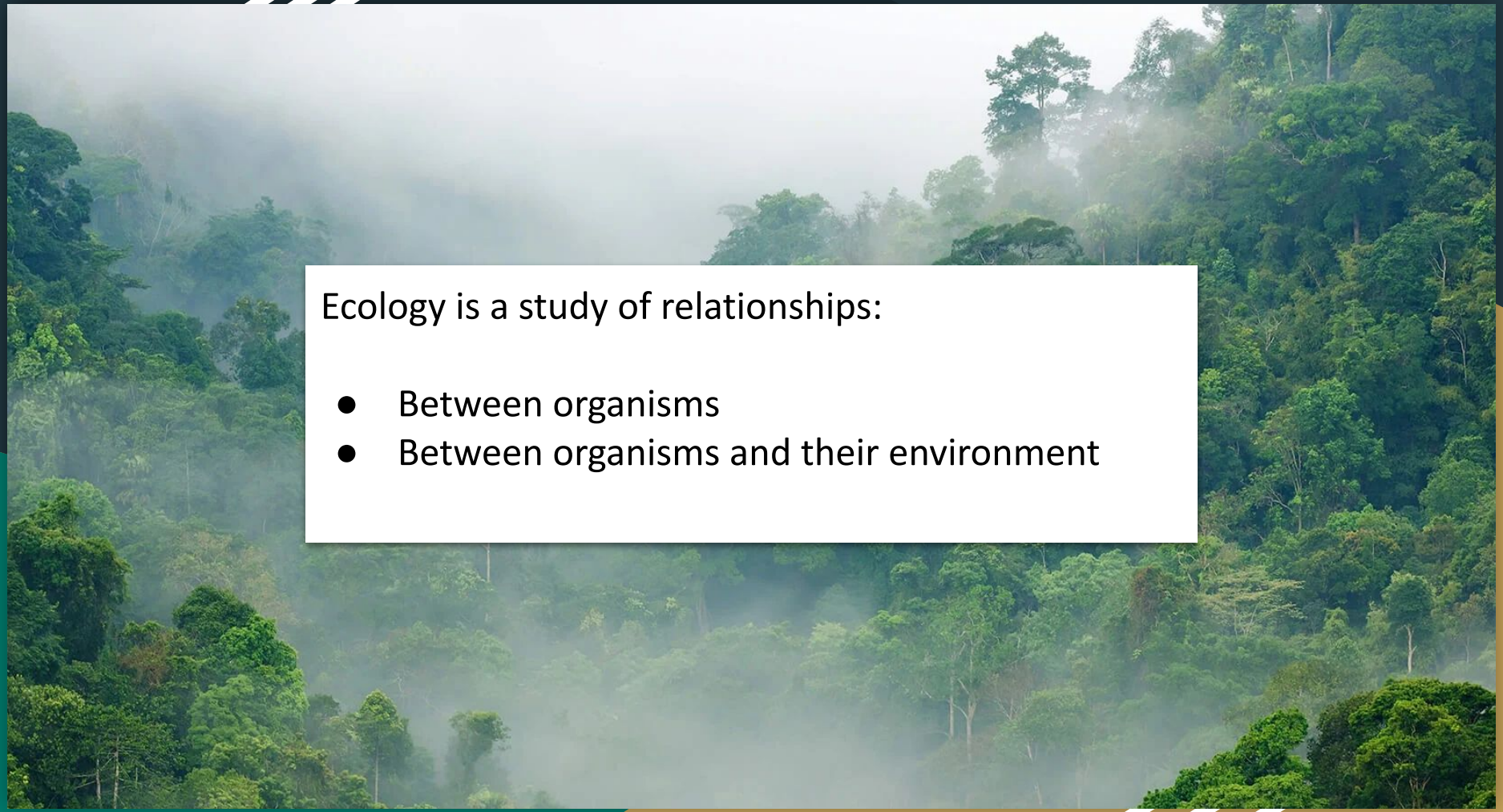
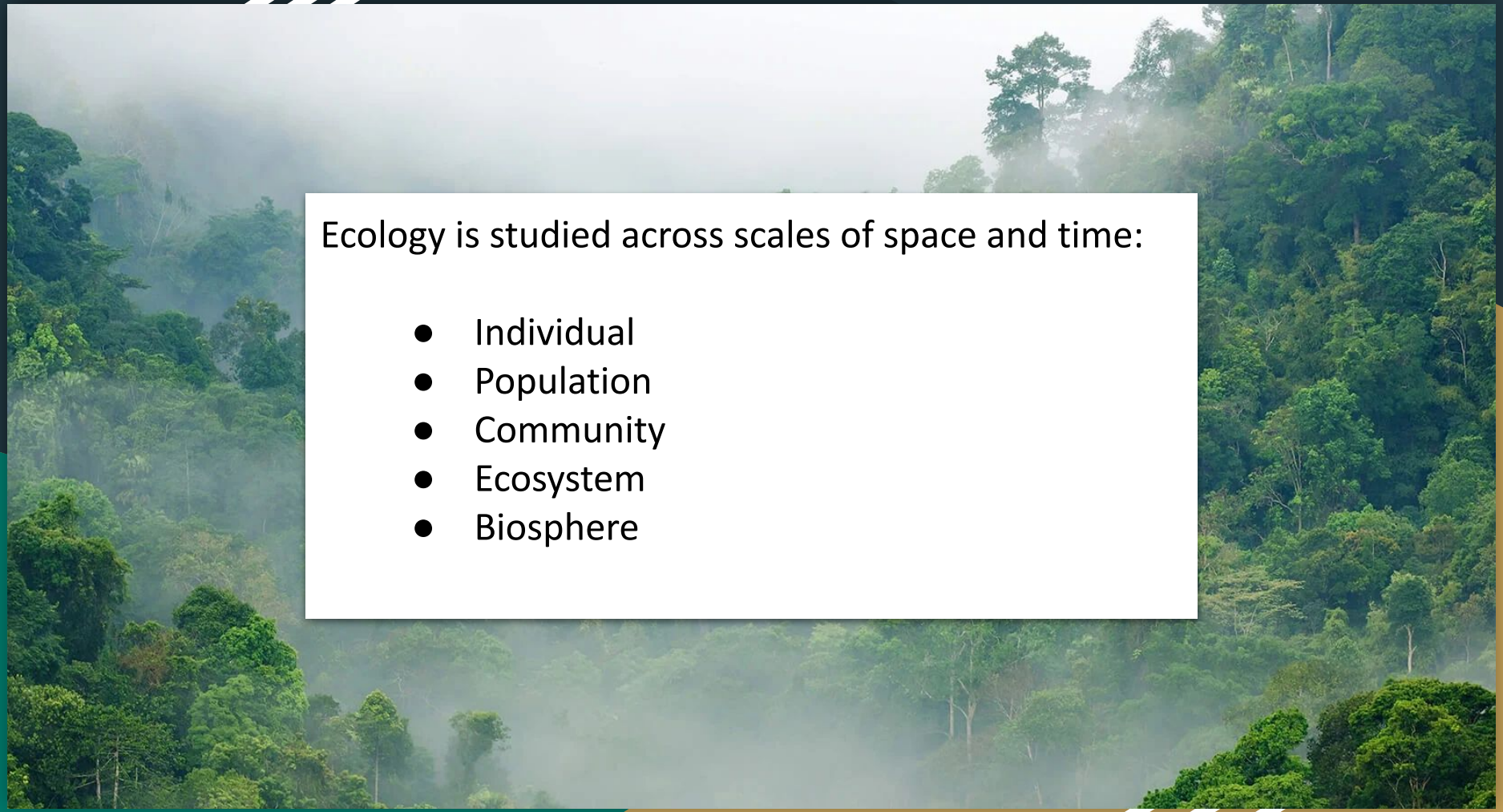
BISC 404: Ecology and Biodiversity



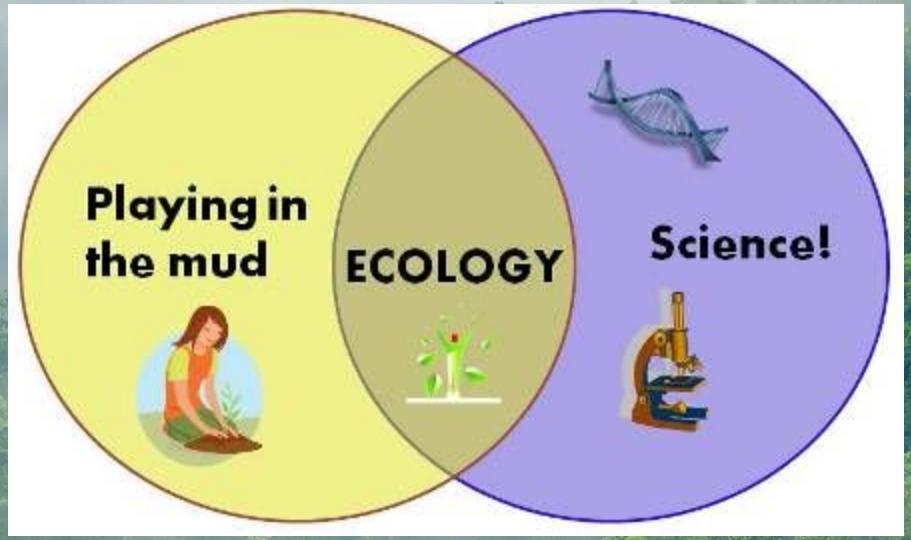
Ecology is a study of relationships:

- Between organisms
- Between organisms and their environment



Ecology is studied across scales of space and time:

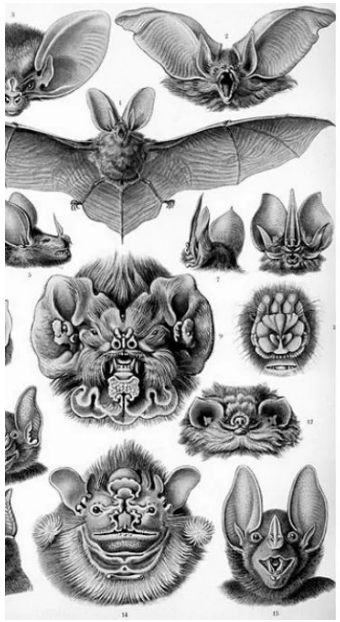
- Individual
- Population
- Community
- Ecosystem
- Biosphere



https://girlsaregeeks.wordpress.com/2010/06/18/ecology-a-venn-diagram/

Agenda

- Introductions
- How to read a scientific paper
- Resources
  - Course site
  - Discussion forum
  - R/Rstudio
  - Git/Github
  - Optional resources



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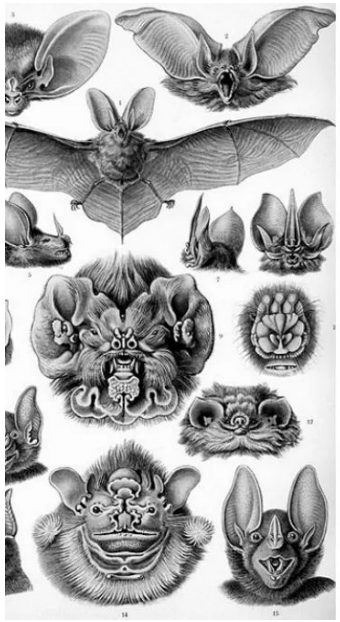
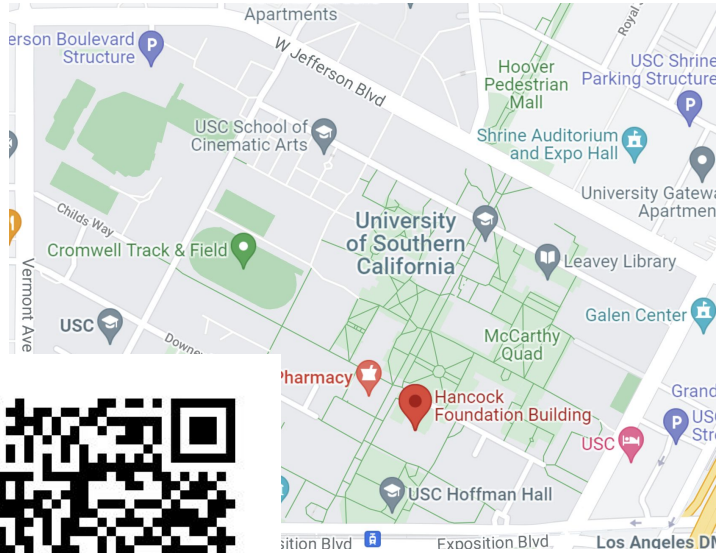


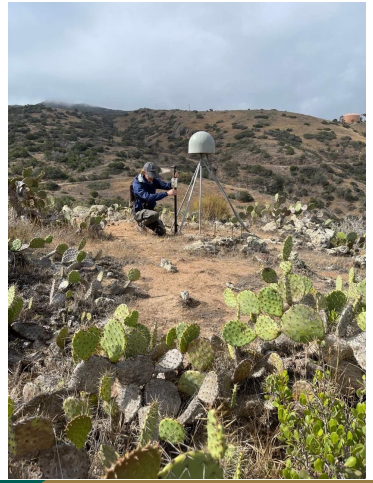
Charles Lehnen

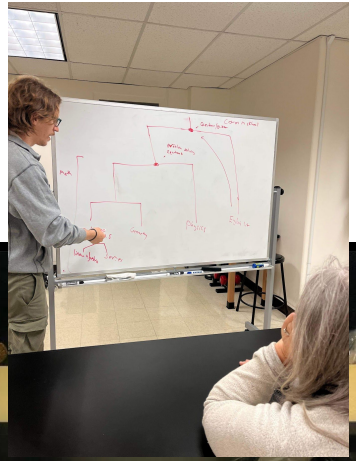
(lay - nun)
he / him / his
lehnen@usc.edu
[business hours within 5 hours]
Integrative and Evolutionary Biology PhD Candidate
Office hours:

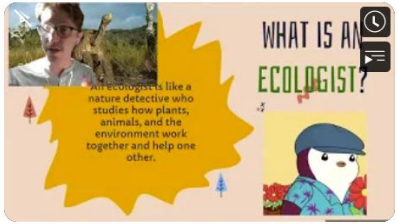
- Tuesdays 6:00-7:00pm virtual
- Wednesdays 5:00-6:00pm virtual and in-person
- By appointment

Office: AHF B10G







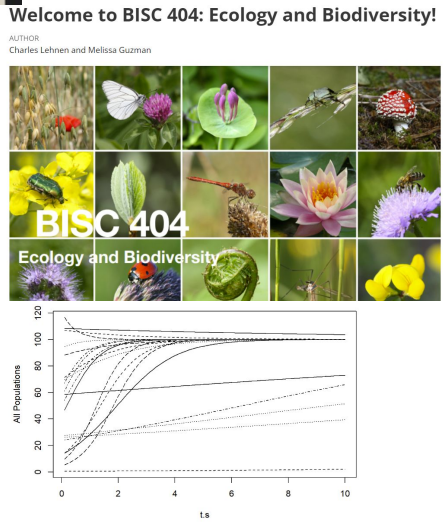


USC Wonderkids - Fall 2023 ·

29 views • 3 months ago

USC JEP STEM Programs

The first week of Fall 2023 focused on the



The Human Animal

Wonderkids

Ecology & Biodiversity

My goal this semester is to inspire students to:

- Get excited about ecology and biodiversity!
- Gain a stronger confidence in approaching scientific questions
- Gain practical computational skills that will be useful across fields of study

Introduce your neighbor!

1. What's your preferred name?
2. What year are you and what's your major?
3. What was the most recent biology course you took?
4. What do you hope to gain from this class? (no wrong answers)
5. Restaurant you recommend in LA?

Agenda

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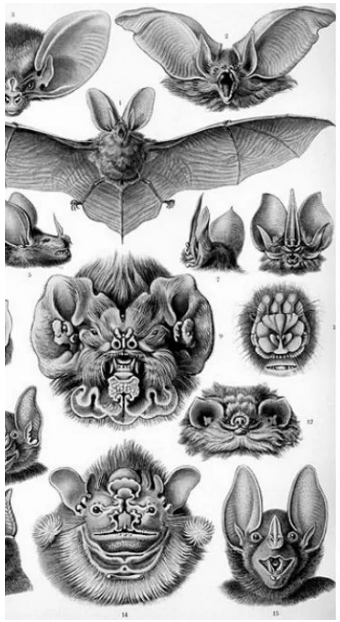
- **How to read a scientific paper**
- Resources



What is a Scientific Paper?

Preclinical testing of anti-human CD28 Fab' antibody in a novel nonhuman primate (NHP) small animal rodent model of xenogenic graft-versus-host disease (GVHD)

Keli L. Hippen[1], **Benjamin Watkins**[2], **Victor Tkachev**[3], **Amanda M. Lemire**[1], **Charles Lehnen**[1], **Megan J. Riddle**[1], **Karnail Singh**[2], **Angela Panoskaltsis-Mortari**[1], **Bernard Vanhove**[4,5], **Jakub Tolar**[1], **Leslie S. Kean**[#3], and **Bruce R. Blazar**[#1]

[1]Department of Pediatrics, Division of Hematology/Oncology and Blood and Marrow Transplantation, University of Minnesota; Minneapolis, MN USA 55455

[2]Aflac Cancer and Blood Disorders Center, Children's Healthcare of Atlanta, Emory University, Atlanta GA

[3]Ben Towne Center for Childhood Cancer Research, Seattle Children's Research Institute, Seattle WA, the University of Washington, Seattle WA, and the Fred Hutchinson Cancer Research Center, Seattle WA

[4]INSERM, UMR 1064-Center for Research in Transplantation and Immunology, Nantes, F44093 France; ITUN, CHU Nantes, Nantes, F44093 France; University of Nantes, Nantes, F44093 France

[5]Effimune SA, Nantes, France

[6]Department of Medicine, Division of Hematology/Oncology and Transplantation, University of Minnesota; Minneapolis, MN USA 55455

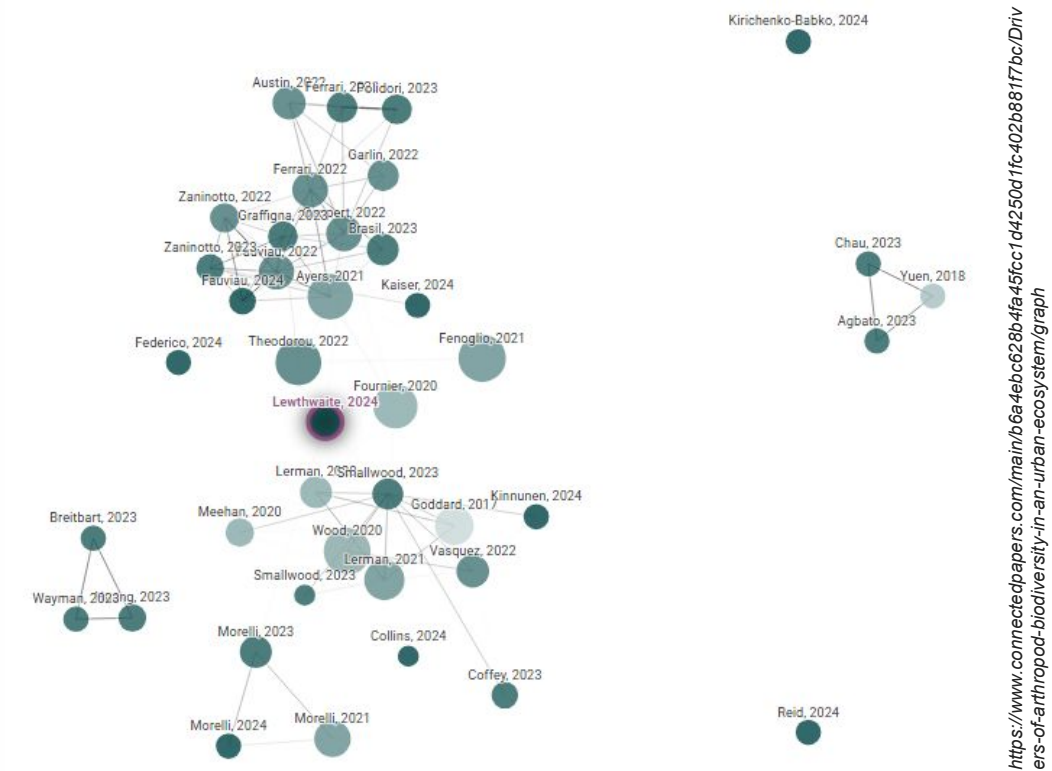
[#] These authors contributed equally to this work.

Abstract

Background—Graft-versus-host disease (GVHD) is a severe complication of hematopoietic stem cell transplantation. Current therapies to prevent alloreactive T cell activation largely cause generalized immunosuppression and may result in adverse drug, anti-leukemia and anti-pathogen responses. Recently, several immunomodulatory therapeutics have been developed that show efficacy in maintaining anti-leukemia responses while inhibiting GVHD in murine models. To analyze efficacy and better understand immunological tolerance, escape mechanisms, and side-

Hippen, Keli L., et al. "Preclinical testing of anti-human CD28 Fab'antibody in a novel nonhuman primate (NHP) small animal rodent model of xenogenic graft-versus-host disease (GVHD)." Transplantation 100.12 (2016): 2630.

What is a Scientific Paper?

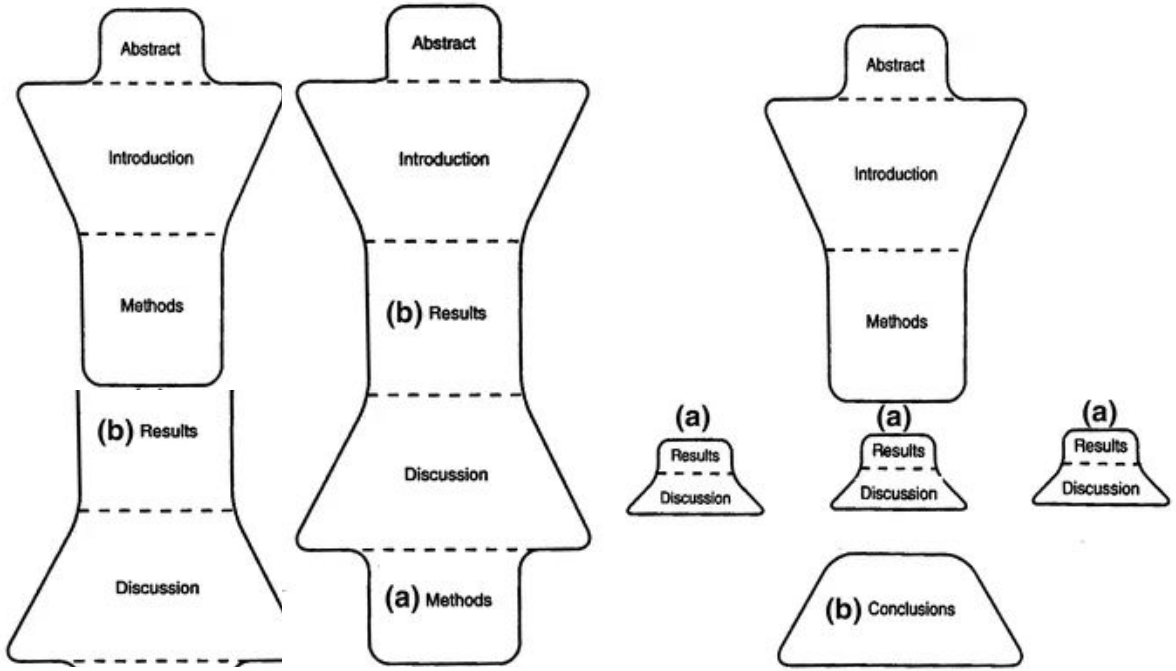


https://www.connectedpapers.com/main/b6a4ebc628b4fa45fcc1d4250d1fc402b881f7bc/Drivers-of-arthropod-biodiversity-in-an-urban-ecosystem/graph

How to Read a Paper

1. How are papers organized?

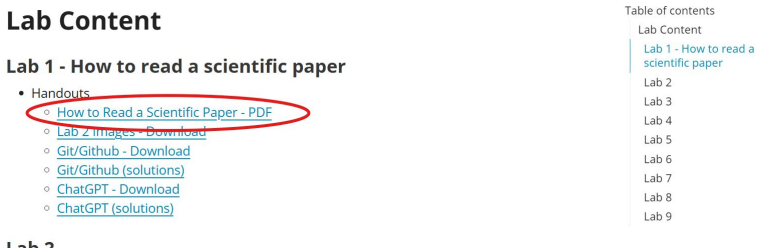
    - Summary or Abstract
    - Introduction
    - Materials and Methods
    - Results
    - Discussion



Englander, Karen. "Writing the Five Principal Sections: Abstract, Introduction, Methods, Results and Discussion." Writing and Publishing Science Research Papers in English. Springer, Dordrecht, 2014. 39-55.

How to Read a Paper

1. How are papers organized? Why are papers organized this way?
2. How do I prepare to read a paper, particularly in an area not so familiar to me?
3. What difficulties can I expect?
4. How do I understand and evaluate the contents of the paper?



https://charleslehnen.github.io/BISC_404_Ecology_and_Biodiversity/

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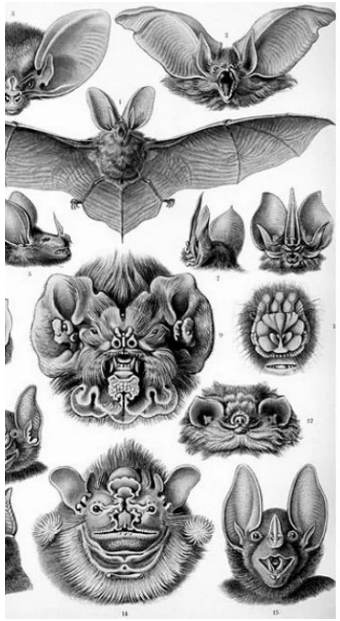

Assignments

1. R/Rstudio downloaded
2. Git/Github downloaded
3. Github shared with me
4. R/Rstudio and Git/Github integrated
5. Github repo organized

Resources

- **Course site**
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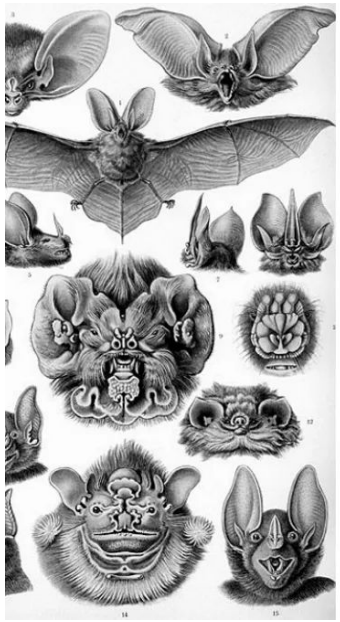

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Welcome to BISC 499: Ecology and Biodiversity!

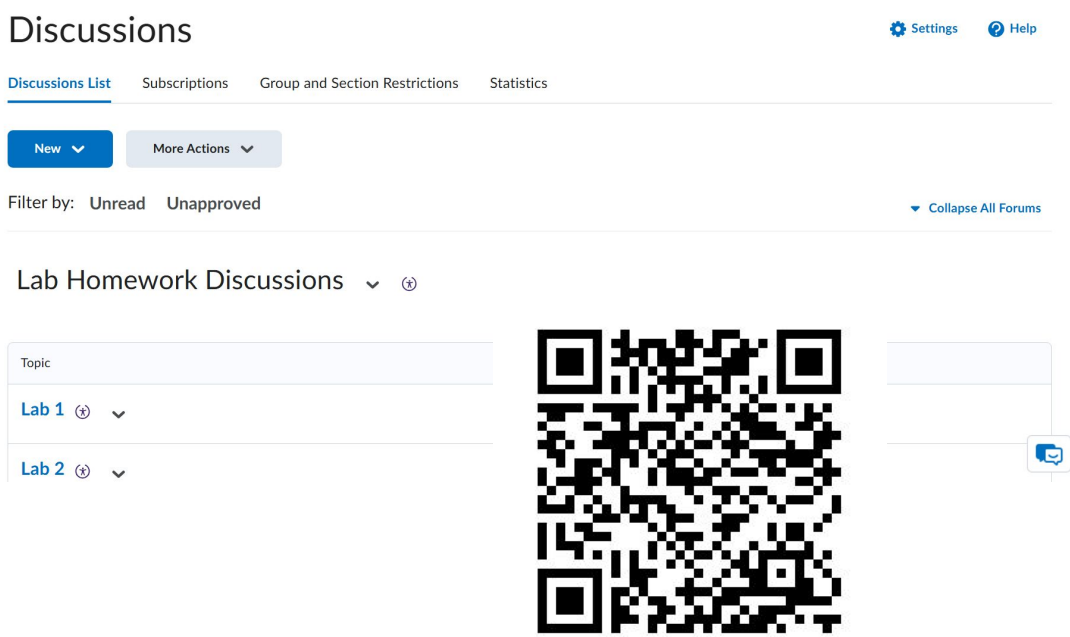
AUTHOR

Charles Lehnen and Melissa Guzman

Table of contents

Resources

- Course site
- **Discussion forum**
- R/Rstudio
- Git/Github
- Optional Resources



https://brightspace.usc.edu/d2l/le/176117/discussions/List?dst=1

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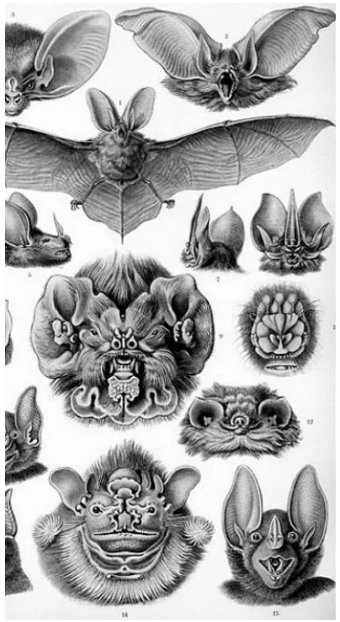
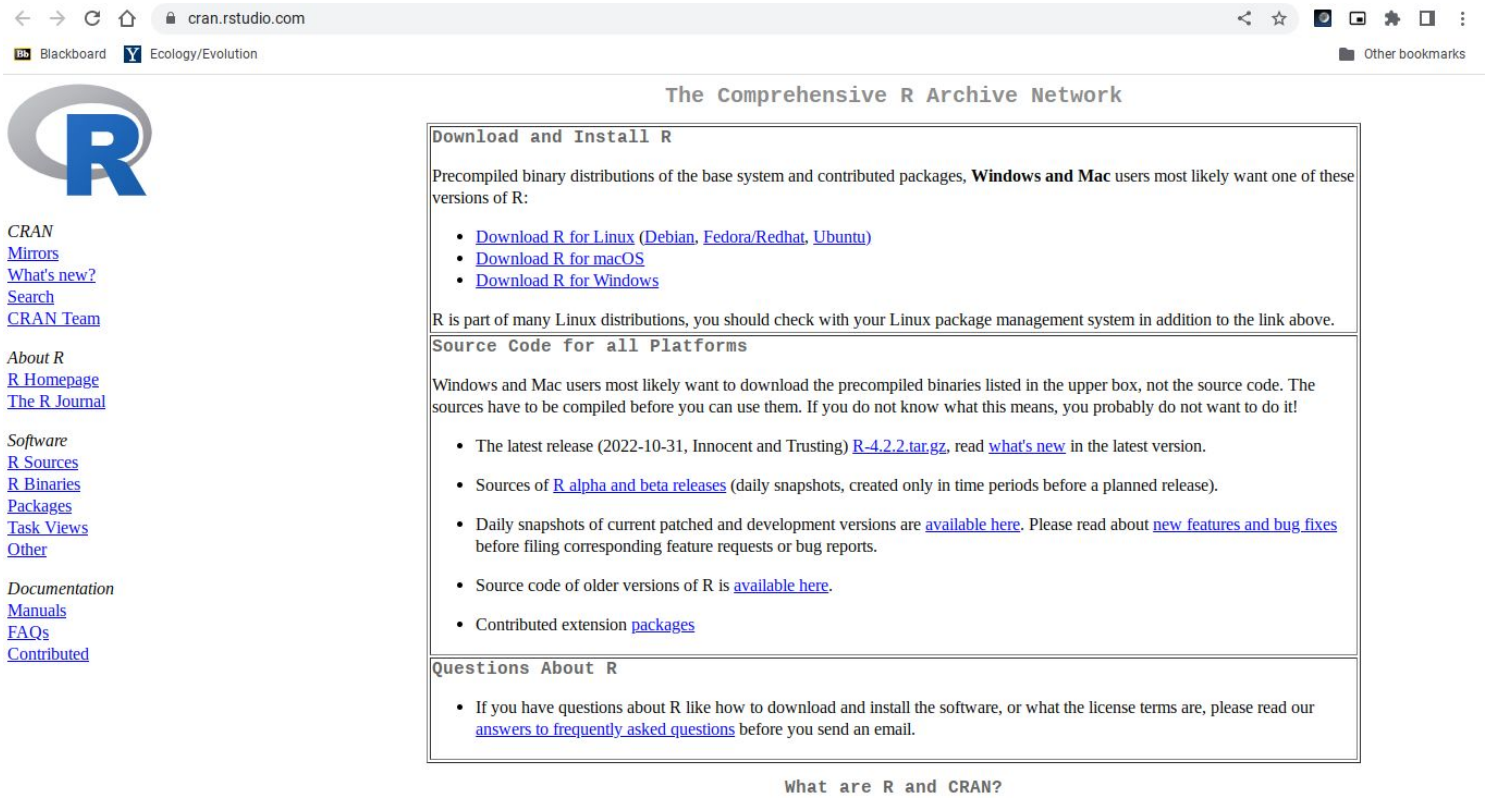


R/Rstudio: *cran.rstudio.com*



https://posit.co/download/rstudio-desktop/

1: Install R

RStudio requires R 3.3.0+. Choose a version of R that matches your computer's operating system.

DOWNLOAD AND INSTALL R

2: Install RStudio

DOWNLOAD RSTUDIO DESKTOP FOR WINDOWS

Size: 215.66 MB | SHA-256: 93C7F307 | Version: 2023.12.0+369 | Released: 2023-12-20

Resources

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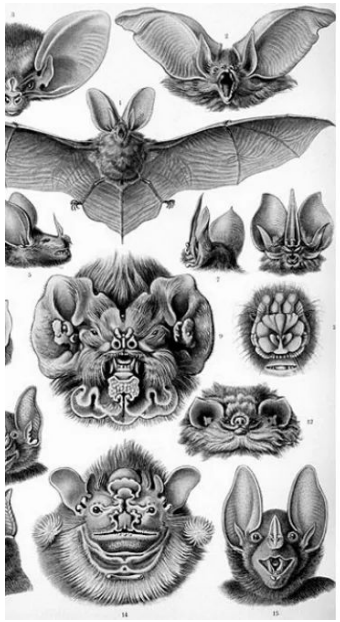
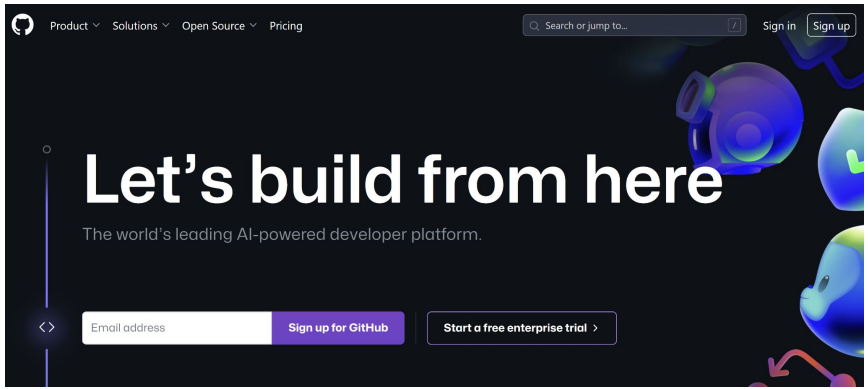


https://github.com/



Introduction to Git/GitHub

```html
<div style="text-align:center;">
  <img src="images/clipboard-319957857.png" width="184" />
  <img src="images/clipboard-3635929608.png" width="192" />
</div>
```

In this lab, we will explore the fundamentals of Git and GitHub, crucial tools for modern-day software development and data science. Git is a distributed version control system that enables you to track changes in your codebase, collaborate with others, and maintain a history of changes to your project.

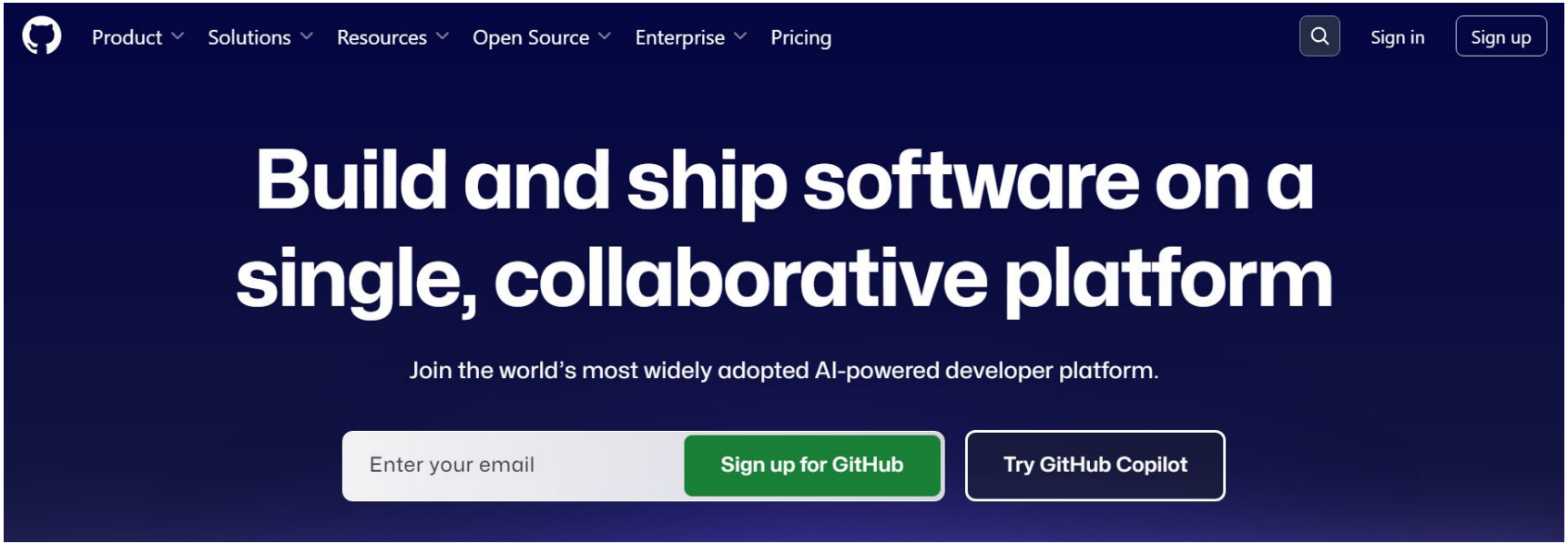
This is not a comprehensive guide to Git/Github, but should introduce you to the basics.

Git vs. GitHub

While Git and GitHub are often mentioned together, they are distinct entities:

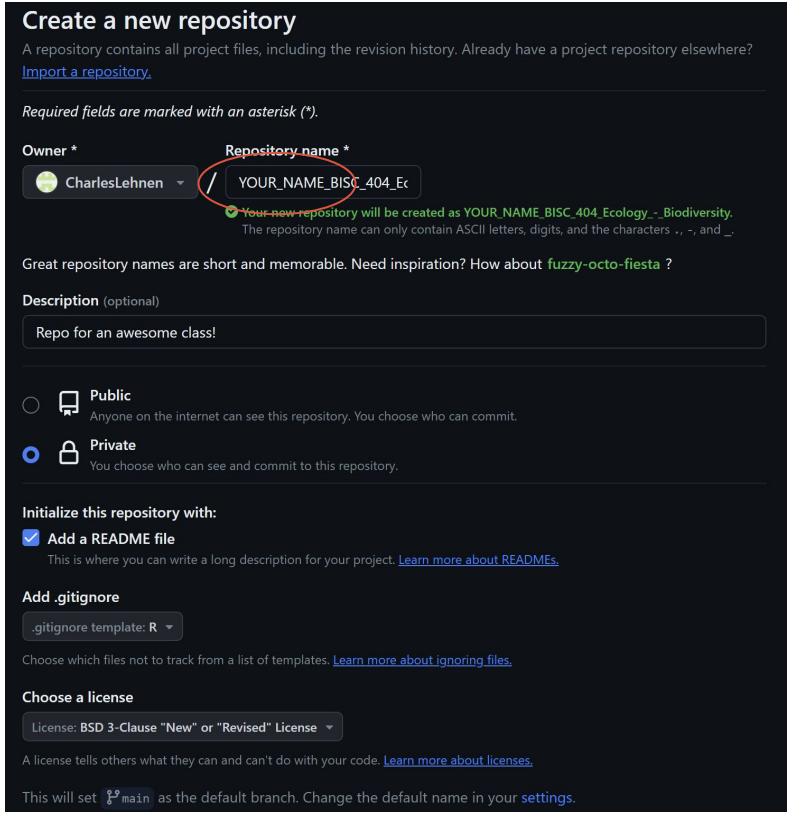
- **Git**: A version control system that runs locally on your computer. You can use Git without GitHub to

https://github.com/



Create account with your **USC** email address

R/Rstudio: *GitHub integration*



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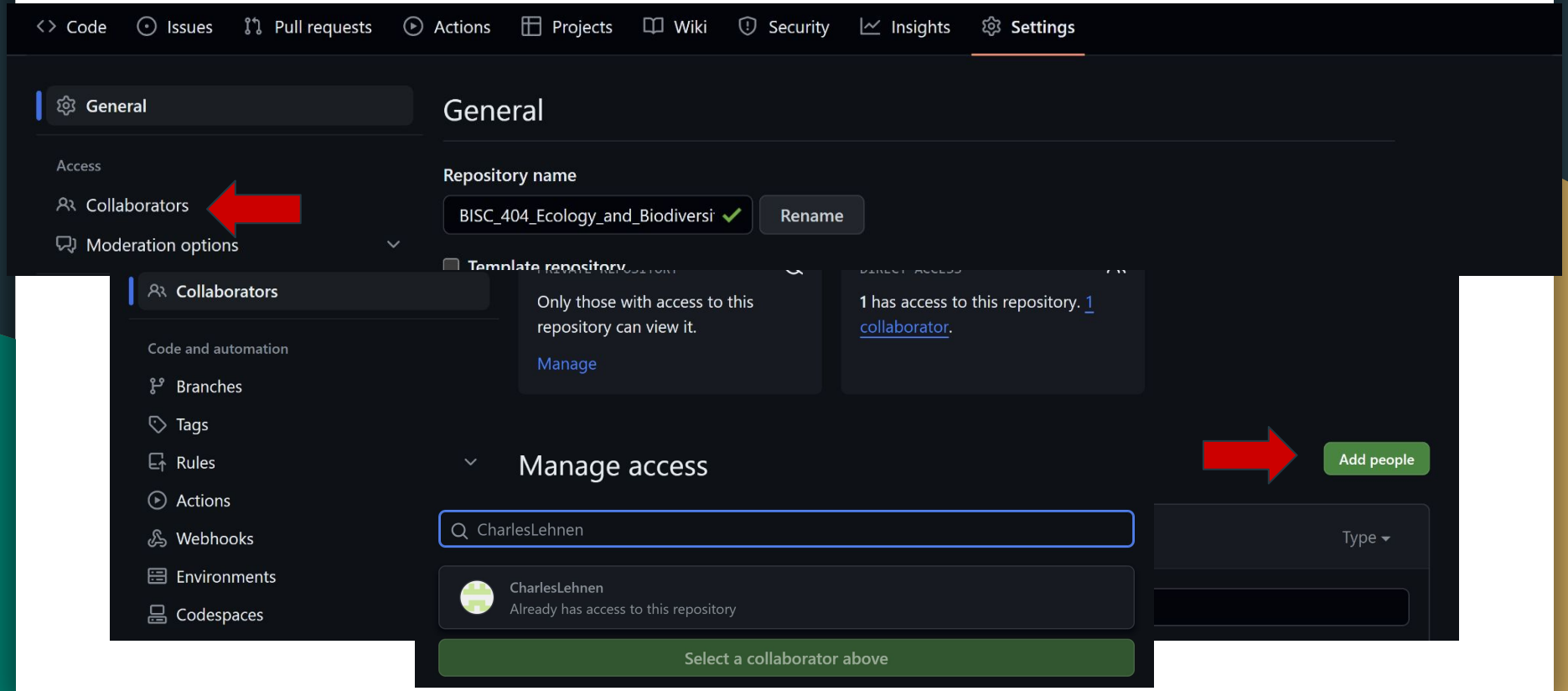
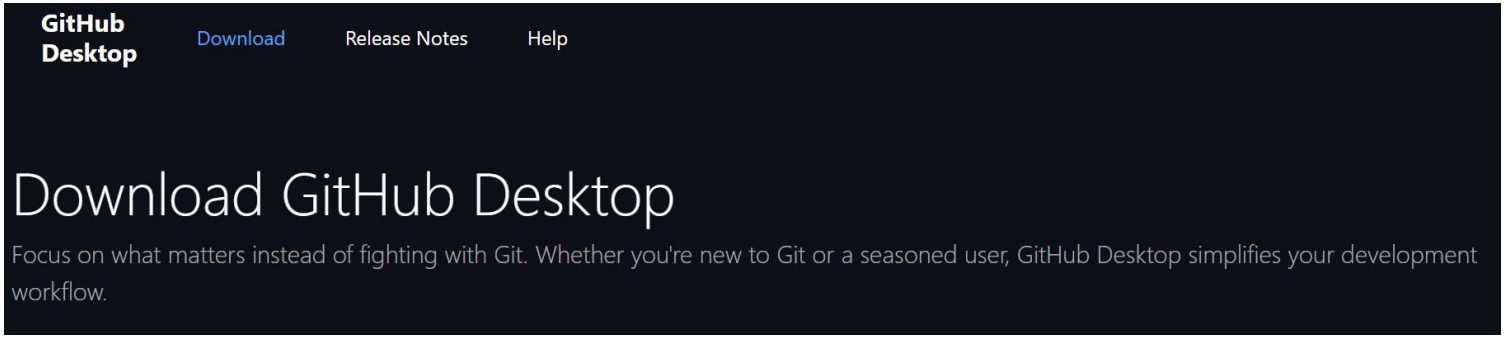
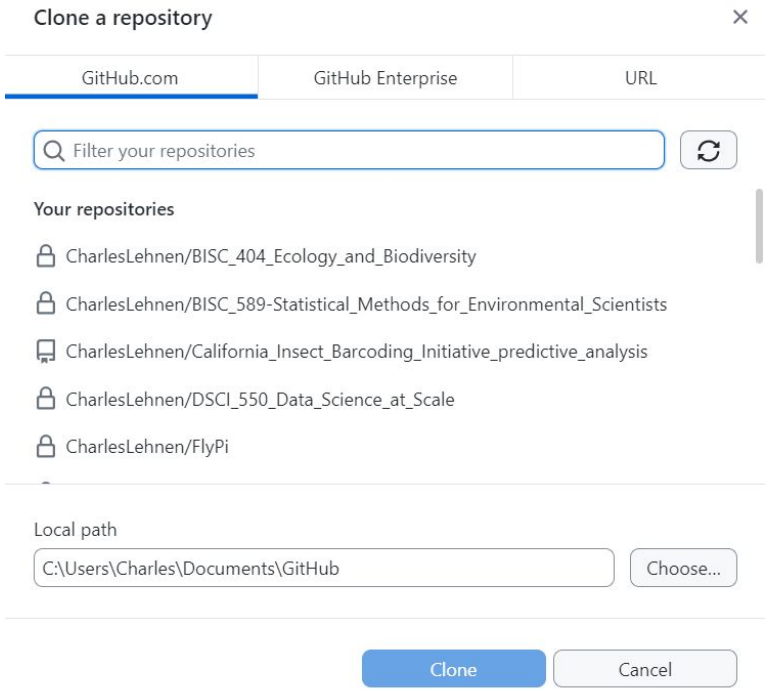


https://desktop.github.com/download/



Be sure to clone to a location you will remember and that makes sense!



Resources

- Course site
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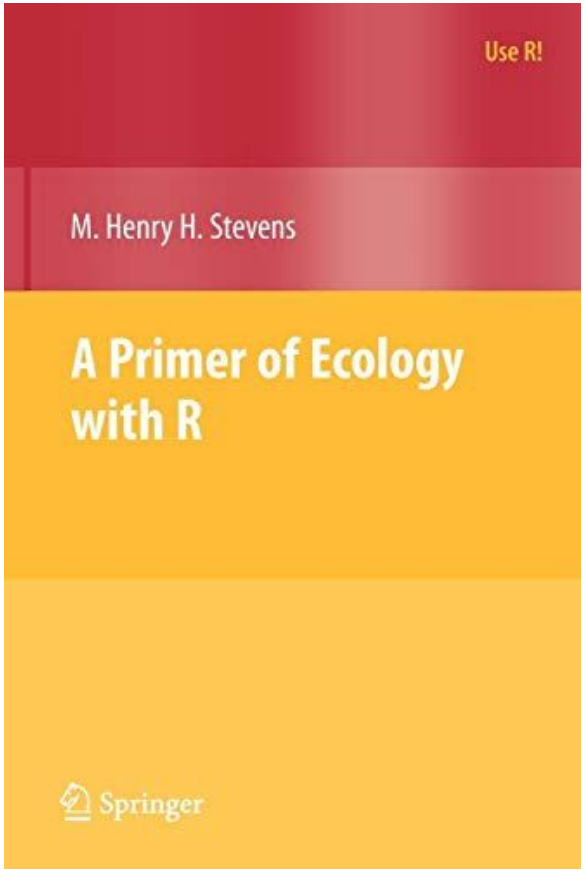
- Git/Github
- **Optional resources**

Optional Resource

A Primer of Ecology with R

Martin Henry H. Stevens

http://www.cas.miamioh.edu/~stevenmh/stevens-2009-part.pdf



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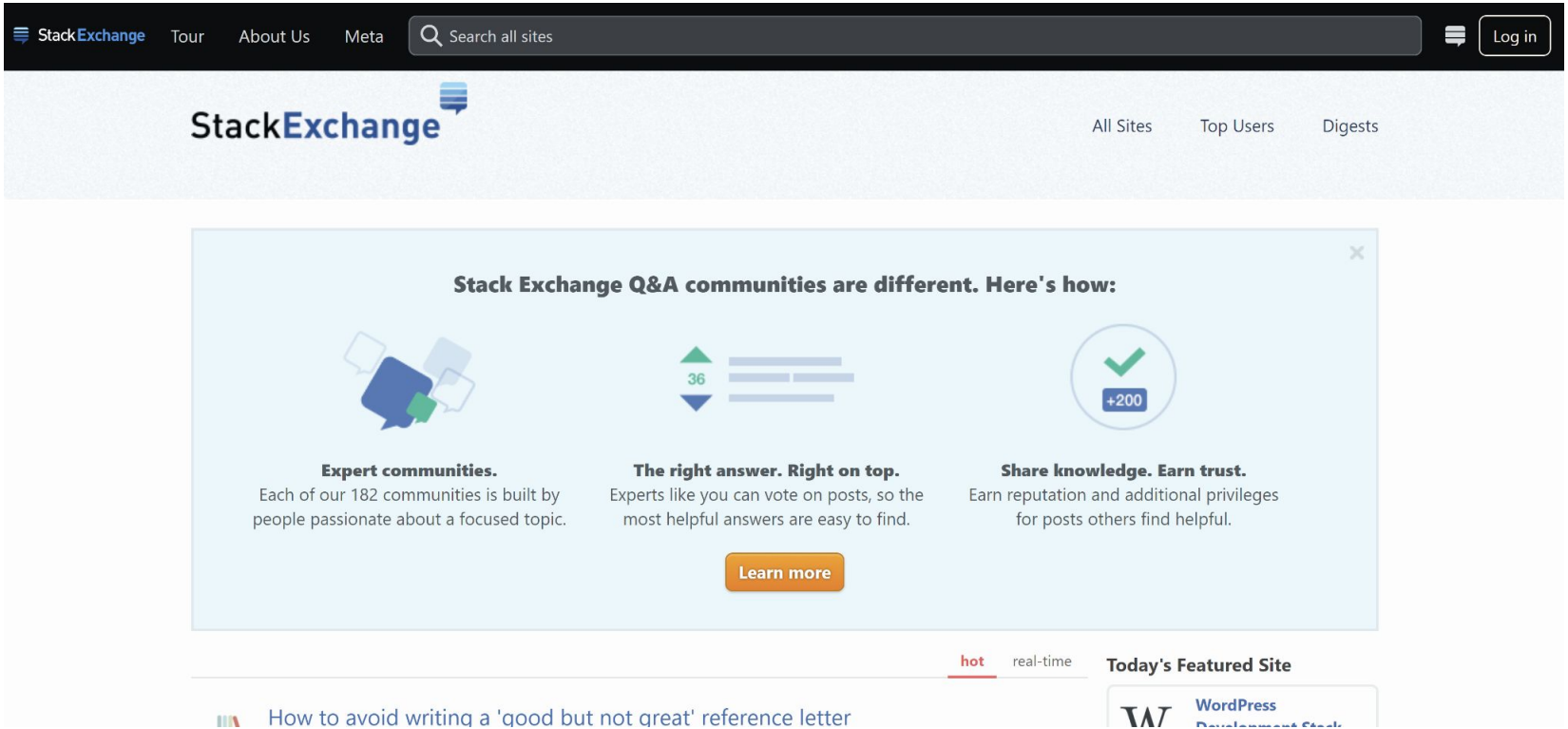

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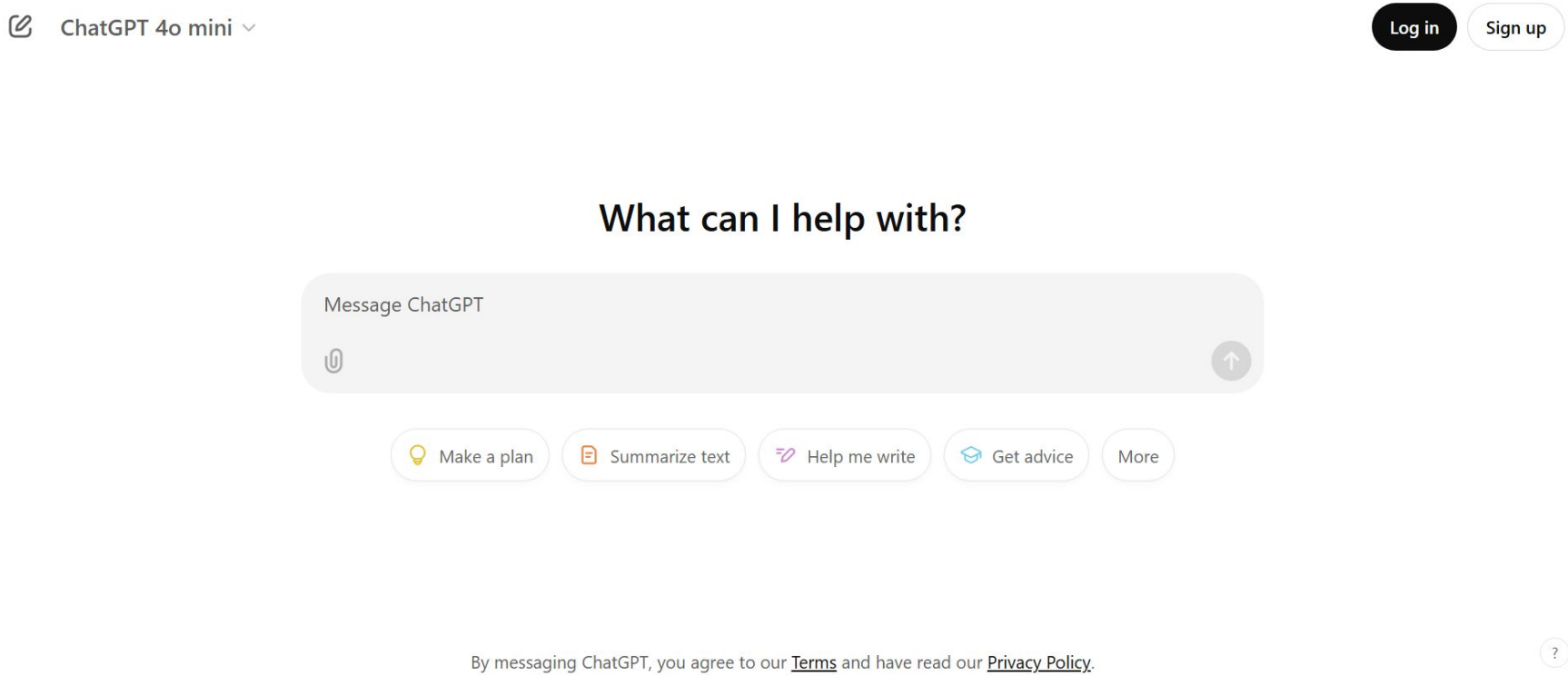

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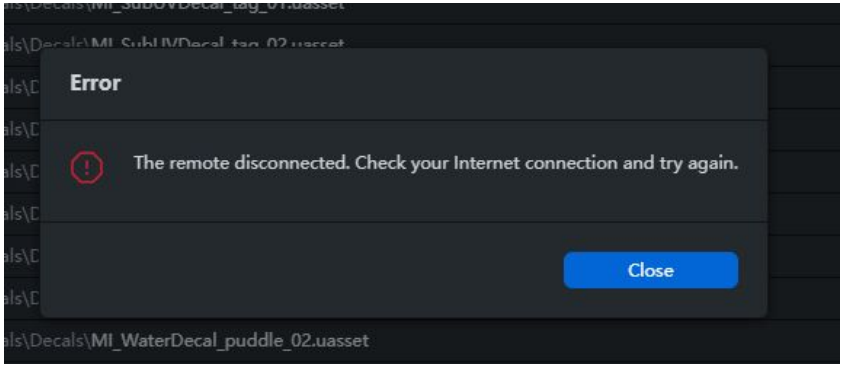
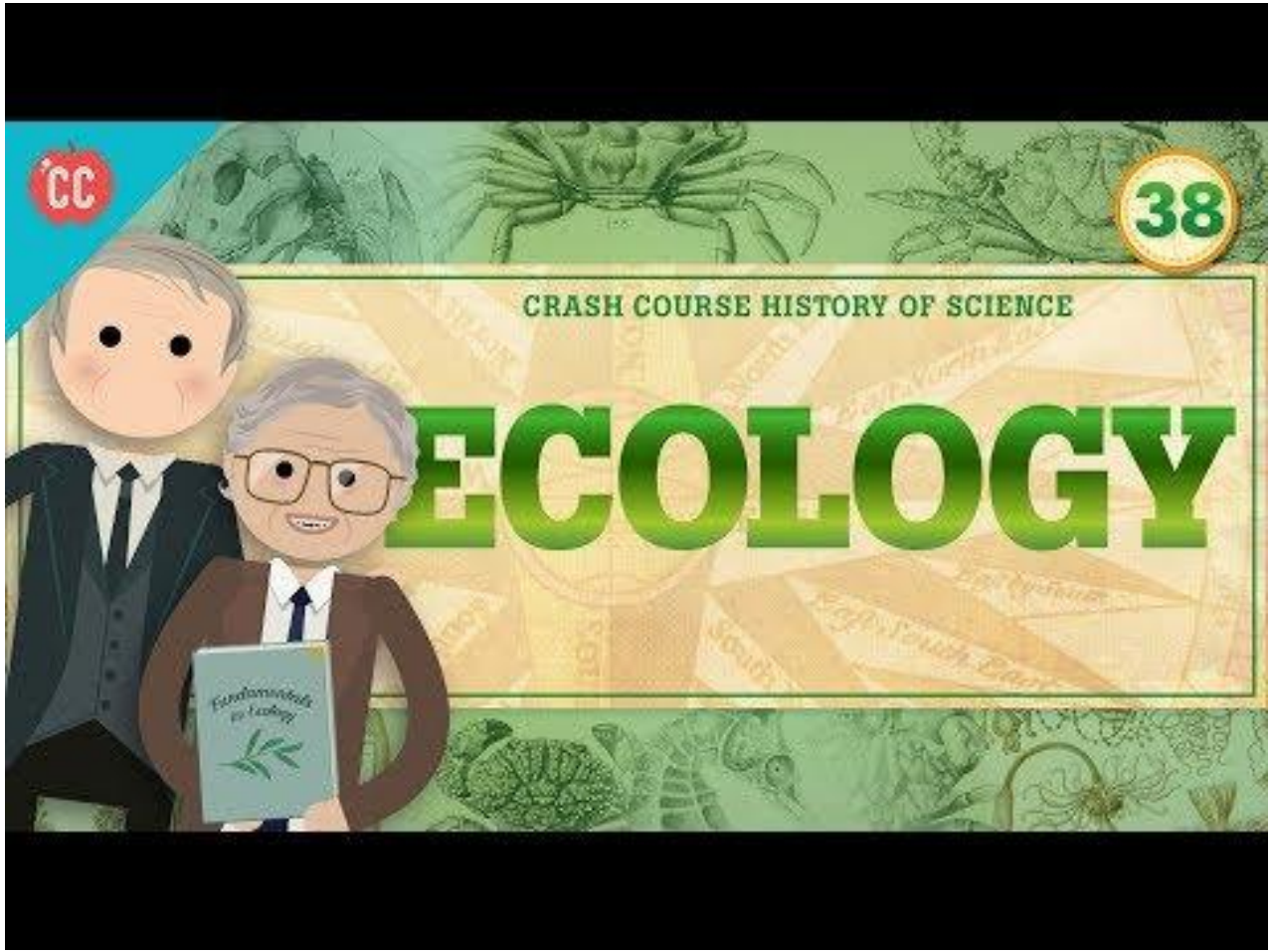
Appendix

GitHub Troubleshooting



In terminal: `git config --global http.postBuffer 157286400`


CC
38
CRASH COURSE HISTORY OF SCIENCE
ECOLOGY

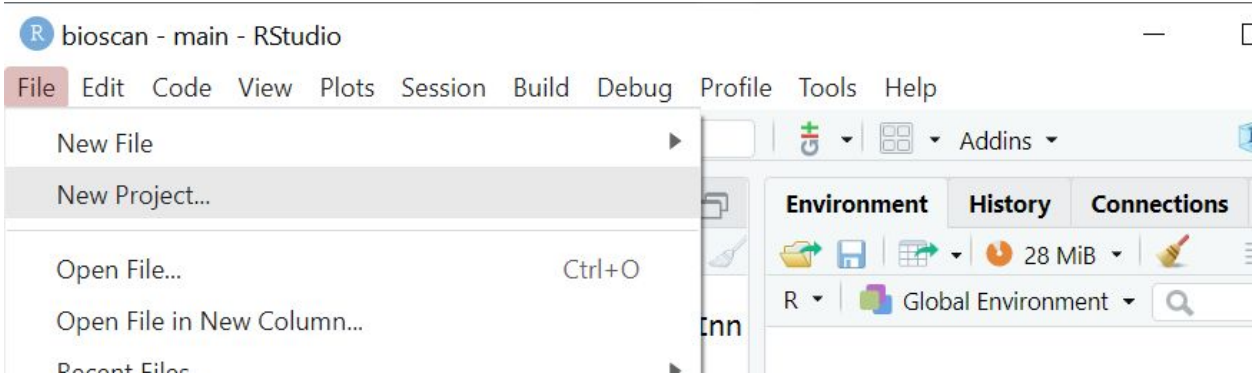
R/Rstudio: *GitHub integration*

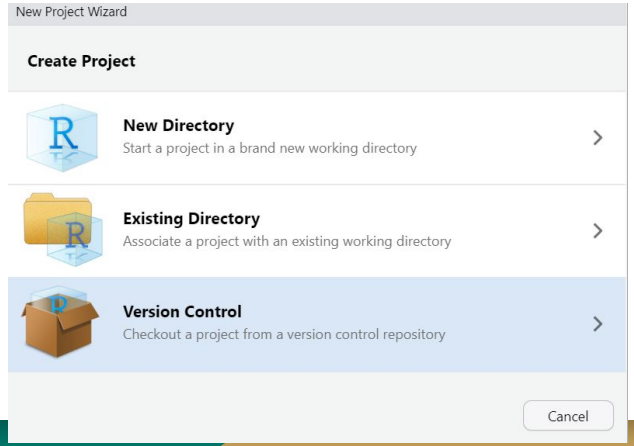
Download and install Git with default settings

- Windows: https://git-scm.com/download/win
- Mac: https://central.github.com/deployments/desktop/desktop/latest/darwin

(I also like Github Desktop too, but is optional)

R/Rstudio: *GitHub integration*





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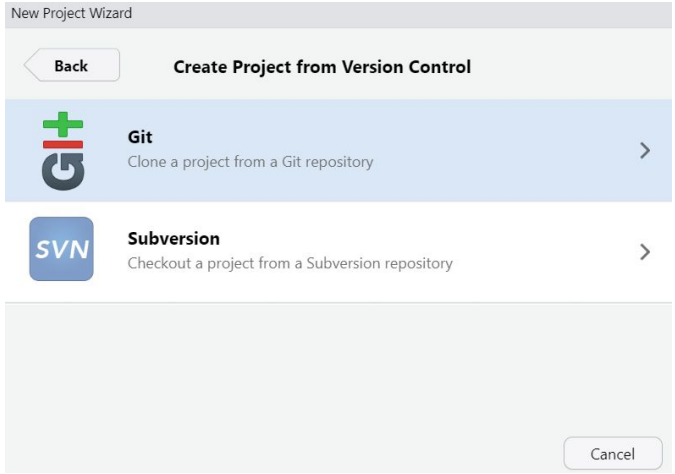

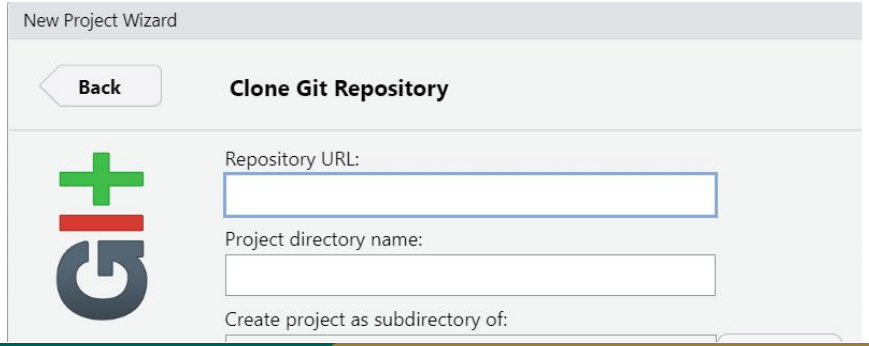

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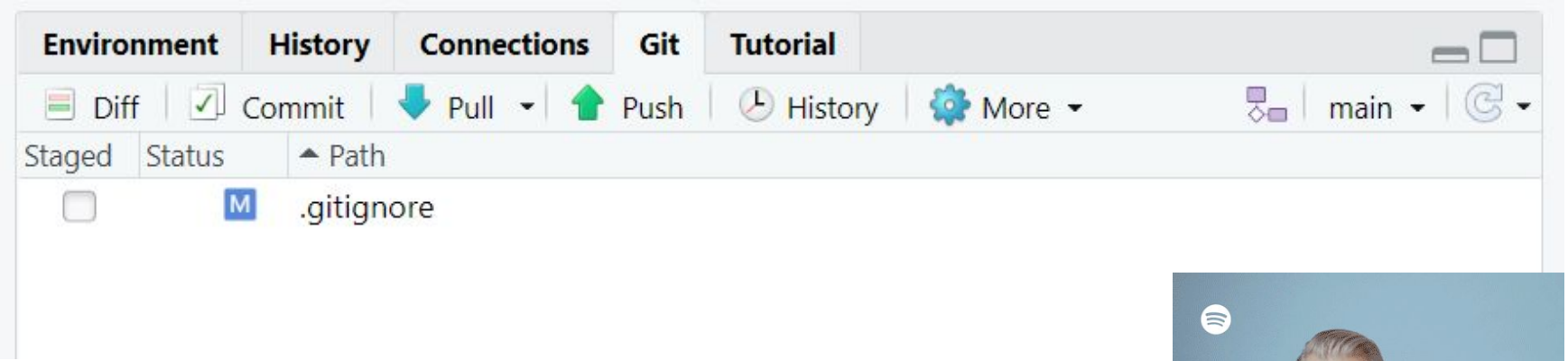
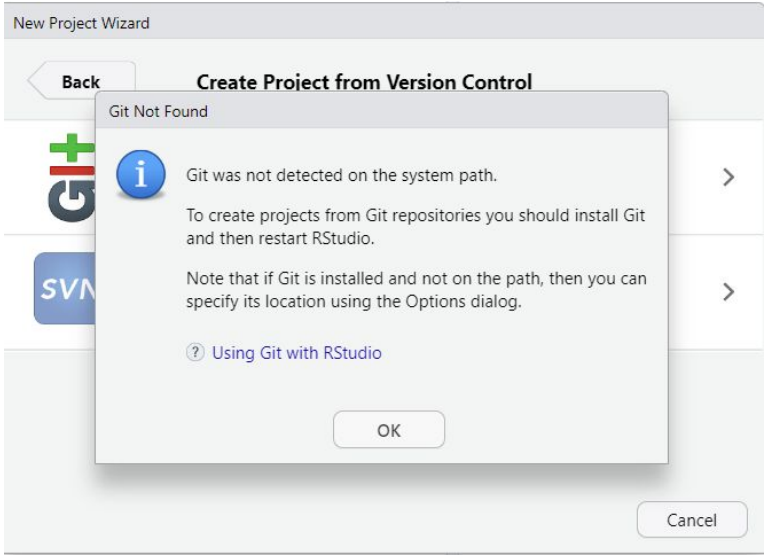
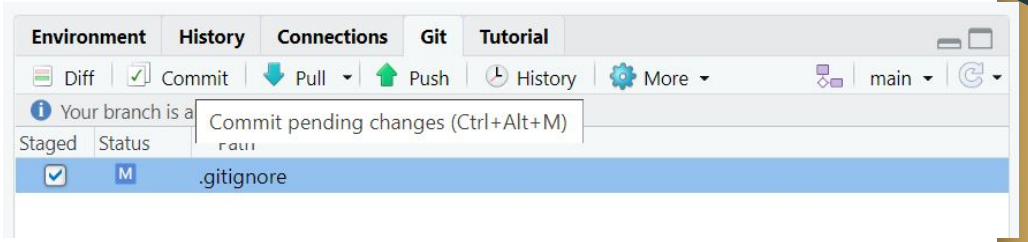


R/Rstudio: *GitHub integration troubleshooting*





- Then download git separately: https://github.com/git-guides/install-git

R/Rstudio: *GitHub integration troubleshooting*

```
19:00:28: *** Please tell me who you are.

Run

  git config --global user.email "you@example.com"
  git config --global user.name "Your Name"
```

- Then:

1) Open your command line
2) Copy/paste in: git config --global user.email "you@example.com"
3) Replace the text in quotes with the email you used to sign up for Github with
4) Press enter
5) Repeat with your username

R/Rstudio: *GitHub integration troubleshooting*

```
>>> /usr/bin/git push origin HEAD:refs/heads/main
remote: Support for password authentication was removed on August 13, 2021.
remote: Please see https://docs.github.com/en/get-started/getting-started-with-git/about-remote-repositories#cloning-with-https-urls for information on currently recommended modes of authentication.
fatal: Authentication failed for 'https://github.com/amkaspar1/Bisc_404_Ecology_and_Biodiversity.git/'
```

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This is how I solved, step by step

1. Click on your Profile Icon (top-right on Github website)
2. Settings
3. Developer settings (bottom-left)
4. Personal access tokens
5. fine-grained tokens
6. "Generate new token"
7. Write a Token name
8. Pick an expiration date from the menu or a custom one
9. Repository access> All repositories
10. Open "Repository permissions" menu
11. Look for the "Contents" row
12. From the menu at right select "Access> Read and Write"
13. "Generate token" (bottom-left)

Try to push in Rstudio. When prompted for your Github password, paste in this token instead