TUTORIAL

How to customize the ‘Exploits_predictions’ GitPage

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CONTENT

This presentation will walk through using and customizing the “exploits_predictions” GitPage

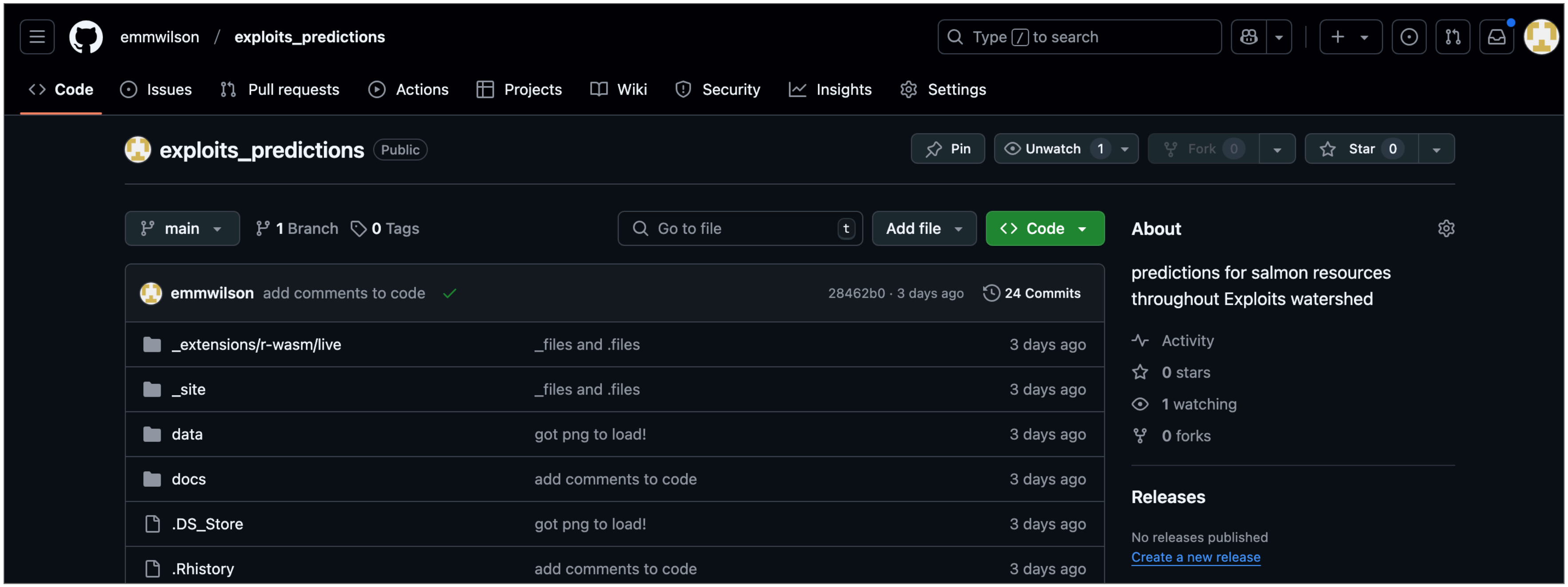
- Using Github
- Parts of a Quarto Webpage
- The website itself!
  - Home tab
  - Slider tab
  - Map tab
- Getting it online

GITHUB BASICS

Somewhere to store, share, collaborate on code/software

REPOSITORIES

This is where you store all your code/data/versions etc
All of the information for this website is at my repository: https://github.com/emmwilson/exploits_predictions



emmwilson add comments to code ✓ 28462b0 · 3 days ago 24 Commits

_extensions/r-wasm/live	_files and .files	3 days ago
_site	_files and .files	3 days ago
data	got png to load!	3 days ago
docs	add comments to code	3 days ago
.DS_Store	got png to load!	3 days ago
.Rhistory	add comments to code	3 days ago

predictions for salmon resources throughout Exploits watershed

0 stars
1 watching
0 forks

No releases published

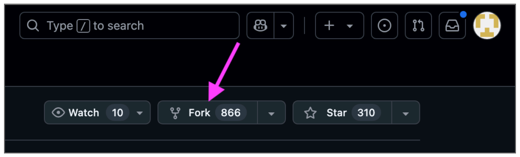
YOUR OWN VERSION

I don’t want you changing this version of the website
So let’s make you your own!
To do this we:

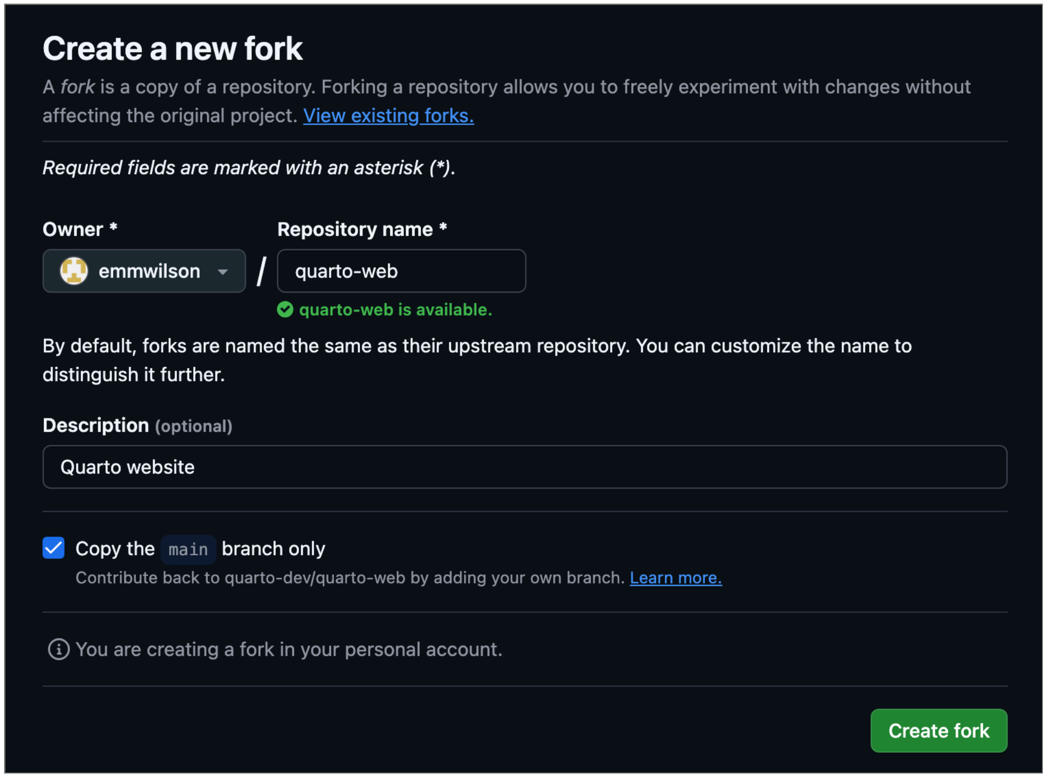
1. fork the repository to your Git account
2. clone the forked repository to your computer

FORK

In the top right corner of
emmwilson/exploits_predictions
click fork



Then give your repository its own name and description



Create a new fork

A *fork* is a copy of a repository. Forking a repository allows you to freely experiment with changes without affecting the original project. View existing forks.

Required fields are marked with an asterisk (*).

Owner * emmwilson / Repository name * quarto-web

quarto-web is available.

By default, forks are named the same as their upstream repository. You can customize the name to distinguish it further.

Description (optional)

Quarto website

☑ Copy the `main` branch only

Contribute back to quarto-dev/quarto-web by adding your own branch. Learn more.

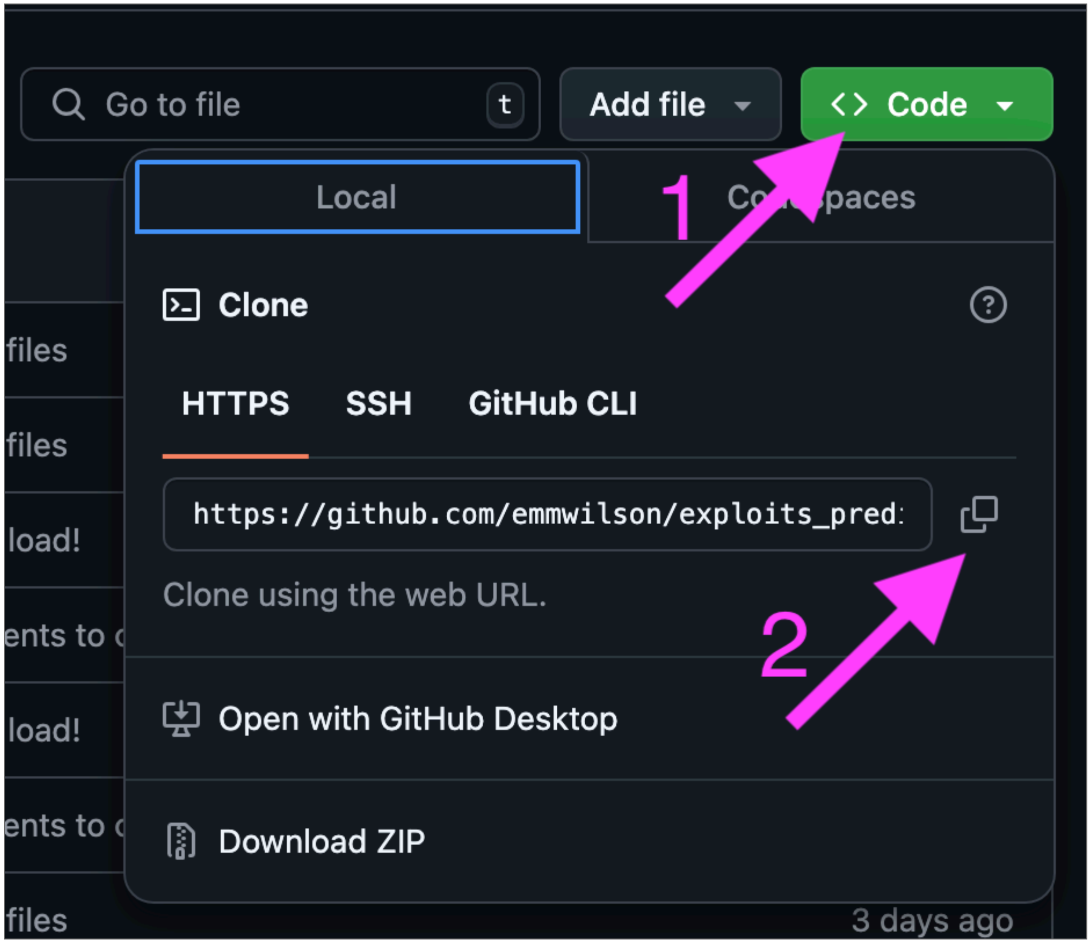
ⓘ You are creating a fork in your personal account.

Create fork

CLONE

Now to get the repository onto your computer to work on
We will do this using RStudio

1. In GitHub (in your own version of the repository) copy the url

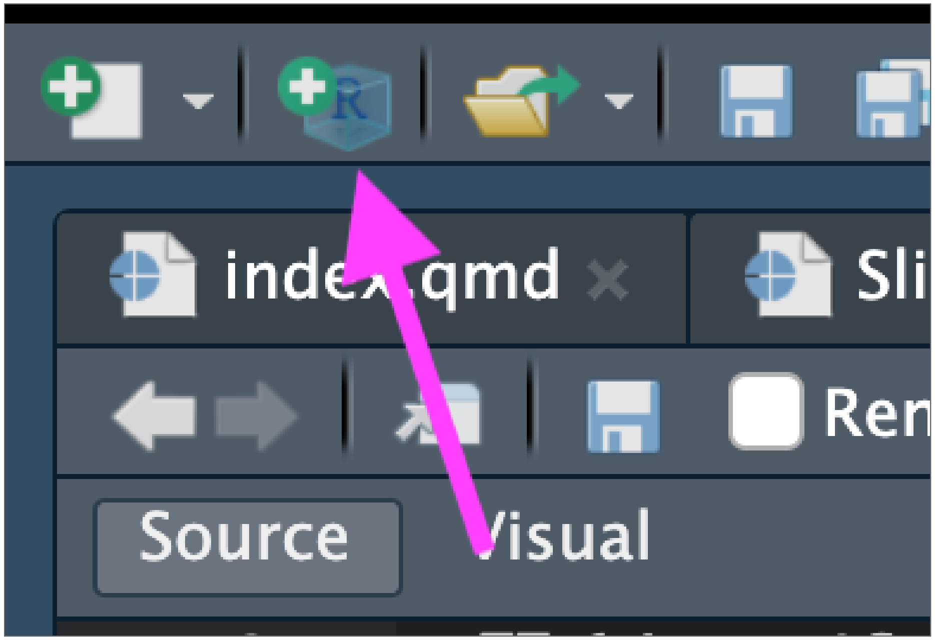


```
https://github.com/emmwilson/exploits_pred:
```

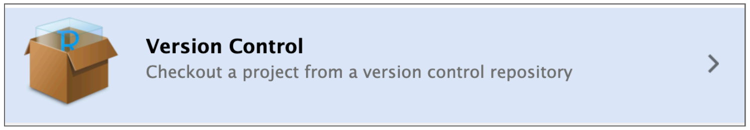
CLONE

2. Create a new project

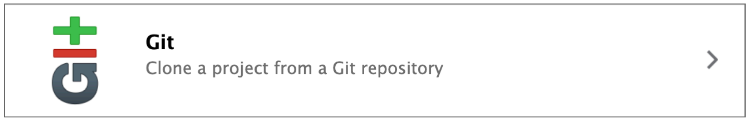
i.



ii. Select Version control, using GIT



Version Control
Checkout a project from a version control repository



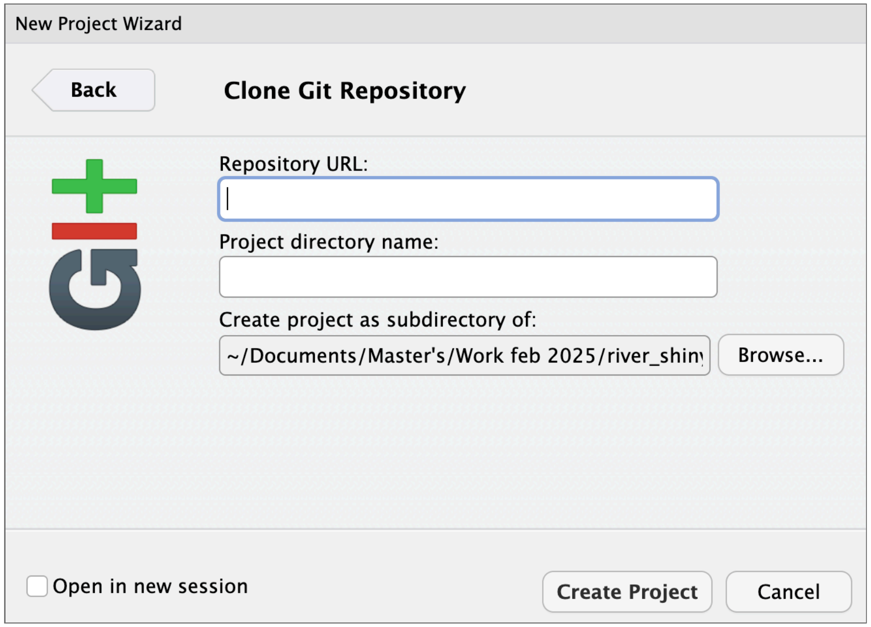
Git
Clone a project from a Git repository

CLONE

2. Create a new project

iii. Paste in the URL

iv. Give the repository a folder name on your computer, and choose where to store it



Repository URL:

Project directory name:

Create project as subdirectory of: ~/Documents/Master's/Work feb 2025/river_shiny

GIT IN RSTUDIO

Now as you work on the project you can keep track of your changes using GitHub

This is done by:

1. Commit: creates a snapshot of the repository with the specified chanegs
2. Push: send the changes to the repository online

RESOURCES

Skipped over installing git:
https://github.com/git-guides/install-git

Other helpful places to look for instructions
https://docs.github.com/en/get-started/start-your-journey/about-github-and-git
https://happygitwithr.com/rstudio-git-github.html

PARTS OF A QUARTO WEBPAGE

.QMD FILES

Each of these files specifies a different page on the website.
For example:

_QUARTO.YML

Can specify:

- How the page gets rendered
- Which .qmd files get included as pages
- Universal themes

OTHERS

There are also other files that are important to building a quarto webpage:

- styles.css
- _extensions folder
- _site folder
- etc…

But we don’t need to alter any of them so we will skip over

THE WEBSITE ITSELF

https://emmwilson.github.io/exploits_predictions/

These next few slides go over which parts of the different qmd files you will need to customize to get this website to show your results

- index.qmd
- Sliders.qmd
- Exploits_map.qmd

INDEX

Simply type in the information on each line.

- about… :Describe the results that will show on each tab
- Affiliated manuscript: if applicable fill this out, if not you can delete that line
- Authors, Affiliations, Funding: add applicable information

Salmon resource predictions

PUBLISHED
14/02/25

Use the top navigation bar to explore the following outputs:

Slider predictions: about…

Map predictions: about…

Affiliated manuscript:

Authors:

Affiliations:

Funding:

App developement: Emmerson Wilson

SLIDERS

Creates a page where you can select predictor variable values and see predicted levels of response variables in a bar graph
There are several parts you will need to customize:

- png paths
  - specify paths(lines: 38 - 41)
  - create table with paths (lines: 81 - 84)
- set up sliders (lines: 46 - 59)
- create table with predictions (lines: 67 - 78)

PNG PATHS

For the response variables

1. save pngs to the “data” folder

2. add a line for your specific image
   (or change out for one you aren’t using; lines: 38 - 41)

```
258  imageURL_invert = FileAttachment("/data/invert 2.png").url()
259  imageURL_peri = FileAttachment("/data/periphyton.png").url()
260  imageURL_invert_div = FileAttachment("/data/invert_div.png").
261  imageURL_par_len = FileAttachment("/data/par_len.png").url()
```

PNG PATHS

For the response variables

3. create table with paths (lines 81 - 84)

```
276 // create a table that stores the image paths
277 images = aq.table({
278   'response_type': ["Invertebrate biomass ()", "Invertebrate diversity", "Par length (cm)", "Periph
279   'image_path': [imageURL_invert, imageURL_invert_div, imageURL_par_len, imageURL_peri] //order the
280 })
```

SET UP SLIDERS

For the predictor variables
Add in name of variable, range, starting value, step, and label (lines: 46 - 59)

```
viewof wetted = Inputs.range(
  [0, 10],
  {value: 5, step: 0.1, label: "Wetted width (units):"}
);
// example: substrate size
viewof substrate = Inputs.range(
  [0, 10],
  {value: 5, step: 0.1, label: "Substrate size (units):"}
);
// example: percent lakes
viewof percent = Inputs.range(
  [0, 20],
  {value: 10, step: 0.1, label: "Percent lake (units):"}
);
```

CREATE TABLE WITH PREDICTIONS

Uses the inputs from sliders to calculate the predicted response variables (lines: 67 - 78):

1. Need to make sure predictor variables match sliders

```
function myFunction(wetted, substrate, percent) {
  return aq.table({
  'wetted': [wetted, wetted, wetted, wetted],
  'substrate': [substrate, substrate, substrate, substrate],
  'percent': [percent, percent, percent, percent],
  'response_type': ["Invertebrate biomass (units)", "Invertebrate diversity", "Par length (cm)", "P
  'response_predict': [0.83-0.095*wetted+0.03*substrate, 0.44+0.026*wetted+0.32*percent, 0.7+0.0016
  })
}

predictions_ps = myFunction(wetted, substrate, percent)
```

CREATE TABLE WITH PREDICTIONS

Uses the inputs from sliders to calculate the predicted response variables:

2. Give response variables names (same as those for png files)

```
function myFunction(wetted, substrate, percent) {
  return aq.table({
  'wetted': [wetted, wetted, wetted, wetted],
  'substrate': [substrate, substrate, substrate, substrate],
  'percent': [percent, percent, percent, percent],
  'response_type': ["Invertebrate biomass (units)", "Invertebrate diversity", "Par length (cm)", "P
  'response_predict': [0.83-0.095*wetted+0.03*substrate, 0.44+0.026*wetted+0.32*percent, 0.7+0.0016
  })
}

predictions_ps = myFunction(wetted, substrate, percent)
```

CREATE TABLE WITH PREDICTIONS

Uses the inputs from sliders to calculate the predicted resonse variables:

3. Specify calculations of response variables from predictor variables

```
function myFunction(wetted, substrate, percent) {
  return aq.table({
  'wetted': [wetted, wetted, wetted, wetted],
  'substrate': [substrate, substrate, substrate, substrate],
  'percent': [percent, percent, percent, percent],
  'response_type': ["Invertebrate biomass (units)", "Invertebrate diversity", "Par length (cm)", "P
  'response_predict': [0.83-0.095*wetted+0.03*substrate, 0.44+0.026*wetted+0.32*percent, 0.7+0.0016
  })
}

predictions_ps = myFunction(wetted, substrate, percent)
```

PRODUCES

Sliders

Set the below variable values to see predictions of several response variables shown in the bar graph

MAP

Creates a map of the Exploits Watershed with predicted levels of response variables for each reach that has been sampled.
There are several parts you will need to customize:

- importing layers (lines: 38 - 50)
- create predictions (lines: 60-64)
- colour palettes (lines: 70-72)
- popups (lines: 80-86)
- map (lines: 92 - 138 **but only lines that need changing are 117-130)

IMPORT SPATIAL DATA

(lines: 38 - 50)

```r
#import layers
  ## river extent
  exploits_drainage <- vect("data/spatial data/exploits_watershed.shp") |>
    project("EPSG:4326 - WGS 84")

  ## all rivers
  exploits_river <- vect("data/spatial data/OrderSlopeSegJan22.shp") |>
    project("EPSG:4326 - WGS 84")

  ## lakes
  lakes <- vect("data/spatial data/Exploits_lakes.shp") |>
    project("EPSG:4326 - WGS 84")

  ## data from river reaches sampled
  field_reaches <- vect("data/spatial data/exploits_reaches_with_sites.shp") |>
    project("EPSG:4326 - WGS 84")
```

CREATE PREDICTIONS

based on data from sampled reaches (lines: 60-64)

```
# use river reach data to predict outcomes
  predictions_reaches <- field_reaches
    ## predict responses based on data from field at each reach
  predictions_reaches$invert <- 0.43-0.015*predictions_reaches$avg_wet_wi+0.03*predictions_reaches$
  predictions_reaches$embed <- 0.43-0.015*predictions_reaches$avg_wet_wi+0.03*predictions_reaches$D5
```

COLOUR PALETTES

Add palettes as you add response variables (lines: 70-72)

```
#colour palettes for predictions
 invert.pal <- colorNumeric(c("#f47c3c", "#d9534f"), domain = predictions_reaches$invert, na.color
 embed.pal <- colorNumeric(c("#e9c602", "#93c54b"), domain =  predictions_reaches$embed, na.color =
```

POP UPS

Lists out the data that will show up when you click on a reach (lines: 80-86)

```
  label_text <- glue("<b><u>{predictions_reaches$stream_nam}</u></b
"<b>Embededness: </b> {predictions_reaches$embed}<br/>", # predict
"<b>Invertegrate biomass: </b> {predictions_reaches$invert}<br/>",
"<b>Wetted width: </b> {predictions_reaches$avg_wet_wi}<br/>", # p
"<b>Catchment: </b> {predictions_reaches$catchment_}<br/>", # pred
"<b>Substrate size: </b> {predictions_reaches$D50_pred}<br/>") |> #
```

Looks like

CODE FOR THE MAP

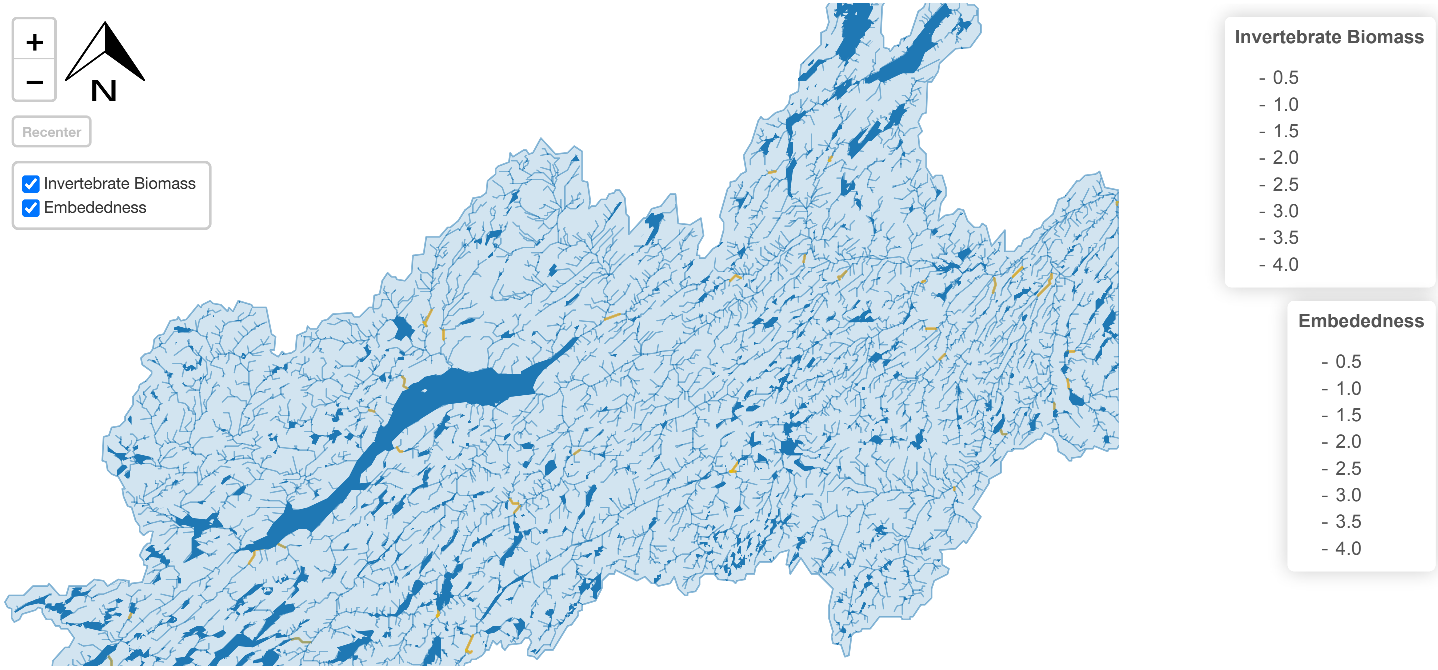
(lines: 92 - 138 **but only lines that need changing are 117-130)

```r
exploits_map <- leaflet(width = 1900, height = 1600) |>
      addProviderTiles('Esri.WorldImagery') |> # adds base map

      # open map to this screen
      setView(-56.65499, 48.70449, zoom = 9) |>

      #can recenter to that location by clicking button
      addHomeButton(ext = c(-58.9311,47.9605, -53.830,49.3532), position = "topleft", group = "Rece

      # create layers to add vectors to
      addMapPane("drainage", zIndex = 410) |>
      addMapPane("river", zIndex = 415) |>
      addMapPane("reaches", zIndex = 420) |>
      addMapPane("lakes", zIndex = 425) |>

      # add polygons and lines
      ## exploits drainage area
      addPolygons(data = exploits_drainage, color = "#1f78b4", weight = 1.25, fillColor = "#1f78b4"

```

Exploits watershed predictions

Predictions of invertebrate biomass and embededness for the sampled reaches of the Exploits watershed.

Click on a reach that has been sampled (highlighted in orange-red or yellow-green) to see the predictions and underlying characteristics



GETTING THE SITE ONLINE

We use GitPages to host the interactive webpage

A FEW THINGS YOU NEED FIRST

In terminal run this line of code:

- quarto add r-wasm/quarto-live

(there should be a terminal tab beside the RStudio console tab)

SOURCE FOLDER

GitPages needs to know where to look to render the webpage. In our case we are using the docs folder.

Go to GitHub -> Your repository -> Settings (along the top)-> Pages (along left)
Make sure your deployment is configured like so:

RENDER LOCALLY

To get the docs folder ready we need to render everything locally

To do that click

along the top of RStudio for each qmd file

This should open up each page in the browser

And will create the necessary files in the docs folder

COMMIT AND PUSH

Now we need to commit and push all the changes we’ve made

1. In RStudio: go to the Git tab (one along top or one by the environment tab)

2. Select

COMMIT AND PUSH

3. Commit:

i. Select the files and folders that show up in the top left console

ii. Add a commit message and select “Commit”

** Important ** There is a limit to how much you can commit and push at one time!
If you are adding any spatial data, do a seperate commit and push for that file
And be conservative about how much you commit at one time

4. After it has finished with the commit click Push

PAGES BUILD AND DEPLOYMENT

GitHub will now build and deploy your webpage!
Once it has finished you can go to:
Settings -> Pages
and you should have the option to visit the site

https://emmwilson.github.io/exploits_predictions/

CONGRATS! YOU'VE CUSTOMIZED THE WEBPAGE!