Fossils, Environments, and Geologic Time
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In this activity, we will evaluate the importance of fossils to our knowledge of past life; investigate fossils in relation to geologic time, construct a possible scenario for formation of fossils; understand how organisms are adapted to their environments; and understand the relationships of modern and ancient communities with their environments (i.e., ecology and paleoecology).

The goal is to make a fossil cast that represents a likely community of organisms that lived at the same time and in the same environment and therefore were likely to have been preserved together.

Materials: 5.5 x 8.5” cards with information on a fossil, provided by the instructor.
Six to 8 fossils (or more) of organisms that match the information cards
Plaster of Paris, mixing cups, and containers to make fossil molds
Modeling clay to line the containers

Activity:
1. Review the Geologic Time Scale. Understand what the different periods mean in terms of age and of life forms present on earth at that time. Understand how fossil molds and casts are made in nature.

2. Look at the fossils and the read the information on the cards. What kind of organisms are you looking at? How are they different? When did they live? What kind of environment did they live in?

3. Start planning which fossils you want to use based on their geologic time and environment. You will notice that some fossils represent only a short period of time, while others lived for a long time, or are still living today.

4. When you have a group of fossils that you think makes geologic and ecologic sense for a given time period, start building your mold. Line the container with a layer of modeling clay. Press each fossil into the clay. Think about the community you are representing and make as many or as few imprints as you feel appropriate. You can use the same fossil to make multiple imprints, if you think that is a likely scenario. Should they all have the same orientation?

5. When you have completed your mold, pour the plaster of Paris mixture and gently tap out any air bubbles.
6. Let the mold set for at least 3 hours. After that time, gently peel off the modeling clay to reveal your cast. (Modeling clay will be reused)

7. Describe your fossil community. What geologic time period(s) does it represent? What environment (deep water, shallow water, tidal zone) does it represent?
My name is *Hebertella occidentalis*

I belong to the Phylum *Brachiopoda*

I am commonly known as a *brachiopod*

I lived during the **Ordovician**

I lived in a *shallow marine* environment

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My name is *Brachyspirifer audaculus*

I belong to the Phylum *Brachiopoda*

I am commonly known as a *brachiopod*

I lived during the **Devonian**

I lived in a *shallow marine* environment
My name is *Hebertella sinuata*

I belong to the Phylum *Brachiopoda*

I am commonly known as a *brachiopod*

I lived during the **Ordovician**

I lived in a *shallow marine* environment

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My name is *Terebratula sella*

I belong to the Phylum *Brachiopoda*

I am commonly known as a *brachiopod*

I lived during the **Devonian - Recent**

I lived in a *shallow marine* environment
My name is *Platystrophia cypha*

I belong to the Phylum *Brachiopoda*

I am commonly known as a *brachiopod*

I lived during the Ordovician - Silurian

I lived in a *shallow marine* environment

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My name is *Goniorhynchia boueti*

I belong to the Phylum *Brachiopoda*

I am commonly known as a *brachiopod*

I lived during the Jurassic

I lived in a *shallow marine* environment
My name is *Acrospirifer pinyonensis*

I belong to the Phylum *Brachiopoda*

I am commonly known as a *brachiopod*

I lived during the **Devonian**

I lived in a *shallow marine* environment

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My name is *Hemiphragma whitfieldi*

I belong to the Phylum *Bryozoa*

I am commonly known as a *bryozoa*

I lived during the **Ordovician**

I lived in a *shallow marine* environment
My name is **Heterophrentis simpex**

I belong to the Phylum **Cnardia**

I am commonly known as a **rugose coral**

I lived during the **Ordovician - Devonian**

I lived in a **shallow marine** environment

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My name is **Zaphrentis gibsoni**

I belong to the Phylum **Cnidaria**

I am commonly known as a **coral**

I lived during the **Devonian - Pennsylvanian**

I lived in a **shallow marine** environment
My name is *Epiaster whitei*

I belong to the Phylum *Echinodermata*

I am commonly known as an *echinoderm*

I lived during the *Cretaceous*

I lived in a *shallow marine* environment

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My name is *Pentremites godoni*

I belong to the Phylum *Echinodermata*

I am commonly known as a *blastoid*

I lived during the *Mississippian*

I lived in a *shallow marine* environment
My name is **Crinoid column (stem) fragments**

I belong to the Phylum Echinodermata

I am commonly known as a *crinoid*

I lived during the **Cambrian - Permian**

I lived in a **shallow marine** environment

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My name is **Belemnitella americana**

I belong to the Phylum Mollusca

I am commonly known as a *belemnite*

I lived during the **Cretaceous**

I lived in a **open marine** environment
My name is *Aucella piochii*

I belong to the Phylum *Mollusca*

I am commonly known as a *bivalve*

I lived during the **Jurassic - Cretaceous**

I lived in a *shallow marine* environment

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My name is *Compeloma multilinea*

I belong to the Phylum *Mollusca*

I am commonly known as a *gastropod*

I lived during the **Eocene**

I lived in a *nonmarine* environment
My name is **Nevadites humboldtensis**

I belong to the Phylum **Mollusca**

I am commonly known as an **ammonite**

I lived during the **Triassic**

I lived in an **open marine** environment

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My name is **Astartella concentrica**

I belong to the Phylum **Mollusca**

I am commonly known as a **bivalve**

I lived during the **Pennsylvanian - Permian**

I lived in a **shallow marine** environment
My name is *Crassatella protexta*

I belong to the Phylum Mollusca

I am commonly known as a bivalve

I lived during the Cretaceous - Pleistocene

I lived in a shallow marine environment

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My name is *Gryphaea washitensis*

I belong to the Phylum Mollusca

I am commonly known as an oyster

I lived during the Triassic - Pleistocene

I lived in a shallow marine environment
My name is *Arctica sp.*

I belong to the Phylum **Mollusca**

I am commonly known as a **bivalve**

I lived during the **Cretaceous - Recent**

I lived in a **shallow marine** environment

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My name is *Lepidochitona sp.*

I belong to the Phylum **Mollusca**

I am commonly known as a **chiton**

I lived during the **Devonian-Recent**

I lived in a **shallow marine** environment
My name is *Pleurotomaria timorensis*

I belong to the Phylum *Mollusca*

I am commonly known as a *gastropod*

I lived during the **Silurian - Miocene**

I lived in a *shallow marine* environment

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My name is *Turrilites brazoensis*

I belong to the Phylum *Mollusca*

I am commonly known as an *ammonite*

I lived during the **Cretaceous**

I lived in an *open marine* environment
My name is *Pecten texanus*

I belong to the Phylum **Mollusca**

I am commonly known as a **bivalve**

I lived during the **Mississippian - Recent**

I lived in a **shallow marine** environment

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My name is *Traskites robustus*

I belong to the Phylum **Mollusca**

I am commonly known as an **ammonite**

I lived during the **Triassic**

I lived in an **open marine** environment
My name is *Juvavites subintermittens*

I belong to the Phylum *Mollusca*

I am commonly known as an *ammonite*

I lived during the **Triassic**

I lived in an *open marine* environment

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My name is *Ogygopsis klotzi*

I belong to the Phylum *Trilobita*

I am commonly known as a *trilobite*

I lived during the **Cambrian**

I lived in a *shallow marine* environment
My name is *Asaphiscus wheeleri*

I belong to the Phylum *Trilobita*

I am commonly known as a *trilobite*

I lived during the **Cambrian**

I lived in a **shallow marine** environment

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My name is *Phacops sp.*

I belong to the Phylum *Trilobita*

I am commonly known as a *trilobite*

I lived during the **Ordovician - Pennsylvanian**

I lived in a **shallow marine** environment