



17 Sep 2025

To Whom It May Concern,

I am writing in response to a request from My Sea To Sky (MS2S) regarding the proposed floating worker housing at the Woodfibre site in Howe Sound, BC. As an expert on glass sponges, I am providing my professional assessment of their ecological role and the potential impacts of a large, moored vessel on these fragile long-lived organisms. MS2S have asked me:

Do glass sponges indicate a certain kind of habitat? Glass sponges are found in the deep-sea globally, but uniquely form complex reef-forming structures from southern Alaska, through British Columbia, to northern Washington State. They are typically found in cold and stable environments, often in deeper waters, but in the Howe Sound they are as shallow as 20 m depth, within recreational diving limits. They form structurally complex habitats that support high biodiversity, including commercially important species of rockfish, and thus are an indication of high biodiversity and commercially valuable species. These reefs are extraordinary suspension feeders, they filter water at twice the rate of mussel beds, the next most efficient filter-feeding community in the ocean. For example, the 19 documented glass sponge reefs in the Salish Sea collectively filter an estimated 104 billion litres of water daily, equivalent to about 1% of the combined volume of the Strait of Georgia and Howe Sound. By filtering seawater, they remove up to 90% of bacteria and transform nutrients, strengthening food webs and enhancing water quality - an important service to the entire Howe Sound, including humans.

Are glass sponges sensitive to environmental changes or conditions? Glass sponges are highly sensitive to disturbance. They rely on the continuous flow of clean, oxygenated waters, and their survival is impaired by intense sedimentation, warming, acidification, and physical damage. In a long-term experiment on juveniles of *Aphrocallistes vastus* (one of the three reef-forming species in Howe Sound), sponges exposed to slightly warmer (+1.8 °C) and more acidic (-0.2 pH units) seawater filtered 2 to 4 times more slowly, became 2 to 6 times weaker, and many ceased feeding entirely within weeks. Prolonged starvation caused tissue damage, and after just 30 days of warming, irreversible tissue loss was observed. Further testing revealed that sponge skeletons became weaker and more flexible under these altered conditions, reducing their ability to withstand current flow and likely halting reef formation in the long term. Because they are slow-growing, long-lived, recovery from any disturbance is extremely limited, and their susceptibility is likely to increase under future climate scenarios.

How would the presence of a 167m ship, moored in site for a number of years, impact any glass sponges at the site? The long-term presence of a 167-metre ship in Howe Sound could threaten glass sponges in multiple ways, including physical disturbance as anchors or chains could directly damage sponge reefs; vessel-induced resuspension (from propeller wash, maintenance, or hull cleaning) could smother sponges; the ship's bulk could alter current flow, reducing delivery of food-rich water; and discharges, anti-fouling leachates, or accidental spills could introduce harmful substances. While direct effects of these factors on glass sponges remain untested, their known low tolerance to environmental change (e.g. deviations from the natural temperature and pH conditions to which they are locally adapted) suggests strong vulnerability.

These sponges are ecologically vital, yet highly sensitive to disturbance. The prolonged mooring of a large vessel in the vicinity of this habitat might pose risks to the survival of these sponges and their communities. I strongly recommend a thorough and precautionary evaluation of potential impacts before any such activity proceeds.

Sincerely,

A handwritten signature in black ink, appearing to read 'Angela'.

Dr. Angela Stevenson

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