## INNOVATIONS

# Photographs can help collect, analyze animal data

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**Most of us** have heard the old saying, "A picture is worth a thousand words." But what if a picture was worth much more? Scientists are starting to unlock a wealth of information from pictures of live animals, both wild and domestic.

One of the most expensive, time-consuming and dangerous parts of collecting data on animal health and status is during handling and working. With the development of tools such as remotely triggered cameras, sensors, analytical tools and software, producers may now be able to collect and analyze data in the comfort of their home. Although these tools will take the guesswork out of several measurements, the tools will not completely replace knowledge gained from working with the animals.

Pictures are a two-dimensional representation of a three-dimensional object and often lack scale, a ratio of the picture's measurement to the true measurement of the animal. These are two of the obstacles to be overcome before data can be collected. There are two ways of overcoming these hurdles. First, use a known-sized reference in each picture to "scale" the photograph to the true measurement
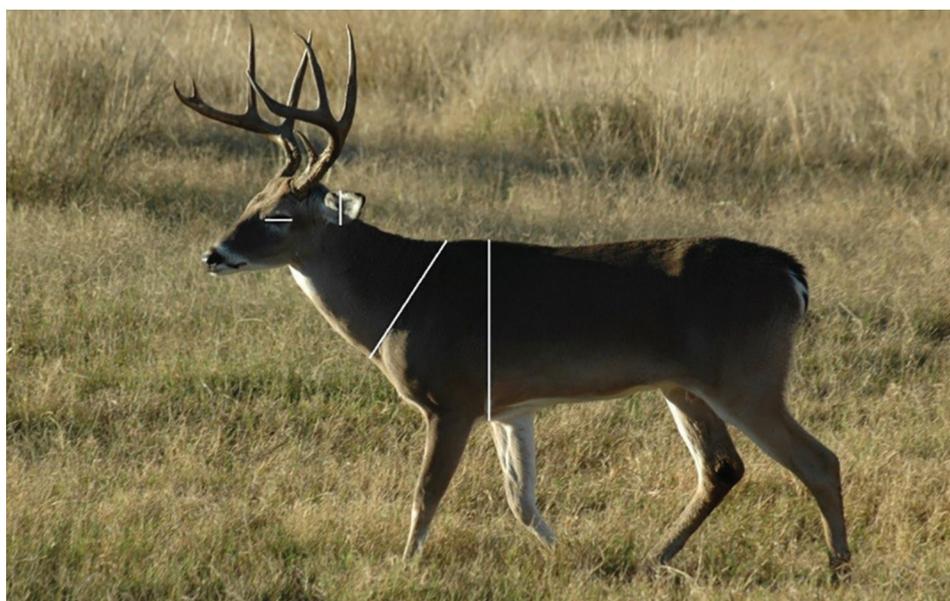


*Sample of measurements taken from white-tailed deer to estimate age and antler score.*

of the animal. For instance, in the photo shown, the average width of the eye and height of the ear are used as a scale for each photograph. The second alternative is to use ratios of one measurement to another because these measurements do not require a scaled factor. For example, the ratio of neck size to chest depth of the white-tailed deer is used as a ratio for estimating age.

The use of photographs in science is increasing, with several recent developments and applications. One of the first applications was to measure

antlers of white-tailed deer and to estimate the age of bucks. Antler score (total inches of antler) was estimated using average measurements of body parts, like eyes and ears, to scale the photograph to obtain true measurements of the antlers. To estimate age, ratios of body measurements were used to assign age to bucks. The development and application of these techniques resulted in a United States patent, scientific publication and a commercial software known as BuckScore™, which can be downloaded at www.buckscore.com.

Other applications have been developed for bison, wildebeest, bobcats and zebras. Photographs taken of bison during aerial surveys were used to identify individual bison for aid in estimating population size. Facial features and horn configurations were unique to individuals, resulting in a high level of accuracy in identifying unique bison. Coat patterns of bobcats, wildebeest and zebra also have been used to identify unique individuals in a population.

Current efforts are underway to develop measurement calculators to estimate age and body weight of feral pigs from photographs. Preliminary results indicate strong relationships for estimating age and weight of feral pigs from body measurements obtained from photographs. These techniques also are being tested on photographs of cattle to determine whether body weight can be estimated and whether new measures of body condition can be calculated.

There likely are more applications for collecting data using pictures. We are only limited by our imagination. So, next time you file a picture away in an album, consider what type of information is hiding within it. ■