

Crown of the Continent Ecosystem – Landscape Map Activity

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The following is based on an activity developed in Waterton Lakes National Park for its *Land Care* program. The Land Care program is delivered and hosted by Waterton Lakes National Park, but involves different guest speakers and perspectives on caring for the land. There are speakers representing Parks Canada, Nature Conservancy of Canada (Waterton Park Front), ranching and Aboriginal perspectives (and possibly Shell Canada). This activity was used as an introductory activity to introduce the concept of the Crown of the Continent Ecosystem, and to introduce the speakers and their tie to the landscape.

This activity is best suited to Grades 5 and up. Adapt activity to the topic/curriculum unit/grade level as required. This activity works well as an introductory activity to a program, or as a focal/reference point that students can come back to throughout a unit or program.

Materials (for each group of 4 – 6 students):

- Crown of the Continent Ecosystem Landscape Map sets:
 - Base colour map of landscape features, no human references
 - Transparency Layers:
 - Residential areas, Provinces and States
 - Human Use
 - Grizzly Bear Home Ranges
- Dry erase marker

Time Required: 15 – 20 minutes

Preparation:

- This activity works best at tables (or other flat surface)
- Have teacher divide class into small groups (4 – 6 students each or as many groups as there are map sets)
- Prepare map sets by layer (e.g. all base maps in a pile, on top of next transparency layer to be handed out, etc.) and have nearby for passing out to groups as you talk

Activity Instructions (example script)

Introduction

- Hello everyone! How are you today? Welcome to _____ (*depending on where you are, point out direction of local towns, river/lake, landmarks to give students some context to where they are*). My name is _____. Who has been in this area before? What did you do while you were here?
- Today we're going to visit different places and people in this ecosystem. Who can tell me what an ecosystem is?

- We like to talk about the 4 Ps to help remember what an ecosystem is – a **place** where **parts** and **processes** interact and **persist** over time.
- In this place, can you tell me some of the parts of this ecosystem? (*Plants, animals, air, water, soil, etc.*) What about processes? (*Photosynthesis, fire, erosion, nutrient cycles, weather, etc.*) And how might these parts and processes interact? (*E.g. Fire creates new places for different plants to grow, some plants need fire to disperse their seeds, animals like elk will come into these areas to feed on the new growth*)
- *Show map to students and point out some general things.* Right now, we are in what's called the Crown of the Continent ecosystem. This is a map of the Crown of the Continent – but just the landscape.
 - It's the "crown" because from here, water flows into 3 basins – Pacific Ocean, Hudson Bay & Gulf of Mexico.
 - COCE covers @ 44,000 square kilometres, which is bigger than Vancouver Island (at 31,000 square kilometres)
 - This place is widely recognized as one of the premier mountain ecoregions in the world.
- *Hand out base maps and a dry erase marker, one for each group. You might have to show them the "North" arrow and how that indicates which way is up on the map. Allow students a couple of minutes to look at the map.*
- Where do you think we are in this ecosystem right now? Where do you live in this landscape? Use your marker to draw a dot, star, X, circle or happy face to mark where you think we are right now (or where you live).
- *Pass out "Residential Areas, Provinces, States" layer to each group.* Let's see if you were correct. Put this layer on top of your map and line up the edges. *Give students a few minutes to look at the layer. They probably weren't correct – show where they are on your map from the front.* Did you find where we are? Did you guess correctly? We're actually here on a very small spot in this ecosystem. It was hard to tell without the human references on the landscape, wasn't it? Now can you see where you live?
 - COCE split in half by the Great Divide
 - Northern boundaries: headwaters of Elk River in BC and Highwood River in Alberta (*off map, about 3 or 4" above – didn't include so we could see more details*)
 - Southern boundary is Montana's Blackfoot River Valley.
 - Eastern edge extends slightly onto the prairies
 - Western edge is Salish Mountains in BC and Montana.
- Now that we know where the political boundaries and towns are, what else are we missing from the map? What other things are happening in this landscape? What else should this

map show? *Many of the students answers will likely point to human activities, like roads, farms, etc., but make note of any answers regarding wildlife, plants.*

- *Hand out “Human Use” layer and give students a couple of minutes to look at the map – instruct them to simply put this layer on top of the others and line them up.* Humans are also part of this ecosystem. The map with just the landscape is probably what would have been here even just two hundred years ago. With European settlement, people became a part of the landscape as well. There are many different human uses on the landscape:
 - *Roads* – Roads are the most significant landscape feature, they are built to allow us to travel from place to place. There are few places where there aren’t roads. What impact do you think roads have on the ecosystem? *Wildlife have to make dangerous crossings, roads introduce weeds, bring more people to places, etc.*
 - *Protected areas* – Protected areas are places that are set aside to allow wildlife and the ecosystem to function with minimal human alteration or influence. By protecting these areas as provincial and national parks (*show WLNP, GNP, Beauvais, Akamina-Kishenena, etc*), we have examples of how the landscape might be without human developments. These are only small parts of the COCE.
 - *Semi-protected areas* – Semi-protected areas are places that are protected in different ways, and still allow many human activities (*show NCC Waterton Front, Castle Wilderness Area, etc.*). Some of these semi-protected areas are privately owned, like the Nature Conservancy of Canada Waterton Front, and some are provincially run, like the Castle Wilderness Area. Ranching is still the primary activity in the Waterton Front, but the land is protected from further subdivision. But as a private landowner, the NCC does not have any other protection like protected areas do.
 - *Aboriginal reserves* – We also see where aboriginal reserves are in the landscape (*show Blackfeet, Pikaani and Kainai, there are also timber limits set aside for the latter two*). This might be where many aboriginal people live now, but historically they ranged over this entire landscape. Aboriginal people have lived in this landscape for about 10,000 years, following bison and plants as they came into season. The Pikaani (North Pikaani and South Pikaani (Blackfeet) used the area east of the continental divide extensively, and the K’tunaxa used the area west of the divide; each group occasionally travelling through the South Kootenay Valley to hunt and collect plants. The Kainai started to use the area more recently (1800s) as trade routes brought them (and other tribes) into this area. The Blackfoot name for the land is “Miistakis,” which means “The Backbone of the World.”
 - *Private Lands* – The rest of this map is mostly owned privately – for ranching, farming and homes – and for resource extraction like oil & gas, forestry and mining, products we use every day.
 - *Cutlines* – To get to resources, these are areas where trees are cleared and machinery can get through to e.g. place a pipeline or get to a site. These are like

roads – they create disturbances that bring in weeds, but can also create open areas for wildlife to travel through.

- What about animals? How do you think they are affected by these human activities?
- Where do you think a grizzly bear would live in this ecosystem? Use your marker to draw the area where you think grizzly bears would live. *Hand out “Grizzly Bear Range” layer to put on top of other layers.*
- This layer shows the range of 3 grizzly bears that were tracked by GPS. Did you guess a big enough area of land for your grizzly bear? Many people think that the grizzly bears would only live in protected areas or just in the mountains, but these 3 bears used mostly private lands and ranged through different parts of the landscape. Their range is larger than Waterton Lakes National Park, and they crossed international and provincial boundaries. Historically, grizzly bears ranged through the grassland areas as well, but as humans settled the land, grizzlies moved into areas where there are fewer humans. Many parts and processes of the ecosystem don’t recognize political boundaries.
- Ecosystems don’t stop just because of lines on a map and there are many different users on the same landscape – what does this mean for caring for the landscape? In your groups, brainstorm some ideas for some of the problems you see for the ecosystem, and some of the ways we can solve these problems.

Other Activity Ideas:

- Visit or talk to the different people who care for the landscape (e.g. Parks, Nature Conservancy, Aboriginal person, rancher, resource extraction, etc.)
- Have each group take on roles (e.g. Parks, Nature Conservancy, Aboriginal person, rancher, resource extraction, etc.) and interview the different people who care for the landscape or other groups or have a discussion on a topic (e.g. Can we all live with grizzly bears?).
- Create a poster or multimedia project about the different aspects of this ecosystem.