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| **Introduction to R with Biodiversity Data** | **A body of water  Description automatically generated** |

**Prerequisite**

* Basics in file management and familiarity with datasheets (in excel, google sheets, ect.)

**Objectives**

* Be able to navigate R Studio and write reproducible code.
* Execute lines of code, as well as complete scripts.
* Identify variables, functions, and operators.
* Approach basic troubleshooting.
* Know how to download biodiversity data using Application Programming Interface (API).

**Introduction**

Students will learn R basics while downloading biodiversity data from multiple data repositories. This module will walk students through installing R, navigating R, reproducibility in R, and using R to download biodiversity data.

The guide for this module is available as a pdf or as an html. The pdf is uploaded with this module, and the html file is available [here](http://mlgaynor.com/BLUE-Intro2RwithBiodiversityData/_book/general-information.html).

**Activities**

1. General Information

Introduces the overall objectives for this module.

1. Setup

Describes R Studio and R Projects.

1. Pre-Activity

Discusses R Basics and shows users how to write their own script.

1. Class Activity

Uses R to download specimen data from iDigBio and teaches students how to make a simple map.

1. Assessment

**Relevant Literature**

Broman and Woo, 2018

* Summary of data organization best practices:
  + Be consistent
  + Name things well
  + Write dates as YYYY-MM-DD
  + No empty cells
  + Each cell should only contain one data item
  + More columns than rows
  + Data dictionaries
  + Do not calculate, use fonts, or highlight
  + Make backups
  + Save files as plan-text

Carey and Papin, 2018

* Introduces simple ‘rules’ to help biologist approach programming.

Ellis and Leek, 2018

* Discusses data sets and how to package your data for collaboration.

**Instructor Support Materials (as separate documents):**

* Assessment Answers
* These materials were generated using bookdown in R Markdown. These files are available on github, [mgaynor1/ BLUE-Intro2RwithBiodiversityData](https://github.com/mgaynor1/BLUE-Intro2RwithBiodiversityData).