



UNIVERSITY of
DENVER

HISTORY  Colorado
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AMACHE GARDEN ARCHAEOLOGY WORKSHEET

Try thinking like an archaeologist by
learning about garden excavations!



This activity is geared for children in grades 4-7. Credits and links to lessons and videos about archaeology and history can be found at the end of this packet.

Amache Entryway Garden Worksheet Packet

To become an archaeologist, you have to think like an archaeologist!

Use the steps, history, and maps in this packet to complete it. By completing it, you'll be able to think about the past like an archaeologist and learn more about an important moment in the history of the United States!

To know which archaeologist this packet belongs to, write your name below:

If you have a parent who is helping you, they can write their name, too:

They'll be your research assistant and help you, the archaeologist, learn about the past at Amache.

Now what is Amache? Let's read ahead to find out! Start with the steps below to begin your adventure in archaeology!

You can also look at the list of words at the end of this packet to help in your work.

Steps for Completing this Packet:

Step 1: Read the following pages on Amache, archaeology, and gardens – you can do this with your parents, too!

Step 2: Look over the garden map and see if you can understand it.

Step 3: Try to match up the pictures of pollen samples with the Pollen Locations on the map.

Step 4: Try to draw what you think the garden may have looked like on the attached worksheet. Add in flowers, garden decoration, and maybe people, too!

Step 5: Show the completed map to your parents and continue learning about the past!

Amache and Archaeology



Map courtesy of the National Park Service.

This map of Colorado shows the location of one of the state's most important historic sites. During World War II, 120,000 Japanese Americans were removed from their homes along the west coast of the U.S. and moved into internment camps. One of those camps is noted on this map, near the town of Granada. If you were to visit Amache, you would see foundations from barracks and hundreds of trees planted by those who transformed this place of confinement into something that looked like a town. These remains help us all to remember this dark time in American history.

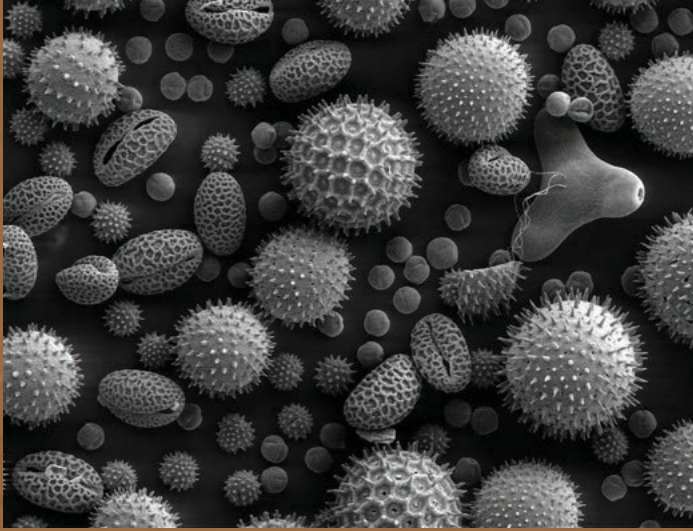
Since 2008, the University of Denver has conducted archaeology at Amache, looking for what remains on site. Archaeologists work with the Japanese American communities connected to Amache. Together they learn about and remember internment, in part through the clues left behind. Some of the most amazing finds are the remains of the gardens like the one in this picture. You are invited to join the archaeologists in learning more about this Amache garden.



This Amache garden was excavated in 2014. Follow the steps in this packet to do your own archaeology of this garden!

Gardens that feature stones have a long tradition in Japan. At Amache, large rocks were hard to come by, but pieces of concrete and brick were often used along with gravel from the nearby Arkansas River. This garden contained all those things, but it also had flowers. You might be thinking, "How can archaeologists know what was planted in a garden 75 years after internees cultivated it?" Well, that's where pollen comes in.

The Science and Art of Pollen



This is what pollen looks like under a microscope. Look at how many different kinds of pollen there are in this photo!

Photo provided by the Dartmouth College Electron Microscope Facility

When you think of pollen, you probably think of bees or flowers. When archaeologists think of pollen, they think of bees and flowers too, but also other things, like what plants were grown in the past. During excavation, archaeologists know they might find pollen hiding under objects, such as a piece of broken plant pot, or features, like the decorative concrete pieces in this garden.

Pollen is one of the best sources of information about the plants that were grown or used in many places where people once lived. Because pollen can't be seen in the ground, excavators don't collect it bit by bit. Instead, archaeologists collect bags of soil which they hope contain pollen grains.

Archaeologists then enlist the help of scientists called 'palynologists' who specialize in studying pollen. They chemically separate pollen grains from the soil and then examine them under microscopes. Palynologists can interpret what they see because the grain shapes are distinctive of the plants that made them. Once palynologists know what kind of pollen is mixed in with the soil archaeologists collected, we all know more about the plants people grew in the past and information about the local environment!

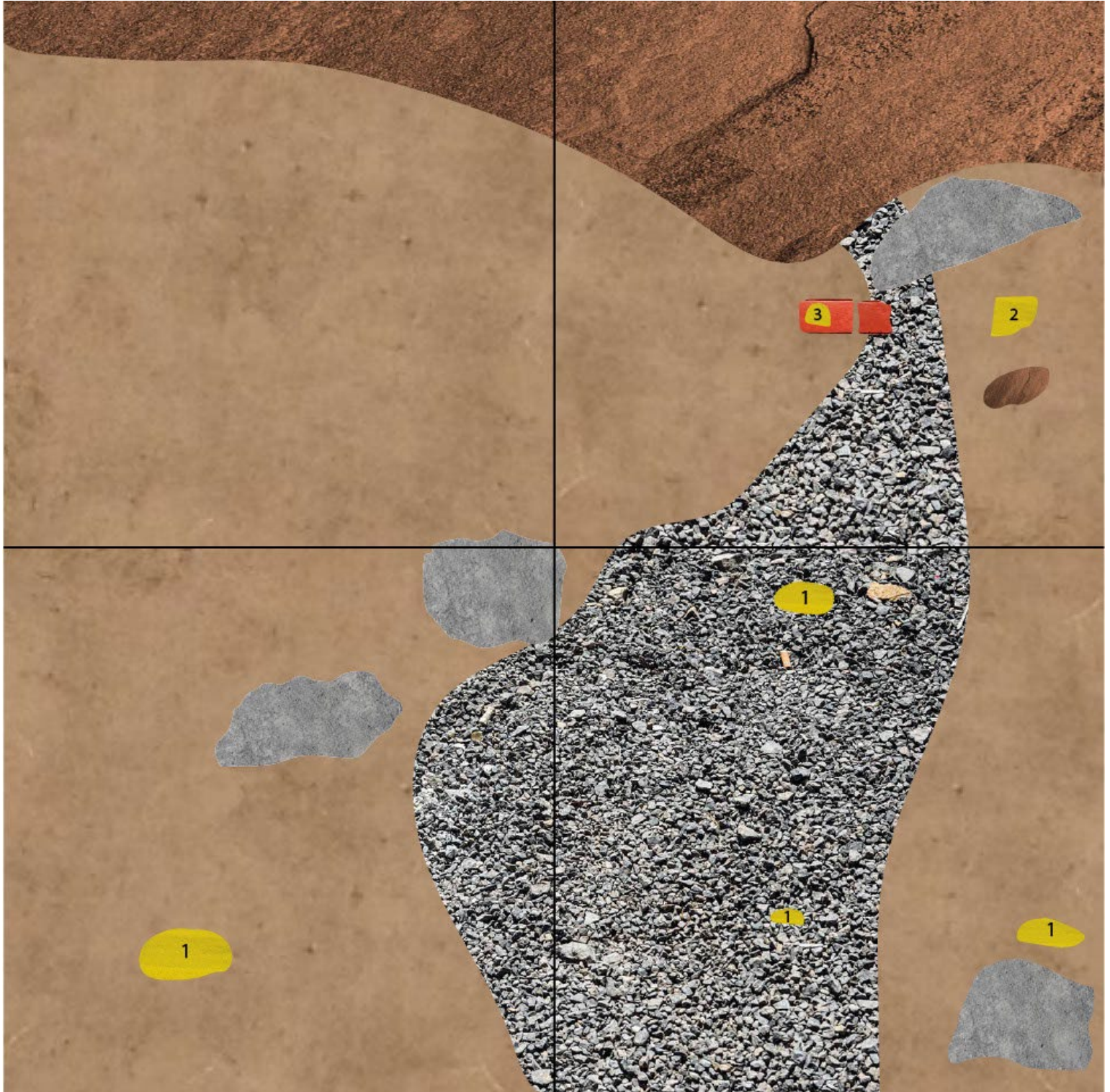
On the next page is a map showing the Amache garden excavation, including the locations where soil for pollen studies were taken by archaeologists. On the page after that are examples of some of the pollen that was found in the garden, a diagram of pollen, and pictures of plants grown in Amache gardens.

Amache Entryway Garden Excavation Map

This is a map of the archaeological excavation from the Amache garden pictured on the first page of this worksheet. To understand how internees created this garden, archaeologists mapped what was visible like concrete pieces, brick, and a concentration of river gravel. They also mapped the places where they took pollen samples to better understand what plants might have been grown in this garden. Using this map and information about the pollen that came from this garden, archaeologists can imagine what this garden could have looked like when the internees made it—and so can you!

KEY

■ = Brick ■ = Soil ■ = Gravel ■ = Pollen Sample ■ = Sub-soil ■ = Concrete pieces





A microscope photo of rosaceae (rose family) pollen found in Pollen Sample Location 1 on the garden map.

Photo provided by
<https://www.sciencephoto.com/media/32975/view/pollen-grains-of-a-rose-flower>
 r, D. Phillips and Science Photo Library



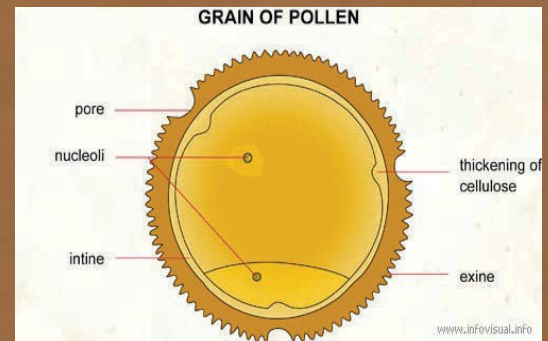
Rugosa roses planted in a different entryway garden at Amache. This hardy variety is still growing even though no gardeners are around to take care of it!

Photo provided by Dr. Bonnie Clark, University of Denver Amache Project



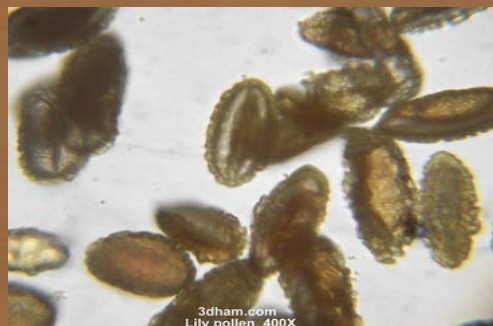
A photo of fabiceae (sweet pea flowers) found in Pollen Sample Location 2 on the garden map.

<https://pixabay.com/photos/sweet-pea-scented-ornamental-plants-2766022/>



A diagram of a grain of pollen. This is the basic structure of pollen.

Photo provided by <https://infovisual.info/en/biology-vegetal/pollen> and Visual Dictionary



A microscope photo of liliaceae (lily family) pollen found at Pollen Sample Location 3 on the garden map.

Photo provided by <http://www.3dham.com/microgallery/index.html>
 and John Alan



There are many varieties of lily. One that is native to Japan is the red spider lily. Where would you plant flowers like these in the entryway garden?

Photo provided by
<https://pixabay.com/photos/red-spider-lily-korea-incheon-2805197/>

Amache Entryway Garden Archaeology Worksheet

Using the Amache Entryway Garden Excavation map, the results of the pollen analysis, and your imagination, you can recreate this Amache garden.

- Begin by drawing in the four big decorative concrete pieces and the gravel concentration.
- Draw in the plants grown in this garden based on the pollen locations and results.
- In gardens like this in Japan, gravel was often shaped with a rake. Try drawing interesting patterns in the gravel areas of this garden.

Have fun! Share this example of the work you did as an archaeologist with friends and family!

Important Ideas and Words

Here are some important words and phrases that you and your parent can use to help with completing this activity.

There is a lot information here about archaeology and history, but that's only the start! If you want to learn more, we've provided descriptions and links to internet resources below.

Amache: a Japanese American internment camp in southeastern Colorado constructed in 1942 and taken apart in 1945. Also known as the Granada Relocation Center, Amache is a National Historic Landmark.

Archaeology: the study of the human past through material remains like the places people lived and the items they used there

Excavation: careful removal of soil to uncover the places impacted by people in the past

Internment Camp: Internment is a commonly used term to describe the removal and confinement of Japanese Americans during World War II. The sites where they were incarcerated are often called camps.

Palynology: the study of pollen

Pollen: small, microscopic grains made by plant flowers so they can produce seeds

Sub-soil: soil below human occupation levels. Archaeologists often stop excavations once subsoil is found.

World War II (WWII): a war involving countries across the globe that lasted from 1939 to 1945

More Resources for History and Archaeology Education

Japanese American National Museum, Enduring Communities

- Grades 4-12
- Downloadable curriculum about Japanese American history, especially their confinement during World War II, tailored to education standards for Arizona, Colorado, New Mexico, Texas, and Utah.
- Link: <http://www.janm.org/projects/ec/curricula/>

American Museum of Natural History Archaeology for Kids

- Grades K-5
- A website with a lot of different games, videos, and interviews with archaeologists made for kids.
- Link: <https://www.amnh.org/explore/ology/archaeology#all>

List of Archaeology Lessons and Activities (Society for American Archaeology)

- Grades K-5, 6-8, 9-12
- Provides several different resources for activities regarding archaeology in science, math, language arts, social studies, and other core curriculum requirements for elementary, middle, and high school lessons.
- Link: <https://www.saa.org/education-outreach/teaching-archaeology/k-12-activities-resources>

YouTube Archaeology for Kids Videos

- Grades K-5, 6-8
- Six short videos on YouTube that provide base understandings of archaeology for kids.
- Link: <https://www.youtube.com/playlist?list=PLwATkHzMg1ETnOHCMkskh8z2M5XtmqnIp>

Crow Canyon Archaeological Center Resources

- Grades 3-5, 6-8, 9-12
- List of lesson plans for varying ages and grades that teachers can use free of charge. Also has links to different programming done by Crow Canyon Archaeological Center.
- Link: <https://www.crowcanyon.org/index.php/classroom-resources>

Online Resources for Colorado Archaeology and Historic Preservation

- Grades K-5, 6-8, 9-12
- List of lessons and educational resources about archaeology and historic preservation in Colorado. Also provides links and contact information for local resources and teacher training in archaeology in Colorado.
- Link: <https://archaeologycolorado.org/content/resources-educators>

Credits

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For further information on the DU Amache Project, please go to:

<https://portfolio.du.edu/amache>

For further information on garden archaeology at Amache, please go to:

<https://www.du.edu/ideas/interview-videos/gardens-of-internment.html>

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