# The Story of Geesh
## A Coloring Book

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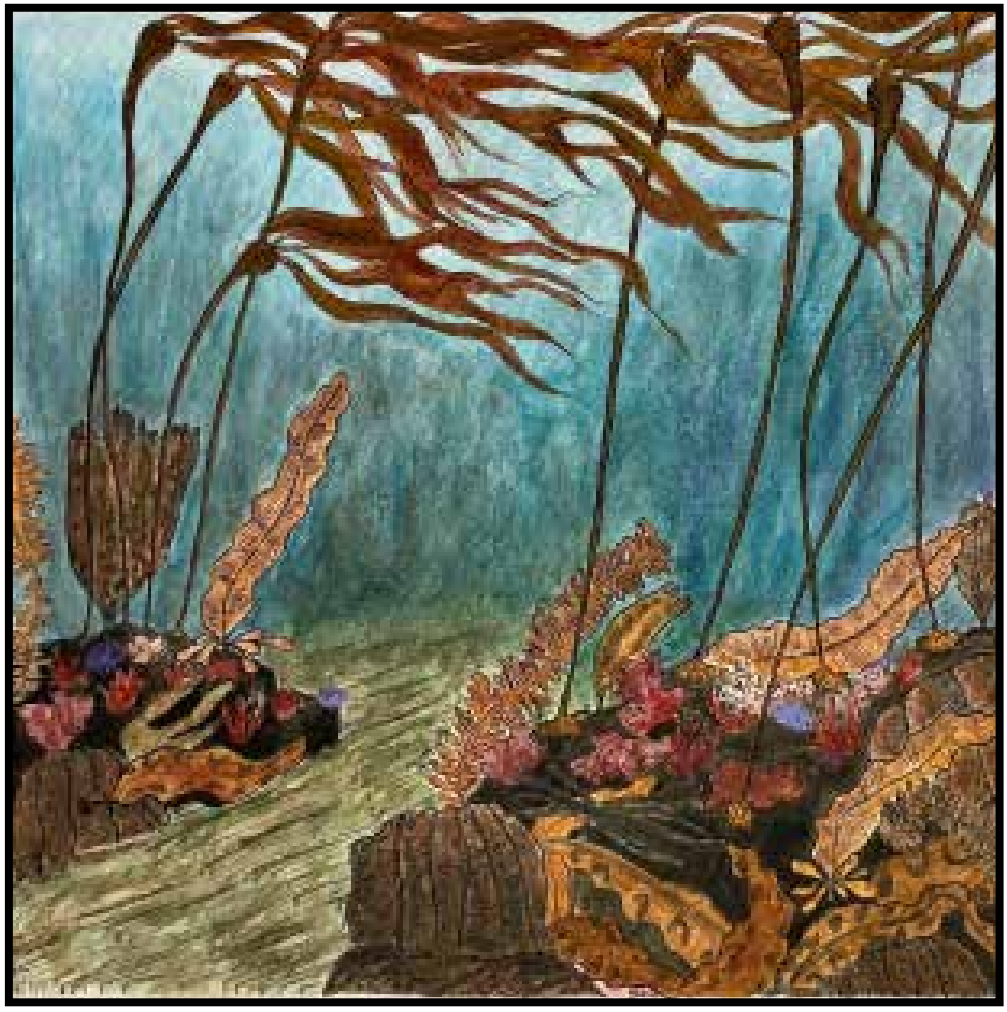
Illustrations by Greta Bolinger



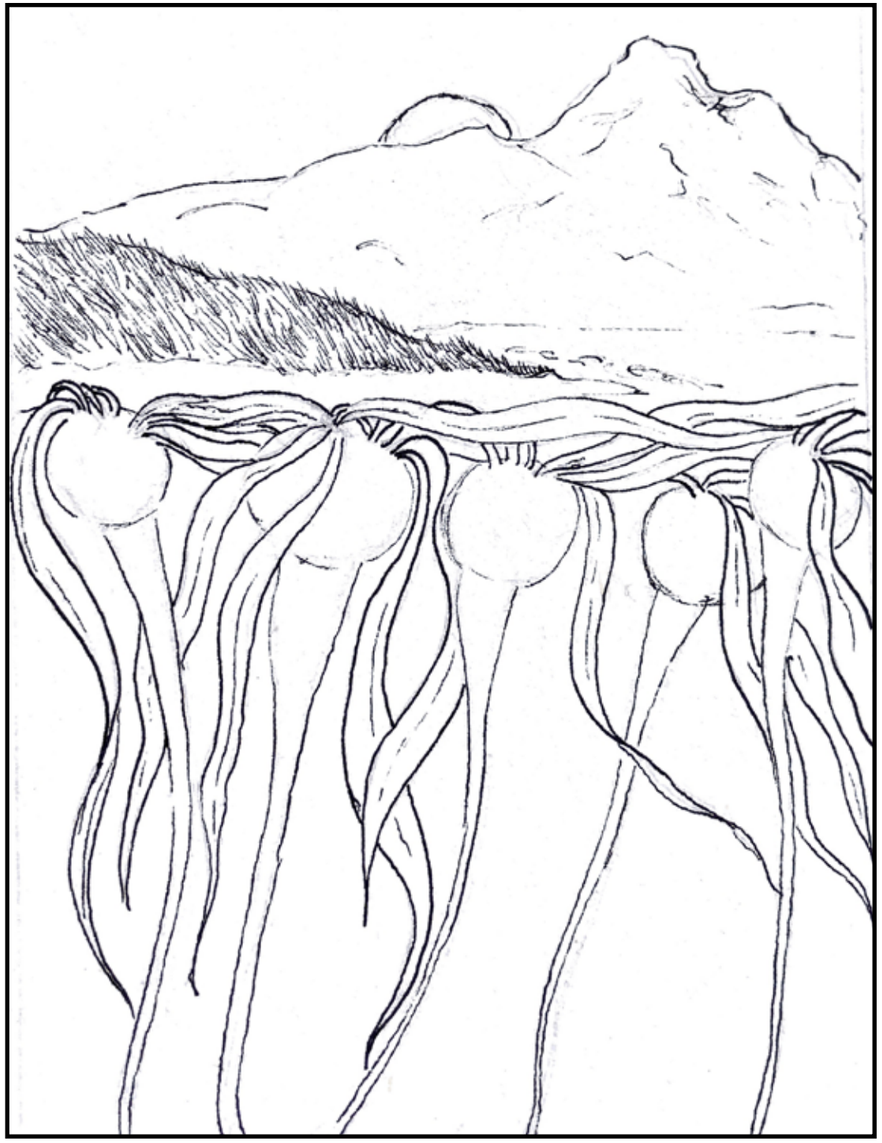
Geesh is the Tlingit word for Nereocysits lutkeana – Greek genus name Nereocystis for mermaid's bladder, or also known as bull kelp or bullwhip kelp.

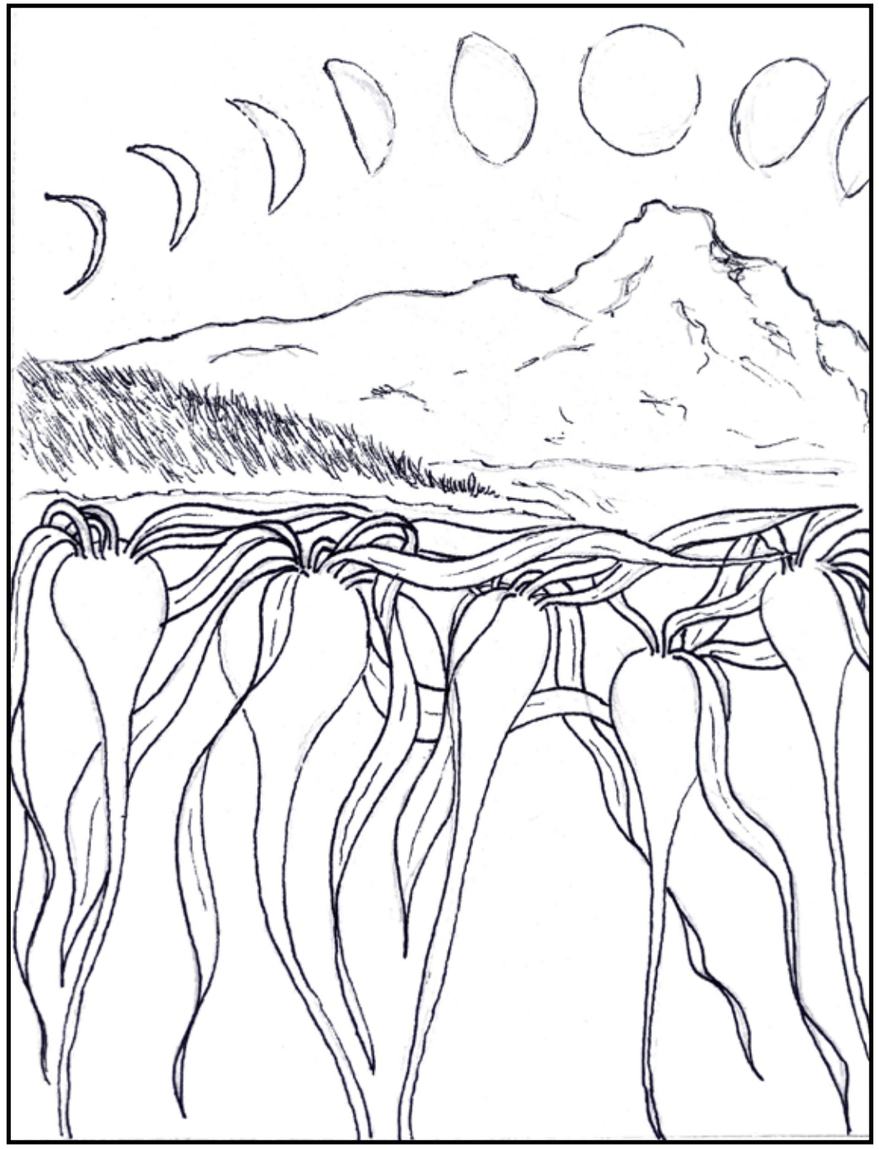
For Alaska's coastal communities bull kelp has been a very important source of food and material for tools for thousands of years. Nereocystis lutkeana also provides many important services in the marine environment, serving as habitat for countless fish and invertebrates while taking up excess carbon dioxide and nutrients.

Tlingit oral knowledge of Geesh (Bullkelp) shares the “Raven Who Went Down the Bull Kelp” or “How Raven Creates the Tides”, to demonstrates the importance of its unique attributes. Geesh’s kelp forest and strong holdfasts, provides the home and habitat for the sea urchins, crabs, and other mollusks that are delicacies for the Old Women who holds the tide lines.

Geesh has a strong root like structure called a holdfast, that anchors it to the sea floor in strong currents and storms. Geesh also has a buoyant pneumatocyst or bulb filled with carbon monoxide that brings the blades to the surface for light and the photosynthesis process. According to the legend, this strong structure allows Raven to go down and collect the urchins the Tide Lady desires. Raven bargains with the Tide Lady to slacken her lines each day so we have Leins (tides).

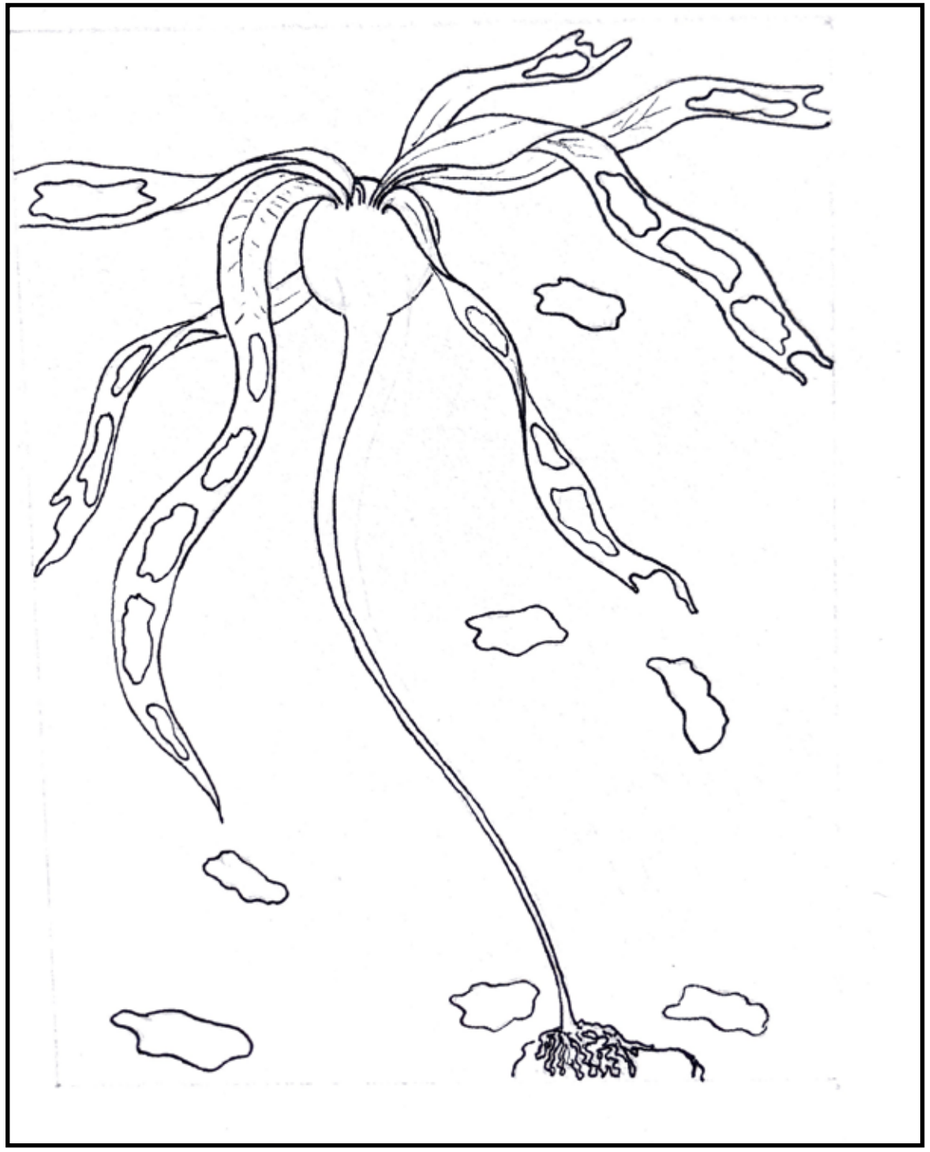






Geesh is also controlled by Dis, the moon and moon cycles, Disi. In He`enta`anax Kayaan'i Dis, the spring moon, the underwater plants start to grow. Geesh is an annual kelp, completing its growth cycle within a year.

In the fall, as days shorten and storms increase, Geesh begins to produce fertile patches on its blades. These patches contain spores and when they are ready, some will fall to the bottom close to the parent plant to help ensure the conditions are right for their growth. Others will drift a long way before hopefully landing in a place with the right amount of light and flow to grow.



The spore filled patches are called sori that contain sporangia where the spores are produced.

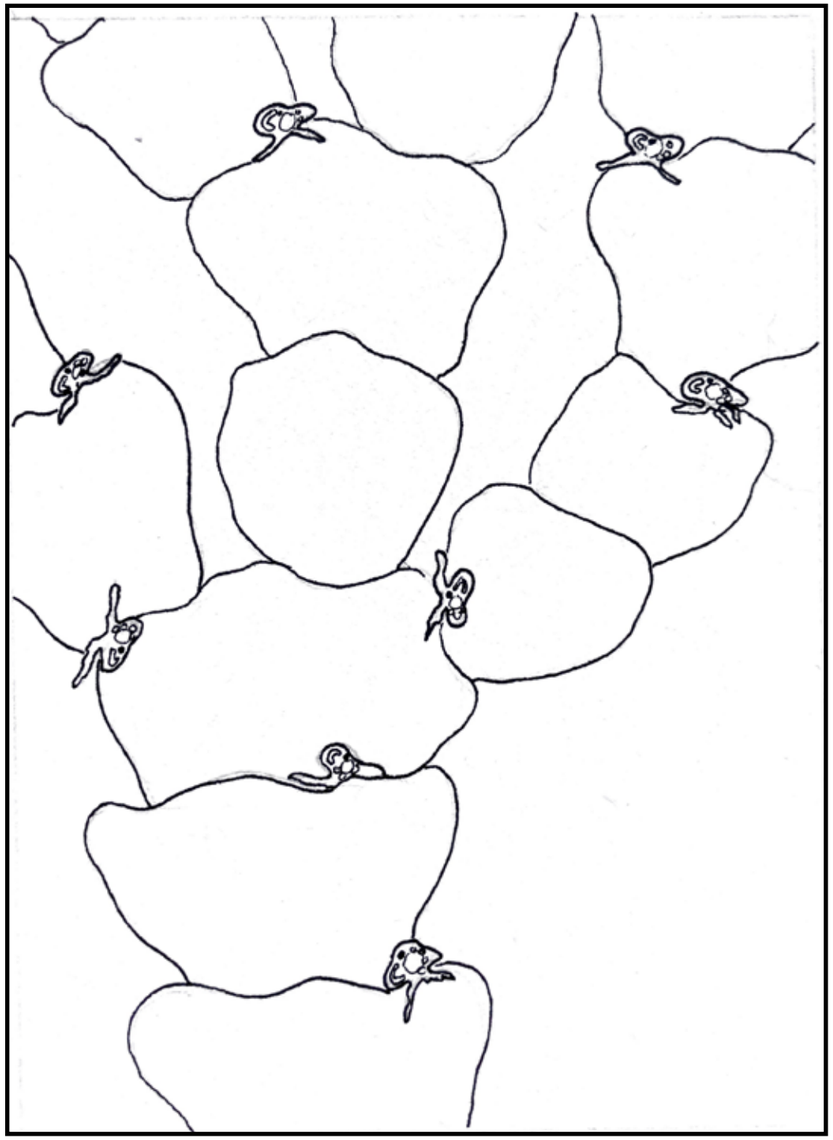
Geesh produces many sori which contain millions of spores. These spores are microscopic and need to land in just the right place where they can hold onto the bottom and get enough light and nutrients. Most of the spores will be carried away or land in a place that lacks what they need to develop.

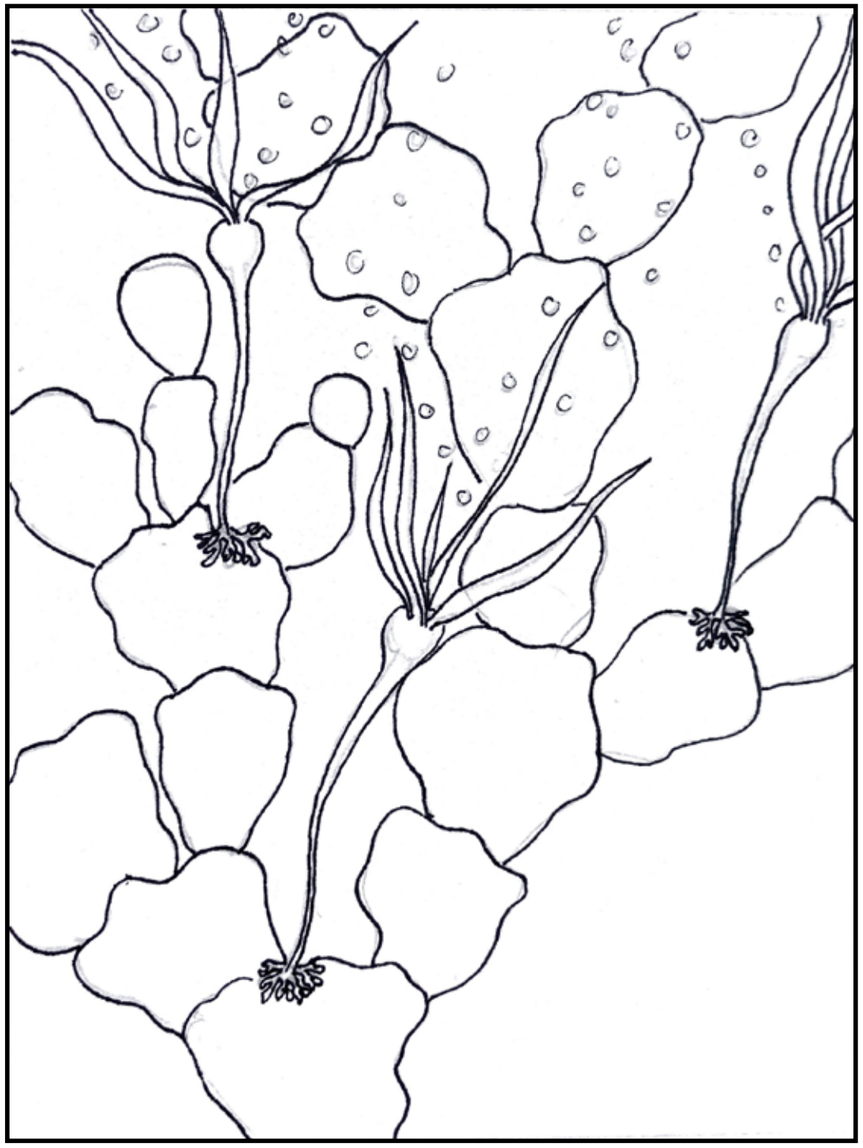


The spores are haploid, which means they have a single set of chromosomes .

Each spore will develop into a male or female gametophyte. The gametophyte produces gametes, or eggs and sperm.

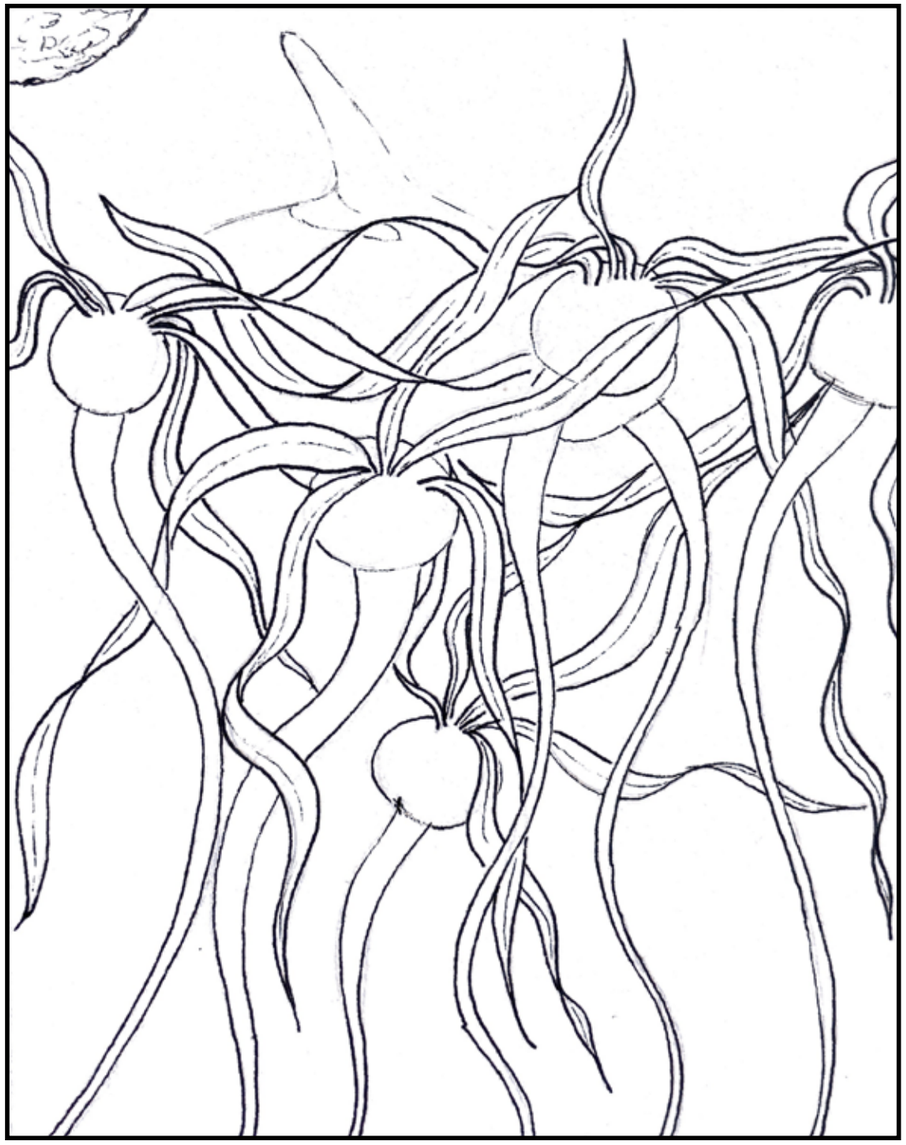
The male gametophytes release sperm that swim to the female gametophytes and fertilize the eggs. Once the egg is fertilized, the gametophyte will now develop into a sporophyte. These sporophytes are diploid, meaning they contain two sets of chromosomes, one from each gametophyte.

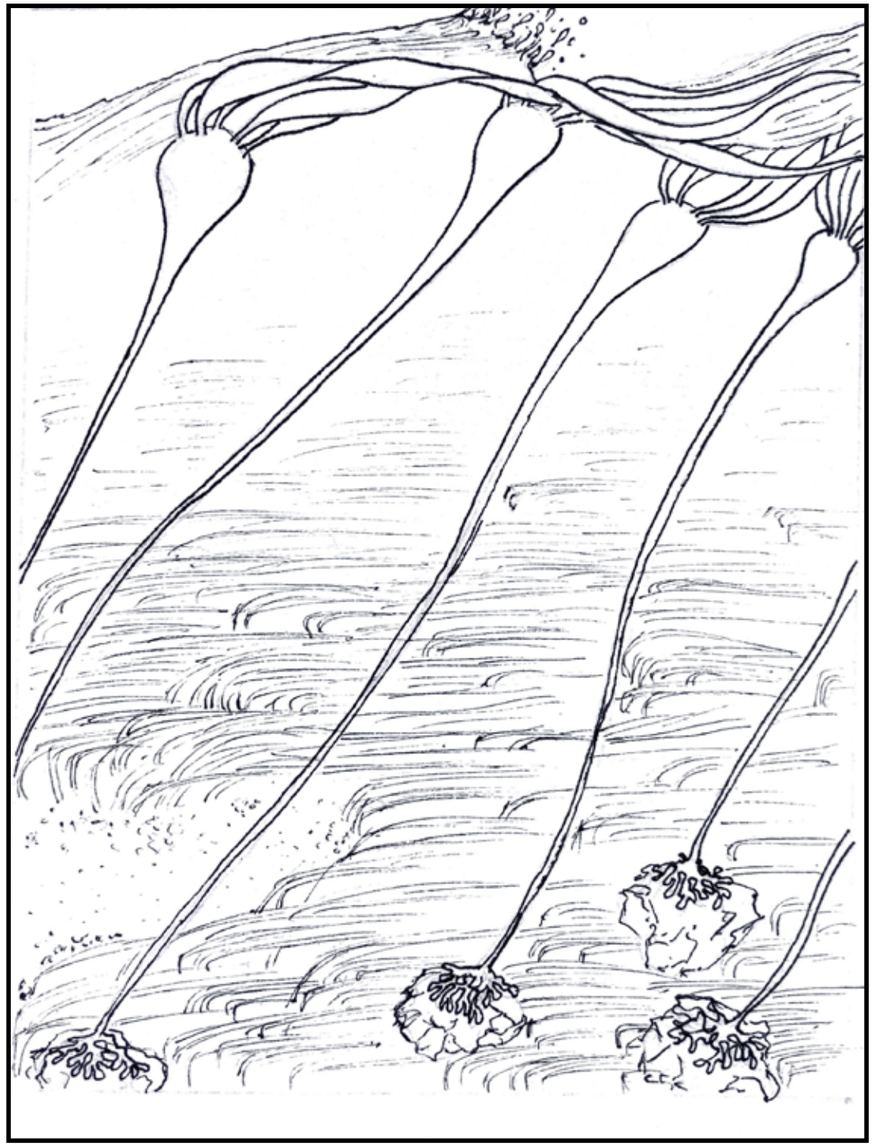




The young sporophyte's stipes, which are like giant stems, grow fast reaching up to 130 feet in length. Once they reach the surface, growth becomes faster in their blades which are leaf-like structures in kelp.

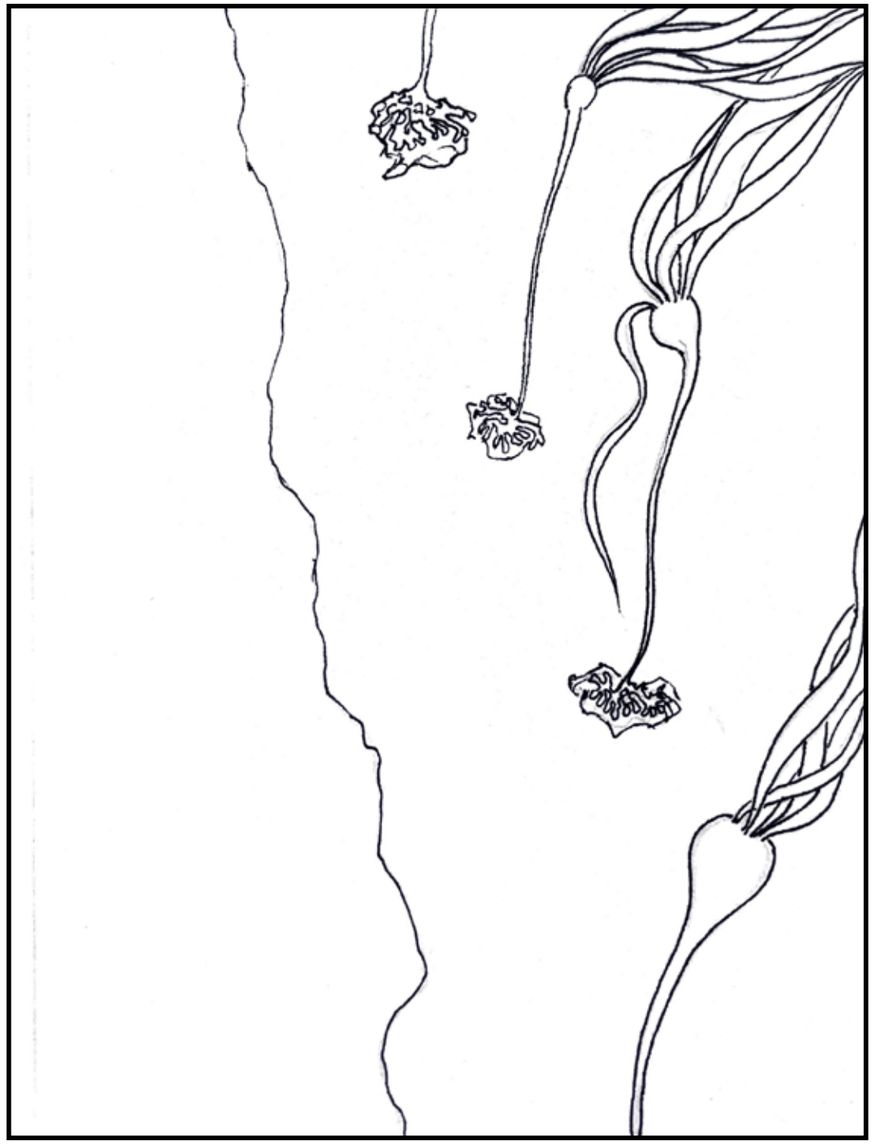
Young Geesh matures over the summer, the long daylight hours encouraging growth. People harvest it for pickles and salads, create tools such as ropes or containers or create art. As the summer wanes, Geesh sheds its fertile sori again in the face of another year's fall storms.

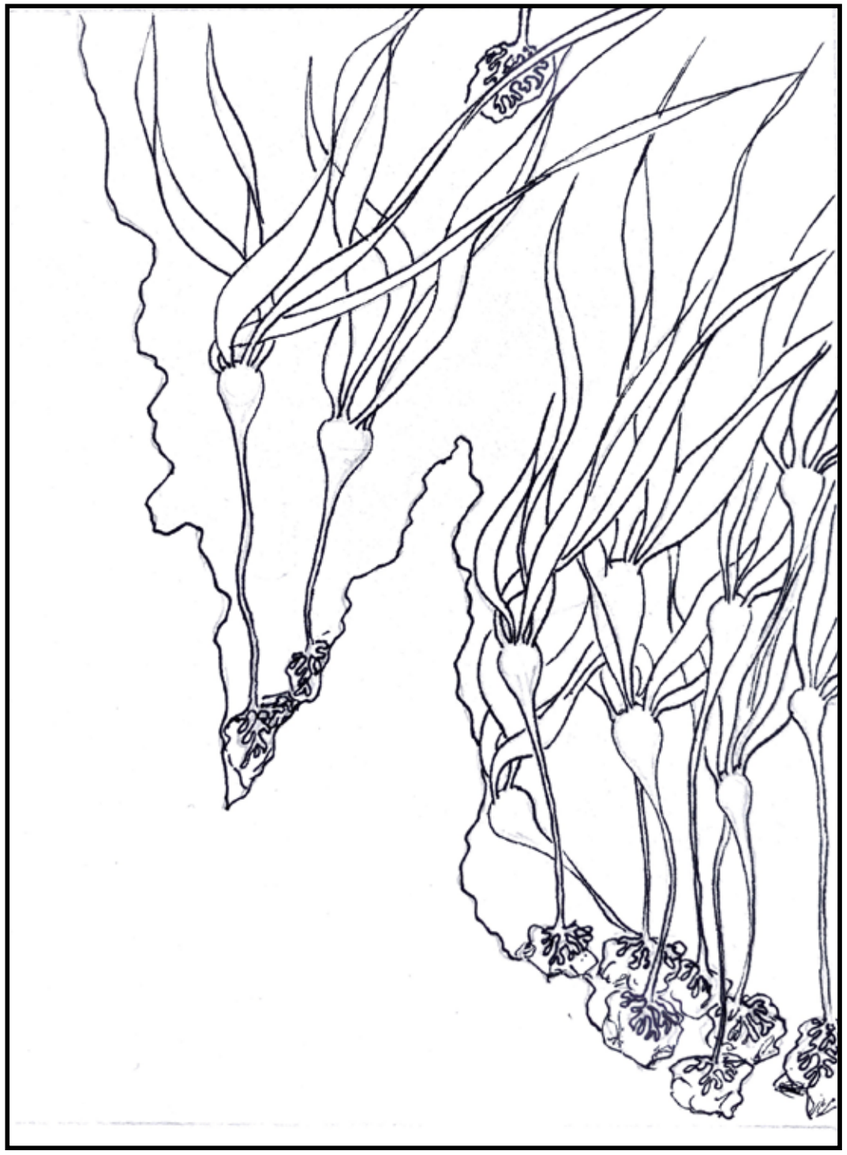




Yeis, fall equinox, brings strong winds and waves and even Geesh's sturdy holdfast cannot prevail against these forces.

Geesh has shed its fertile sori and starts its journey through the carbon and nutrient cycle.





Geesh will often wash up on beaches but some will settle on the bottom, storing some of the atmospheres carbon and releasing organic material to deep sea organisms.

Geesh graciously settles to the deep, providing nutrients and resources for the next generation.