

### Questions and Problem Solving

One of the most common and most serious problems with many samples is the lack of clearly stated objective questions or problem statements. This seem trivial and obvious that without a clear objective a sample would have little chance of being successful. Many people sample the way we have always done it. Others think that if you collect a lot of stuff surely we will find something good.

I have found that a two-step procedure forms a good frame work for learning to state workable questions.

1. Usually when people start on a topic of interest the questions are general. General questions do not have a simple answer. It is OK to start this way. These general questions can lead to questions that can be answers by a sample. Examples of general questions are:
  - What is the value of a particular forest?
  - What is the health of a particular lake?
  - Is this population of deer sustainable?
2. General questions can be divided in the specific questions that can be answered with a specific data from a sample. For example:
  - What is the value of a particular forest?
    - First ask what is valuable?
      - Aesthetic beauty - measured as viewer relative ranking.
      - Hunted days - measured as a count of hunting day opportunities.
      - Clean water production - measured in acre feet of water that test cleaner that a standard.
      - Timber Volume - measured in board feet.
      - Etc.
    - Is this population of deer sustainable?
      - First ask what is sustainable?
        - What is the fecundity rate? - measured in births per female.
        - What is the mortality rate? - measured in the ratio of deaths to population.
        - Are these rates changing? - Monitored by repeat measurements.
        - etc.
  - 3. Each of these attributes can be measured in a specific way. When all the specific questions are answered you have a good idea of the answer to the general question.

This method is very similar to hypothesis testing used in science yet a bit less restrictive. Hypothesis testing divides questions into questions that can be answered yes/no usually by comparing groups. For more information on formal hypothesis see the hypothesis test page.