

# B&C PROFESSOR'S CORNER



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## In The Name of Science

**Most Americans have been exposed to the terms “let the buyer beware” and “read the fine print.” Both can be applied to understanding science.**

Since the last World War we have lived in a science-conscious society. One cannot read the newspaper, watch television, or listen to the radio without exposure to scientific studies that claim one product is better than another and learn of scientific advancements related to space, medicine, computer technology, energy management, climate change, wildlife, and numerous other advancements that influence our lives.

Billions of dollars are spent on science each year, and the term science has become imbedded in our common language. Unfortunately, many think of science as some mysterious process too complicated to understand and conducted by strange people that speak a different language. Ask someone what this mysterious word means, and you will likely get a blank stare back. This should not be the case because most people use scientific thinking in some aspect of their daily activities.

An example is when a person's car will not start. Might be the battery. To check, turn on the headlights to see if they work. If they are working properly, it probably is not the battery. Maybe it's the starter. If the starter is replaced, and the car still will not start, it is something else. The

process will continue until the real cause for failure is discovered. Science is straightforward and is the best method to understand the natural world we live in.

Simply, science is the process of understanding natural phenomena. This has resulted in numerous types of sciences, including biological, computer, environmental, physical, and wildlife science. However, the scientific method is similar for each discipline. Because there is a specific process (i.e., the scientific method) to correctly obtain understanding, science can only be science if it follows specific steps.

**Numerous individuals from numerous organizations make statements about wildlife and their habitats. Many are scientifically based, but some are expressions of emotions or opinions. We need to be able to make the distinction.**

Thus, I am confused when I hear terms like best available science, bad science, citizen science, junk science, pseudoscience, traditional science, Western science, and other such terms. Science is science. If it does not follow the scientific method, it is likely something other than science.

There are several versions of the scientific method, but they all consist of five or six specific steps:

- 1) Observe the area of interest.
- 2) Develop ideas to explain the patterns observed (i.e., hypothesis formulation).

- 3) Design a study to test the hypothesis.
- 4) Conduct the study and analyze the data.
- 5) Evaluate the process to decide whether to reject or support the hypothesis.
- 6) If the ideas are not supported, researchers will likely return to the second step to form additional hypotheses and continue the process of learning about the natural world (the goal).

Researchers must exercise discipline to tentatively accept explanations that are consistent with the data, even if it was not the answer expected or hoped for. Data rule, not desires or emotions.

There is nothing mysterious about the process; it has worked quite well to advance our knowledge of the natural world. Unfortunately, numerous claims are made in the name of science that have nothing to do with the process of scientific inquiry. This can be confusing to those listening to the claims. The entire process has to be followed for knowledge to be gained. This is just as important for citizens trying to understand statements made as it is for scientists conducting research.

Numerous individuals from numerous organizations make statements about wildlife and their habitats. Many are scientifically based, but some are expressions of emotions or opinions. We need to be able to make the distinction.

Are the conclusions presented derived from the scientific method or are they opinion? Scientific management of wildlife demands that the scientific method be an integral part in the conservation and wise use of our nation's resources. Let the buyer beware. Read the fine print. ■

