Format of Modules

Originally created for Grade 1 at UHill Elementary.

1. Background
	1. “Out the backdoor: exploring biodiversity”
	2. Topics: Insects, BC forests, Interactions between animals and their environment
	3. Learning Goals & PLOs  [**Objective]**
		1. PLOs:
			1. Communication observations & thinking
			2. Describe how basic needs of plants & animals are met in the environment.
			3. Additional Learning goal: Understand what organisms, specifically insects, live in the forest environment and why.
2. Why is this module interesting? [**Bridge**]
	1. The forest is out the back door for the students and many live near Pacific Spirit Park. However, they may not routinely observe their surroundings and the organisms that live there. Introduction questions to students can focus on what they may already know about animals and plants in the forest.
	2. References
		1. Information regarding the role of insects (native and non-native) on Canadian forests and forest health. [*http://www.nrcan.gc.ca/forests/insects-diseases/13361*](http://www.nrcan.gc.ca/forests/insects-diseases/13361)
		2. Document about BC forest diversity including different forest types. [*http://www.naturallywood.com/sites/default/files/NW\_fs\_bcsforestdiversity\_Mar%202011%20%28web%29.pdf*](http://www.naturallywood.com/sites/default/files/NW_fs_bcsforestdiversity_Mar%202011%20%28web%29.pdf)
		3. Information regarding Pacific Spirit Park: [*http://www.metrovancouver.org/services/parks\_lscr/regionalparks/Pages/PacificSpirit.aspx*](http://www.metrovancouver.org/services/parks_lscr/regionalparks/Pages/PacificSpirit.aspx)
		4. Insect identification key: <http://www.amnh.org/learn/biodiversity_counts/ident_help/Text_Keys/arthropod_keyA.htm>
		5. Information on pitfall traps. http://pubs.ext.vt.edu/444/444-416/444-416\_pdf.pdf
3. Materials (List)
	1. List of materials:
		1. For pitfall traps: Shovel, Plastic cups, dish soap, plastic bags (1 per student), magnifying glasses
		2. For optional activities: plain paper, writing/coloring tools, bar chart templates.
4. Procedure (note if any items are optional)
	1. **Pre-Assessment**
		1. If time is limited, simply ask students what they have seen in the forest. Other questions could center around asking them to identifying common “bugs” (beetle, spider, centipede, millipede, worm etc.)
		2. If more time is available: Draw hypotheses of what lives in the forest (plants, animals, insects etc.). Students can also focus on colors and shapes of the living things.
	2. **Participatory Learning**
		1. Pit fall traps will be set out a few days prior to collection. Leader will need to set these up. On day of activity, students will take a walk through the woods and observe animals. Groups of students can collect insects from each pitfall trap. It may be best to keep all insects in one bag since the number collected will vary based on weather. Students can pick up other items from the forest and place them in their personal baggies to observe closer in the classroom.
		2. Observation methods:
			1. Listen for 10 seconds to bird calls and count the number of different calls.
			2. Feel soil, moss, and bark. Determine if it is wet or dry and why.
			3. Depending on the season, ask children to make observations about what changes have occurred (flowers in bloom etc) and what may occur soon (leaves dropping).
		3. Back in the classroom students can sort out the insects into what they look like. Introduce the idea that scientists sort living things based on their appearance.
		4. Students can also look at their other forest items up close using the magnifying glasses.
	3. **Post-Test**
		1. There are multiple options here depending on time and interest of the teacher/classroom.
		2. Students can thoroughly sort insects based on what they look like. Once students have sorted their insects, they can graph their results with simple bar charts and stickers. Ex. One sticker= 5 bugs
		3. Students can draw their forest objects with and without magnification. This can lead into further discussions about plant or insect structures.
		4. Students can compare their observations from the forest walk with what the expected to be in the forest. This is probably the most straightforward and quick method.
	4. **Summary**
		1. A classroom discussion about the forest, its living and non-living components, and their importance.
		2. Discuss why insects are important to forests in BC (pollination, crop production etc.)
	5. Make it your own
		1. Advancements
			1. Use a dichotomous key for identification
			2. Place pitfall traps in different habitats and compare compositions. Measure evenness and richness.