

## DISCOVERING NEPTUNE CANADA'S UNDERWATER LABORATORIES

**\*Follow along with the presentation. Fill in the blanks as you discover the answers.**

NEPTUNE Canada is a new way of studying the \_\_\_\_\_. The NEPTUNE Canada project has laid down \_\_\_\_\_ kilometers of electro-optic cable that sits on the ocean floor. The cable makes a loop that starts on \_\_\_\_\_ Island, and runs out (on the bottom of the ocean) past the \_\_\_\_\_ plate to the edge of the \_\_\_\_\_ plate and back again. Along the way, the cable is connected to seafloor \_\_\_\_\_. These nodes are like underwater \_\_\_\_\_, and instruments are connected to the nodes. Information and images collected by NEPTUNE Canada instruments are sent over the \_\_\_\_\_ to the shore station on Vancouver Island.

1. The **Folger Passage Node** is located on the continental \_\_\_\_\_ near the entrance to \_\_\_\_\_ Sound. The latitude is \_\_\_\_\_° \_\_\_\_\_' N and the longitude is \_\_\_\_\_° \_\_\_\_\_' W. The instruments connected to this node are located in two locations: Folger Pinnacle and Folger Deep, at depths of \_\_\_\_\_ to \_\_\_\_\_ meters. This site is full of life and dynamic because it is exposed to huge ocean \_\_\_\_\_. The \_\_\_\_\_ provides energy for photosynthesis in this ecosystem. From the underwater footage taken at Folger Passage, use three words to describe what the habitat looks like: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_. Scientists can use data from the Folger Passage Node to better understand the factors that control how much \_\_\_\_\_ is present, and the effects of ocean changes on marine \_\_\_\_\_.

2. The **Barkley Canyon Node** is located on the \_\_\_\_\_ slope, where the \_\_\_\_\_ plate dives under the North American plate. The latitude is \_\_\_\_\_° \_\_\_\_\_' N and the longitude is \_\_\_\_\_° \_\_\_\_\_' W. The instruments attached to this node are located from \_\_\_\_\_ to \_\_\_\_\_ meters deep.

Submarine canyons act as channels for sediment and \_\_\_\_\_ to move from the continent to the deep ocean. Typically, canyons are sites of underwater \_\_\_\_\_. Barkley Canyon is unique because it has \_\_\_\_\_ hydrates seeping out of the ocean floor, creating a very interesting environment with creatures new to science.

From the videos and images you see taken at Barkley Canyon, use three words to describe what the habitat looks like: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

Scientists are very interested in the unique \_\_\_\_\_ that is supported by the gas hydrates. \_\_\_\_\_ provide energy for chemosynthesis in this ecosystem.

3. The **Endeavour Ridge Node** is located in a valley between active volcanic ridges, where the Juan de Fuca plate and the \_\_\_\_\_ plate are spreading apart. The latitude is \_\_\_\_\_° \_\_\_\_\_' N and the longitude is \_\_\_\_\_° \_\_\_\_\_' W. The instruments attached to the Endeavour Ridge Node are located \_\_\_\_\_ meters below sea level (that is 2.5 km!).

Hot \_\_\_\_\_ are found along the spreading zone, where large chimney-like structures called \_\_\_\_\_ spew out chemicals, minerals, and fluids at temperatures reaching over \_\_\_\_\_°C. Amazingly, the super-heated water and the chemicals support a whole ecosystem of organisms, with up to \_\_\_\_\_ a million creatures living per square meter around the chimney structures ("Black Smokers").

Chemicals provide energy for \_\_\_\_\_ in this ecosystem.

From the video and images you have seen of these hydrothermal vents, use three words to describe what the habitat looks like: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

The Endeavour Ridge Node will allow scientists to study the interactions among tectonic, volcanic, \_\_\_\_\_, and biological processes.