“We’re all in this Together:” Intro to Human-Environment Systems

Date: Thursday, 13 July, 2017

09:00-12:00

Estimated # of Participants: 12 teachers + 3 facilitators + CM & EO = 17 participants

**Lesson Learning Objectives:**

1. To **expand upon existing knowledge** of ecosystem services & food webs and incorporate human interactions into the ecological dimensions of the foothills.

2. Students will learn about citizen science & ways to get involved in environmental policy here in Boise, as well as the importance of an informed public.

3. To **understand how we as humans are a part of the sagebrush** **steppe** **ecosystem**.

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| **Classroom Resources** | **Field Materials & Resources** |
| Printed example of our BHS interaction mapPrinted examples of the BHS interaction maps (students)Examples of BHS student Ecosystem ValuesPrinted example of our HES map using Ostrom’s framework | PPENotebooksClipboardsPencils/writing utensilsBinoculars (if available)HES Worksheets |

**Timeline:**

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| **Time** | **Activity** |
| 09:005 minutes | **Brief Introduction to me:*** Graduate student in biological sciences at Boise State.
* BS in Environmental Science & Anthropology from University of Notre Dame.
* Idaho native and most influential ES/JHS/HS science teachers
* Interests & dream project
* My graduate work on Greater Sage-grouse
* *The IdahoWatch* & *Adopt-A-Scientist* program
* TA at BSU, I teach Biodiversity of Life, which is an exploratory semester of all taxa, and the biggest thing I struggle with is getting college kids excited about nature & biodiversity.
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| 15 minutes | **Background Info & Intro to HES:** Last year I was “adopted” by Gina Lockwood’s classes to share my scientific endeavors with them throughout the year. This included coming in with sagebrush and blacklights to measure plant chemistry, to talk about food webs and ecosystem service, and even bringing in other scientists from my HES class to talk about how humans fit in their environment. We always talk about this “nature as ‘other’” idea, where we seem to be outside of it, rather than living as a part of it. What I did last year was to incorporate standard HES structures into a simple lesson plan to try to lay foundations for understanding human-environment interactions, as well as the diction by which we study these.**QUESTION:**  Has anyone ever heard of an *umwelt*? I’ll give you a hint—it’s nothing like a kumquat. In anthropology, we often describe this idea of an *umwelt*, which essentially describes the way that we see ourselves and our place in the world. Think about a giant beach ball that has all of “nature” inside it. Are we on the outside holding the ball? Are we outside the ball looking at it? Or are we one with the ball, also habituating inside of it? As time goes on, we seem to be identifying more and more as being outside of it. We have to get kids “into” nature. We go outside, to go camping or have “wilderness experiences” without realizing that we can be “in nature” without even realizing it. This is not a lesson on urban ecology, so I won’t go there today, but I do have an entire lesson plan on urban ecology and the importance of acknowledging it for what it is. Rather, today is about understanding ways that we can try to create a new framework for looking at the world that doesn’t have us as “other,” but also acknowledges the amount of control we have over this thing called “nature.” This then, loosely, becomes the study of Human-Environment Systems. **QUESTION:** Can anyone tell me what they already know about HES?**QUESTION:** Has anyone ever heard of “Ostrom’s Framework?” QUICK INTRO TO HES, using Ostrom’s Framework. Once upon a time, there was a Political Economist who was passionate about environmental protection and common pool resources, and the idea of “The Commons.” I’m sure we’ve all heard of the Tragedy of the Commons, suggested by Garrett Hardin in the 1960s. Dr. Ostrom attempted to use economics and ecology to map out ways that this tragedy could be mitigated. To do this, Dr. Ostrom described the necessity of defining the (1) Actors & Users, (2) Resources, (3) Governance, and (4) External Factors of a system, particularly those at risk of being unstable, whether or not due to low resistance or resilience. This framework, and the management implications that came from understanding the myriad of variables that go into conservation, preservation, and sustainable development, led Dr. Elinor Ostrom to be the ONLY WOMAN EVER to win the Nobel Prize in Economics, and later go on to lead the Sustainable Agriculture and Natural Resource Management CollaborativeUsing this framework of Actors, Resources, Governance, and External Influence, we can try to map out the balance of a particular area, whether it is an ecosystem, park, or city. The first step, and the purpose of this lesson, is to try to identify just two of those—actors and resources. These lessons can be expanded on over the course of a few days or an entire year/semester to look at all the other components of a system, too (I also have lesson plans for Governance & External Factors). When I did this lesson plan in November with Borah High School, I was only in for a morning and they’d just been on a field trip, so we used their memory of the field trip. I’d come in a week before the sagebrush seed collecting trip to talk about the sagebrush steppe and the importance of sagebrush to local wildlife. This was my opportunity to talk about the resources present in the sagebrush steppe. Then they went out to the foothills by Bogus Basin, adventured, collected sagebrush seeds, and probably froze to death during that ridiculous winter. **QUESTION:** Does anyone remember hearing about some events in the foothills lately? [big fire, airstrip landing, development, mountain-top removal, landslides, property battles, migrations]When they came back, our goal was to get them to incorporate those sorts of human-dimension into their observations. We talked about what they saw, and the implications of that, then got them thinking about the *non-natural* things they saw up there…roads, houses, etc. We talked about building houses and airstrips in the foothills, as well as the fires from last summer and the recent news stories about the houses that are condemned and literally sliding down the mountainside. Today, we’re going to try to do all of this in a day. Now that you are experts in HES, and Ostrom’s Framework, we’ll go for a walk. I’ve never done this at the same time, so we’ll see how it works. We’ll hike around and do some birding & nature observing. Ya’ll can quiz me on some of my Idaho native flora & fauna. Just remember to be flexible and patient with me, and that we’re scientists, so we need to make observations! Use your clipboards to come up with as many observations as you can –both “natural” and “human” throughout your walk. Also, think about what & how you feel, pre-& post-hike, and what that may have to do with our sense of “place” in the world.  |
| 09:30-10:0030 Minutes | Ellie Opdahl & Spit Test pre-swab |
| 10:00-11:0060 minutes | **Activity: HIKING**Intro: Remember what scientists do!* They wear PPE! Just because this isn’t a lab coat doesn’t mean we don’t need to dress like wise scientists. Eye protection & skin protection & proper footwear! So grab some sunscreen, tie your shoelaces, and grab your sunnies.
* They observe, they write, and they **DRAW**!!!

Record as many observations as you can about nature, the people, etc. Other things to discuss: HES ideas, my experiences & research goals, outreach, etc. *Things they’ve already discussed at this workshop:* SES, Ecosystem Services, Watersheds, Geothermal/hot springs, Dams, Mining, Drinking water, gardens, fish populations, recreation, etc.  |
| 11:00-11:30 or 11:30-12:00?30 minutes | **Closing & Discussion** –*While we’re post-swabbing?***POSSIBLE DISCUSSION QUESTIONS:**1. What were “natural” things that lots of groups seemed to have? What were “human” things that lots of groups had?
2. Which “interactions” lines were the most common? Why is that?
3. What would happen if we removed one natural thing? One human thing?
4. Are these maps messy or simple? Does this depict real life? Why or why not?
5. Could some “natural” things be considered “human”? What about the other way around?
6. How much of this lesson do you think high school students will be able to retain?
7. How can we incorporate more “backyard science” into classrooms?
8. When I teach this, I try to incorporate things directly applicable to Boise: this includes a LOT of development, since we’re growing. What other topics could be incorporated? What aspects of development did I miss (landslides, fires, water, property, wildlife migration).
9. Is human-nature truly a dichotomy? It’s messy! How important is it to teach students about how messy the world, and HES is?
10. How important is it to incorporate human dimensions, urban ecology, and coupled systems into our environmental curriculums? Do you think, in some way, this might take away the “wilderness appeal” of what we do?
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| **3:00:00** | **TOTAL TIME** |