It’s Autumn, and the time when elk hunters take to the field. This also means an increase in the number of hoof samples submitted to WSU for diagnostic evaluation and research because many of our samples come from elk that are harvested during hunting seasons. We are appreciative to everyone who works through the state fish and wildlife agencies to report limping elk and abnormal hooves.

The samples collected through state fish and wildlife agencies are critical for our research into better understanding of the cause, or causes, of hoof disease. As I mentioned in the last Update, this is one of the main questions we are addressing in our multi-pronged research approach.

A common question is how we decide what research projects we will conduct and how long each will take. There are many ways to address an issue, and in research we follow a well-established scientific method. But what does that mean?

Each one of us have perceptions that explain what we observe. And while often the assumptions we make to form our conclusions are correct, many times they are not as well. With complex issues, like hoof disease, not all the various perceptions can be correct. Our assumptions must be tested. That is where the scientific method guides our work.

The scientific method provides an approach to test our ideas, or hypotheses. A hypothesis is an educated guess, made as a statement, not a question, that we make based upon observations and assumptions.

For a simple example consider that we observe that when we don’t water our new houseplant, it dies. Our hypothesis might be, “Houseplants require watering to survive.” To test the hypothesis, we could water some plants but not others while holding all other factors constant and collect data on their survival.

For determining whether a hypothesis is confirmed or denied, we must gather data using an organized approach to test the hypothesis. Importantly we must do this in an unbiased way in which we are not
trying to “prove” our hypothesis is right, but gaining information that either lends support or refutes the hypothesis. As a scientist, it is critical to keep an open mind to all possible explanations, but it is efficient to start out testing the most likely educated guesses first.

Based on previous findings, a hypothesis regarding hoof disease is that the observed lesions are the result of infection with bacteria. With our research at WSU, we will begin by testing that hypothesis by exposing unaffected elk to hoof disease in an otherwise normal setting. In our case, this will be in a biosecure, captive research facility. If the healthy elk develop lesions, that is support for the hypothesis. Additional data on bacteria that are detected and description of the lesions may, or may not, lend additional support.

On the other hand, if the healthy elk remain unaffected, then we conclude that either the disease is not infectious and transmissible at all, or that other predisposing factors need to be present for the disease to occur.

With all results, we must always consider whether our experiment was designed properly to reproduce the disease. In any of these cases, the findings from one experiment inform development of a more refined hypothesis that we test next. This stepwise progression is necessary because it is uncommon that one experiment provides sufficient evidence to accept a broad cause-and-effect hypothesis.

Further, it is this stepwise progression that leads to well-founded, reproducible results. The scientific method is not always fast, but where properly employed, its rigorous approach provides confidence in the results we obtain both to the scientific and medical communities as well as to the public whose tax dollars support this important work.

We will work as rapidly and effectively as possible to gain information on hoof disease and how to reduce its impacts. We are also committed to an approach that we acknowledge will take some time and patience to reveal answers that we can have confidence in and will steer us in the right direction.

This approach applies to all of our research, including work with captive elk once our facility is completed. We will also work transparently and communicate like this to share our confirmed results.

My goal remains to build the mandated WSU research program, initiate studies to provide reliable information, and let those results guide us to improved understanding and management of hoof disease. Application of the scientific method is crucial for achieving this goal.