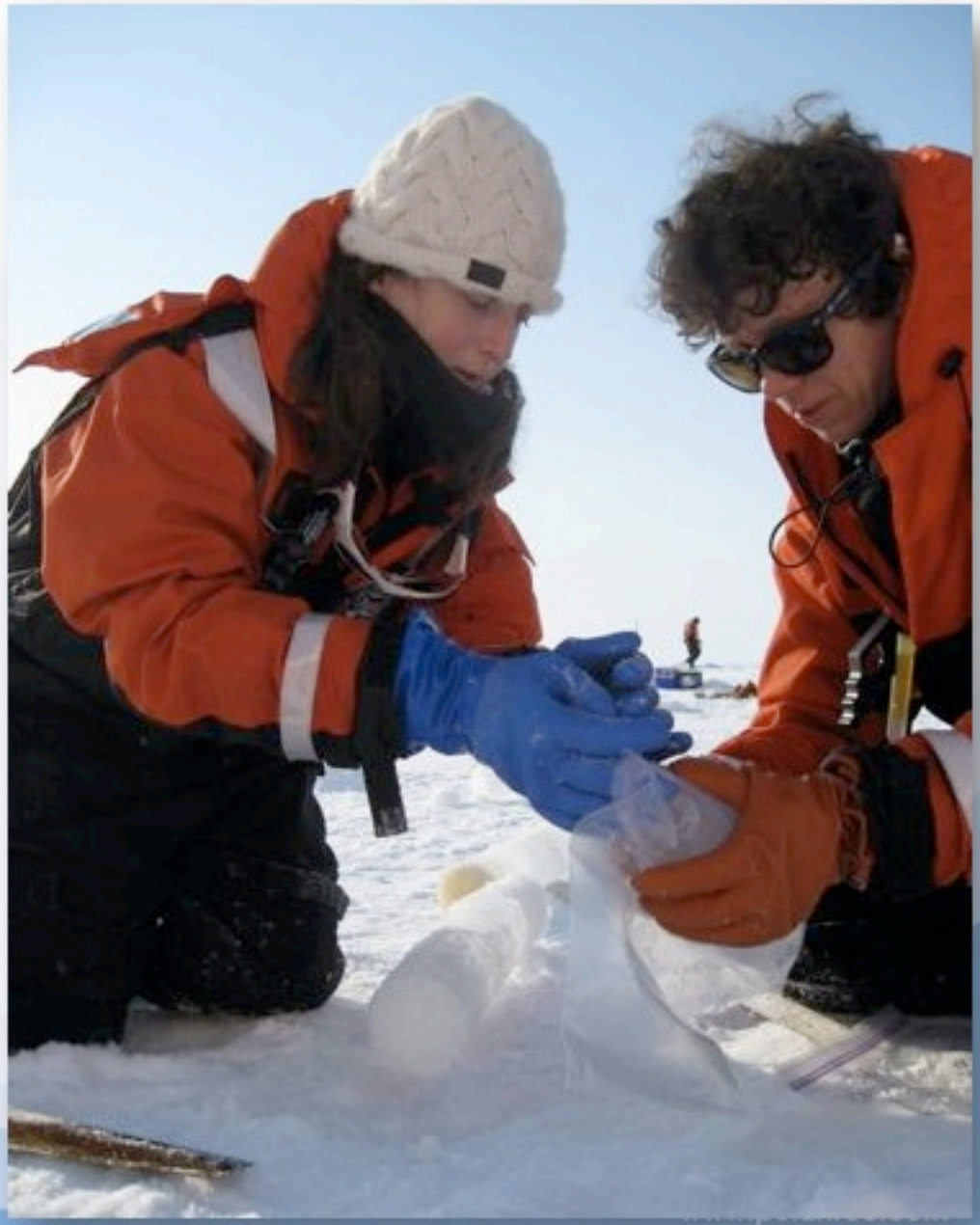
Live from IPY!

with Simone Welch

and the team onboard the USCGC Healy in the Bering Sea

6 May 2009

10:00AM [8:00AM HST, 11:00AM PDT, 12:00PM MDT, 1:00PM CDT, 2:00PM EDT]

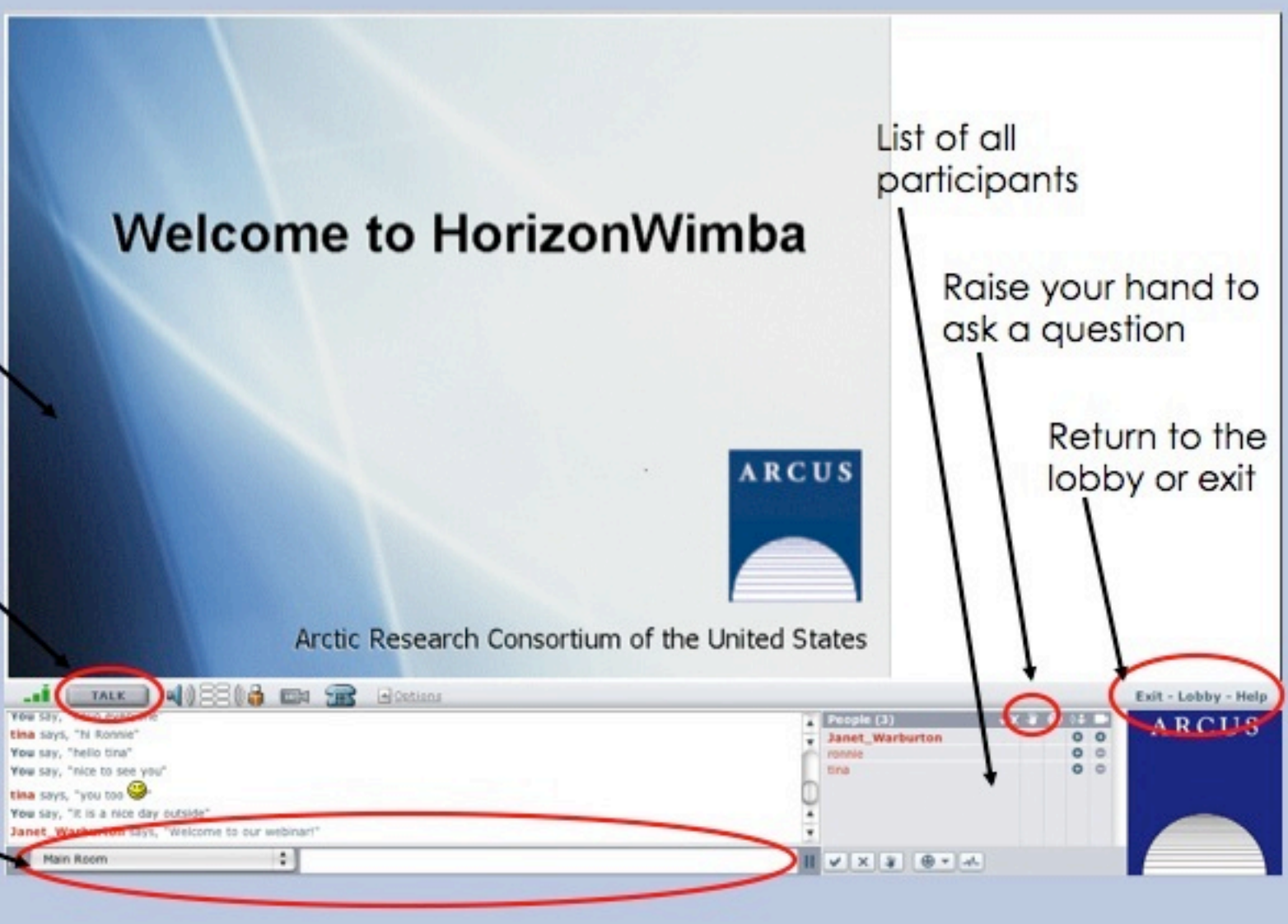


Wimba
people teach people

Slides will be shown here

If using VOIP, press here to talk

'Chat' with one person or the entire group



List of all participants

Raise your hand to ask a question

Return to the lobby or exit

Please note: Today's event will be recorded and archived at www.polartrec.com.

Roll Call

When called, please state your:

- ✓Name
- ✓School / Classroom
- ✓The number of students participating from your classroom today

International Polar Year (IPY)

The International Polar Year (2007-2009) is an exciting scientific campaign focusing on the world's polar regions!

IPY is a time for discovery, science, learning, and awareness about the polar regions with activities for youth, scientists, and the public.

www.ipy.org

What is PolarTREC?

PolarTREC is a professional development experience in which K-12 teachers are paired with researchers in authentic polar research experiences.

In the next three years over 40 teachers from around the United States will join scientists in the Arctic and Antarctica in celebration of the International Polar Year!

www.polartrec.com

Simone Welch
PolarTREC Teacher

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Woods Hole Oceanographic Institution

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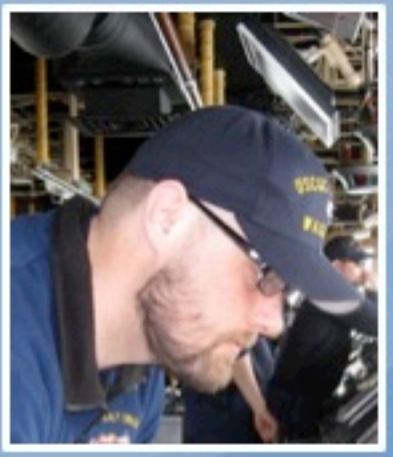
David Shull
Western Washington University

Pat Kelly
URI-GSO

Katrin Iken
University of Alaska Fairbanks

Chris Linder
Woods Hole Oceanographic Institution



Jim Merton
United States Coast Guard

Where are Ms. Welch & the Team?

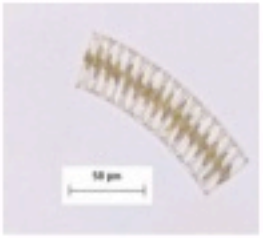

Russia
Alaska (U.S.A.)
Chukchi Sea
Zaliv Kresta
Zaliv Kanchalan
Anadyrskiy Zaliv
Bering Sea
02-May 1200
0000
01-May
0600
2100
28-Apr
200 00
www.sailwx.info

Mesozooplankton-Microzooplankton Food Webs

Carin Ashjian

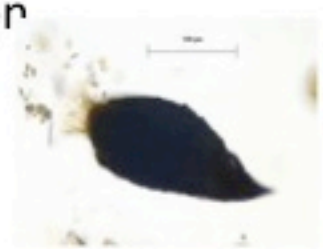
(with Bob Campbell, Ev Sherr, Barry Sherr, Philip Alatalo, Julie Arrington, Celia Gelfman, Celia Ross, and Donna Van Keuren)

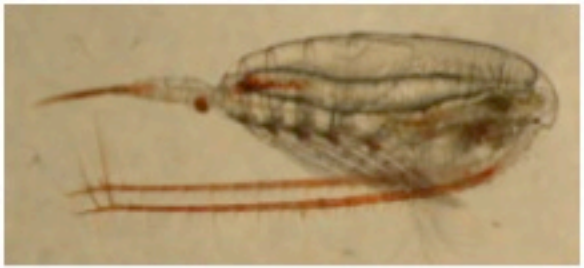
The Planktonic Food Web



Phytoplankton
and Ice Algae
(e.g., diatoms)

Microzooplankton
(e.g.,protists)





Mesozooplankton
(e.g. copepods, krill)

Fish, whales, birds, larger zooplankton

Goal: To measure how much and what type of food (phytoplankton, ice algae, microzooplankton) the copepods and krill are eating

First, we need to catch the plankton

Then we need to sort the plankton at 32 °F

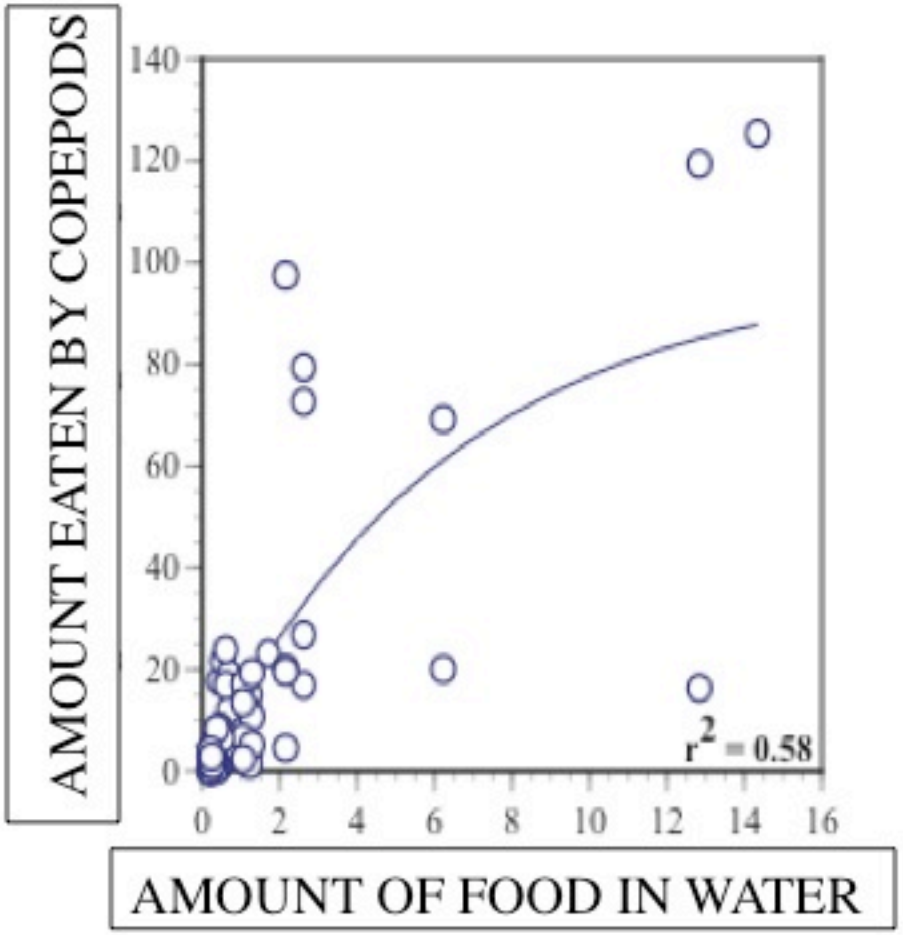
The animals live in water that is just about -1 °C. In order to keep them alive and healthy, we have to keep them cold. The easiest (and most uncomfortable) way to do this is to work in the “cold room”.

The copepods and water are put in bottles that are wrapped in screening to limit sunlight

Then we put the jars on a plankton wheel. The wheel keeps it all mixed.

We keep them on the wheel for 24 hours. Afterwards, we measure how much they ate.

The end result…

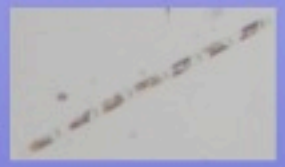


The more food there is, the more the copepods eat.

In the Bering Sea, everybody eats krill –

but what do the krill eat???

Phytoplankton?



Ice algae?

Protozoa?

baby

adult

Copepods?

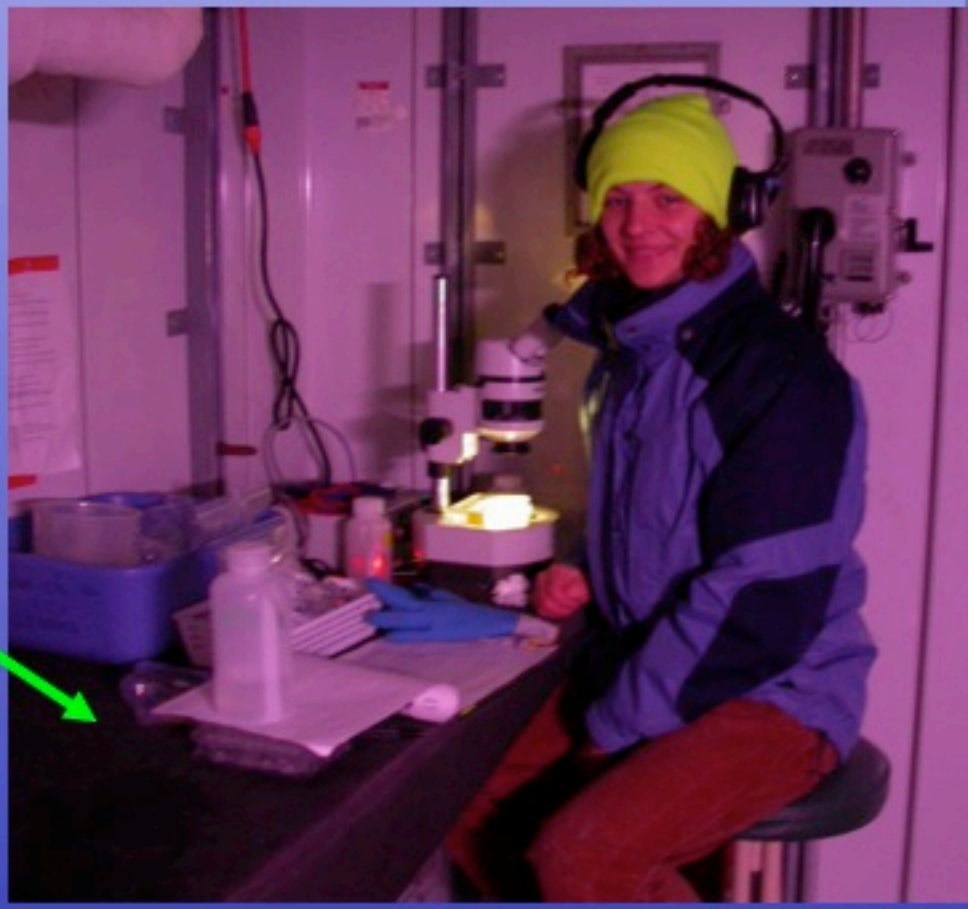
That's what 'TEAM KRILL' is trying to find out on board the icebreaker Healy!

First, We catch the krill in big 'Bongo' nets:

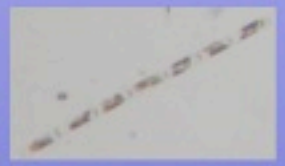

Sometimes we catch things we don't expect!
Ice

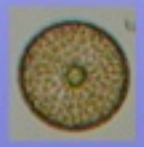
We add the krill to bottles with prey from the water or from the ice and hold them in a cold water bath for 1 day.

After, we identify and count what prey the krill ate using a microscope.



Phytoplankton?





Ice algae?

Protozoa?

baby

adult

Copepods?

WHAT DO YOU THINK KRILL EAT?

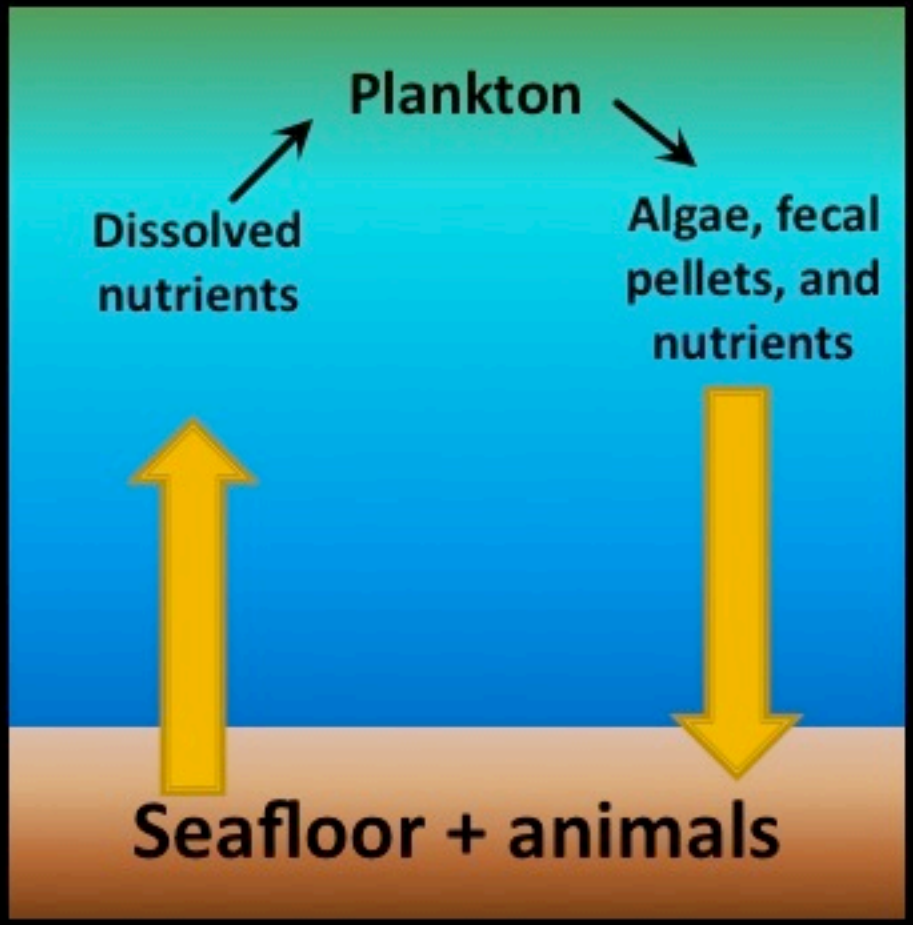
Why study the muddy seafloor?

Reason #1: Lots of wild animals

Clams, ice cream cone worms, bamboo worms, and snails South of St. Lawrence Island

Brittle stars, crabs, sea starts, and sand dollars farter north

Reason #2: The sea's recycling center



Reason #3: Mud = fun

Collection of Sinking Particles During the Bering Sea Ecosystem Study

Roger P. Kelly - University of Rhode Island
S. Bradley Moran – University of Rhode Island
Michael Lomas – Bermuda Institute of Ocean Science

Why are sinking particles important?

- Food source for benthic community
- Mechanism for removal of organic carbon from surface ocean

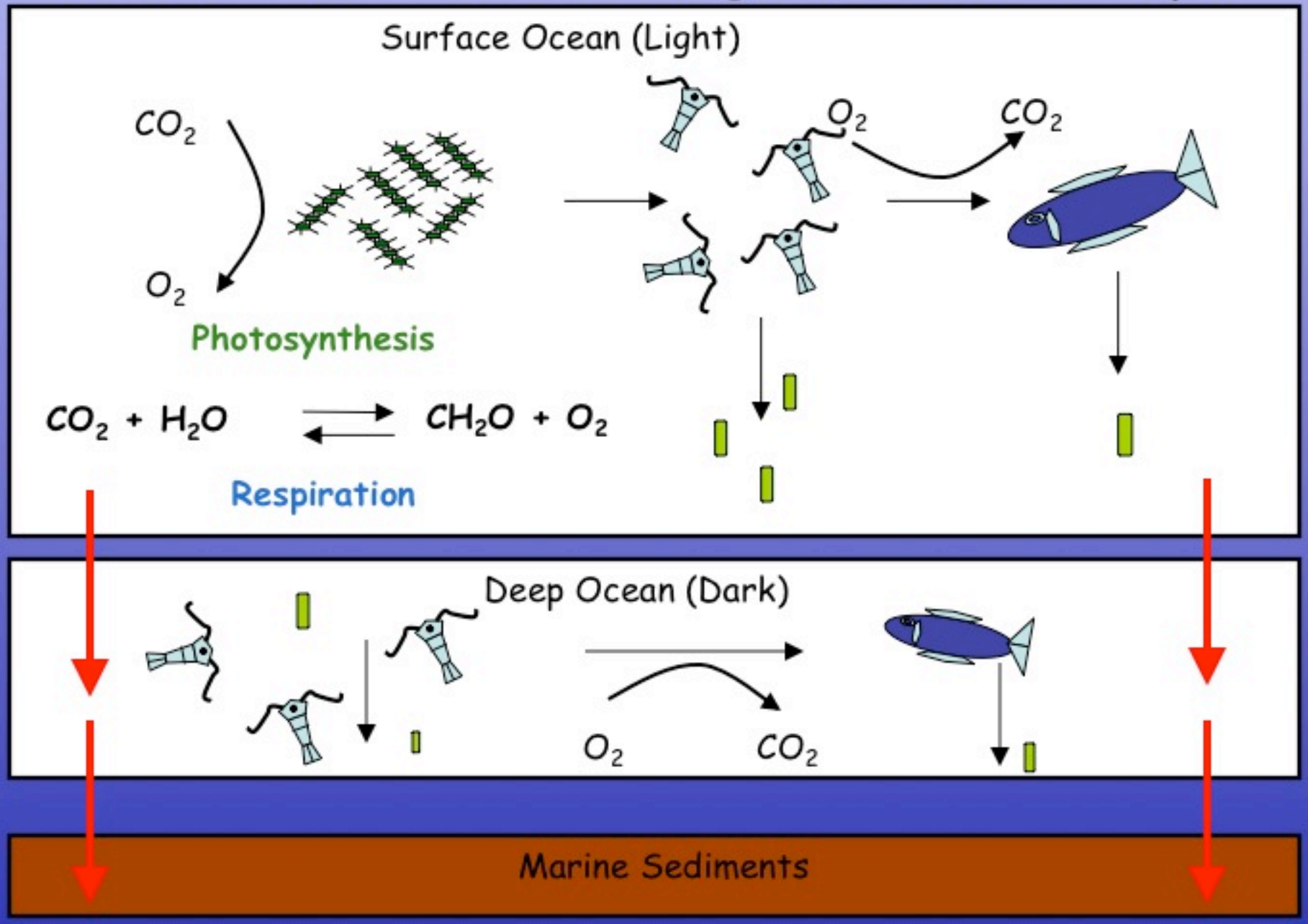
Where do particles come from?

- Aggregation of phytoplankton
- Zooplankton, fish, whale waste
- River runoff and aerosol dust

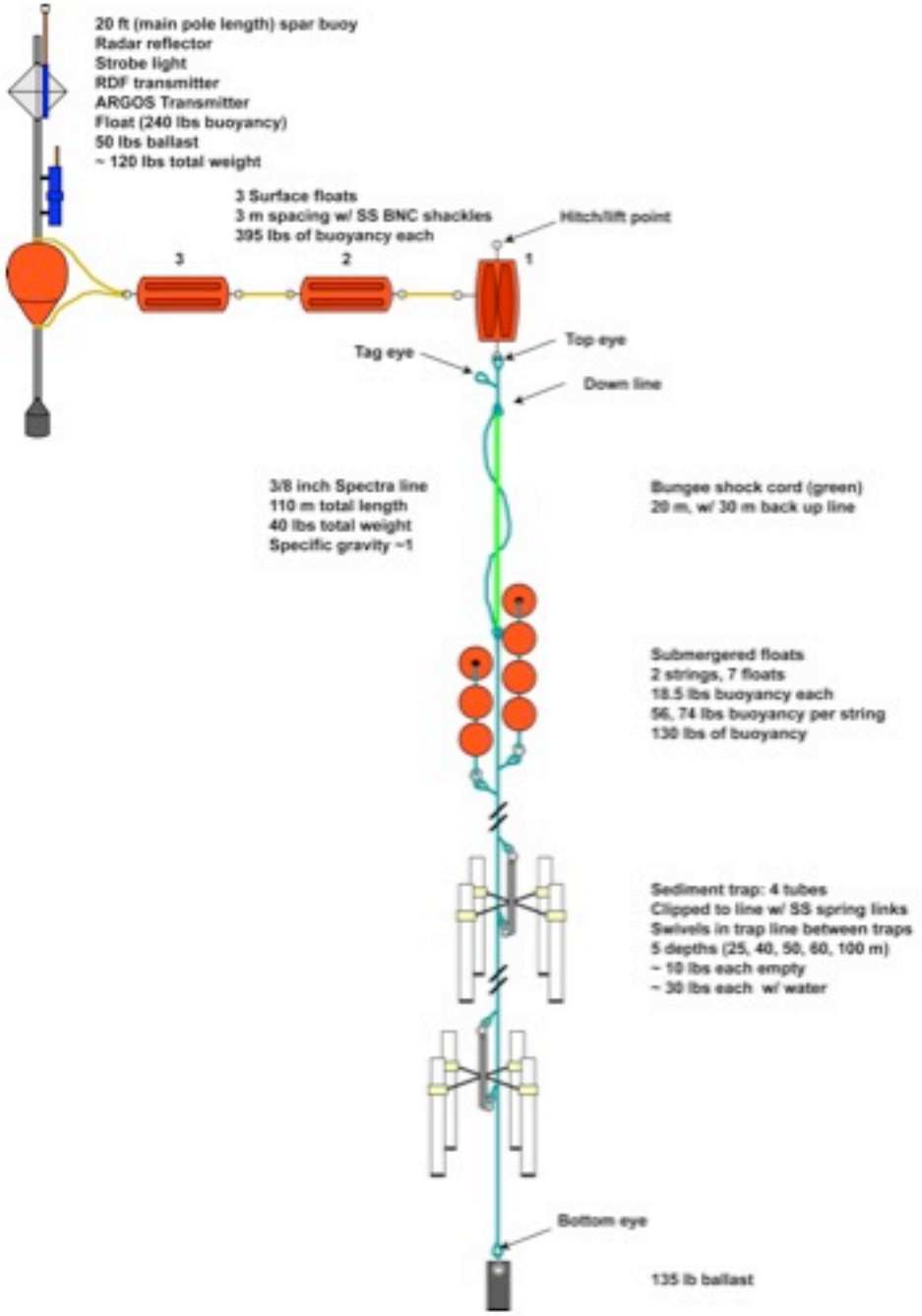
Why study particle flux in the Bering Sea?

- Highly productive fishery
- Dramatic change between winter and summer particle production
- Sub-arctic ecosystems are sensitive to climate change

Marine Particulate Organic Carbon Cycle



Drifting Sediment Trap Array



Drifting Sediment Trap Deployment

Drifting Sediment Trap Deployment

Drifting Sediment Trap Recovery

Photos by Rachel Pluenther

Sediment Trap Particle Processing

Sinking particles are collected in a brine solution, which is separated from seawater.

Brine is then filtered to collect the particles.

Observations:
Most particles appear to be fecal pellets and phytoplankton aggregates

More particles in deeper samples

Arctic sea ice – can anything live here?

Ice is brown on the underside.

Tiny algae live in the ice.

Ice algae feed animals in the water and on the bottom.

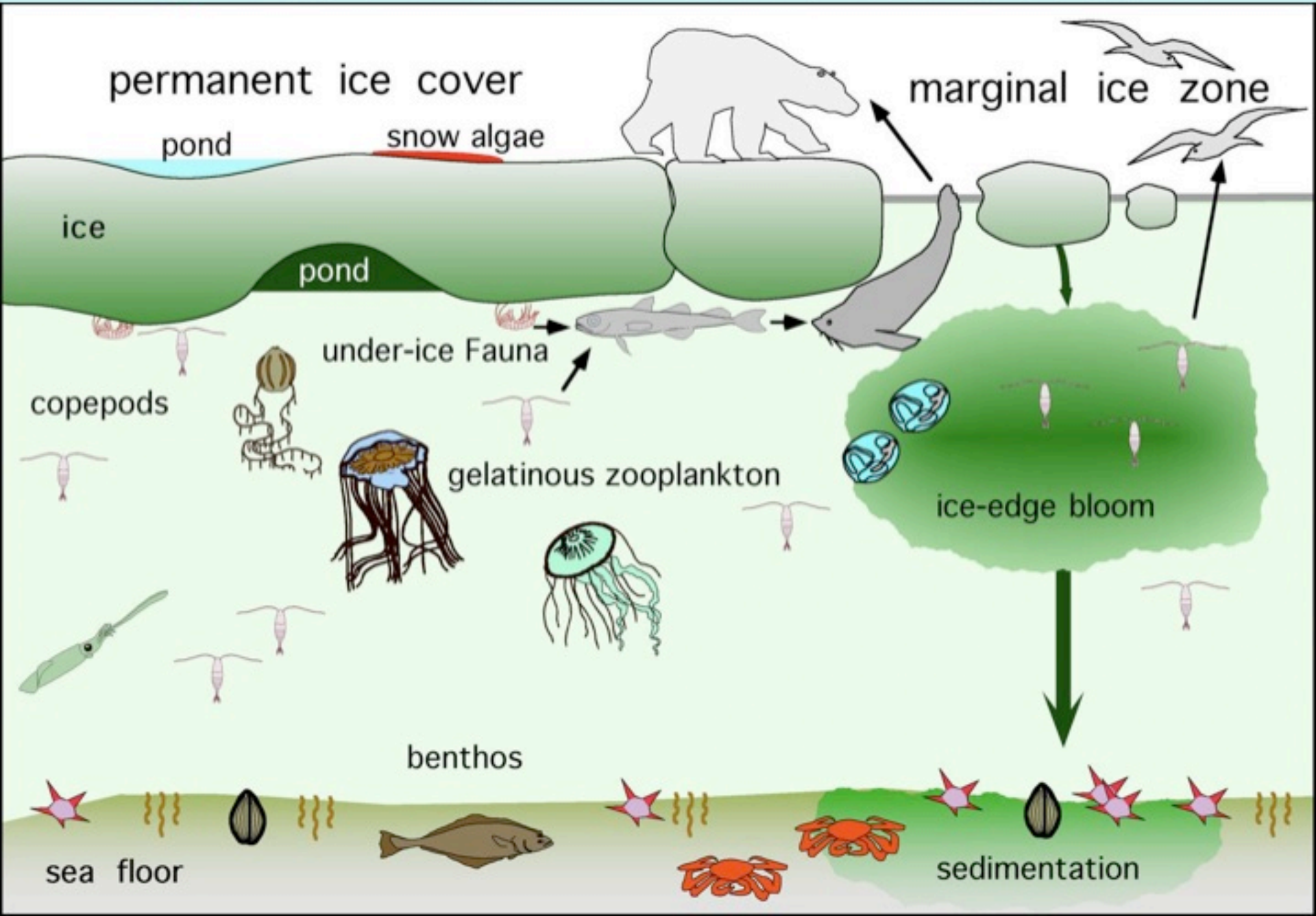



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Photo by Chris Linder, WHOI


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If you have further questions, please contact us at: info@polartrec.com or call 1-907-474-1600

Connections in the ecosystem