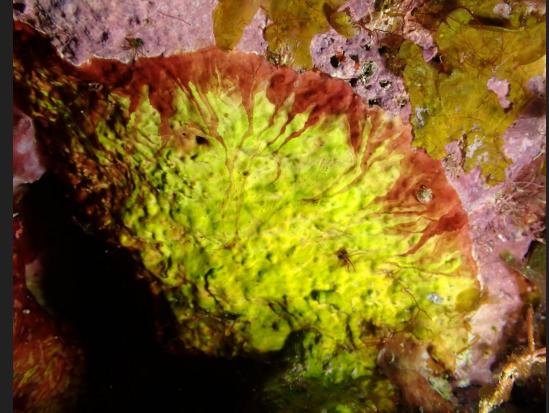


# Algal crusts on Caribbean Reefs

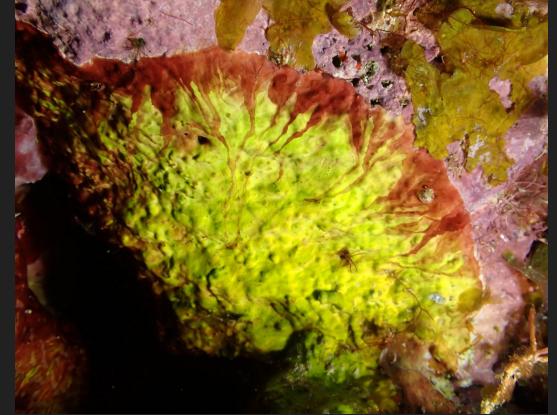
Kaitlyn Tonra - AW Fall 2021



# Octocoral settlement choice

(Very similar but a different project)

Kaitlyn Tonra - AW Fall 2021



# Background

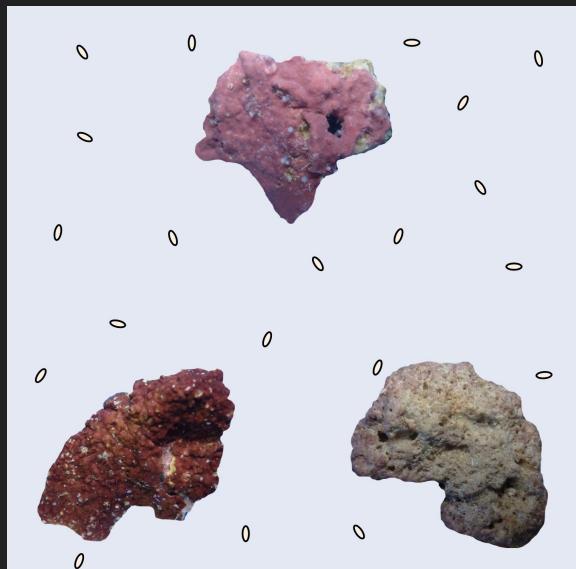
## Reason for changing projects:

- Requires **much more** organization
- Results not reproducible
- Slightly smaller & easier to work out complexities of file management

## Scientific context:

- Settlement choice is very important for sessile animals
- Scale of decision making for marine larvae
- Algae can either increase or decrease survival odds

.Rproj.user	10/14/2021 10:41 AM	File folder
Ramicrusta-Markdown_cache	10/5/2021 8:04 AM	File folder
Ramicrusta-Markdown_files	10/5/2021 8:04 AM	File folder
RDData	2/22/2021 2:22 PM	RDATA File
RHistory	2/25/2021 1:41 PM	RHISTORY File
Data.xlsx	10/14/2021 10:31 AM	Microsoft Excel W...
fig.elect.tif	2/22/2021 2:24 PM	TIFF File
fig.mort.tif	2/22/2021 2:24 PM	TIFF File
Metadata.xlsx	9/28/2020 5:22 PM	Microsoft Excel W...
mortality.csv	1/22/2021 12:55 PM	Microsoft Excel C...
patchelectivity.csv	1/11/2021 11:49 AM	Microsoft Excel C...
PatchElectivity.xlsx	12/22/2020 2:21 PM	Microsoft Excel W...
patchelectivitytype.csv	2/22/2021 1:39 PM	Microsoft Excel C...
Ramicrusta Markdown.Rmd	2/22/2021 2:24 PM	RMD File
Ramicrusta Project.Rproj	10/14/2021 10:41 AM	R Project
Ramicrusta-Markdown.html	2/22/2021 2:24 PM	Chrome HTML Do...
rubbleelectivity.csv	1/11/2021 11:01 AM	Microsoft Excel C...
RubbleElectivity.xlsx	12/22/2020 12:21 PM	Microsoft Excel W...
rubbleelectivitytype.csv	2/22/2021 1:27 PM	Microsoft Excel C...



# Project structure

kjtonra Update file structure	
homomalla_code	Update file structure
homomalla_data	Update file structure
.gitignore	Update .gitignore
README.md	Update README.md
ph_sett_choice.Rproj	Update

hom_electivity_mortality.Rmd
ph_data_analyses.Rmd
ph_data_prep.Rmd

coralnet_annotations.csv
patch_type_area.csv
rubble_area.csv
settlement_counts.csv
size_data.csv

README.md

**Plexaura homomalla larval settlement choice**

K.J. Tonra and C.D. Wells

This repository contains the data and analyses performed for the settlement choice experiment performed with *Plexaura homomalla* planulae in July, 2019. The experiment was conducted at the Virgin Islands Environmental Resource Station (University of the Virgin Islands) on St. John, USVI.

**Project summary**

In complex marine habitats like the intertidal zone and coral reefs, the specific location where sessile organisms settle can determine whether they die or live to reproduce. Given the importance of this first decision, the process of habitat selection and settlement is frequently not random or passive. The goal of this project was to understand the effects of algal crusts on settlement location choice, the subsequent effects of different substratum types on mortality rates, and the scale on which octocoral larvae can sense differences and make decisions.

**File structure**

**data**

This folder contains the .csv files associated with our analyses and results. There are three: 1. annotations.csv contains point count data from CoralNet. This contains a row for each individual point that was annotated. 2. counts.csv contains data for each container and piece of rubble, including how many polyps were settled on each substratum type or rubble type. 3. areas.csv contains size data for each piece of rubble. We measured heights in the field and used photos of the top and bottom of each piece to find the perimeter and area of each side. These data are used for calculating the total surface area to be used in finding electivity indices.

**analyses**

This folder contains R script files with analyses that were used. (Include more information about those here)

## Completed so far:

- Completely migrated out of Excel into R scripts
- Fully separated code and data files
- Beginning to write functions to replace extensive code

# Goals

Steps:

- Finish re-coding all methods in R (mortality, electivity, areas)
- Begin incorporating code for figures

End goal:

- Fully automated Rmd that outputs statistical analyses and figures for main results

# Challenges

From proposal:

- Breaking from past project development systems
- Learning best practices while working on something (trying to learn and decide between all options at once)
- Creating a system that collaborators will be willing & able to use

# Goals

Steps:

- Finish re-coding all methods in R (mortality, electivity, areas)
- Begin incorporating code for figures

End goal:

- Fully automated Rmd that outputs statistical analyses and figures for main results

# Challenges

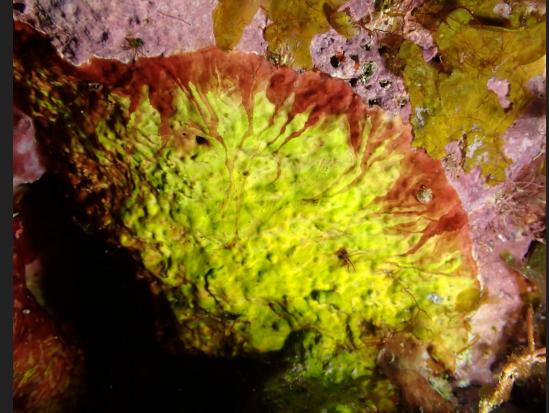
Now:

- Technical learning for things like functions, integrating scripts into an Rmd
- Reflecting on what worked or didn't work so that I can apply the workflow to future projects

# OLD SLIDES

# Algal crusts on Caribbean Reefs

Kaitlyn Tonra - AW Fall 2021



# Background

Past experience with data analysis:

- ST511-513
- Some experience with R
- No experience with how to manage large datasets or structure files

Reason for being in this class:

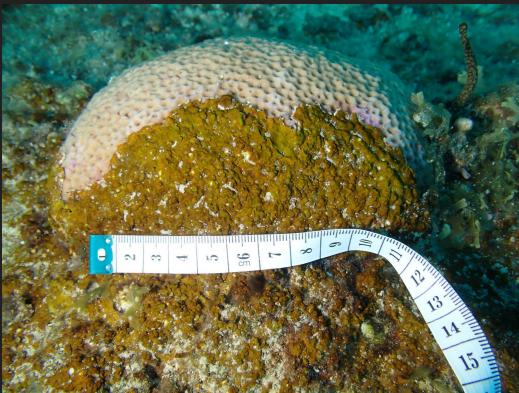
- To learn best practices for coding & data analysis
- Begin to work on my data from fieldwork this summer and finish the quarter with (hopefully) publishable results



*Callyspongia plicifera*

# Scientific context

- In the Caribbean, a potentially invasive algal crust overgrows and kills corals, sponges, and other types of algae.
- What factors influence competitive outcomes in these interactions?



# >2000 observations

Annotations:

- ID of competitor**: Points to column E.
- full name**: Points to column F.
- Taxonomic group**: Points to column G.
- measurements of size**: Points to columns H, I, J.
- only some have heights**: Points to column J.
- Horizontal, sloping, vertical**: Points to column K.
- Did the crust win?**: Points to column L.
- Also: % cover & DNA**: Points to the bottom right corner.

A	B	C	D	E	F	G	H	I	J	K	L
date	site	transect	meter	comp.abr	comp.full	comp.group	maxaxis	minaxis	height	orientation	RAMwin
7/25/21	EC	T10	0.08	cca	corallines	algae	X	X		H	yes
7/25/21	EC	T10	0.25	cca	corallines	algae	X	X		S	yes
7/25/21	EC	T10	0.33	cca	corallines	algae	X	X		S	yes
7/25/21	EC	T10	0.65	cina	cinachyrella.kuekenthali	porifera	X	X	X	H	yes
7/25/21	EC	T10	0.7	cca	corallines	algae	X	X		S	yes
7/25/21	EC	T10	0.76	rico	ricordea.yuma	corallimorphia	X	X		H	tie
7/25/21	EC	T10	0.83	pw	plexaura.wagenaari	octocorallia	X	X	4	H	tie
7/25/21	EC	T10	0.9	paly	palythoa.caribaeorum	zoantharia	X	X		S	no
7/25/21	EC	T10	0.95	por por	porites.porites	scleractinia	X	X	X	S	no
7/25/21	EC	T10	1	cca	corallines	algae	X	X		S	yes
7/25/21	EC	T10	1.5	orb fav	orbicella.faveolata	scleractinia	X	X		V	yes
7/25/21	EC	T10	1.6	orb fav	orbicella.faveolata	scleractinia	X	X		V	no
7/25/21	EC	T10	1.6	orb fav	orbicella.faveolata	scleractinia	X	X		H	yes
7/25/21	EC	T10	1.6	sid	siderasterea.sp	scleractinia	X	X		S	yes
7/25/21	EC	T10	2.6	cca	corallines	algae	X	X		H	no
7/25/21	EC	T10	2.6	paly	palythoa.caribaeorum	zoantharia	X	X		H	no
7/25/21	EC	T10	2.65	cca	corallines	algae	X	X		S	no
7/25/21	EC	T10	2.7	cca	corallines	algae	X	X		V	yes
7/25/21	EC	T10	2.83	por ast	porites.asteroides	scleractinia	X	X		H	yes
7/25/21	EC	T10	2.86	nip dig	niphates.digitalis	porifera	X	X	X	V	yes
7/25/21	EC	T10	2.91	pw	plexaura.wagenaari	octocorallia	X	X	50	H	tie

Also:  
% cover  
& DNA

# Goals

- Arrange the data in a way that allows for easy analysis
- Create a clear pipeline to completed statistical analyses and figures
- Set up an Rmd (or something else?) that I'll be able to understand and make changes to in 5 years

# Challenges

- Breaking from past project development systems
- Learning best practices while working on something (trying to learn and decide between all options at once)
- Creating a system that collaborators will be willing & able to use