

Biodiversity within *Hedophyllum sessile*

By: Rachael McCurrie

2025 Marine Invertebrates (FHL 432)

Abstract: An observational study on whats in the holdfasts of *Hedophyllum sessile*. Collecting four replicas of sea cabbages within a 1.5-foot ecology frame from two locations, Dead Man's Bay Preserve and Cattle Point. With these collected specimens then looked over for any organisms found inside/on them and identified those organisms found. The results of this observational study were that the highest amount of a species was *Lacuna vincta*, being 56.4%, and an unknown species of egg colony being 12.8% .

My project is an observational and comparative study. I am observing and comparing the biodiversity within the holdfasts of *Hedophyllum sessile* (sea cabbage) and seeing if these observations are similar across locations (between Dead Man's Bay Preserve and Cattle Point). I am comparing the biodiversity of organisms that live in and around the sea cabbages, and comparing the data gathered to see if there are any patterns or correlations with particular species being found in higher amounts. My materials for this research were a 1.5-foot ecology frame, a lower flow table, buckets for transporting my specimens from the site locations, a pocket knife, a scarper, a microphone attachment (for making identification much easier), and a dissection scope (for identification of organisms found).

Methods:

I am looking at two different site locations, Dead Man's Bay Preserve and Cattle Point, from these locations I collected 4 replicate sea cabbages. I defined that collecting a sea cabbage plant would include everything within a 1.5-foot ecology frame. The frame would then be placed in the desired area with sea cabbage. I would collect as one replicate, or 1 sea cabbag, which would be everything within this frame. I decided to use an ecology frame because it was a tool to help me keep consistent in the same amount

of material I was collecting for each replicate. Sea cabbages vary in size, so to strictly stick to only collecting one sea cabbage for each replicate would result in varying sizes of the plants and unreliable data. The plants were then placed inside a field bucket and transported back to the labs. I choose to use a hallow style of ecology frame because it allowed me to not only see what was under what I placed inside my frame, that way if anything tried to run away from the cabbage I was collecting I would be able to see it and make sure to also collect, but it also allowed me to once I decided which plant I wanted to collect I could place down the frame and then take the plants that were within the frame making sure to stick within my defined area.

Processing data:

I choose to keep my data of each piece I found within the sea cabbages in a table to see visually which species had the highest numbers and if they happened across the two locations. I also used the data from the table to make two other diagrams, a pie chart showing within the data I collected which organism was found the most. For the second diagram, I chose a bar graph as another good representation of which species were seen the most in each location.

Results:

The highest number of species found within the holdfasts of *Hedophyllum sessile* were are 56.4% *Lacuna vincta* and at 12.8% was an unknown species of egg colonies. *Lacuna vincta* being the highest amount of a species observed, could be a correlation that this species use the sea cabbage as their environment across locations. This would need further data to prove if this is correct.

The unknown species of egg colony benign the second highest found within the cabbage could a connection that whatever organism is laying them prefers *Hedophyllum sessile* as the habitat for their young, but once again, more data would be needed before moving forward with this question.



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Introduction:

Project type: Observational and comparative. Observing, recording, and then comparing my data based on location.

Data that I recorded: All organisms observed inside and on the *Hedophyllum sessile* (sea cabbage), along with noting what species were found living around the sea cabbages. Both how many were found and their specific scientific name.

Two types of
ecology
frames:

Grid:



Open:



I choose the open frame for defining what is 1 sea cabbage due to being able to place it down on the plants and be able to collect them through the frame.

Collected 4
frames of sea
cabbages:



Before collecting the sea cabbages from within the ecology frame I would make not of the different organisms around the sea cabbages within the frames borders. I also collected organisms that were inside the frame but after removing the plants ran out of the frame.

Experiment setup:

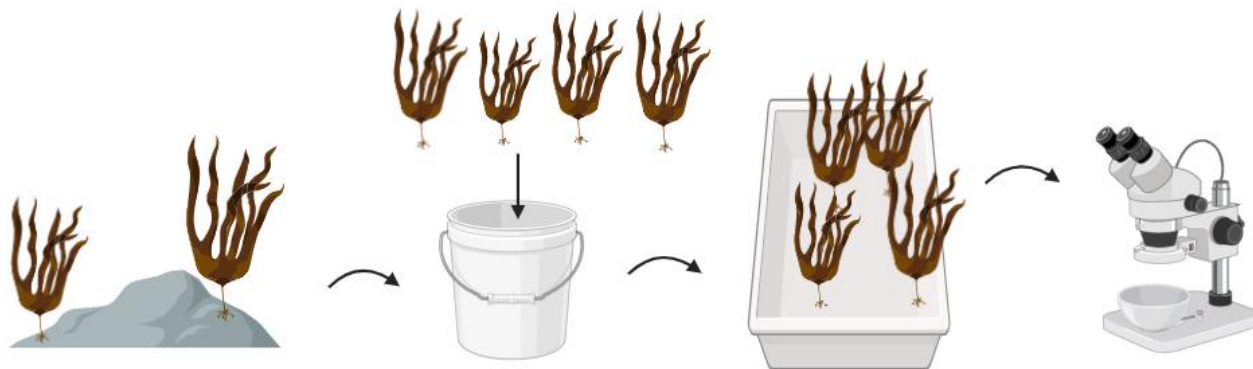
- This setup was done twice. Once for each location.
- Within each location there was 4 replicates.

Samples collected at:
-Dead Man's Bay Preserve
-Cattle Point

4 ecology frames of Hedophyllum sessile were collected from each location. Plants were placed in bucket for transportation:

Stored in a flow table to be observed:

Organisms found inside the Sea cabbages were observed and identified, using a dissection scope:



The Data:

Diagram 1:

Species	Cattle Point	Dead Man's Bay Perseve	Total
<i>Pugettia gracillis</i>	3	10	13
<i>Glebocarcinus uregonensis</i>	1	0	1
<i>Cibanarius virescens</i>	1	0	1
<i>Rostabga pulchra</i>	1	0	1
<i>Lacuna vincta</i>	44	15	59
Sillidate: polychaetet	1	0	1
Unknown egg colony	10	19	29
<i>Pagurus hirsutisculus</i>	4	9	13
<i>Pentidotea wosenesenskii</i>	6	4	10
Snail egg cluster	2	0	2
Polychaete (not sillidae)	3	0	3
Nemetean (unknown)	0	1	1
<i>Nucella lamellosa</i>	2	2	4
Unknown egg colony	0	8	8
<i>Paranemertes peregrina</i>	0	1	1
<i>Membranipora membranacea</i>	0	21	21
Southern kelp crab	0	1	1

- Looking for any patterns with which organisms are found inside the sea cabbages from both locations.
- The organisms that in both locations had higher counts were:
 - Egg colonies of a unknown species
 - *Lacuna vincta*

The Data:

Diagram 2:

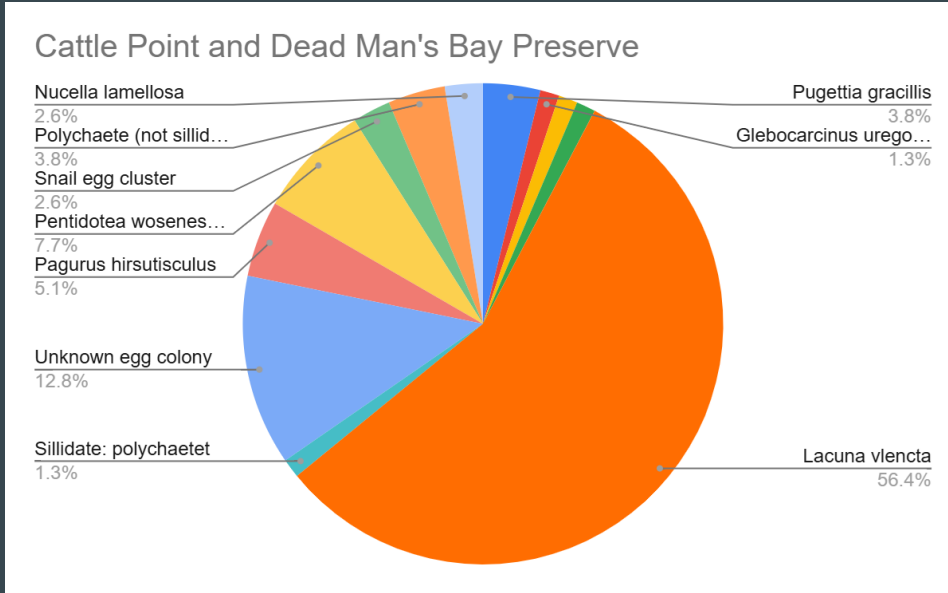
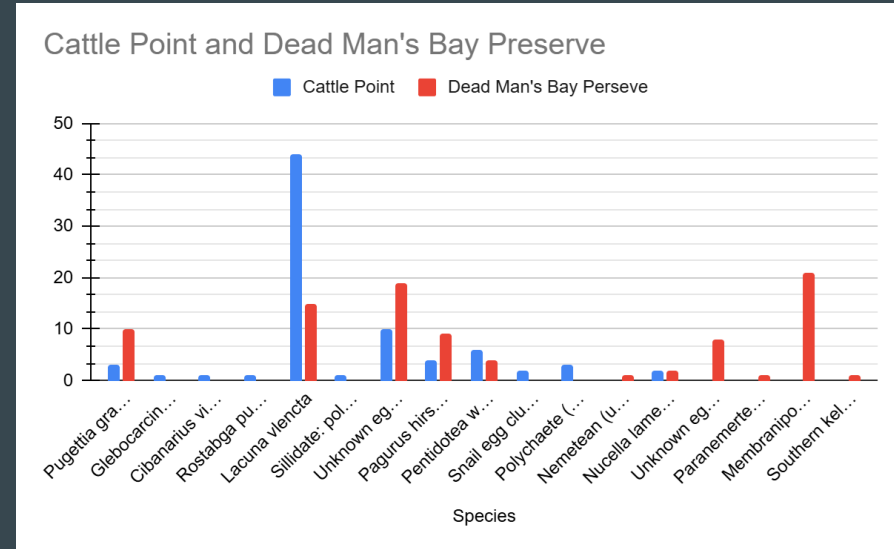


Diagram 3:



Results:

- *Lacuna vincta* was the highest number of species observed within *Hedophyllum sessile*, with the unknown species egg colony being the second largest amount of a species found. This could be a correlation that both of these species use the sea cabbage as their environment across locations. This would need further data to prove if this is correct.
- The unknown species of egg colony benign the second highest found within the cabbage could a connection that whatever organism is laying them prefers *Hedophyllum sessile* as the habitat for their young, but once again more data would be needed before moving forward with this question.

Things that could have influenced my data and results:

- Each location gets differing amounts of sun exposure.
 - Different plants were taken from different levels of intertidal.
 - Not enough data was taken to truly see if there were patterns.
 - Not taking sea cabbages on a really good low-tide day.
 - Varying temperatures between each location and on the days of collecting specimens.
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Sources:

Images:

- Fletcher, Garry, and Garry Fletcher. *Race Rocks Ecological Reserve*-, 8 Dec. 2002, racerocks.ca/hedophyllum-sessile-sea-cabbage-the-race-rocks-taxonomy/.
- *Marine Botany at FHL*, depts.washington.edu/fhl/mb/Sacc_sess_Kristina/Sacc_sess_home.html. Accessed 16 July 2025.
- Diagrams made in: <https://BioRender.com>

Resources used to help this research:

- Steel, E. Ashley, et al. "Applied Statistics in Ecology: Common Pitfalls and Simple Solutions." *Ecosphere*, vol. 4, no. 9, Sept. 2013, p. art115, <https://doi.org/10.1890/es13-00160.1>.
- Royaux, Coline, et al. "Guidance Framework to Apply Best Practices in Ecological Data Analysis: Lessons Learned from Building Galaxy-Ecology." *GigaScience*, vol. 14, 2025, academic.oup.com/gigascience/article/doi/10.1093/gigascience/giae122/8010442, <https://doi.org/10.1093/gigascience/giae122>. Accessed 24 June 2025.
- "What Is Environmental Sampling? | Ecology & Environment | Biology | FuseSchool." *YouTube*, 28 Aug. 2016, www.youtube.com/watch?v=HLX76gdXgTA.
- "Sampling Strategies." *YouTube*, 4 Sept. 2015, www.youtube.com/watch?v=UDp3I07Wcrg