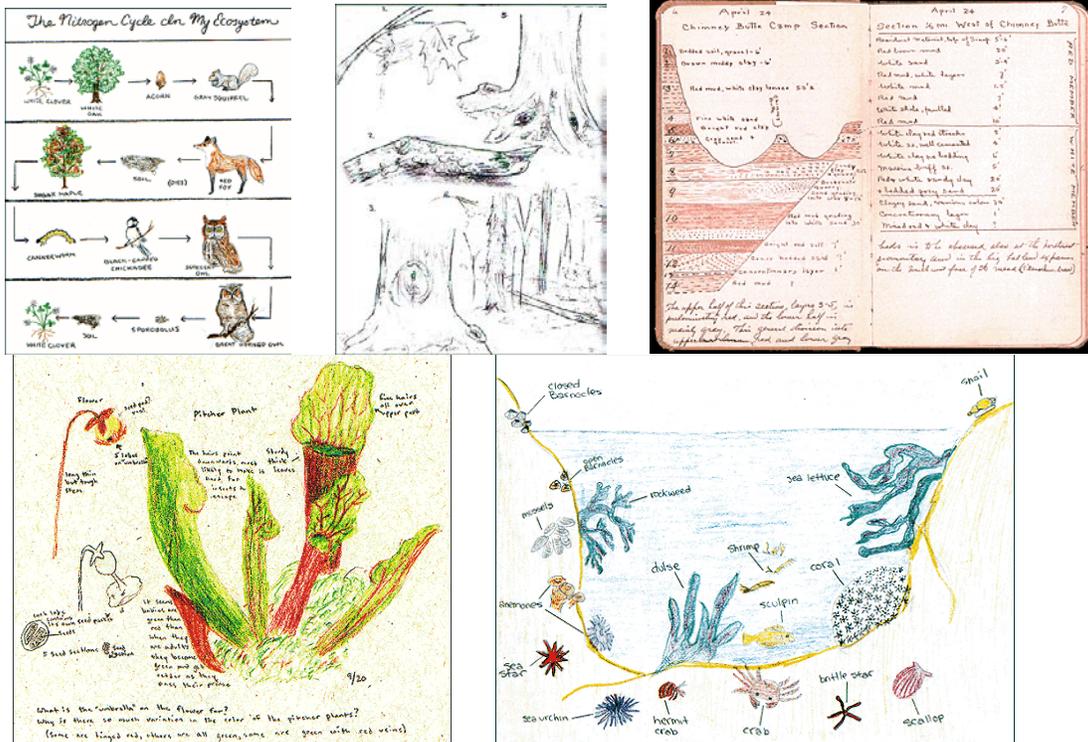


## How to keep a field journal

A field journal is essential to a scientist's fieldwork. When you go on into the field, you will record all your observations, thoughts and questions in your field journal.

Your field journal will be unique to you, reflecting your personal style. As you can see by the examples of different field journals below, there is no one way to keep a field journal. Field journals end up being very personal. It may take some trial and error before you come up with the way that works best for you.



Some scientists will sketch simple pencil drawings, and others will paint colorful, detailed images. You can use whatever tools work best for you. The important thing is to visually record the information so you can use it later when trying to remember what you saw. See more hints on how to create sketches in the [Helpful Hints for Field Sketching](#) section at the end of this handout.

Some people record their observations with charts, list and labels, while others will write long, detailed descriptions. Some scientists write everything--measurements, data, observations, specimens collected--on the same page; others record some of this information--specimens collected, some scientists make sketches or drawings; some do diagrams or graphs or flowcharts. A formal field journal can even have a diary-like account with records of feelings and emotions.



## Keeping a Field Journal: Suggestions from Eleanor Sterling

To find out how, and why, to keep a field journal, we asked an expert: Eleanor Sterling, an anthropologist who has done fieldwork and kept field journals in Africa, from the rain forests of Madagascar to the savannas of Tanzania. "Field journals are incredibly important," she told us. "Basically you can't do science without them."

"When I first went out into the field, I thought it wasn't very important to take notes, because I wasn't collecting data, I was just looking for a site. I wrote down things occasionally but not rigorously. Besides, the things I was seeing were so amazing that I was convinced that I would remember them for the rest of my life. But the truth is that so many things crowded my brain that I couldn't remember them all, and some of what I couldn't remember turned out to be very important. For example, when I got home, I couldn't remember whether a little baby animal we had seen had his eyes open or closed. Now that makes a huge difference if you want to figure out when the baby was born. Later, when I was working on other research, suddenly that little piece of information would have been very valuable . . . but I didn't write it down!" She laughed.

**So the moral is: No matter how trivial an observation or piece of information seems, *write it down*.** But how can you write down *everything*? we asked.

"You can't write down everything, it's true," Eleanor told us. You have to figure out what basic things are important and then, through trial and error, you begin to know what kinds of information you need for your project. "You will probably find that you've left out some important data that you really could use. Chalk it up to experience, and take more complete notes next time," she advised.

Here are some tips from Eleanor on keeping a field journal:

1. Use a well-sharpened pencil. I wore a pen or pencil on a string around my neck.
2. Begin each field session by writing down these basics:
  - site name/location and date
  - time of day and temperature
  - weather conditions: for example: is it cloudy, sunny, windy, raining?
  - wind conditions
  - soil conditions: for example, is it moist or dry?

3. Record your observations. Some things to consider recording are:

- if there are fruits or flowers on individual trees or plants in your site
- if you observe any kinds of interactions among insects: like mating or fighting, or between insects and plants, like feeding and pollinating
- if you see any changes from the last time you were there

4. Think of some questions that may help you get started:

**"What do I see?"**

**"Do I see anything that surprises me?"**

### **SAMPLES OF NATURALIST WRITING:**

Within a small section of Group 5's range grows a hard, grapefruit-sized fruit called mtanga-tanga by the local people. It is favored by elephants, who become besotted after extensive mtanga-tanga binges, but the gorillas have not been observed eating the fruit. Effie's young, though, did go out of their way to climb high into trees supporting the fruits and knock them to the ground for play purposes. Puck, when only an infant, used the fruit as a display item, gripping the stalk between his teeth and beating the fruit against his chest. This resulted in a resonant, deep chestbeating sound that, try as I might, I could not duplicate. The fruit also served as a football, soccer ball, or baseball for all of Group 5's young, according to which type of game was initiated. - **Diane Fossey, *Gorillas in the Mist*, 1983**

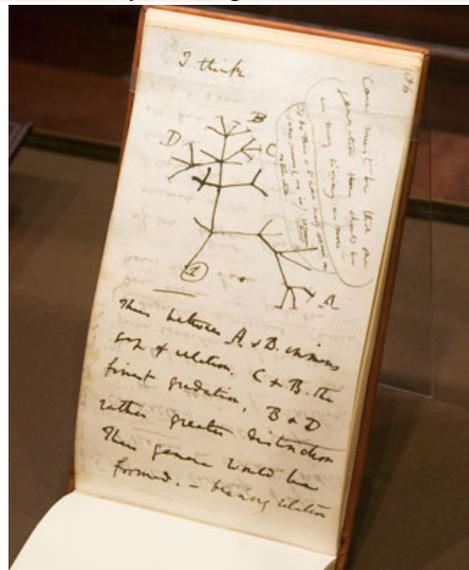
The dragon lizard padded toward us, slapping its feet down aggressively, first its front left and back right, then vice versa, carrying its great weight easily and springily, with the swinging, purposeful gait of a bully. Its long, narrow, pale, forked tongue flickered in and out, testing the air for the smell of dead things. It reached the far side of the fence, and then began to range back and forth tetchily, waiting for action, swinging and scraping its heavy tail across the dusty earth. Its rough, scaly skin hung a little loosely over its body, like chain mail, gathering to a series of cowl-like folds just behind its long death's head of a face. Its legs are thick and muscular, and end in claws such as you'd expect to find at the bottom of a brass table leg. The thing is just a monitor lizard, and yet it is massive to a degree that is unreal. As it rears its head up over the fence and around as it turns, you wonder how it's done, what trickery is involved? - **Douglas Adams, *Last Chance to See*, 1990**

## Charles Darwin

Charles Darwin began his pocket notebook habit while sailing as a naturalist aboard the HMS Beagle. While exploring the South American coast, he gathered specimens and filled 15 field notebooks with observations on subjects like zoology, botany, archeology, and linguistics, data like latitude and longitude, barometer readings, temperature, and depth soundings, sketches of maps and specimens, and personal information like diary entries, shopping lists, and financial information.

Near the end of the voyage he began writing in his Red Notebook, which he devoted to more theoretical speculations. Upon his return, he continued hashing out his theories in a series of notebooks he labeled with letters of the alphabet: A,B,C, D and so on. The notebooks were filled with memorandum to himself on things to look further into, questions he wanted to answer, scientific speculations, notes on the many books he was currently reading, natural observations, sketches, and lists of the books he had read and wanted to read. The notebooks provide a window into how Darwin's theory of the transmutation of species, well, evolved. But the progression is far from orderly-the entries are chaotically arranged and wide-ranging; they jump from one scientific subject to the next and are interspersed with notes on correspondences and conversations.

When traveling and making field notes, Darwin would write vertically down the page with a pencil as this is easiest when holding the book in one hand and writing with the other. At home, he would rest the notebook on his desk and write horizontally down the page with a pen. And like Isaac Newton, he would sometimes start in from both ends of the notebook at once and work towards the middle.



*In Notebook B, Darwin began to speculate on the origin of species, here drawing his first evolutionary tree.*

## Lewis and Clark

With the 1803 Louisiana Purchase, the United States acquired nearly a million square miles of territory, territory that had yet to be officially mapped and explored. Americans knew very little about this new swath of their country, and Jefferson charged the Corps of Discovery with finding out just what

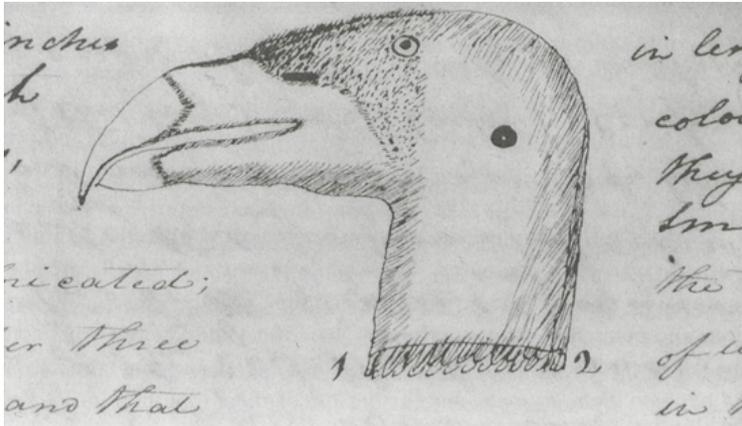
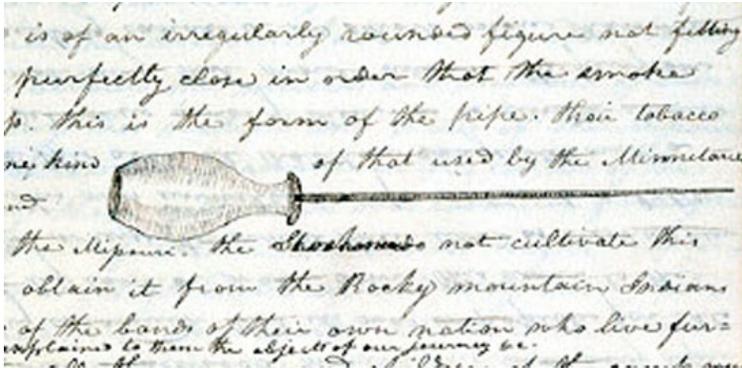
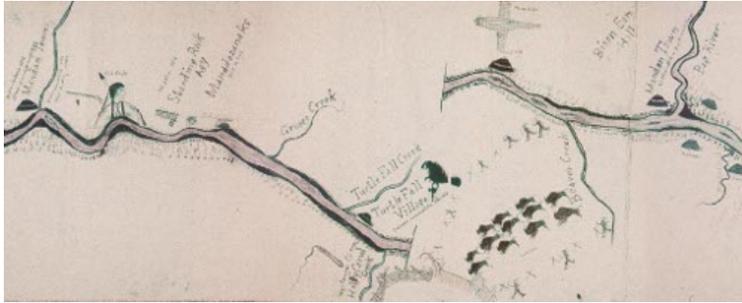


was out there. Jefferson was not only interested in the men finding river routes to the Pacific, but as an amateur naturalist and scientist himself, was also extremely keen on discovering just what geography, climate, plants, peoples, and animals inhabited this frontier. So he charged the expedition with recording a long list of information, from the lay of the land to the disposition of the native peoples they encountered. He asked them to keep multiple journals and to take extremely good care of them.

The Corps of Discovery carried out this order with all due diligence. Not only did Captains Lewis and Clark keep notebooks on their observations, but the other soldiers did as well, producing in all more than one million words during their travels.

Lewis and Clark kept 18 of what Jefferson called their “traveling pocket journals,” 13 were larger notebooks bound in red morocco leather, 4 were smaller and bound in





paper board, and one was Clark's field notebook bound in elkskin. Clark carried this elkskin field book during times of inclement weather or while canoeing down a river in order not to risk damage to one of the larger red notebooks. He would then copy his field notes into the red notebooks later on. When all the notebooks were not in use they were kept protected in tin cases. When their pages had been completely filled, the notebooks were sealed safely shut inside the cases for a safe return to Washington.

Historian Donald Jackson called Lewis and Clark "the writingest explorers of their time." The men "wrote constantly and abundantly, afloat and ashore, legibly and illegibly, and always with an urgent sense of purpose."

Their journals covered astronomy, weather, natural history, botany, animals, anthropology, maps, and much more, and today offer an incomparable snapshot of the frontier of America.

## Helpful Hints for Field Sketching

Seeing and observing are two different things. When we look at something, we are usually seeing just to identify. We might look at a person, a tree, or a building, and we may later recall the identity of the person we were looking at, or tell if a tree was in bloom or even if the building was made of brick or concrete. However, if asked whether the person had narrow-set eyes, or whether he or she held one shoulder lower than the other, or what exactly was the color of his or her hair – well, our ability to recall becomes less exact. Was the building or tree or person! – taller than it was wide? How would you describe the color of the leaves? Were they yellow-green or blue-green?

Observation is a discipline, and drawing is a way of training ourselves to observe. Many people assume that they don't have talent, that they lack that ability to draw. They think that drawing skills are somehow magically bestowed on "artists" alone. As with many assumptions, this one is incorrect. Drawing is a skill that one can learn. As with many other skills, some people will exhibit more aptitude than others, but everyone can improve his or her abilities with some time and effort.

The kind of drawing we are discussing here is observational rendering – trying to capture on paper in two dimensions some aspect of what you are observing. The first thing to do is determine what aspect(s) of your subject you want to record. For example, do you want to know the relative height and width of your subject? Are you recording color? Do you want to show the volume of the subject? How much detail are you interested in? Some of these questions are answered by two factors: the medium you are using and the amount of time you want to spend on drawing. Obviously, if you are using a pencil on paper, you are not recording color. And if you intend to spend only a few minutes drawing, you will not be recording a lot of detail.

### **Hint #1: Proportions**

One of the most difficult aspects of drawing is perhaps the most easily solved. When you draw you are usually creating an image that is smaller in size than the object you are rendering. You do not have to know the actual measurements, only the relative height and width. For example if you are drawing a sleeping cat, you need to know how wide the animal is in relation to how tall it appears to you from your perspective. That is, from where you are observing the animal, you will see a particular and unique set of relationships between height and width. If you move to a new observing position, you will see a different set of relationships. So how do you determine what those relationships are? Remember, you do not have to know the actual size of the object you are observing. What you must do is first establish one element. Let's start with the width of our sleeping cat. Simply mark off on your drawing how wide you want your cat to appear on the page. This can be accomplished by making two light marks to establish these outer boundaries. Next you must establish a relationship between the tallest part of the

sleeping cat (as you view it from your observing point) and the width. A simple way to accomplish this task is to hold your pencil at arm's length and look down your arm to the subject. Turn your pencil sideways and align one end with the right or left side of the object and move your thumb to mark the end of the other side on the length of the pencil. You now have created your own optical measurement from your viewing location. You can use this measurement to establish the relative sizes of anything you see from your particular and unique viewing position. For example, you can turn your pencil vertically, while still holding it at arm's length (with your thumb still holding the mark), and compare the width of the cat with its height, as seen from your vantage point. You can now use that relative size to mark off the upper boundaries of the size of the cat on your page. You can use this method to establish all of the proportions of what you see on your drawing, such as the distance between the cat's eyes, or the size of the space between the sleeping cat and the rock on the ground next to it. You will find that with practice you can create very naturalistically proportioned drawings.

### **Hint #2: Perspective**

Things appear smaller the farther away from you they are. This phenomenon is called perspective. For example, if you look at a tree that is a few feet away from you and, using the method for establishing relative size from Hint #1, compare the size of a tree as observed from a fixed viewing point to a similarly size tree that is farther away, you will see that it appears smaller. The actual relationship of size of distant objects and their placement on the page can be established the same way you drew the proportions of the cat.

### **Hint #3: Volume**

If you are trying to create a sense of volume or fullness of what you are drawing, you need to establish the source of light. Light falling across a form creates a sense of volume or fullness in a three-dimensional object. Volume is established by the relative lightness or darkness of areas of a volumetric surface as is viewed. For example, if you look at light falling on a tree trunk, one side probably will appear darker than the other. The side of the trunk that is in the direction of the light source will appear lighter, and the side of the trunk farther away from the source of light will appear darker. If you squint your eyes when looking at a subject, it helps to establish these relative values of lightness and darkness, because we are not confused by the details. And speaking of details, when you draw the rest of the tree, don't try to draw it a leaf at a time. Again squint your eyes and look at the volume created by the whole bunch of branches and leaves and draw that volume rather than each individual leaf. You can always add detail later if you want to or have the time.

#### **Hint #4: Simplify**

As with drawing the leaves of tree, look for the general shapes. Start with the basic proportions and then add detail. If you start with the details first, you will have only a record or inventory of objects. You will not have a convincing drawing.

#### **Hint #5: Practice**

Practice a lot. Drawing is a discipline that can be learned. The more you do it, the better you get. Like playing ball or learning to play the piano, the more you practice, the better you get.

#### **Hint #6: Have fun**

This is the most important hint. Have fun. You will be surprised at how much "talent" you never knew you had.

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