Why R?

First off, what is R?

* R is a programming language and software used to run code written in R.

Why R?

* Multi-functional
* Cross-disciplinary
* “Transferrable skill”

Why R in Ecology?

* Multi-functionality
  + Can “clean” data, analyze it with statistics, and make pretty pictures
  + Can also create other cool things with R-based tools (more on that later!)
* “Reproducibility” – no pointing and clicking
  + Easier to update with new data
  + Easy for someone to look at your code and find mistakes
  + Easy for someone (including you) to re-do similar processes or repeat the same process later!
* R works for many kinds of data
  + Not limited to what you can “handle” in Excel.
  + Can work with really big files
    - Many lines of data, geospatial data, genetics data, etc.
* You can make pretty pictures
  + Not only are pictures easily customizable, but you can also update them with new data or translate the code to similar projects to create graphics for similar needs

Interdisciplinary

* Used across many fields, not just ecology
* Data analysts at Google use the same functionalities of R that I use! (‘transferrable skill’)
* Image analysis, GIS, time series, genetics, statistics

Great community for support

* RStudio Community, Stack Overflow
* You can Google any error and there will be solutions online
* Because many researchers use R, many of the answers are geared toward researchers, not software engineers

Free, open-source, cross-platform

* Free is great
* You can contribute to R!
* Anything created in R is free for you to use
* You can use R on Mac, Windows, and Linux

R is multi-purpose

* Anything from data “cleaning”, to statistical analyses, to data visualization – can all be done in R
* R also has extensions to create beautiful websites, books, tutorials, and even interactive websites through other free R-based tools such as Quarto, RMarkdown, and Shiny.

Make sure everyone is able to download R and RStudio

* Explain the difference between R and RStudio
  + **R** is a programming language and software used to run code written in R.
  + **RStudio** is an integrated development environment (IDE) that makes using R easier. In this course we use RStudio to interact with R.
* install.packages(c("tidyverse", "lubridate", "ratdat"))
* library(tidyverse)
* library(lubridate)
* library(ratdat)