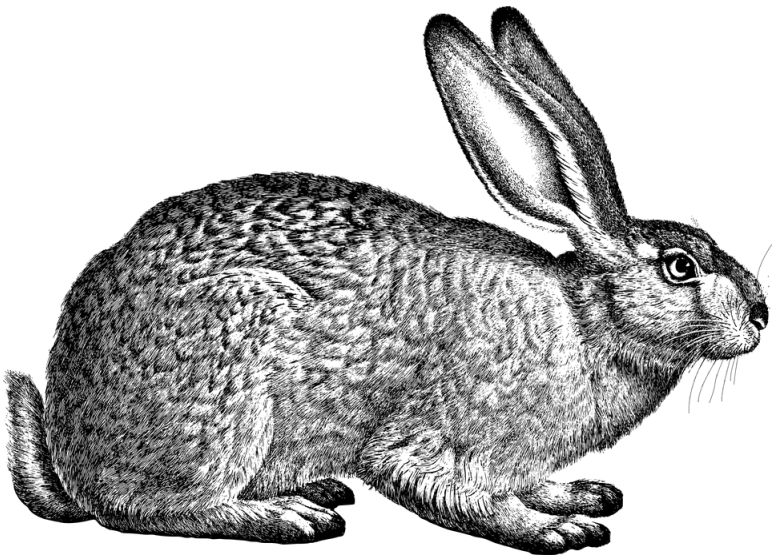
Chapter 1

Introduction



Welcome to experimental design. There are two sets of three exercises provided to explore principles for better experiments. This is a simple book to support the practical, at-home learning associated with experimental design. The text Experimental Design for the Life Sciences underpins the design principles (Ruxton and Colgrave., 2018).

There are two primary modules.

(1) Field experiments comprises three outdoor experiments to explore sampling heterogeneous, complex processes in natural systems. The purpose is to provide choice. You need to try each, briefly, as a pilot experiment only. Then, select one to pursue in depth and write up as a research

article.

(2) The data experiments describe the opportunity to use design thinking to structure existing data that others have already collected. The same principles for better experiments still apply in how you reuse the data. There are also three examples provided. Select only one and write up as a note.

Both report formats supported by FACETS. It is the first and only open access science journal in Canada.

Field experiments gear and prep

Data-design experiment prerequisites

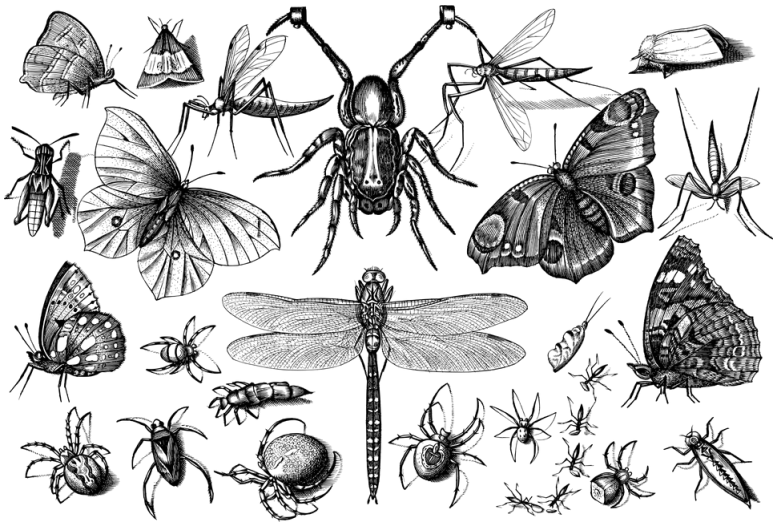
Chapter 2

Balcony birdwatching

Bird observation, from a distance.

Chapter 3

Backyard bioblitz



A bioblitz is a biodiversity survey that is done rapidly for a specific place.

Chapter 4

Solo surveys

Distributed ecological networks often use surveys done by individuals or small-teams to compile data on species or communities. Transects and quadrats are typically used to structure these 'walk-through' surveys to estimate abundances and distributions of focal species.

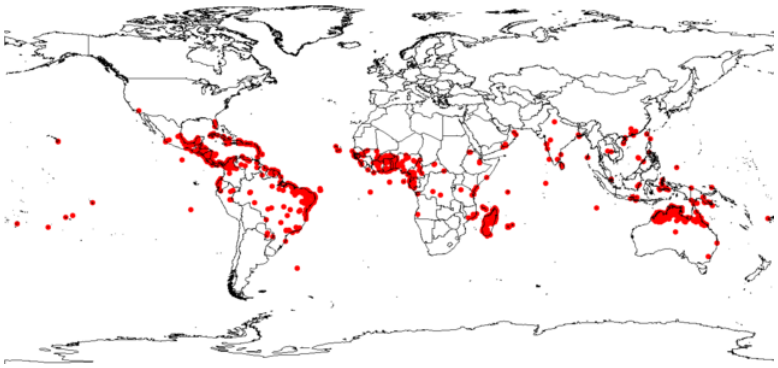
Chapter 5

Magic data

Magic the Gathering is a popular collectible card game that includes strategy and chance.

Chapter 6

Diversity data



Diversity data from ebird or any citizen science project.

Chapter 7

Human data

Data associated with humans. Fitbit steps and sleep.

Chapter 8

Final notes

Observations and conclusions.

Bibliography

Ruxton, G. and Colgrave., N. (2018). *Experimental Design for the Life Sciences.* Oxford University Press., Oxford, UK, fourth edition.