Geokids Handbook for First Grade Teachers

Welcome to the wonderful world of Geokids where first graders get excited about rocks and science!. This handbook is to give you a guide on the activities we've developed for our GeoKids program, so that you can use the take-home box confidently in your own classroom. We also provide some background information and ideas about how to use these activities to fulfill the state educational standards for first grade.

Activity Kits

We have provided you with four activity kits, one for each station (Rocks, Minerals, Fossils and Soil) and a field book. Each kit is in a labeled bin (Fossils and Soils share a bin, but all materials are labeled) and contains all the specialized items needed for the activity. However, some materials required for the activities (crayons, clay, paper, etc) are not provided. Please make sure you read over the activity directions and acquire all the additional materials you need before starting.

Day-of Preparation

General -- Make enough copies of the field book for every child to have one.

Rocks – Make sure you have enough crayons or colored pencils for each child to have one. Make 5 mini-stations on a table with one sedimentary rock (gritty sandstone), one metamorphic rock (mica schist), one igneous rock (gray or pink granite), and one card for each rock type.

Fossils – (1) For this station, you need one five-pound box of air-dry clay or an equivalent amount of play-dough. You should be able to find this type of clay at an arts and crafts store like Michael's, at a pottery studio, or online. You will also need one small plastic plate per student. Make one clay ball, approximately 1 inch in diameter, for each student, and put it on a small plastic plate. If you have to leave the balls sitting out for more than about half an hour after making them, spray with a small amount of water and cover in plastic wrap. (2) If you want to use the enclosed overheads, make sure you have an overhead projector available. Make sure the overheads, trilobite and ammonite fossils are out and ready.

Soil – You will need to collect some soil from outside your house or school. Fill one or more buckets, bins, or boxes with soil, trying to include interesting things like insects, worms, roots,

rocks, decaying leaves, etc. Have one spoon or fork (these can be the disposable plastic kind) for each child so they can dig through the soil. Mix a tablespoon or two of each of the three mineral pigments with a small amount (about ½ cup) of water in a cup to make paint with a good consistency. Set out paint, mixing palettes, water cups, brushes and sheets of paper for the painting activity. You will probably want to cover all the tables you plan on using in this station with a tablecloth or newspaper.

Rocks Station

Supplies:
Provided in the kit:
-1 bag of gritty sandstone (sedimentary), 1 bag of mica schist (metamorphic), and 1 bag each of pink and gray granite (igneous)
-Laminated cards with the words "Sedimentary", "Igneous" and "Metamorphic" and some characteristics of each rock type printed on them
-Pumice and rhyolite (each in its own labeled bag)
-Laminated photos of volcano, Half Dome at Yosemite, sand flats, and twisted rocks
-1 set each of igneous, sedimentary, and metamorphic rocks (each in its own brown cardboard box) to show kids the variety of rocks within each type.

Provided by you:
Crayons (at least one per child)
Clear plastic container with a volume of at least 1 cup.

Overview:
Students learn the three rock groups and identification characteristics. They test their knowledge in pairs by identifying the rock group for 3 rocks. Also, students see how low density rocks such as pumice float while most other rocks sink in water.

Setup:
Set out the one sample each of sandstone, schist, and granite and one Igneous, Metamorphic and Sedimentary card on a table or the floor for each rock identification station. Place crayons (1 per child) on the same table. You should set up one station for every 2-3 students. Fill the container with water and set it aside along with the pumice and rhyolite. .

Activities.

1. You can begin by asking the kids what are rocks made of. How do we tell them apart? Explain that different rocks are made of different minerals and geologists can tell the difference between them by looking at minerals, the color and the texture of the rock. Using the analogy of minerals being the chocolate chips in a cookie (the rock) can help them visualize this a bit.
2. Begin with the igneous rocks. Ask how rock can be formed. Show the pictures of the volcano and of the mountain. Teach them the three rock types (See below: sedimentary, igneous and metamorphic). Sing the song with them (below). With the granite and

obsidian, talk about how cooling rate relates to grain size (slower cooling rate leads to larger grain size because crystals have a longer time to grow. You can get out the whole set of igneous rocks and discuss the differences between them, as well as the characteristics they all share. Volcanic rocks are usually fine-grained because they cool quickly when exposed to the cool temperatures of the air or water, while other igneous rocks, which solidify deep inside the earth, have larger grains).

3. Divide the students into small groups and give each group a set of 3 rocks and 3 cards (these should already be set up on the table). Their goal is to figure out which rock is igneous, which is sedimentary, and which is metamorphic, and match each rock up with the right card. Make sure that each group gets some one-on-one help from an adult. The rocks are easy to distinguish: gritty sandstone (sedimentary) is yellow gold with a sandy texture, granite (igneous) is gray or pink with a crystalline, chunky texture, and schist (metamorphic) is silvery in color with a flaky or platy texture.
4. Ask the kids in the group what they know about the rock. Ask them what type of rock it is (sedimentary, igneous or metamorphic) and how they can tell. Make sure they understand which type their rocks are and why.

   Try to get them to make observations about the rocks (focus on color, texture, how heavy the rock is). Get the kids to compare the rocks as well. For sedimentary rocks, ask them where they think the rocks formed, or what kind of places these rocks look like they might be from (for example, a sandstone looks like its made of sand from the beach).

   After a group has completed the identification, have them draw their favorite rock in the field book. Focus on features (lines, crystal size). They should circle the type of rock at the bottom of the page.

5. For a final trick, ask them if rocks can float. Ask why or why not? Show them the pumice and rhyolite. Have the group make predictions. Drop the two different rocks in the water to show that the pumice floats. Give each group a piece of pumice and ask them why they think it can float (it has holes which provide space for air).

Rock Types Song (to the tune of Frère Jacques)
*****The words in parentheses are the hand motions to accompany the song

Sedimentary, sedimentary
(With hands flat, put one on top of the other in a layering motion)
Igneous, igneous
(Start with hands apart at chest. Bring them together, then shoot them up and open like an erupting volcano)
Meta, metamorphic, meta, metamorphic
(Press hands together in a wavy or sideways orientation to symbolize pressure and deformation)
Rocks, rocks, rocks! Rocks, rocks, rocks!
(Make both hands into fists like in rock-paper-scissors and tap fists together).

Three Rock Types:
Igneous rocks – Made by fire

Igneous rocks are created when molten material such as magma (within the Earth) or lava (on the surface) cools and hardens. The hot material crystallizes into different minerals. The properties and sizes of the various crystals depend on the magma's composition and its rate of cooling. Examples: Granite, Obsidian, Basalt, Pumice, Andesite, Diorite, Rhyolite

Sedimentary rocks – Made of pieces

Sedimentary rocks are made up of sediments eroded from igneous, metamorphic, other sedimentary rocks, and even the remains of dead plants and animals. These materials are deposited in layers, or strata, and then are squeezed and compressed into rock. Most fossils are found in sedimentary rocks. Examples: Sandstone, Shale, Conglomerate, Limestone, Chert, Coal, Gypsum

Metamorphic rocks – Made by change

Metamorphic rocks are produced when sedimentary or igneous rocks are transformed by heat and/or pressure. The word "metamorphic" comes from the Greek language, which means "to change form." For example, metamorphism changes limestone into marble. Examples: Slate, Schist, Gneiss, Marble, Quartzite

---

Minerals Station

Supplies:
Provided in the kit:
Ten Ziploc bags, each containing one piece of gypsum (soft white mineral), one piece of calcite (glassy green, orange or amber colored mineral), and one penny.

One How Minerals are Colored set with a variety of mineral colors

Laminated photos of minerals from Stanford's collection

One jar of talcum (baby) powder

One container of salt

One tube of toothpaste

Provided by you:
Crayons or pencils

Overview:
Students observe many different minerals. They may even learn the difference between a rock and a mineral. They look at color and hardness as ways to determine mineral identification.

Activities:

1. Ask the kids some questions about minerals. Make sure to talk about how rocks and minerals are different, and how minerals are different from each other (A mineral is a specific type of substance that is uniform throughout. It is characterized by a unique chemical composition and molecular structure. Minerals differ in many ways, which can include color, crystal shape, hardness, chemical composition, luster, etc. A rock, in contrast, can be composed of many types of minerals and is not necessarily uniform throughout).
   General Questions: Can you name a mineral? What is a mineral?
   Focus Questions: Can you explain that more? How is a mineral different than a rock? Minerals, which are found in nature as crystals, are processed and used in a surprising variety of household products. What is in toothpaste? (fluorite) Baby powder? (talc which is a very soft mineral) Salt? (salt is the mineral halite – sodium chloride.
   General Questions: How are minerals different from each other?
   Focus Questions: Show them the samples of calcite and gypsum. What is the same about these? What is different?
2. Explain that they will be looking at two properties that help geologists tell the difference between minerals. Explain how the color, hardness, and shape of minerals can help us tell the difference between them.

<u>Hardness</u>

1. Describe hardness as a measure of the ease with which a smooth surface of a mineral can be scratched, or of its resistance to abrasion. (In 1822, the Austrian mineralogist Friedrich Mohs devised a scale based on one mineral's ability to scratch another. He placed 10 minerals in order from softest to hardest, giving a relative hardness value of 1 to the softest mineral, and 10 to the hardest (diamond). Each mineral in the scale scratches the one below it (the lower number) but not the one above it (the higher number).)
2. Ask the kids which of the two minerals they think is harder (gypsum or calcite) and explain that to test the hardness we scratch a know item onto another, such as fingernail or penny onto the mineral.
3. Scratch both minerals with their fingernail and then with a penny. Using moderate pressure, drag a sharp edge over the smooth surface of a mineral. If the surface of the mineral is scratched then it is softer than the material used to scratch it, if not then it is harder. Students should circle the harder one in their field book, based on their scratch test.
4. Explain that even though gypsum and calcite can look similar (calcite is often white just like gypsum), hardness is one way geologists can tell the difference between them.

<u>Color</u>

1. Describe that minerals come in different colors. This is one way to describe the mineral.
2. Have the kids go around look at the minerals pictured on the cards and in the How Minerals are Colored collection and find minerals of different colors. Explain that

everyone will examine the cards and samples, and find a yellow mineral, a green mineral, and a purple mineral. They should write down the name of each colored mineral. The cards have the minerals' names printed on them. The mineral samples are numbered, and there is a key taped to the inside of the brown cardboard box holding the set. Help the kids write the mineral names if they are having trouble.

3. To wrap up, ask them if they have any general observations. Did all the greens look the same? Did they notice anything about shape? Which was their favorite?

Soil Station

Supplies
Provided in the kit:
3 mineral powders in brown glass jars (Red Iron Oxide, Yellow Iron Oxide, and Pyrite)
palettes for mixing paint colors
laminated photos of cave paintings

Provided by you:
Bins, boxes or buckets to hold soil
Hand trowel to collect soil samples
forks and/or spoons (1 per child)
cups to mix paint using mineral powders
paintbrushes
blank paper for painting
crayons
2 tablecloths or newspaper to cover tables

Overview:
There are two parts to the soils activity. At one table, students observe living and non-living materials in the soil. At the other table, students paint with minerals.

Setup:

1. Collect soil from near your home or school. Try to get a lot of interesting things in your soil sample, such as bugs, worms, rocks, roots, decaying leaves, etc.
2. Mix some of the powdered mineral with water in the small cups until you reach a thin consistency that makes it easy to paint with. About one tablespoon with a half a cup of water and mix well.

<u>What's in that soil?</u>

1. Give each student a spoon/fork for him or her to investigate the soil.
2. Discuss the following as they are digging. Soil is composed of all sorts of different things, and many of those things are alive. The more animals that are in soil, the better it is for the plants trying to grow there. There are two main types of animals that are found in soils, and these are the "shredders" and the "digesters". The shredders break down

large pieces of plant material into smaller ones. Shredders include caterpillars, pill bugs (also called sow bugs), and millipedes. Digesters are mainly the earthworms, and they go through the soil eating the small particles and putting out new soil that is full of plant food, which is why worms are so good for the garden and compost heap. Sometimes we find a third category of creature, which is a predator like a centipede; it eats other creatures, alive and dead, that live in the soil. The centipedes are the only animals that we don't allow the kids to pick up with their hands, since they can bite (we use a spoon instead). Other things that can be found in soil include leaves, bark, twigs, and roots (both alive and dead). These things contain nutrients (plant food), and it's important that they stay in the soil and get shredded and digested so that the growing cycle can continue. Soil also has rocks.

3. In their field book, have students circle what they find in the soil. Remind them that a good scientist records their observations.

Mineral Painting

1. Begin by explaining where paints come from (natural minerals from soil and rocks) and then have them paint with the mineral paints just like water color paint.
2. Explain that soils occur in many different colors, and minerals often are the reason for these differences. People found out very early on that these minerals can be separated and used to make all sorts of different paint colors. In fact, some of the most expensive paints today are still pure forms of minerals, and you can often find minerals added to makeup for color or sparkle.
3. Use the photos of cave paintings to discuss how people have been using natural minerals in art for millions of years. Because these paints were so durable, we know much more about the lives of primitive people than we otherwise would. They would mix ground up minerals with milk, eggs or even their own saliva to make the paint stick to the material they were paining on.

A great resource for more on soil is from Elementary Globe (www.globe.gov/elementaryglobe). Check out the book called the Scoop on Soils.

Fossil Station (in the same box as Soils)

Supplies:
Provided in the kit:
Transparencies of a Stegasaurous, footprint fossils, ammonites, plant fossils.
Ammonite fossils (3)
Trilobite fossils (1 replica and 2 real fossils)
1 bag of assorted seashells

Provided by you:
Small plastic plates
clay (air-drying type) or Play-do (preferably white, gray or brown color)
Sharpie marker
crayon

Overview: Discuss how fossils are formed. Inspect and identify trilobite and ammonite fossils. Make your own fossils using seashells and clay.

Setup:
- Set up the overhead projector, and get out the overheads.
- Have the ammonite and trilobite fossils close at hand.
- Prepare a large table for the kids to gather around a single table. Put table cloths on the table.
- Roll clay balls ~1 inch in diameter. This is to conserve clay but will ensure that the kids have enough to work with successfully. Put each clay ball on a plastic plate, and spray with water and cover if they will be sitting for more than half an hour (to prevent drying out). Put clay and shells on a side table out of view until ready for use.

Activities:
<u>Introduction</u>
1. Ask the kids if they know anything about fossils. How are fossils made? Have they ever found a fossil? Explain that hard parts fossilize and soft parts decay. Explain then the importance of imprint or trace fossils. Explain that much of what we know about early life is from impressions or traces like footprints and burrows.
2. Show them the 4 panel fossil overhead and ask them to identify the pictures. Talk to them about the different panels, emphasize the difference between hard parts (bones-shell) and "soft" trace fossils (leaf imprint and foot prints). If time permits, let them tell you what they know about T-rex and then show them the fossils of Stegosaurus and let them tell you what they know about Stegosaurus. Express to them that we know a lot about dinosaurs and EVERYTHING we know is from fossils. Now is a good time to ask them if they know the name for a geologist that studies fossils; occasionally one will. Explain that paleontologist means scientist that studies old bones (paleo=old, ontology=bones).
3. Show them a trilobite fossil. Ask them if they know what it is. Ask them if they've ever been to the beach and seen a trilobite at the beach. Explain that trilobites lived approximately 542-241 million years ago. They died out in the Great Permo-Triassic extinction in which 90% of all species living went extinct. You can talk about where and

how the trilobite lived (at the bottom of the ocean, feeding on detritus), what similar creatures are alive today (arthropods including insects and crustaceans), and the concept of extinction.

4. Using their field guide, have them identify which trilobite they have in their hands. Depending on whether they have the real fossil or the replica, they may get a different answer! Guide them by talking about body shape, eyes, head, etc. No correct answer here.
5. Next pass out the ammonite fossils. Talk about what kind of animal an ammonite was (similar to a squid growing inside a snail shell) and its closest living relatives (the chambered nautilus). Look at the surface texture to determine which ammonite it is in the field book. (For the identification part, use the two black, rough-textured ammonite fossils, not the one that has been cut in half and polished). No correct answer here.
6. Next students will make a fossil imprint using shells and clay. Show them how to flatten the clay into a thick pancake type shape on the plate. Demonstrate how to press a shell into the clay to make the imprint. Pass around the clay balls on plastic plates. Distribute the shells to be shared. They should pick a shell and make and imprint of the fossil that tells the most about the shape, size, and texture of the shell. Make sure each child's name is written on the plate so they can find their fossil later.

Erupting Volcano!

Overview: This game is about temperature and how molecules move more quickly at hotter temperatures. The students simulate the movement of the magma/rock while it heats up, erupts from a volcano, and cools down.

Activity Script:
Today you are going to be part of a rock. When things – rocks, plants, air, and all the little parts that make up your body – are cold, they move very slowly. And as they get warmer, they move more quickly. I'm going to tell you when you are hot moving magma and when you are a cold solid rock. There are a few rules. 1. Stay within a certain boundary 2. Watch out for your friends and what is on the ground so you don't run into each other or trip and fall.

To begin, everyone should stand still. You are part of some rock deep in the earth, near a volcano. Right now you are solid rock, and then something shifts in the earth and you start to heat up. You should begin slowly moving in place, just by rotating the top of your body. Then as you get hotter, you will slowly begin to rotate, and then make small circles. You are getting hotter and hotter. You are now flowing magma in the magma chamber. You are very hot and are starting to move even faster. And then, the volcano erupts. Run! You are now hot lava running quickly down the side of the volcano. (Let the kids run for a minute). Now you are cooling off and slowing down. You are a solid rock and you break and fall off (kids naturally fall down).

Science Content Standards for California Public Schools

Below is a list of California standards for first-graders that GeoKids can help fulfill.

Physical Sciences
1. Materials come in different forms (states), including solids, liquids, and gases. As a basis for understanding this concept:
   a. Students know solids, liquids, and gases have different properties.
   b. Students know the properties of substances can change when the substances are mixed, cooled, or heated.

Life Sciences
2. Plants and animals meet their needs in different ways. As a basis for understanding this concept:
   a. Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.
   b. Students know both plants and animals need water, animals need food, and plants need light.
   c. Students know animals eat plants or other animals for food and may also use plants or even other animals for shelter and nesting.
   d. Students know how to infer what animals eat from the shapes of their teeth (e.g., sharp teeth: eats meat; flat teeth: eats plants).
   e. Students know roots are associated with the intake of water and soil nutrients and green leaves are associated with making food from sunlight.

Earth Sciences
3. Weather can be observed, measured, and described. As a basis for understanding this concept:
   a. Students know how to use simple tools (e.g., thermometer, wind vane) to measure weather conditions and record changes from day to day and across the seasons.
   b. Students know that the weather changes from day to day but that trends in temperature or of rain (or snow) tend to be predictable during a season.
   c. Students know the sun warms the land, air, and water.

Investigation and Experimentation
4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:
   a. Draw pictures that portray some features of the thing being described.
   b. Record observations and data with pictures, numbers, or written statements.
   c. Record observations on a bar graph.
   d. Describe the relative position of objects by using two references (e.g., above and next to, below and left of).
   e. Make new observations when discrepancies exist between two descriptions of the same object or phenomenon.

Notes on the Life in Soils
Worms, Centipedes, Millipede, and Roly-Polies

Worms

Heartbeats: Worms don't have just one heart. They have FIVE! But their hearts and circulatory system aren't as complicated as ours -- maybe because their blood doesn't have to go to so many body parts

Seeing: Earthworms have no eyes, but they do have light receptors and can tell when they are in the dark, or in the light. Why is being able to detect light so important to a worm?

Eating: Worms do not have teeth, but their mouths are muscular and strong. Worms swallow pieces of dirt and decaying leaves. The intestine extends over two-thirds of the worm's body length. In the intestine, food is broken down into usable chemicals which are absorbed into the bloodstream. Worm poop is dark, moist, soil-colored, and very rich in nutrients. That's why farmers and gardeners like to have lots of worms in their soil.

Centipede

(From Virginia Cooperative Extension)
Contact: Eric Day, Manager, Insect Identification Laboratory
August 1996

Class: Chilopoda

SIZE: Slightly over 1 inch (25.4mm)

COLOR: Reddish brown

DESCRIPTION: Centipedes are reddish-brown, flattened, elongated arthropods with one pair of legs attached on most of their body segments. The first pair of legs is modified into poisonous jaws located below the mouth to kill insects. Their antennae are longer than those of millipedes. Centipedes feed on live insects and other small animals. They do not damage plants.

HABITAT: Commonly encountered in damp basements in the fall.

LIFE CYCLE: They overwinter as adults and lay eggs during the warm months. Usually eggs are laid in the soil and are protected by adults. A few species give birth to living young.

TYPE OF DAMAGE: Nuisance in household and basement. They feed on small insects such as cockroaches, clothes moths and houseflies; do not damage food supplies or household furnishings. If crushed, they may bite, causing some pain and swelling.

CONTROL: Controlling these pests should start with reducing the moisture and humidity in the basement, then using household sprays.

INTERESTING FACTS: Centipedes sometimes live up to six years.

Millipede

Contact: Eric Day, Manager, Insect Identification Laboratory
August 1996

SIZE: From 1 to 4 inches (25.4-100mm)

COLOR: Dark brown

DESCRIPTION: Slow-crawling, round-bodied pests
which have two sets of legs on each body segment. Millipedes develop best in damp and dark locations with abundant organic matter (food). They often curl up into a tight "C" shape, like a watch spring, and remain motionless when touched. The body is long and cylindrical.

HABITAT: Millipedes have caused some problems around Virginia in the summer and fall. Areas around houses that provide these conditions include piles of grass clippings, a wooded lot close to the house, excessive mulch around the house, and similar locations.

LIFE CYCLE: They lay eggs in the spring and populations build up during the summer. Under good conditions (adequate food and habitat), populations can become very large. Then changes in the habitat (excessive moisture, lack of food, too little moisture) cause the population to disperse.

TYPE OF DAMAGE: May infest a basement and other parts of the house in the fall.

CONTROL: Controlling such large numbers of millipedes can be very difficult. It seems that most insecticides available to homeowners are not very effective in killing millipedes. Nonchemical control measures, such as looking for the source of the problem, may be useful but not always possible or effective. Populations of millipedes may build to large numbers in one year, the habitat become overcrowded, and thousands of them migrate to other areas.

INTERESTING FACTS: There were several locations in which the numbers of millipedes were so excessive that they swarmed over mulched flower beds and invaded basements and other ground level rooms in houses. At times there can be thousands of millipedes moving across lawn areas and into houses.

Pill Bug

The pill bug (also called the wood louse and the roly-poly bug) is a small, segmented land creature that can roll into a tiny ball for protection. The pill bug is NOT an insect, but is an isopod (another type of arthropod).

Habitat and Distribution: Pill bugs are common invertebrates that are found in many biomes around the world, including temperate forests, rainforests, and grasslands. They prefer moist areas, often living in soil and under decaying leaves, rocks, and dead logs.

Life Cycle: A pill bug begins its life as a tiny egg. The young pill bug looks almost like a miniature adult. As it grows, it molts (sheds its old, outgrown exoskeleton) 4 to 5 times.

Anatomy: Pill bugs are covered by a hard exoskeleton (also called the cuticle) made from chitin. They have three basic body parts, the head (which is fused to the first segment of the thorax), the thorax (the 7 segments of the thorax that are not fused to the head are called the pereon), and the abdomen (which is also called the pleon). Pill bugs have 7 pairs of jointed legs and 2 pairs of antennae (but one pair is barely visible). The antennae, mouth and eyes are located on the head. A pair of abdominal uropods are at the posterior end of the pill bug, but only the terminal exopods are visible from the top of the pill bug. Pill bugs are less than an inch long.

Diet: Pill bugs eat decaying plants and animals and some living plants.

Predators: Pill bugs are eaten by many animals. Their main protection is rolling into an armored ball.

Classification: Kingdom Animalia (animals), Phylum Arthropoda, Subphylum Crustacea, Class Malacostraca, Order Isopoda (isopods), Family Armadillidiidae, Genus Armadillidium, Oniscus, etc. Many species, including *A. vulgare* (the common pillbug).

http://www.britannica.com/needmoreDescription, Elimination of Pillbugs, Roly-Polys:

Pillbugs or roly-poly and sowbugs though similar are different bugs that fall into the pest category of occasional invaders. Sowbugs and pillbugs are crustaceans and are closely related to crayfish and shrimp, more so than to insects.

Often confused with sowbugs, one of the distinct differences between sowbugs and pillbugs is that a Pillbug has the ability to roll its body up into a ball resembling a small pill; a Sowbug does not roll into a ball.

Pillbugs prefer damp areas, which is why they are often found invading homes through openings close to patio doors, laundry rooms and basements. These bugs feed on decaying vegetation most often found in mulched areas around homes. The damp conditions and decaying organic debris are contributing factors for several occasional invaders such as millipedes. Elimination procedures for Pillbugs parallel those for millipedes and sowbugs.

SOWBUGS AND PILLBUGS 

PHYSICAL CHARACTERISTICS

Sowbugs and pillbugs are the only two crustaceans that have adapted themselves entirely to land.

They actually have gills instead of a trachea with which they breath.

They are also related to snails and slugs.

Sowbugs are virtually the same as pillbugs but have a wider body and cannot roll themselves into a ball.

Sowbugs have two appendages that protrude from the rear of the body.

They have oval bodies which have 7 overlapping plates, as well as 7 pairs of legs.

Head and abdomen are small compared to rest of body and they can reach 3/4 inch in length

Pillbugs are often called roley poleys as they can roll up into a tight ball.

HABITATION

Both are scavengers which feed on decaying organic matter and can injure young plants.

They like moist locations and are found under objects on the damp ground, as well as under vegetable debris of all kind.

They may bury themselves several inches into the soil.

They are active mostly at night

The female carries her young in a pale colored vivarium or marsupium (pouch) on the underside of her body. The young are white in color.