

Field Notes :: observations, reflections, & sketches from the field

Deepening your observations and developing your personal style of documenting time spent and observations made in the field ...

- ✍ Find a comfortable spot to read these pages. Get still and observe your surroundings. Keep track of your **observations**, as well as any **questions** that arise (brainstorm questions that might be good topics for research).

“... [One] of the hardest parts of science is coming up with new questions. **Where do fresh new ideas come from?** Careful observations of nature are a great place to start.” – *Erick Greene*

Your field notebook is the place for your observations, reflections, and sketches — keeping a field notebook is a great way to document your time in the field and to generate new questions.

There are a few standard pieces of information that you must include in each entry (*below*). **Beyond the requisite introductory information, you should develop your own approach and style to record observations, questions, species lists, sketches, references to photos taken, etc.**

Begin (legibly!) each entry in your field notebook with the following requisite information:

- **Date** (day – month – year)
 - **Location** (be specific enough for others to find the location – GPS coordinates, if possible)
 - **Time stamps:** at least, start time & stop time (include periodic time stamps, if appropriate)
 - **Weather/Field Conditions** (*e.g.*, temperature, precipitation, cloud cover, wind speed)
 - **Field Companions/Observers**
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“I have meticulously documented my observations, and this documentation has made **the difference between simply being a witness to nature and being one who identifies themes and questions.**”

– *Bernd Heinrich*

Keep reading! The following pages contain more thoughts & inspiration on keeping field notes ...

On Keeping Field Notes ...

“Almost anything might be relevant, so I had to write down everything. Over the following weeks I couldn’t pass up any observation or thought, and a notebook on ravens evolved. Protocol was out the window since I had no idea where I was headed or what might be trivial and what important.” – *Bernd Heinrich*

“Taking notes has always helped me zero in on the interesting questions. They have made the difference between simply observing and being able to get to the meat of the science. When I am in the field collecting information, I am on the lookout for the nascent, the new, and the unexpected that may spring out of the familiar.” – *Bernd Heinrich*

“...I am most interested in the seemingly anomalous. In taking field notes, the way to find these peculiarities is the keep track of many observations that may not appear at the time to be relevant at all. Similar to the way a subtle twist in a blade of grass may betray the presence of game, a single observation in my field notes may stand out against a backdrop of sentences standing in an ordered array.” – *Bernd Heinrich*

“It is impossible to predict the future relevance of any one page of notes. Yet it is clear that meticulous and organized records form the foundations of field science, and ... are the most basic tool for studying the science of nature.” – *Michael Canfield*

“The field has no geographical or physical bounds, but is defined by those who go there to investigate, study, or commune with nature.” – *Michael Canfield*

{On Darwin’s notebooks from aboard the *Beagle*...} “He fills the pages with many observations and facts, and his questions on evolution emerge between the cracks.” – *Michael Canfield*

“Computer sensors, handheld devices, digital cameras and microphones can all capture huge quantities of information in seconds, but these volumes of unstructured information are not cohesive field notes, though they may provide a false sense of completeness. Such data are not naturally integrated ... **The raw information lacks both a narrative and a record of how and where information was recorded. Providing this record is the role of field notes.**”

– *Michael Canfield*

“The value of taking field notes lies both in the actual information that is recorded as well as in what is gained in the process of recording itself. ... **Taking time to write out an idea or observation forces us to pause and consider.**” – *Michael Canfield*

“Since human memory is transitory and things that are not written down may slip away quickly, field documentation is critical. However, there is clearly an opportunity cost to taking field notes.” – *Michael Canfield*

“Its value is usually derived less from its contents and more from the exercise of writing things down that forces me to pay attention and remember. **This process slows my thinking and serves as a first crude filter for the natural breeze of data that passes by in a continual stream.**”

– *Bernd Heinrich*

“... note-taking helped transform me from a young boy on barefoot runs who passively observed the tangled bank of the Maine woods into a naturalist-scientist who is an active participant in unraveling the mysteries of the natural world.” – Bernd Heinrich

“Aspiring field scientists might do well to consider how recording diary information, in addition to keeping data sheets, might serve them when undertaking the rigorous accounting often required of scientific grants, or **how a journal might provide a wide-angle forum for more general reflection on experiments and organisms**, or even **how it might have personal value later on** when reflecting on their adventures in the field.” – Michael Canfield

“... [I]t has remained a constant for me that daily field notes will usually include a list of the species observed and at least some indication of numbers of individuals.” – Kenn Kaufman

“The myriad tools of the digital age that provide quick ways to capture words, images, and data have added to **the perception that handwritten field notebooks are passé**. ... In spite of the expanding virtual world, the fundamentals of good fieldwork have not changed much since Darwin. ... [S]cattered digital information breaks down over time, however, without the cohesion provided by a single, well-kept field notebook.” – Anna K. Behrensmeyer

“... experience has taught me there is no substitute for taking time to question, puzzle, explore, and document observations and insights while in the field. Even when there is little to show for a day’s effort, my fieldwork provides me with time to think in beautiful outdoor settings and to be inspired by present and past worlds.” – Anna K. Behrensmeyer

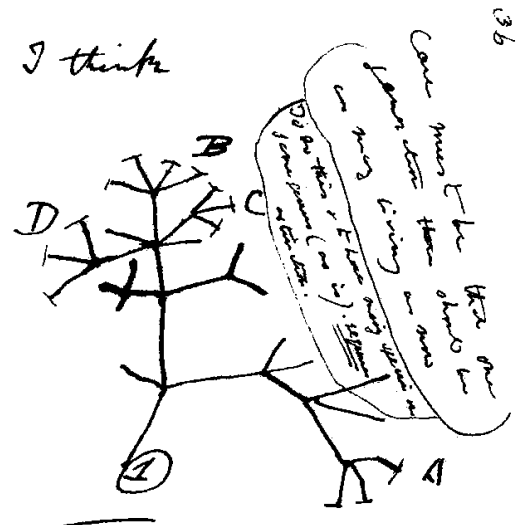
“Although I had some early training and good role models, **much of what I learned about note-keeping resulted from trial and error, evolving over several decades to where it is today.**”

– Anna K. Behrensmeyer

“Documenting almost any conceivable field experience may be important as a record of an observation in nature, a new insight about the way the world works, or even just a step in the evolution of your own thinking and education.” –

Anna K. Behrensmeyer

“In addition to factual observations, it’s fine to record your initial scientific interpretations and personal impressions, but **remember to clearly separate facts from interpretations so these are not confusing to a future reader.**” – Anna K. Behrensmeyer



I think
 then between A & B. various
 sort of relation. C + B. The
 first predation, B & D
 rather greater distinction
 than former would be
 formed. – binary relation

Charles Darwin (1837)

“... [D]ocumenting collecting strategies and protocols receives special attention. In the moment, these may seem like common knowledge for the field team, so sometimes no one bothers to write them out. ... The result is that we cannot always be sure whether there was a collecting bias or not, and relative abundance tallies for interesting animals ... versus other species are useless without this information.” - *Anna K. Behrensmeyer*

“Photographs are great, but drawing what you see is a more powerful way to learn about spatial patterns and relationships. Thought diagrams, such as flow charts, food webs, or time lines, are valuable ways to conceptualize research questions whatever your area of specialty. ... **Even if you are not an expert at drawing, you can make sketches that are much more informative than words would be.** But even if your talents are limited, always include a scale (preferably metric), even if it is a crude estimate, and always indicate north, or up versus down, or the direction to some known place ... It is also important to label your diagrams so that you can remember what they mean.” - *Anna K. Behrensmeyer*

“A field notebook is a special kind of journal that adopts the rigorous standards of science while also providing a unique record of our personal experiences as scientists.”
- *Anna K. Behrensmeyer*

“Over the years, I have developed a multifaceted approach to field notes that allows me to record facts, ideas, and observations about my study populations. From these records, **research questions emerged** that I never expected when I was making them.” - *Karen L. Kramer*

“While repetitive observations are the sustenance of science, they can obscure connections and pigeonhole imagination. Understanding the scientific data we collect also requires being alert to clues about interrelationships that are often outside the initial research problem. Narrative by nature is relational, and **recording events, thoughts, speculation, and anecdotes as well as quantified data brings our curiosity back from the field.**” - *Karen L. Kramer*

“Important connections are often made by accident, outside the bounds of our research agenda. How we record field notes opens or closes us to the unexpected.” - *Karen L. Kramer*

“Given the new research on how the brain processes visual input and given that drawing is a mental process, no further justification need be made for **the utility of drawing in lifting out relevance from within the chaos of actual visual experience.**” - *Jonathan Kingdon*

“Learning to discriminate between what is significant and what is irrelevant to the question at hand is an essential part of field studies, and just such discrimination is integral to the act of drawing.” - *Jonathan Kingdon*

“The act of drawing serves to remind us that hands are agents of thought and experiment. The great cave drawings of Africa and Europe attest to that truth no less than the sketchbooks of Leonardo da Vinci. Photography has a great future, especially in the hands of imaginative scientists, but no matter how much ancillary wizardry photography accumulates, it will not be in competition with ‘drawing’ ... **There will always be a role for exploration by the hands, ... its very simplicity commends it to the field biologist.**” - *Jonathan Kingdon*

“Although technological innovations have provided powerful new tools for documenting information, **all field scientists can benefit from understanding how to think visually and can use simple drawing techniques to improve the way that they document their corner of the natural world.**” – Jenny Keller

“Use of a camera can impart a false sense of security ... It is only later that we may discover that something crucial is missing: there is no view of the underside of the leaves, for example, or the animal’s tail does not appear in any of the photos. On the other hand, **a simple image drawn on the page provides a perfect framework on which to record (and assess the thoroughness of) our observations.** Basic shapes, arrow, circles, spots of color, and written notes can effectively document important field marks. A single line may be used to describe the arc of a hummingbird’s dive, or the angle of a bird’s central axis as it perches.” – Jenny Keller

“... scientific illustrations can achieve certain things that photographs cannot. A good illustration can portray difficult-to-photograph or rarely witnessed events.” – Jenny Keller

“**To start the process of familiarizing myself with a subject, I study reference materials before going out.** A review of species descriptions and photographs, if available, helps me begin to form a mental picture of the organism. This process can also call my attention to gaps in information, alerting me to particular features to look for and questions to ask.” – Jenny Keller

“Looking at and drawing negative space can help us **set aside what we think we know and pay attention to what we actually see.** This is one of the foundations of good artistic (as well as good scientific) observation.” – Jenny Keller

“**I recommend thinking about field sketching as just another way to collect information rather than an effort to make pretty pictures.** ... When I release myself from caring about the prettiness of the results, I often work faster and better.” – Jenny Keller

“... compose your notes as if you were writing a letter to someone a century in the future. **Writing for an external audience requires you to be more explicit in your descriptions and to take less knowledge for granted.** ... The goal is to **paint a picture of the current context of your work, so that someone else can see the landscape through your words.** ... This approach requires a little extra time and attention when writing your notes, but the resulting document will be far more valuable. ... **Write so the picture is clear for an external audience, and it will be clearer for you as well.**” – John D. Perrine & James L. Patton

“**Don’t trust your memory, it will trip you up, what is clear now will grow obscure; what is found will be lost.** Write down everything in full; time so spent now will be time saved in the end, when you offer your researches to the discriminating public. **Don’t be satisfied with a dry-as-dust item: clothe a skeleton of fact and breathe life into it with thoughts that glow; let the paper smell of the woods.** There’s a pulse in each new fact; catch the rhythm before it dies.” – Eliot Coues, 1874 (as quoted by Perrine & Patton, 2011)

(above) selected from *Field Notes on Science and Nature*, ed., Michael Canfield (2011) – excerpted by J. Purrenhage

(below) adapted/modified from *The Laws Guide to Nature Drawing and Journaling (Laws 2016)*

PROMPTS TO DEEPEN OBSERVATION

I NOTICE ...

Scan your environment – notice what surrounds you.

“Look at structure, behavior, color, interactions. Change your perspective: look up close or far away and see what else you can observe. ... Pay attention to what surprises you. This gives you insight into ways that the world is different than you had thought.”

I WONDER ...

Keep track of your questions on the page as they come to you.

“Your questions might be connected to an observation you made earlier, or they could be about any aspect of what you’re observing. There is no need to worry about answering the questions yet. Just get them all out there.”

IT REMINDS ME OF ...

Let your imagination and associative memory make connections.

“[Be] uninhibited in this step. ... Try looking at individual parts of the object, then back up and examine it as a whole. ... [Noting] what you are reminded of connects what you observe in the moment to what you already know. By placing your observations and ideas within the framework and knowledge of the world that you already carry, you will gain a stronger memory of your experience. This part of the process can also lead to scientific understanding.”

EMBRACING MYSTERY

“We are born into curiosity, a quality that can either be developed or degraded by experience and can always be enhanced by practice. Think of curiosity as a skill that you can improve over time. You can train yourself to find rich questions hiding everywhere.”

“Some naturalists can name every species they see. ... There is a special word for these experts: liars. No one knows it all. This pressure to look smart and competent keeps us from publicly wondering and admitting when we do not know the answer. ... Not knowing the answer is okay.”

ASKING QUESTIONS

“It is not necessary to know something’s name to ask an interesting question or make a discovery about it. Ask as many questions as you can, and don’t worry if an answer seems beyond your reach at first. **The process of asking questions in and of itself is important.**”

“**By asking a rich question, you engage your brain to explore more deeply and to focus on a chosen topic.** A question provides structure within which to organize observations and related thoughts, and it prompts you to look for other details that are germane.”

“Embrace your curiosity. ... **If you can come back from a stroll in the woods with a new and provocative question in your head, you have tapped into a rich part of being alive.**”