



### The Challenge:

To explore the history of underground food storage in Anaktuvuk Pass, Alaska, and to build a model hiġluaq (underground cellar) using recycled materials.

### You Will Need:

Recycled cardboard, pencil, ruler, scissors, tape; optional: plastic plate, paintbrush, colored paints, cup and water or colored markers.

### Who are the Iñupiat?

Iñupiat are a group of Alaskan Natives whose traditional territories encompass Northeast Alaska. To learn more about the traditional territories of Alaskan Natives, check out this map.

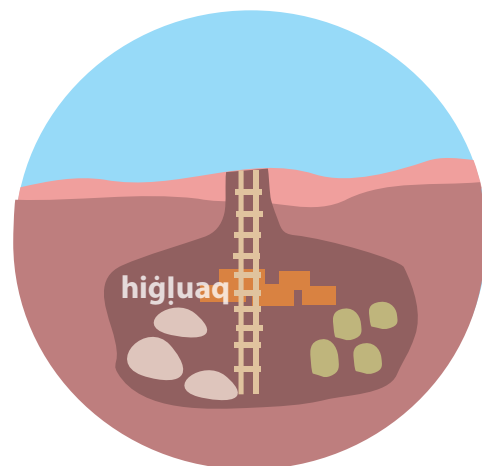
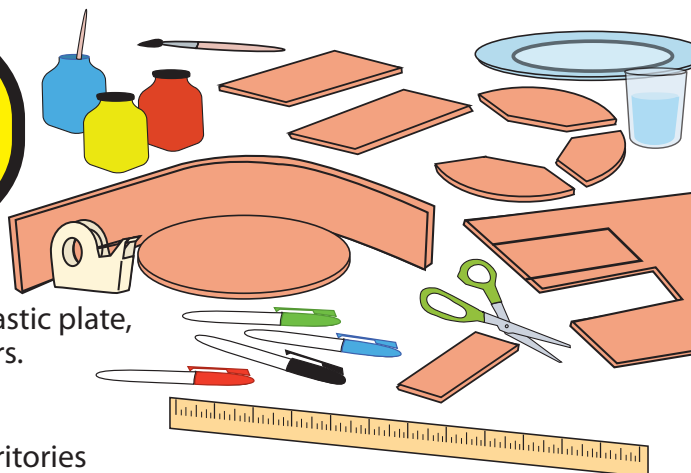
<https://www.uaf.edu/anla/collections/map/>

### What is a Tundra Biome?

Anaqtuuvak (Anaktuvuk Pass) is located in a mountainous tundra biome. Tundra is the coldest biome. In Anaqtuuvak it is so cold that the ground remains frozen throughout the whole year. Ground that remains frozen for more than two years in a row is known as permafrost (NASA Climate Kids). Due to climate change, the permafrost in Anaqtuuvak is thawing which creates new challenges for storing food underground. (Saito, Kugo, Koskey et al.).

### How is the hiġluaq (underground cellar) used?

Inland Iñupiat peoples, known as Nunamiut, settled in Anaqtuuvak in the 1940s and 1950s. In 1949, the community leaders built three community cellars, known as hiġluaq. The cellars were built in permafrost and used to safely store the meat of caribou which the people in Anaqtuuvak hunt in Fall and Spring. When the village got electricity, in the 1970s, the people of Anaqtuuvak started using freezers instead of the hiġluaq. Now, due to thawing permafrost, the three old cellars have flooded and are no longer usable (Saito, Kugo, Koskey et al.).



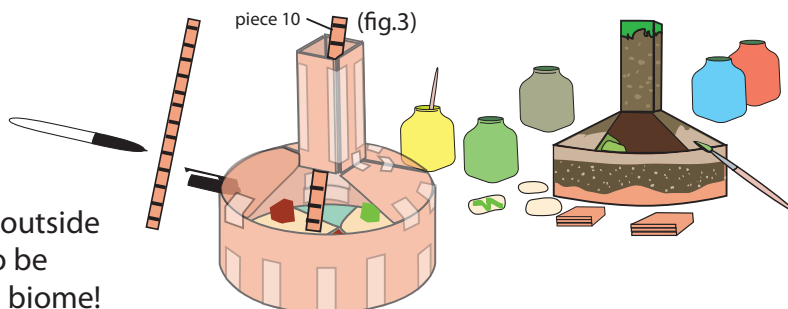
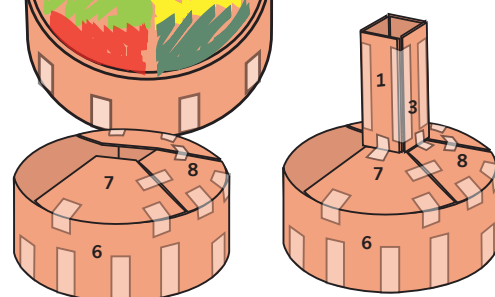
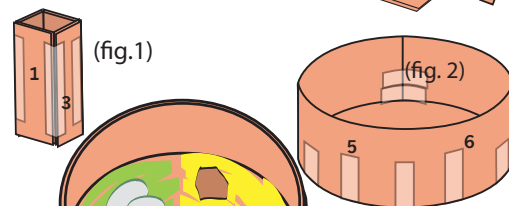
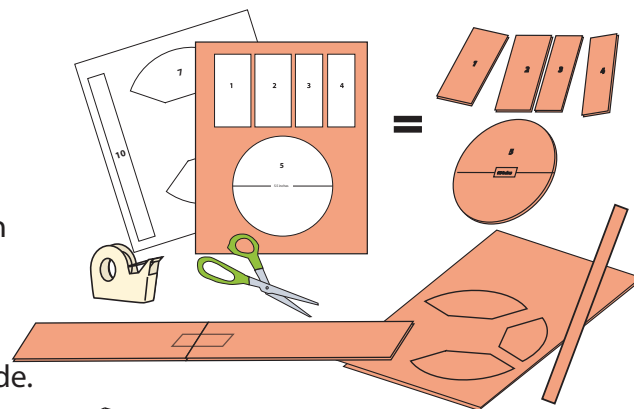
### At the Library



Learn more about the Iñupiat people and their traditions in this exciting read! Eagle Drums by Nasuġraq Rainey Hopson. Roaring Brook Press, 2023.

# Let's Build!

1. Note, in this model 1/2 inch = ~1 foot
2. Cut out all the template pieces on pages 3-5 of this activity.
3. Trace each template piece onto cardboard. Be sure to write the piece numbers and notes on the cardboard exactly as labeled on the paper template!
4. Cut out each cardboard piece.
5. Make the cellar entrance. Tape pieces 1-4 along their long edges, creating a chimney shape. Then, set these pieces aside. (fig.1)
6. Make the cellar floor and wall. Place piece 5 on a flat surface. Then use piece 5 as a base and wrap piece 6 around it, taping as you go, until you have made an open-topped cylinder. (fig. 2)
7. Use paint or markers to divide the inside of the cellar into different "pie slices." Each family will use their "slice" to store their caribou meat. Decorate the different family slices! Feel free to be creative in how you decorate.
8. Make the cellar roof: carefully attach pieces 7, 8 and 9 to piece 6. Note that real cellars have a completely enclosed roof, but for this model, one roof panel is missing to allow you to see into the cellar.
9. Tape the "chimney," made from pieces 1-4, to the opening created by pieces 7, 8 and 9 at the top of the cellar.
10. Draw ladder rungs on piece 10 and gently lower it through the cellar entrance until it touches the cellar floor. (fig. 3)
11. If you want to be extra creative, use paper or cardboard scraps to create little "packages" of meat and place them in the different family sections.
12. After you finish assembling your higluag, paint the outside to represent the permafrost and tundra. Feel free to be creative in what flowers are growing in your tundra biome!



## What Do You Think?

How does your family store food? How is your food storage similar or different from a higluag (hint: think about temperature and light exposure)?

Think about a memorable meal you have eaten at home. What were the ingredients?

Who helped make the meal? Why do you think that meal was so special?

Imagine you live in Anaktuvuk in modern times. What would be some of the benefits of constructing a new higluag? What would be some of the risks?



Want to try preserving food right in your kitchen? Instead of an underground cellar, you can also preserve food by dehydrating it in an oven. To make dried banana chips, you will need: banana, knife, cutting board, fruit juice, cinnamon (optional), baking sheet, parchment paper and a storage container. First, wash hands with soap and water. Slice bananas into 1/8 to 1/4-inch slices. Dip banana slices into fruit juice to reduce browning. Sprinkle with cinnamon or other flavorings if desired. Set the oven to the lowest temperature possible (175 to 200 °F). Place the banana slices on a baking sheet lined with parchment. Bake for 3 hours, or until pieces bend like thick leather and no longer feel sticky. Flip the banana slices at the 1.5 hour mark. Cool. Store in an airtight container or bag. (Source: USDA MyPlate)

Concept by Yoko Kugo and Michael Koskey

Special thanks to Anaktuvuk Pass residents and elders who provided insight into cellar use and design

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Illustrated by Dennis Smith

This activity was created through a Polar STEAM partnership between Yoko Kugo and Michael Koskey (research team), GrowingGreat, and the Anaktuvuk Pass community.



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**1**

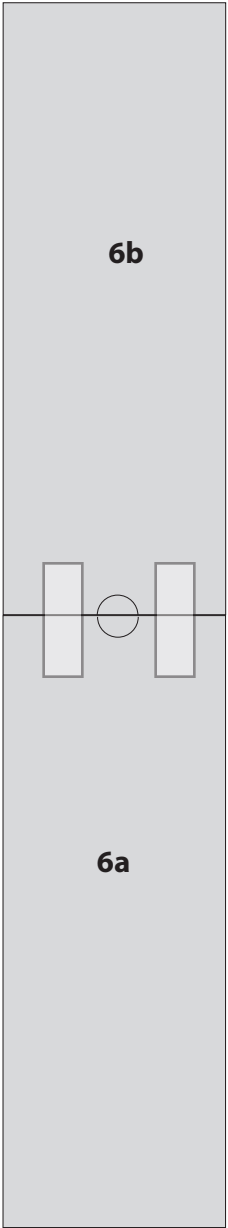
**2**

**3**

**4**

**5**

5.5 inches



Tape 6a and 6 b  
together

