

Arctic Ecology in West Michigan Classrooms

Jenny Liebig and the members of the GVSU Arctic Ecology Program



Hands-on Activities

How do animals stay warm in the Arctic? What do Arctic animals eat? These activities are designed to explore adaptations for Arctic life. Students learn words like "predator," "herbivore," and "food chain." We find out about the differences between summer and winter in the Arctic. The activities talk about how birds and mammals can live in the snow and ice and still stay camouflaged in the summer.



In this Arctic Ocean simulation activity, students try out different insulation materials. Insulation gloves are made out of plastic bags: "fat" (Crisco, glove A), "fur", (synthetic fur fabric, glove B) "feathers" (down from a pillow, glove D) or "bare skin" (a plain bag, glove C). The "ocean" is a bin of ice water, but gloves A, B, and D keep hands warm.



Below, a young student plays with a collection of Arctic stuffed animals and puppets that shows the diversity of Arctic life. There are more than polar bears in the Arctic, and penguins are nowhere to be seen.



Above, a boy and girl work on an Arctic animal matching game. Pictures of animals are matched to their track marks. Tracks can teach a lot about an animal. The big claws of the snowy owl are used to catch many kinds of prey. The small paw prints of lemmings and weasels are good for moving quickly to escape predators.

The Arctic Ecology Program (AEP) at GVSU is led by Professor Bob Hollister and includes both graduate and undergraduate students. Though the main emphasis of the AEP is on tundra research in northern Alaska, the program also participates in outreach activities in Michigan. Outreach activities are intended to educate students about science in general and the Arctic in particular. Students attending one of these programs learn about the plants, animals, and people of the Arctic. Hands-on activities emphasize Arctic adaptations for plants and animals. Plant collections from Alaska, in the form of photography, pressed, and dried specimens bring Arctic life back to Michigan students, so they can see and touch the species from the AEP's research.



This Google Earth image shows most of the Arctic circle. Michigan is just visible in the lower right. In the picture on the left we see the AEP team at one of their research sites in Barrow. In the picture on the right we see a slideshow presentation in a Michigan classroom. The slideshow is often surprising to students. We show them pictures of things that do not fit stereotypical ideas of "Arctic", like wildflowers (below left), mosquitoes (below center) and even cities (below right). After seeing some of the photographs from our study sites and the cities we visit, students lose some of their misconceptions about this region of the world.

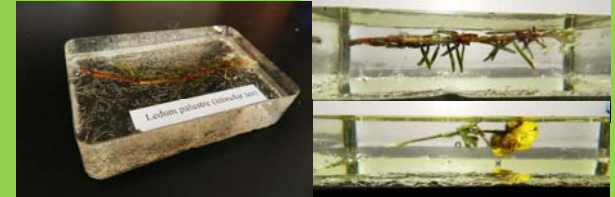


These pictures are from Atkasuk, Alaska. Prior to our program, when students are asked if they think these pictures were taken in the Arctic, they answer no because of the flowers and mosquitoes.

This is a picture of the city of Barrow, Alaska. Students are surprised to see what an Arctic city looks like.

Plant Collections

The AEP team studies Arctic plants. We spend the summer identifying species and taking measurements of flowers and leaves. We also work on collecting plants to take home so we can show people what Arctic plants look like. The easiest way to collect plants is with photography. We use close-up settings to take pictures of as many species as possible. Most Arctic plant species are very small and have small flowers and leaves. We also collect samples of plants to press or preserve in plastic.



Our 3D preserved plant collection was created by drying plant specimens and then encasing them in plastic resin. This process allows the plant to be preserved in a lifelike way. Colors stay almost as bright as they are in nature. Through the clear plastic, the plants can be seen from all angles. The small piece can be examined up-close.



With microscopes it is easier to see some plant adaptations such as the tiny hairs that many Arctic plant species have (above left). In a matching activity, plants preserved in plastic are matched with pressed specimens and photos of the same species (above right). Sometimes preserved plants do not look like how students expect them to look from the photos due to their small sizes and the close-up photography. The photos at left show species that match the plants shown in plastic above.

