

GLOBE North America Phenology Campaign: Dr. Constance Harrington Q&A Transcript

Dr. Constance Harrington:

Good morning. My name is Connie Harrington. I am a researcher with the Pacific Northwest Research Station in Olympia, Washington. And I do research in Western Washington and western Oregon mostly. But I also collaborate with some people from other areas in the U.S. working on other kinds of phenology projects.

U.S. GLOBE: What kind of research do you do?

I work with trees mostly, although I've also worked with shrubs and I try and understand what the environmental factors are that influence when they stop and start growing.

U.S. GLOBE: When did you know you wanted to be a scientist?

That's a good question. I always knew that I liked science and I liked math, but I just assumed early on that I would probably work in an organization like the Forest Service or Department of Natural Resources or something in managing trees.

But I realized the more that I learned, the more I was interested in doing science, and so trying to learn new things rather than just taking advantage of what other people had learned. Although I was always interested in science, I don't think I really decided that I was going to be a scientist until I started college, and then I could focus in more on the things that interested me the most.

U.S. GLOBE: What is the research question you've tried to answer?

We've tried to answer a lot of different phenology questions, but one of them is the timing of diameter growth, and that's one that requires some specific equipment because you, you can't see when it just starts. You can take some very careful measurements and get an idea, but if you want to know exactly when those cells are dividing and expanding, you need to have something like a dendrometer, which is a piece of metal usually that fits around the stem. So that helps us see when the trees actually are beginning to grow.

And one of the things that I learned is how early diameter growth actually starts, much earlier than budburst, at least for plants that are evergreen, whereas those that are deciduous, their diameter growth is going to start a little later. So it just gives us an idea of some different strategies that plants have that we might not have appreciated if we weren't looking at their phenology.

But we've also looked at phenology in relation to some diseases in particular. So we can see that some trees from some areas are more sensitive to some diseases because they tend to have new needles come out much earlier than, than other ones. So certain kinds of needle diseases can be quite a problem in some areas. And so trying to understand why some plants are doing better than others, we can look at their phenology and understand more what's, what's really going on.

U.S. GLOBE: Why is studying phenology important?

Phenology is the study of repeating biological phenomena. And when I was in college, I took a

Physiology class and the professor suggested that we start having phenology logs recording when things happened, and at the time I was not at all interested in doing that. I wanted to get out of college and use all kinds of fancy equipment. I wanted to use a pressure bomb to see how stressed the tree was, or a mass spectrometer to understand the chemistry in the leaves.

But I realized over time that phenology is really very important because it tells us how trees are really interacting with their environment. And so people kid me now that, you know, I can turn anything into a phenology question. So I want to understand when they start, when they stop, how fast they're going in the middle. And not just bud burst, which is the most common thing that people look at, but bud burst is also the beginning of height growth. So we can look at the rate of height growth during the year and when it stops, but also flowering. And depending on the plant, the flowering can happen at the same time as when the leaves come out or it can happen at a very different time. And then the timing of fruit development, this could be really important because maybe flowering happens sooner, but then there's not a lot of time for the fruits to actually develop.

So it's important to understand that there's different factors that can influence various aspects of the plants development. So there's just a lot of different questions you can start asking once you think of this subject more broadly.

U.S. GLOBE: What equipment or technology do you use in your research?

For many of the studies that we do, you're just using your eyes. However, we have used time lapse cameras for a couple of reasons. One is we can't always travel around to all the places that we want to get and we want to really understand what's happening not just once a month, but you know, more frequently.

The other thing is that there are often areas that you just physically can't get to. For example, we did a project where we were really interested in huckleberry up in the mountains and there's a lot of snow there in the winter and so the roads are not drivable until after the plants have already flowered.

I can share with you a little video that we have where we actually looked at the the height growth of two trees during the year and you could see how one starts a lot later than the other. But it was very interesting to look carefully at what was happening during the year to be able to say, oh, now I understand why this particular thing develops when it does or how it does.

U.S. GLOBE: Do you have any advice for young scientists?

Connie: I would just repeat what my faculty advisor told me years ago and that's start recording things in a notebook or a spreadsheet or on your phone. It's so hard to remember later if something happened earlier or later. But if you just take a few notes. And there's some really good data sets where someone has just recorded what happened around their neighborhood, different kinds of plants, and they would just go year after year and record them and we can see big differences in what's happened over several decades. So think about it, something you can just take on as a hobby.

U.S. GLOBE: What do you like most about spring?

I guess the artist in me loves the colors that come out in the spring, not just the flowers but also the colors of the leaves. They're just so different than how they develop later in the year. And the spring as

the temperatures get warmer, it's just so much more relaxing to go for a hike. And of course you have to plan the garden. So those are all things I kind of look forward to in the spring.