CURRICULUM SUPPLEMENT

For use with the **RESULTS** section of Meltdown

ACTIVITY ONE: BUILDING A FOOD WEB MOBILE

Materials:

-mobile building materials (see material ideas below)
-species circles (~6 for each student)
-colored paper
-glue
-scissors and hole punches
-scratch paper
-pens & pencils
-butcher paper concept web from previous lesson
--Completed **Get to Know and Invert** *and* **WANTED** *worksheets*

Teaching Time: 1.5 hours

Preparation: 1 hour

Teachers will want to collect mobile making materials prior to the class. Creating a mobile ahead of time may be a helpful tool when demonstrate the project to students. Check out the links below and decide what style of construction will work best with your class:

Sample one: mobile using fishing line and wire

Sample two: mobile with sticks and string

Sample three: hanger mobile

Background:

A hanging mobile is great way to visually represent the connections between species in an ecosystem. In this activity students will construct their own food web mobiles using the species they've studied and discussed in the previous activities.

Throughout this virtual field trip students have been introduced to the idea that sea ice algae is an important part of the spring food web in the Bering Sea. Though these student food webs will not be specific to ice algae, this activity strives to solidify student understanding of why these primary producers are important- namely because they are the foundation of the food web.

Each student will construct their own food web which will be hung together in the classroom. In order to keep the process streamlined, students should limit their food chain to 5-8 species, and should include species from each trophic level: producers, primary, secondary and tertiary consumers and decomposers.

Directions:

1. Introduce the project to students. Explain that they'll be using the expertise they've developed to create their own visual representation of a food web- a mobile!
2. Clarify that they will not be expected to include every animal in the food web, but that they should include the invertebrate species they studied along with 5-8 others it is connected to.
3. Show an example of a mobile, and demonstrate how they will construct their own. (Find the process in the written directions on student assignment below).
4. Pass out student concept maps and worksheets for use as reference material.
5. Have students spend a few minutes reviewing the ideas they've already brainstormed.
6. Distribute scratch paper. Have students sketch out a draft of their food web. Students should make note of the trophic level of each species.

Species can be connected in this draft using arrows to show how energy moves through the system.

7. When students have completed their draft, have them share it with a partner, working out any kinks in their design.
8. Pass out paper circles (species cards) to students. Have students draw a picture of each other species on the front.
9. With all illustrations complete students are ready to cut out their circles. Circles will then be glued to construction paper that denotes the animals trophic level (ex: blue for primary consumers, green for primary producers etc.)
10. Have students lay out all their species cards, so that they can visualize how their mobile will go together.
11. As students become ready for the construction phase, making mobile building supplies available.
12. Move around the room assisting with design challenges as necessary.
13. When mobiles are complete hang them up around the room. Give students time to circulate, looking at each other's projects.

Discussion:

When students have completed their mobiles, debrief the process as a class:

-Was constructing your food web easier or harder than you expected?
-If you found it challenging, what aspect of the process was it that was the most difficult?
-Think about your food chain in relation to the ecosystem as a whole. Do you think there are other species you could have included? Which ones?

Challenge students to take the process a step further:

-If you were a researcher studying food webs, how would you determine how species were interconnected?
-What would happen to the food web you created if there was so much sea ice and snow covering the ocean's surface that light was unable to penetrate through?
-What do you think would happen to your food web if the type of algae at the base of your food web was no longer able to grow as a result of changing climate? Which species would be most affected? Would any be unaffected?

Conclusions:

Being able to visualize how their food web as a mobile helps students recognize the importance of balance in the ecosystem. Too few or too many individuals of any species may throw the ecosystem off balance.

If living conditions in the Bering Sea change as a result of changing climate, food webs within the ecosystem will change too. Species who rely on ice algae may find their populations dwindling. In turn, species that rely on phytoplankton may actually benefit from this change.

Students should walk away from the lesson with an understanding of the importance of balance in an ecosystem. With recognition of the fact that any sudden changes (for example sudden changes in availability of sea ice algae in spring) will ripple throughout the whole food web, students are ready to proceed to the RESULTS section of Meltdown.