

GEO130 SPRING 2006

FILM STUDY GUIDE

Title: *Blue Planet, Seas of Life Episode V: Frozen Seas*

1. Polar Seas can be very productive during the spring and early summer season, because of long hours of daylight and cold waters that contain large concentrations of oxygen and carbon dioxide. Later in summer because resources have been used primary productivity decreases.
2. During summer when the phytoplankton is most productive many migrants visit the polar seas.
3. During winter productivity is nil and only the hearty carry on. For example in the Antarctic krill scrape phytoplankton from the bottom side of sea ice to survive.
4. Marine mammals (whales etc.) require air to live and many species that are trapped must keep air holes open by constant activity.
5. In the Antarctic when the great ice sheets form, krill stays alive beneath the ice by scraping dead phytoplankton from the bottom of the ice.
6. The size of the Antarctic continent effectively doubles each winter with seasonal ice formation.
7. The combination of freezing and the chilling winds create the most dense oceanic waters on Earth, the Antarctic bottom water.
8. The Antarctic ice cap contains 30 million cubic kilometers of water and 70% of Earth's fresh water.
9. The Greenland ice cap contains 2.5 million cubic kilometers of water.
10. 1,450 km³ of ice calves from Antarctica per year. That is about equal to half the total usage by humans each year.
11. Icebergs can be 1000 feet thick and more than one hundred miles long. Bergy bits are 5 - 15 feet chunks of ice and brash ice is even smaller bits.
12. Many species of Antarctic fish have natural antifreeze called glycopeptides, and their blood contains no hemoglobin - it is translucent, not red.
13. Polynyas are areas of open water surrounded by ice. Upwelling, tides, winds and strong currents can prevent water from freezing

by stirring it. Polynas can be important to the survival of whale and other marine mammal species.