

# INVENTORY AND MONITORING

## THE SCIENCE OF DISCOVERING WHAT'S THERE & HOW IT IS DOING

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When someone knocks on your door and you ask, “Who is it?” you have just taken a simple inventory of the people at the other side of your door. When you let them in and they ask, “How are you?” they have conducted a simple monitoring program to determine your health. Of course, the accuracy of the data depends on how truthful the answer is. Conducting a biological inventory or ecological monitoring makes use of most of the tools of science, but it does not involve developing a hypothesis to test. Instead, it involves making careful observations of how things are (inventory) and how things may or may not change over time (monitoring).

If you are given a box full of stuff to use and protect, one of the first things you’ll probably want to do is open it to take an inventory of what is inside so you could do your best job of using and protecting it. A biological inventory may involve developing a simple list of species or may include estimates of populations size (how many), mapping their range (where they are), and even what other species they associate with - their ecological community. An inventory is most useful if it occurs over a brief period of time because over a long period of time things can change and your inventory stops being accurate. An inventory is best as a snap-shot in time. A good inventory produces baseline data which is the standard against which you can compare what happens over time (for example there may have been changes in the environment, such as air pollution, or a change in the way people use the resource). We usually don’t know what things were like 500 years ago, but we can find out what things are like now, which might let us determine if things are changing, becoming less or more diverse the next time we look. The All Taxa Biodiversity Inventory is a huge inventory project started in Great Smoky Mountains National Park in 1998 to determine what species live in the park, their distribution, and their ecological community. It is estimated that as many as 100,000 species of plants, animals, and fungi live in the park. Right now, biologists have found 14,000 of these species. That leaves a lot of stuff in the “box” that park managers don’t know about.

Though an inventory is conducted over a brief period of time, a monitoring program could be designed to go on forever. Usually a monitoring program is set up to help detect if an unexpected change is happening to a protected area or a population of rare species, or to determine if an expected change is happening as we thought it would. If a population of rare plants is being protected, it would be better to know that the population is declining while it is still large and you can do something about it, rather than go out one day and discover it is all gone. Great Smoky Mountains National Park monitors air quality, forest recovery after fires, rivers, populations of endangered species, and many other systems.

Inventory and monitoring are important parts of managing a national park or any natural area. Findings from these projects allow managers to make informed decisions on when and how to act, and when to keep hands-off. Inventory and Monitoring programs also develop many questions that may be answered by hypothesis testing and other scientific methods.

