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Version 1

# Macroalgae Analysis V.1

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Island Sustainability Pro...



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Student

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**Protocol status:** Working

**We use this protocol and it's working**

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**Keywords:** Macroalgae, Turbinaria, Sargassum, Mo'orea, biomass of the invasive macroalgae species, invasive macroalgae species, native algae, macroalgae analysis, algae, ecosystem, transect data collection in baie vaiti, effect on biodiversity, coral for space, marine species, biodiversity, fish abundance, residing organism, turbinaria, data on the spatial occupancy, coral, species, biomass, transect data collection, abundance, spatial occupancy, data collection, random samples of each species, guidance of maya lin

## Abstract

Determine the abundance and biomass of the invasive macroalgae species, Turbinaria and Sargassum. Then, identify marine species located on random samples of each species. Turbinaria decreases fish abundance and biodiversity, competing with native algae and coral for space and resources. Determine the effect on biodiversity if Turbinaria were to be removed from an ecosystem entirely. Under the guidance of Maya Lin, the ISP class will conduct transect data collection in Baie Vaiti, located in Mo'orea. The objective is to gather data on the spatial occupancy of algae. Additionally, algae will be gathered to bring back to the lab where they will be examined for any residing organisms.



## Materials

### Field Materials

- Transect tape
- Underwater slate clipboard
- Underwater pencil
- Snorkel gear (mask, snorkel, fins)
- Booties/water shoes
- Large Ziploc bags
- Underwater camera

### Analysis Materials

- Large plastic tub
- Colander
- White background
- Camera
- Ruler
- Flashlight (optional)

## Troubleshooting

## Safety warnings

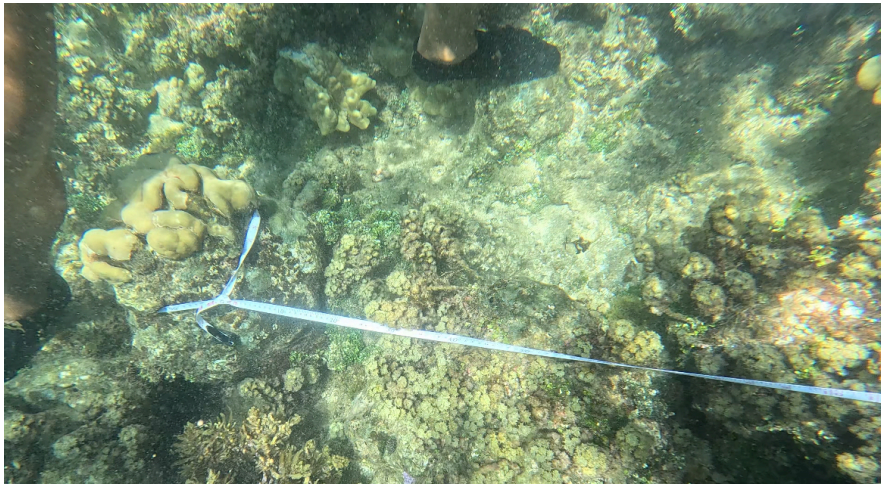
- ! Don't fall fr - stand your ground against strong currents!  
Don't get munched/poked - beware of stonefish and eels!  
May get scratched up from corals

## Before start

Make sure participants are well equipped with proper snorkel gear. Before getting in water, have data table written out on slate clipboard for convenience.

## Algae Transect Survey

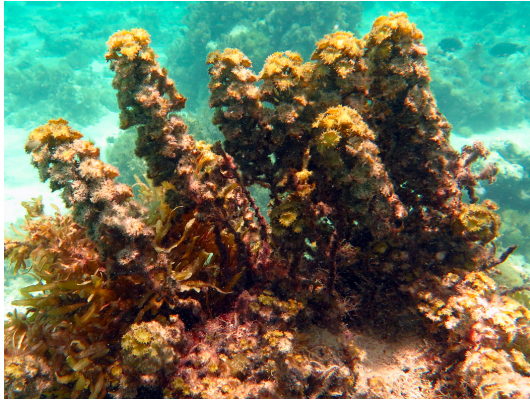
- 1 Split into five groups of four people.
- 2 Gather materials - Transect tape, slate clipboard, snorkel gear
- 3 Swim to the group's transect location, approximately 5 meters apart.
- 3.1 Groups should have received the location of their transect areas on shore
- 4 Begin 30 meter transect along reef crest, parallel to the shore.
- 4.1 Tie down transect tape to coral or rock and map out the transect trajectory and distance. Tie to the 1 meter mark so that your first observation is at 1 meters.



- 5 Swim along transect tape and record the presence of rock, coral, Turbinaria, or Sargassum for every 10 centimeters of the transect. Take photos along the transect for

later reference. (300 observations per 30m)

5.1



*Turbinaria ornata*



*Sargassum*

5.2 Record the species of coral if possible

6 Move 5 meters towards the shore, and repeat Step 4 and 5.

7 Repeat Step 6 (until you have three 30 m transects).

## Sample Inspection



- 8 Gather samples of *Turbinaria* and *Sargassum* into ziploc bags filled with seawater. Bring sample bags into dirt lab
- 9 Dump out contents into a plastic tub, and strain water from algae into a colander.
- 10 Carefully inspect macroalgae bunches, searching for organisms.



- 11 Photograph any organisms next to a ruler, against your white background



- 12 Record the weight of each algae bunch, number, size, and type of critters present, stem length of each bunch
- 13 Record field and lab data in separate spreadsheets

## Protocol references

- Maya Lin
- Jean Wencelius ([0000-0002-9500-4404](https://doi.org/10.17504/protocols.io.4r3l22xypl1y/v1))