

TRACKING ECOLOGICAL FOOTPRINTS

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Editor's note: Tate spoke with Scott Samuelson on 4 June 2008.

- Scott: Tate, you teach biology. Would you also call yourself a biologist?
- Tate: I tell my students I am flattered being called a scientist. I probably consider myself more a naturalist than a biologist.
- Scott: How would you define “naturalist”?
- Tate: A naturalist is someone who knows a little bit about all the natural world—not just the plants but a little about some of the animals, some of the birds, some of the fungi, and some of the rocks. Naturalists are, like the old adage says, jacks-of-all-trades and masters of none.
- Scott: So a naturalist is really a generalist. And being a generalist has the advantage of having the long view, being capable of a comprehensive outlook?
- Tate: You make it sound good. Yes, I am probably more of a generalist, although my academic training is in weed science.
- Scott: How, since you're trained as a weed scientist, did it come about that you take students on horseback to see the flora and fauna of Kilgore, Idaho?
- Tate: Well, I do the Horseback Discovery course because of a lot of personal interest and a lot of boning up for other classes, particularly general education. I've always had a keen interest in animals. In past GE courses we've looked into numerous biological fields, so I guess that's probably where my view comes from.
- Scott: Tell us a little about the course we are referring to.
- Tate: Horseback Discovery is very experiential. On class days we have a devotional, catch and saddle the horses, and drive to a trailhead where we ride and can learn about the natural world. This year has been a little bit different because the snow is still low. Last week we went to the Upper Palisades Lake. We've been to Sand Creek. We've been out towards Leadore to a place called Skull Canyon. We go to a variety of places,

but when we get there we talk about what's around us, we examine the plants and the trees and a little bit of geology and some of the animals that might be there. Students keep a scrapbook, so they do some plant collecting. Part of the requirement for the scrapbook is to collect five plants, in places where it's not against the law, press them and label them with comments, scientific names, and some characteristics. In addition to the plants, I have them record live animals that we see that day. Animals range from northern sagebrush lizards to moose and antelope. Last week we saw a black bear down at Palisades, so I am sure that one will show up in the scrapbooks. And birds, of course.

Scott: Do they photograph?

Tate: They do what they can. They should have pictures of themselves in the scrapbook. I tell them this is their book so *they* need to be in it, not just everyone else in the class. They trade cameras and take pictures of each other. Some will be group shots and friend shots and stuff. The scrapbook is based on a rule of fives: five plants, five animals, and five photos. Students bring these together and write a one-page paper on what they say, what they do, and what they feel. That's part of the Horseback Discovery requirement. I usually get comments about feeling close to God while we are out. Students find it very spiritual. They use words like "communing," "temple-like," and "worship."

Scott: Do you think that feeling the spiritual side of nature is at the heart of what brought you to be a naturalist? I think of the Primary song, "I feel my Savior's love in all the world around me."

Tate: I think learning about creation brings me and the students closer to Heavenly Father. We talk in the class about that feeling as well as about the creations themselves. We mention, for example, the Book of Mormon passage that talks about all things denoting there is a God (Alma 30:44), the great Creator.

Scott: I presume that one of the purposes of the class is to get students to see more. The class sounds essentially empirical—students learn about the world by seeing it. They study, but you may tell them before a trip what they are going to see, and you know because you've seen it before but also because you've read books and articles about the things that are there. You come to know through the senses and through describing

what you see. For believers, that process points to higher spiritual truths. Are there other ways your courses get students to know in a new way?

Tate: Part of the purpose of these classes is to help students consider what they see as part of something bigger and greater. In ecology we often use the term “interconnected.” I use a simple little analogy, about the little mobiles that hang over babies’ cribs, mobiles that are in balance yet also in slight motion. I say, “So we take those little hanging parts, and we reach up and grab one of them and give a yank, and now what happens?” Of course, the whole thing is set in commotion. That’s what happens in the world around us. We think, “Well, that one tiny entity is not an important part of our ecosystem or our universe,” and so we give it a yank. And you know, maybe 15 or 20 years down the road, we say to ourselves, “Whoa. That really was an important part.”

I guess another aspect of knowing is looking at the past and seeing the process I’ve just described. At the time something we did to the environment seemed to be validated by science, seemed to be a good decision, seemed to be right. And yet down the road you say, “That apparently was not a very good choice.” We could talk about forests and fire management policy and how that’s gotten us to the catastrophic fires we experience now. We could talk about over-grazing by domestic animals as well as by elk and deer in various areas. We could talk about the effects of taking the wolf out of the picture and re-introducing the wolf. The choices we make today are based on knowing what we think we know. Sometimes I think that, looking back or trying to go forward, we say, “Well, maybe we didn’t know all we thought we did.” And yet we have to make decisions based on what we know at the time.

Scott: One of the questions that’s come up in my other interviews is the idea of the text. It seems that it’s pretty clear from what you just said that your text is the living world—the plants, the animals, and the environment in which they live. But I thought I also heard you say that the text is also the history of man’s involvement with what has worked and what hasn’t worked. What I heard you say was something like this:

In order to be good citizens in the natural world, we have to know our history. We have to think about our place in an environment moving through time.

Where are you on the global warming debate, for example?

Tate: I don't think we can argue that it's not happening because the current situation can be documented. Historically, if you look at the earth's patterns according to ice core data, this process has happened before, numerous times. It's happening again now, but are we amplifying it by the carbon we emit into the atmosphere? Is this going to make it dramatically worse? I don't know the answers to these questions. For me at least, the more important questions are: "What am I doing to be a good steward of my tiny realm of influence on the earth. Am I taking care of things that I have stewardship over? What are the things I do on a daily basis that may have an impact on Earth as a whole?"

Scott: Will you share some examples that come to mind?

Tate: We can look at a thousand things. You could look at our water consumption or energy consumption. Energy comes in multiple forms, and we could examine heating your home, cooling your home, leaving the lights on. Ecologists speak of leaving an ecological footprint, asking, "What is your ecological footprint?" We as a nation have a very large ecological footprint because we consume so many resources. As individuals, what part do you and I play in that? Do we conserve where we can? Do we exploit everything we come across? I don't know what's right, and it's not my job to tell you what you can or can't do. However, going back to the interconnections, we are all tied together in this. There is only one Earth; I think we have to be careful about how we use it. And yet I also think that extremism can be dangerous. I think on both ends of the spectrum you can get so far that it's dangerous.

Scott: I'm thinking of the question about how we know, about how you know as a naturalist and how you get students to expand how they know. We have talked about four dimensions of knowing biology: observation, studying a text, learning history, and acting in an environment. We know that by acting, by changing—hopefully, improving—the way we live our lives as creatures, as part of ecosystems. Can you

give other examples of this very practical orientation to your discipline?

Tate: I teach a class to our natural resource minors called Range Plants. They learn about 220 plants over the semester, in theory and on site. Then this past winter I taught for the first time a weed ecology class in which we consider what to do with non-native species. We talk about early detection and rapid response. In other words, keeping these types of things out of our native habitats and knowing how to get rid of them. However, we also have to talk about biological, chemical, and mechanical control. We look at more than 30 problematic weeds. Some of the problems are so huge and so widespread that they put them into the category of “naturalized.”

Scott: Like what?

Tate: Cheat grass. It’s a horrible invader and it’s spread over millions and millions of acres. What do you do? Cheat grass is displacing native species, competing for resources and, frankly, winning. We hope that students will be more intelligent about all the choices they make by studying this and similar examples about how decisions we make have long-lasting results. ☺