

Pill Bugs in the Garden!
1st Grade Science Unit (Hermit Crabs & Native Animals)

Objective: Students will behave as scientists, working in pairs to use their 5 senses to investigate Pill Bugs (Roly Polys), a type of Isopod or close relative of Hermit Crabs. Both are part of the group of animals we call crustaceans (includes lobsters, crabs, shrimp, crayfish, barnacles)

Materials:

- Books about pill bugs (read in advance of lesson to prime background knowledge) *such as: I'm a Pill Bug by Yukihisa Tokuda and Roly-Poly Pill Bugs by Molly Smith*
- easel/chalkboard in garden for jotting down group notes/diagram of body parts
- Some sample pill bugs (found under rocks/in compost piles etc.)
- Chalk – enough for each child to have a piece
- Jar of sesame seeds (to show size of baby pill bugs!)
- Rulers/Magnifying Glasses (optional)
- Sit-upons for each kid
- Measuring tape to show length of 20 in giant pill bug relative: deep sea isopod!

45 min class

5-10 min **Garden Walk:** walk students the length of garden blacktop to shed end – as walk ask them to point out what has changed since last visit. Stop to look at these changes/specific plants and answer their questions...

10min (group seated around easel in courtyard)

Lesson Intro: Last time we looked at earthworms in the garden – hardworking animal decomposers! Today we're going to look at another decomposer (or scavenger) important to our planet that also keeps our soil healthy: pill bugs! Why do you think we call them **bugs** when they are not insects?

Pill bugs have LOTS of different names! Roly Poly, doodle bug, armadillo bug, cheese log, potato bug, chiggy pig, etc. Why do they have those names? Why do they roll into a ball? Some pill bugs called sow bugs or wood lice do not roll into a ball.

Pill bugs are related to your class pets: hermit crabs! How are pill bugs like hermit crabs? How are they different? Discuss habitat, food, appearance, behavior of each. Write down on chart/chalkboard as kids generate ideas. Use sit-upons in shady space if grass/ground is damp.

Pill Bugs	Hermit Crabs
Habitat:	
Food:	
Appearance:	
Behavior:	
Predators:	

15 min **Pairwork**

There are 4,000 different kinds of pill bugs! And you're going to look for some in the garden today! Based on what you now know.... where should you look for them? (under rocks, in soil/compost/leaf piles) Remember you are scientists using your 5 senses.... With your partner go and look for some pill bugs. When you find them let them crawl on your hand and observe them closely.

Look for these things:

How many legs do they have?

How many body segments?

Antennae?

Eyes?

Eggs/babies? (mother pill bugs carry them underneath on their bellies!)

Does it roll up or not? (roly poly vs. sow bug)

How are they different from the worms we looked at?

As students work in pairs to find pill bugs hand out **chalk to each child**. Adults check in/assist as needed. Once students have found/observed animals they should draw a diagram on sidewalk to show the different parts – count those legs and segments! How many legs per segment?!

5-10 min **Lesson wrap-up**

Students return pill bugs to where they found them/rocks replaced etc. Gather again around easel: look at diagram – did your drawing match this one? Go over parts once more. Describe how true insects have 6 legs, spiders have 8 legs, pill bugs have 14 legs (or 7 pairs!). Now... what do we eat that pill bugs also like to eat?? They eat our scraps, right? Serve students 'pill bug snack' of available veggie/herb from garden (cilantro, chives, radish, spinach etc.) toss remnants into compost. **If teacher allows send some pill bugs back to class to live in cage with hermit crabs (they will 'clean' cage as scavengers eating leftover hermit crab food!)*

Resources:

<http://thehappyhermitcrab.blogspot.com/2011/05/cleaning-with-bugs.html>

<https://en.wikipedia.org/wiki/Woodlouse>

<http://hermitcrabassociation.com/phpBB/viewtopic.php?p=852639>

Pill bug also Roly-Poly also doodle bug, armadillo bug, cheese log, potato bug, chiggy pig

4,000 different kinds of pill bugs!

Are invertebrate animals (no back bone inside them!) like worms – but unlike worms have hard exoskeleton: 3 main body parts: head/middle/abdomen antennae on head for feeling/smelling to help it find food

Are invertebrate animals (back bone inside them!) like worms – but unlike worms have hard exoskeleton

insects have 3 pairs of legs – pill bugs have 7 pairs, attached to 7 segments in middle of body so NOT insects! Have more than 6 legs – insects have 6 legs – related to crabs, shrimp, lobster! Hermit crabs! But live on land not in water - Can even swim a bit if fall into water (Giant deep-sea Isopod largest relative – can be 20 inches long!)

like crabs have gills to breathe but use on land not under water – but because have gills must stay wet/moist so rotting logs, leaf piles, damp spots where they live

Wood louse (or sow bug) similar but can't roll up

Scavengers! Eat dead plants, dead bugs, leftover food scraps from humans

Pet food, newspaper, card board

Eat stones/concrete so bodies work – why they live near people

(concrete/sidewalks, walls, buildings)

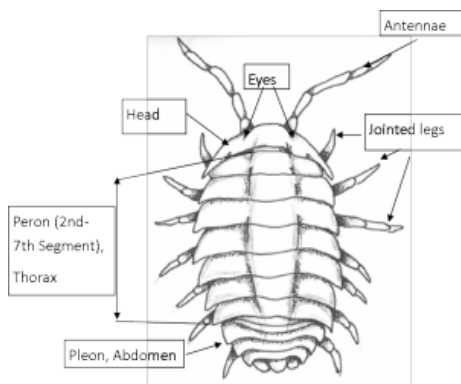
Square poop!

Roll into ball to protect selves from predators like ants BUT frogs, spiders, lizards, birds, shrews will swallow whole

Shed shells as grow bigger, rear half first, then front half, then eat the shell for nutrition

Females carry eggs in watery pouch on their tummies, can be 200 eggs in pouch! when hatch they stay in pouch for another few weeks then leave. They are white and tiny (sesame seed!) but look just like their parents, as it grows it shed or molts its old exoskeleton and gets darker with each molt! Start out with 6 legs then grows 7th pair after first molt!

In fall sleep deep in ground until spring (hibernate) or burrow into warm logs, even in buildings. Live about 2 years, some can live as long as 5 years!



Hermit Crab info: <http://pethermitcrabs.org/anatomy/>

Also crustaceans

Need warmth/heat

Need calcium (just like pill bugs!)

Sweet tooth, like fruits – in wild eat decaying wood, grasses, plants

Nocturnal/like to climb

Gills to breathe but no exoskeleton of their own – so have to find/steal shells!

Molt by shedding outer skin (bury selves in sand to molt)

Need humidity/moisture

Fresh water and salt water needed

Smell through their antennae

Social animals that live in groups

live 5-15 years

10 legs including front chelipeds (pincers) so 5 pairs

Due to their small size, hermit crabs have numerous natural predators all around the world, which includes **sharks, fish, cuttlefish, squid and octopuses.**

