Field journals| Connecting people with place

Carolyn Duckworth

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FIELD JOURNALS

CONNECTING PEOPLE WITH PLACE

Professional Paper for Environmental Studies

by

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5 December 1994

Approved by

Chair, Graduate Committee

Dean, Graduate School

Date
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INTRODUCTION
A LIFE-LONG JOURNEY

Pink and orange—and neat rows of writing. That’s what I remember about my first field notes, taken when I was in Mrs. Taylor’s sixth grade class at Larrymore Elementary in Norfolk, Virginia. Taken twenty-eight years ago, in 1966, after a field trip to the Lynnhaven estuary, except no one called them estuaries back then. We called it Lynnhaven Inlet, and we went there at stinky low tide so we could look for critters. When we found something, we were instructed to draw it and write about it. I was astonished and amazed. Drawing? For science? What fun!

I drew a crab, and my memory is of a pink and orange crab, although I doubt such a crab skitters across the sand of Lynnhaven Inlet. I also remember how much I enjoyed the freedom to do two things I loved—drawing and learning about animals. I remember how it opened my mind to the possibilities of art and science and the world. That’s a memory that was lost until three years ago, when I was cleaning up and throwing out in preparation for my first big move in sixteen years. A blue square scrap of paper floated out of an envelope. One side was covered with cartoons, jokes, and a note from Mrs. Taylor—“So you don’t forget your sixth-grade teacher.” I had, but that note brought back the predictable flood of memories, including that long forgotten first field journal.

During the three-year transition that was culminating in this move, I had often wondered how I had come to be someone so in love with the outdoors, so passionate about protecting the environment, when as a I child I spent more time inside reading and playing cards than outside running and
climbing trees. My family mowed the lawn and played at the beach, but when we went to the beach it was to run and scream and splash, not watch birds or inspect crabs. But I had always been a child profoundly influenced by a few significant adults, and Mrs. Taylor had been one. Her revelation that art and science could be combined reemerged 26 years later when a colleague suggested that I teach a workshop on keeping a field journal.

Although my parents kept some of my school work, that sixth-grade journal is long lost, never completed. We moved that winter north and inland, and I wrote no more in a journal until my hormones kicked in full force and I began the agony and ecstasy roller coaster of adolescent love. Then I filled spiral notebook after spiral notebook with pining poems of unrequited or requited love, depending on the boy and my mood. I kept such personal journals until I was in my 20s when my energy turned toward developing my career in writing and editing. After that, I rarely wrote in a journal, until 1990.

“Carolyn, you’re just the person I was looking for,” Sheri greeted me at the coffee dispenser in the cafeteria one Monday morning. We both worked at the National Wildlife Federation’s offices in suburban Virginia, she as a coordinator of member vacations and I as an editor for their children’s magazine.

“Hey, Sheri,” I said, pulling a napkin out of the dispenser. “What’s up?”

“I need an instructor for the Rocky Mountain Summit,” she began. My heart raced, I had always wanted to teach at these educational events but hadn’t figured out what to teach. “I need someone to fill in for a teacher who’s canceled at the last minute. She was going to teach a workshop on field journals. You do that, don’t you?”
“Um, well, I . . . not really, Sheri,” I stammered. “I mean, I write down some things while I’m out in the field, and I might make a sketch, but I don’t actually keep a field journal.”

“But you could,” she insisted. “You know how to write and draw, you could teach this workshop. I know you could. You’d be perfect.”

I started to continue protesting, then I took a deep breath. She’s right, you know. You could do it, my own mind insisted. “Yes, you’re right, I could do that, I’d be happy to.”

Two and a half years later, at my going away party when I left NWF to begin my life as a freelance writer, editor, and teacher, I honored Sheri by sharing that story with everyone. Her enthusiastic support had launched me into the world of field journals that led directly to this professional paper for my Master’s of Science in Environmental Studies.

Since 1990, I have led field journal workshops at nine National Wildlife Federation Conservation Summits, sharing my ideas with more than three hundred people. I’ve assisted the Montana Conservation Corps with their educational program which requires corps members to keep a journal. I’ve also taught workshops for the Nature Conservancy and Montana Environmental Education Association.

I’ve become convinced if you want to understand and become connected to your environment, keeping a field journal is one of the fastest ways to accomplish this goal. One simple, periodical act—that of marking where the sun rises and sets on your horizon each day—provides a sense of your place on this earth and in this solar system. Noting when the rain falls—or doesn’t—sets up another rhythmic connection. Making quick sketches of one
or two critters you observe on a walk—another connection. Stopping to smell, hear, and feel the wind, and then describing each sensation—these simple acts begin making your field observations personal and unique.

More detail about how to make those connections will conclude this paper. In between, I describe the various kinds of field journals, discuss their role in education, and profile three people who use field journals or notes on a regular basis. One is an artist whose journal pages can be found on gallery walls and whose quality work is bringing field journals to the attention of the general public. The second is a scientist and educator who has kept systematic field notes for more than twenty years and who is teaching his journal method to amateur naturalists throughout the United States. The third person is an activist whose field notes have been critical to preserving open space in a fast-growing part of the United States. Each keeps journals in very different ways and for different purposes, but all three people agree that field journals can unite people with place, and that such unions are vital to the well-being of our world.

I encourage you to read the entire paper. You’ll find history woven into the profiles, methods described in all three parts, and examples throughout that will illuminate all of the text. Each part ends with brief notes; you’ll find the full citations listed in the bibliography at the end. My goal is to help other people begin field journals that encourage attentiveness to ourselves and our environment.
ACKNOWLEDGMENTS

Many people have helped me on this journey, and I am grateful for their assistance and careful consideration of my work. In particular, I thank my original advisor, Lee Metzgar, and my graduate committee—Carol Brewer, Ron Erickson, and Bill Kittredge. Their belief in my work and their strong support helped sustain me when I felt mired in details and deadlines. Their attention to my research and writing enhanced the final product immeasurably. And their friendship has enriched my life.

People who generously provided me with examples include Jim Berkey, Erick Greene, Dennis Knight, Jack Laws, Jeanne Peterman, Kim Russell, George Schaller, and Byron Weber. This paper shines because of their work.

Three people were especially generous with their time and journals—Hannah Hinchman, Jim Halfpenny, and Will Kerling. All three inspire me with their work and their spirit.

In addition to Sheri Sykes and Nancy Taylor, the two key people who helped set my course, I must thank my family and friends whose faith and support in my vision enabled me to move more than two thousand miles away from them to explore field journals and earn this degree. Their continued support, along with the love and encouragement of my new friends in Montana, provides the energy I need for the future.
PART ONE
CONNECTIONS
CHAPTER 1
SO WHAT IS A FIELD JOURNAL ANYWAY?

A Rather Long Journey

I have been collecting examples of people's journals—particularly field journals—since 1992. This collection effort is often hampered by the fuzzy understanding that we have of journals:

“Well, I keep notes on cards; does that count?”
“I scribble notes in a spiral pad then transfer them to the computer later.”
“I don’t really keep a journal; it’s more of a diary.”
“I can show you my field journal, but my personal journal is for my eyes only.”
“My journal is really more of a creative journal than a field journal, although I do keep some field notes.”
“I keep lists of what I see, but not really a journal.”

All of these interpretations belong to the broad “field journal” category. Nevertheless, I felt like I needed a more specific definition. Follow along now on this journey to define journal. (By the way, journey is defined as a traveling from one place to another, usually taking a rather long time.)

First, I collected other people's definitions of field journals:

Journal is about things outside of you and how you interpret or use them; Diary is a personal account of feelings from within yourself, about yourself; Log is more systematic, records observations and data, contains minimal personal reflection.
—Bill Hammond, environmental educator

A nature journal . . . evolves into an illustrated record of natural events; . . . it will contain field notes and sketches, scientific, observations of nature, as well as personal reflections, poems, and essays.
—Mark Baldwin, Director of Education, Roger Tory Peterson Institute
Journals are meant to be done while traveling, and are best written when the observer can cover a limited amount of ground in a day, carefully noting what he sees, contemplating and interpreting the landscape, counting things accurately, stopping to identify plants or investigate rocks that may be present.

—Steven G. Herman, author, The Naturalist’s Field Journal

Given that variety, I decided to see what the dictionary had to say. My lapsized Random House-Webster’s College Dictionary (RHD) was silent on “field journal,” but offered these relevant definitions:

Diary: a daily written record of one’s experiences, observations, and feelings. from Latin diarium daily allowance, journal = di day + arium ary

Journal: a daily record, as of occurrences, experiences, or observations. Middle English from Old French journal (daily) from Late Latin diurnal (diurnal)

The Oxford English Dictionary made these distinctions:

Diary: A daily record of events or transactions, a journal: specifically, a daily record of matters affecting the writer personally, or which come under his personal observation.

Journal: A record of travel; a daily record of events or occurrences kept for private or official use; a record of events or matters of personal interest kept by any one for his own use, in which entries are made day by day or as the events occur.

Journey: An ordinary day’s travel, the distance usually traveled in a day; the daily course of the sun through the heavens; any course taken or direction followed.

And yet, when I look at all the varieties of journals I’ve accumulated, I see nothing that exactly matches any of these definitions. And so I offer my own definitions, which will in the short term serve the reader best and can perhaps in the long term offer clarity for future journal enthusiasts.
Karen Land, a student at the University of Montana, keeps a personal field journal.

I'll be using these definitions throughout this manuscript, except when quoting someone who has a different understanding of journals.
From Near Long-Ago to the Faraway Today:
Who Has Used Journals?

A brief history of journals was buried near the end of an article that went out from the Associated Press in 1993. Entitled, “Diary Dilemma: Personal journals popular despite a history of trouble,” the article discussed the problems that personal journals created for Senator Bob Packwood, whose daily entries recorded his behavior toward female co-workers. The author, Mike Feinsilber, described journaling as the keeping of a spiritual diary that goes back to “the mystics and early saints of Christianity.” He quoted a Catholic theologian saying that the practice helped him find “a quiet stream underneath the fluctuating affirmations and rejections of my little world.”

The tradition of spiritual journal keeping has traveled through time to engage the Puritans, nineteenth century Transcendentalists, and today’s Mormons who consider diaries to be paths of communication to God and guides to posterity. But some scholars believe that journal keeping began long before Christ; they consider the cave paintings of Lascaux to be a form of journal. Given this broad definition of journal, we could also count the petroglyphs and pictographs that provide a visual connection among the canyons of the southwestern United States as early travel diaries.

According to Sharyn Lowenstein, who contributed a chapter on the history of journals to The Journal Book, Japan’s tradition of travel diaries dates to the tenth century when priests and other officials began traveling extensively. Their diaries contained a mix of clear description and creative interpretation. Across the world, privileged upper-class boys wrote travel diaries as they traversed Europe during the Enlightenment, while the journals and logs of European explorers helped people at home see some of what they had
discovered. In the nineteenth century, European-American pioneers recorded their journeys in journals sent back to others undertaking the same trip.  

During the same century that plains pioneers were recording the stark facts of life in the relentless wind, other journal keepers were turning more inward as they wrote pages and pages in increasingly personal journals. The 1800s saw many of these diaries come to light as published documents; this phenomenon continues today.

Even Bob Packwood anticipated that his journals would be published—but long after his death, not while he was still in the Senate. Although many people today say that they keep private journals not meant for anyone else to read, the truth is that most of us know that someone some day will find our books. Thus we leave out details, omit names, use codes—unless we keep field journals, whose most scandalous entries might detail toxic dumping instead of sexual harassment.

From Lewis & Clark to Computers:  
A Brief History of Field Journals

Although we could consider petroglyphs and cave paintings as legitimate field journals, the more recent history of field journals can begin with the transcontinental trek of Meriwether Lewis and William Clark. When Thomas Jefferson sent forth Lewis and Clark to survey the lands west of the Mississippi River, he instructed them to record everything they saw or did. According to historian Paul Russell Cutright, "It has often been said that the Lewis and Clark party was the writingest crew on record, for . . . at least eight of that group did pen day-to-day accounts." Hundreds of pages later, Lewis and Clark completed their mission. Their records described landscapes and wildlife that few European-Americans had seen before. When passing Lolo
Hot Springs, in the Bitterroot Mountains, Clark noted, “I found this water nearly boiling hot at the places it spouted from the rocks . . .” Later, on the Columbia River, the expedition recorded:

October 30th, 1805: We came to mouth of a river on the right, where we landed: . . . its banks possess two kinds of timber which we had not hitherto seen: one is a very large species of ash, the other resembling in its bark the beech; but the tree itself, as also the leaves, are smaller.\textsuperscript{11}

Lewis and Clark’s records also serve as base data for current explorers—conservation biologists, ecologists, environmental activists—searching for clues of change and stability in the ensuing years.

Less than thirty years after Lewis and Clark’s grand journey, Charles Darwin embarked upon his own immense trip. Beginning on 24 October 1831, he filled his notebooks with observations as he sailed on the HMS Beagle:

January 11, 1832: Caught a Portuguese Man of War, Physalia.—Getting some of the slime on my finger from the filaments it gave considerable pain, and by accident pulling my finger into my mouth I experienced the sensation that biting the root of the Arum produces.\textsuperscript{13}

August 1835: Thenca (Mimus Thenca). These birds are closely allied in appearance to the Thenca of Chile. They are lively, inquisitive, active, run fast . . . I imagined, however, its note or cry was rather different from the Thenca of Chile . . . \textsuperscript{14}

Darwin rewrote his field notebook entries into journals, which have been widely read since they were published in 1839. The notebook entry dated January 11, 1832 became the following entry in the published journal:

January 11th: I am quite tired having worked all day at the produce of my net.—Many of these creatures so low in the scale of nature are most exquisite in their forms and rich colours.—It creates a feeling of wonder that so much beauty should be apparently created for such little purpose.\textsuperscript{15}
Rewriting entries is just one of the ways in which field notebooks can be utilized. Darwin also used his notes to think through the meaning of what he was observing among the varying animals of the islands around southern South America and the Galapagos. These musings formed the beginning of his theory of evolution by natural selection.

Henry David Thoreau recorded what was around him, creating “an exhaustive study of the way things work, the way things move, how they act and what they do.” His journals spanned his entire adult life, and included descriptions such as this from April 3, 1858:

When returning, we discovered, on the south side of the river, just at the old crossing-place from the Great Meadows, north of the ludwigia pool, a curious kind of spawn. It was white, each ovum about as big as a robin-shot or larger, with mostly a very minute white core, no black core, and these were agglutinated together in the form of zigzag hollow cylinders, two or three inches in diameter and one or two feet long, looking like a lady’s ruff or other muslin work, on the bottom or on roots and twigs of willow and button-bush, where the water was two or three feet deep.

At the end of the 19th century, another naturalist—Joseph Grinnell—came of age who would profoundly influence the note-taking of scientists. He began his career as a naturalist while still a teenager, and pursued an academic career that lasted more than 40 years.

In 1908, Grinnell became director of the Museum of Vertebrate Zoology at the University of California, Berkeley. The first day of his first field trip with the museum, he numbered the first page of a new scientific field journal with “1.” Thirty years later, just before he died, he wrote in his field journal one last time. The page number was “3005.” Such orderliness is characteristic of the style of scientific field note-taking that commonly bears his name.
The Grinnell System

Steven Herman, whose book, *The Naturalist’s Field Journal*, describes the Grinnell System, says other scientists may have used this system but that Grinnell was the first to describe and promote its use. Grinnell described his method of taking field notes:

The field collector . . . writes his records on the day of observation with carbon ink, on one side of the paper only. The floral surroundings are recorded, especially with respect to their bearing on the animal secured. The behavior of the animal is described and everything else which is thought by the collector to be of use in the study of the species is put on record at the time the observations are made in the field.

He continued to explain why such precision was necessary. It was Grinnell’s intention that someone could visit the Museum of Vertebrate Zoology at the University of California in one hundred years and find a detailed, complete record of the flora and fauna of California.19

If you were following the Grinnell system, you would enter information in a field notebook, a field journal, a species account, and a catalog. The field notebook can be of any size and style; its purpose is to provide you with a place to jot notes during a busy day. At night, you would transfer the jottings into a permanent, bound journal with numbered pages and dated entries. Using waterproof ink and a technical pen, you would carefully describe the activities and observations of the day, including details of the locations, the animals and plants observed, the weather, and the habitat. The entries would follow a particular format; including how time is recorded, species are named, and directions transcribed.

Upon completion of the detailed journal entry, you would then enter information into the species accounts. Typically, you set aside one page per species, adding entries whenever you observe the plant or animal. If specimens are collected, the scientist enters information about each item into a catalog. This was a more prevalent part of field journals in earlier times when naturalists collected specimens routinely.

Most field scientists use some variation of the Grinnell system whether they call it that or not. I’ve also adapted some of its features, such as using a field notebook to collect information while moving quickly but then transferring my notes to a bound journal later. Although this method is time consuming, it enables you to review your notes and allows you time to reflect upon what you have seen.

Although they might not follow the Grinnell system, the scientists I interviewed all kept journals in a consistent format, and many cross-referenced their information. Some still use bound journals, others fit their notes into calendars, some enter data directly into laptop computers. Their goals remain the same: To record data in a systematic way that they can access later to piece together the bigger picture, and that future scientists can also interpret.

As we continue to study the world around us, someone somewhere will be keeping some kind of field journal. Why we do so, and who is doing so, are expanding from the traditional scientific role of field journals into roles they can play in personal growth and community activism.
Why We Keep Field Journals

Naturalists, writers, and artists keep journals because they help deepen our perceptions of what we observe. When observing and recording something in detail, we engage our minds fully and remember what we have observed more clearly. We also establish connections between our current observations and what we have observed in the past. The thought processes opened up during such observation and connection illuminate the world in ways we might not expect. Sometimes this happens automatically; sometimes we must consciously ask questions of what we’ve seen.

Ann Zwinger—a naturalist, artist, and writer—values those unexpected, automatic connections. When they occur, she immediately writes down her thoughts. She says that “ninety percent of the time these paragraphs translate directly into text with just a little cleaning up. . . . You treasure those times.”

On a dig, or when he is prospecting for bones, paleontologist Jack Horner writes, sketches, and maps “so I can remember what it was and where it was; you should be able to reconstruct your entire day, every single minute.” After a few days of recording details, he sits back to look at the overall scene and ask questions that help him piece together the story of Earth’s history through time.

Scientists sometimes return to their field journals to produce new writing. To write Mountains & Plains: The Ecology of Wyoming Landscapes, botanist Dennis Knight turned again and again to his collection of field notes taken as he traveled the highways, roads, and dirt tracks of Wyoming. “I couldn’t have written the book without the extensive travel notes taken along the way. Twenty-five years of observation made a big difference in what I wrote about.”
Another scientist, Frank Craighead, published *For Everything There Is a Season*, a day-by-day guide to natural events of the Greater Yellowstone Ecosystem. His text weaves years of field notes into observations and descriptions of the variety of life in the landscape he has inhabited for most of his adult life. His interest in field notes began when he was a child, exploring his environment with his family. "When something was of special interest,
I dated and recorded the event in a pocket notebook, along with pertinent data on temperature and weather conditions. Regularly, I noted and recorded concurrent seasonal events." After a lifetime of keeping notes, he said "The results of this approach to taking field notes may help provide insight into the interrelation of events and the interdependence of life forms."^{23}

Charles Roth, a naturalist and writer, believes journals help adults regain the powers of observation we had as children:

\[\ldots\] the ability to really see and observe is something most of us have as young children but that our culture inadvertently trains out of us. However, it is a skill almost everyone can regain if they wish and once it is regained, it is like crossing a one-way threshold—you never see the world again in quite the same way.\^{24}

Gary Paul Nabhan, an ethnobotanist and writer, is another eloquent advocate of the value of keeping field notes. In February 1988, he and Ann Zwinger participated in a public session devoted exclusively to how writers use field notes. He explained that "It's the sensory data that I want to record in detail so that it prompts me as soon as I read it to re-experience a particular moment."\^{25}

Nabhan also pointed out that scientists and artists reap the rewards of careful observation in similar ways:

When we notice something new that we haven't encountered before, it is because we've jarred ourselves out of our normal world view. \ldots I believe that moment—the "Eureka!" moment—is at the root of most scientific advances, as it is for most art and for nature writing.

When artists and writers pay as much attention as scientists do to recording their observations, their personal field journals become valuable as scientific field records. Nabhan explained that a future scientist could use
Zwinger's personal field journals as a guide to research "that we can't even imagine" because her observations are so detailed and accurate.

Zwinger said that such detail helps her when she's back in her office. When she's sitting in front of her computer, she remembers field experiences in "full blown, in wonderful and exhilarating detail" that return "filtered through time and absence and distance, with great glowing clarity."

The field journals of amateur naturalists may also play a role in scientific inquiry and environmental activism. Byron Weber, a teacher in Missoula, Montana, has kept detailed field notes of his immediate living area and of the Sweetgrass Hills in north central Montana. He contributed notes about this island mountain range to the Bureau of Land Management when it was assessing the potential impact of a proposed gold mine.

The numbers of people who are keeping field journals—including the general public—appear to be increasing. One instructor alone, Jim Halfpenny, has trained hundreds of students in the art of keeping field journals in just the last few years. His experience indicates that more amateur naturalists are observing our world than ever before. If even a small fraction of them are keeping field journals, we can be sure that more data is being collected than in previous decades. Halfpenny explains the value of these records:

A lot of our knowledge of the west is from Lewis & Clark journals. We are going to see another change of that magnitude in the next 50-100 years as global climate changes, and this time it will be better documented. People who have been keeping notes about their orchard or backyard, that little plot of trees down in the corner, they are producing records of the change that is occurring.

Beyond immediate scientific need, beyond personal pleasure, I believe the true value of our field journals, whatever methods and styles we use, lie in the possibility that these records of our backyard gardens, our daily bird
sightings, our wanderings in our world may one day be of immense value to naturalists looking back at this turning of a millennium.

Ways of Keeping Field Journals

People keep field journals in a variety of ways, choosing the methods, styles, and tools that work best for them. What you choose depends, in part, on your objective for keeping a journal. If you are interested in recording notes about natural history that may be useful to other people, then you need to use some sort of system that other people can understand. If you are keeping notes for yourself, then whatever pleases you is fine.

Scientists often set specific goals for their journals that anyone can adopt. For example, you can focus on describing what you haven’t seen before, trying to describe it so well that another person can picture what you have observed. You can also attempt to describe a location in sufficient detail that someone one hundred years in the future will be able to locate the same spot.

Whatever your goals or methods for keeping a journal, consider using drawing as well as writing to record your observations. When you combine drawing and writing in journals, you are engaging your entire mind by using the abstract—letters, pictures—to reflect on the concrete—your observations and experience.28

Unfortunately, one of the most common concerns that field journal workshop leaders hear is “But I can’t draw”.29 But simple sketching techniques used in field journals vastly improve our ability to observe and inquire about the natural world.

My own journals have been personal field journals, recording what I observe when I am outdoors, but not in a systematic way. Like many other
people who keep field journals, I draw what I'm observing as often as I write about it. As I've investigated the role of field journals in science and activism, though, I've begun to keep my notes in a more orderly way. I may still write all over the page in different directions and sweep strokes of watercolor across, but I date all my entries, note the weather, and have begun to keep species information in the back of each journal. It's my particular way of blending the science and art of field journals.

Kim Russell's personal scientific field journals record behavior of animals on a Nature Conservancy preserve near her home in Wisconsin.
Techniques for recording field observations vary but share a common goal of preserving the information in such a way that it can be retrieved easily when needed, however far into the future. Before computers, this meant meticulous filing of loose sheets of paper or piles of index cards. By 1980, the *Wildlife Management Techniques Manual* recommended using computer punch cards to facilitate filing and retrieval. Computers have continued to make cross-filing easy—once the data are entered on the disk. For scientists who continue to keep field notebooks, they often enter their data directly onto the computer instead of into a permanent journal.

This switch to computers in the field affects data collection in a positive way, but it also affects the availability of supplies that field scientists have traditionally used. David Love, a geologist, can no longer obtain the field notebook he has used for decades. Other journalists encounter difficulty finding technical pens they have used for years. One salesperson explained that “nobody keeps field notes on paper anymore.”
Jack Horner and other scientists would dispute that supplier's conclusion. "I need to draw, and I draw with a pencil not a computer," Horner said when asked if he still kept a field journal. He then showed a current touch to his field notes: They are the thickest section of his nylon-covered, zippered day-management binder.32

Even though laptop computers will be able to read freehand entries in the future, some scientists and other journal-keepers will continue to use notebooks which you can turn page by page and feel the scratching of pen and pencil upon paper. There's something tangible and sensuous about using a pen and paper, and also something necessarily slow. That slowness allows us to truly see what we are looking at—something so necessary if we are to understand the world we live in.
George Schaller, a wildlife biologist who has spent decades in the field watching animals, uses a consistent style of narrative, description of individuals, sketches of behavior, maps of activity, and charts of sound.
CHAPTER 2
CONNECTING WITH THE ENVIRONMENT:
JOURNALS IN EDUCATION

The popularity of keeping journals extends beyond the general public and into education. Those of us who teach workshops about keeping journals find our workshops filling faster and with more teachers. Teachers who are new to journals want to learn methods appropriate to their classes; teachers who have been using journals are eager to share their ideas and learn new techniques. What are the reasons for this popularity? How are journals used? Who uses them? This chapter summarizes information and examples from educator’s journals and databases, interviews, and personal observations of educators who use journals. It concludes with examples of how environmental educators use journals.

Why Journals Work

Journals are popular as learning tools because they reach across curricula, they are accessible to students with various learning styles and abilities, and they develop a diversity of skills. When we record information in a field journal, we take action by going out to observe something, we reflect on what we observe as we write or draw our observations, and we create something new. These actions cement what we learn firmly in our minds. Categorizing and identifying what we see involves our logical thought processes while drawing and reflection utilize the intuitive aspects of our mind. As we interpret the learning experience in our own language and symbols, we often connect with previous experience and construct new understanding.
Students will approach and benefit from journals in different ways, depending on their particular ways of understanding information.

Consider the 4MAT theory that describes four basic learning styles:

Type 1 learners ask “Why?”
They absorb information that has personal meaning to them; they learn through stories and by making connections.

Type 2 learners ask “What?”
They want facts and information that help them understand something.

Type 3 learners ask “How?”
They want to know how things work; they learn by taking things apart.

Type 4 learners ask “What If?”
They learn by discovering things themselves, by experimentation.

When instructors cover all four learning types in their teaching, they are reaching one hundred percent of their students.

Journals can reach one hundred percent of students if students are allowed or guided to use them flexibly. Aimee Hammond, a seventh grader who leads journal workshops for other students, asked her classmates what it would
take for them to do a journal. They said they didn’t want to be instructed what to do; they wanted choices. Yet Bill Hammond, Aimee’s grandfather, points out that most students need some direction. Their compromise? “Provide them enough specificity to get started but enough openness so they can do what they want.” So Aimee instructed her classmates to draw anything they wanted and then connect it to their life or the environment.41

By providing a specific instruction, “Draw anything you want and connect it to the environment,” but allowing them to fulfill the assignment anyway they choose, the Hammonds allow students to use the journal in whatever way best suits their learning style. For example, suppose that four students who have different learning styles choose the same rock to draw and write about. The student who tends to ask “Why?” may write a story that explains how she found that rock in that particular location. The student who asks “What?” might list observations about the rock and the questions that arise; then think about where to find the information. The question “How?” might lead to speculation about the formation of the rock or how it came to be above the ground. A student asking “What if?” might play with the rock to find out if it breaks easily, makes marks on other rocks, or dissolves in water. That student might then proceed to compare it to other rocks nearby.

Journals make writing accessible to students unfamiliar with or unskilled in formal writing. Students of any age, but particularly elementary students, might begin by writing short lists and phrases—a simple use of journals that gives students a sense of accomplishment and completion.42 They can also record information in their journals, putting their research findings into their own words, documenting who they’ve talked to about a project, or what resources they’ve investigated. Writing exercises that emphasize free
association or brain-storming also provide a variety of ideas that students can experiment with.

One researcher, Nancy Cothern, followed students who disliked reading and writing before being exposed to journal exercises. She found that they began to like reading and writing much more after they had worked with journals for a few weeks because the writing helped them focus on reading, allowed them to express emotions, and helped them study human nature.43

Robin Roth, who teaches classes about gender, required students to keep journals because they help students think, evaluate, and manipulate ideas. She instructed them to begin entries with a question, and then to answer the question. This simple instruction sparked an “inner dialog with the student’s intellectual self that leads to heightened articulation and consciousness of personal viewpoints and knowledge. Thus, the journal encouraged students to develop or establish their own views and voice.”44

The importance of journals in schools is reflected in the following “Guidelines for Using Journals in School Settings” from the National Council of Teachers of English:45

1. People learn and understand new information better when they articulate connections between new information & what they already know.
2. When people think and figure things out, they do so in symbol systems—verbal language, music, visual symbols, etc.
3. When people learn things, they do so in all language modes—reading, writing, speaking, listening.
4. When people write about new information and ideas, they learn and understand them better.
5. When people care about what they write and see connections to their own lives, they both learn and write better. (italics mine).
Some teachers prefer to have students keep traditional personal journals or diaries that only the student reads. Other teachers, particularly those in science, ask students to keep learning logs in which they record class activity, research for projects, and observations. Learning logs are not private; they are reviewed regularly by the teacher. Dialog journals are another kind of journal that is reviewed by instructors—they read the entries, answer questions, provide comments, and may direct inquiry or research. All three kinds of journals encourage reflection and interaction with class content and help students clarify thinking and record meaningful facts and events.

**Drawing Importance**

Although the literature contains numerous examples of the value of writing in journals, a search revealed few examples of the value of drawing. Yet visual techniques are powerful tools no matter what the person’s learning style. Research with young children has demonstrated that drawing an object aids memory more than observation or tracing. This could occur because of the analysis needed to draw something. If kids are given pointers about what to observe and then given the opportunity to draw an object several times, they will remember the object even six months later.

Drawing also provides an avenue for communication to students as young as five years old, to non-English speaking students, and to students who are visual learners and are often labeled “low achievers.”

For young children, writing and drawing are inseparable. They use writing and drawing to test and stabilize feelings, and to explore their surroundings. According to researcher Anne Haas Dyson, “The transforming and elaborating upon experiences through symbol making is one of children’s major ways of learning about their world . . . [they] are not copying the world.
but examining it and, through imaginative creations, manipulating it to express their ideas and feelings about it.\textsuperscript{50}

In Kindergarten, kids write in their journals by drawing what is on their minds and by writing phonetically. They may also can dictate their stories to an adult.\textsuperscript{51}

Too often, though, kids stop drawing as they get older. Why this happens isn’t clear. Perhaps as children get older, they become discouraged from drawing because their skills don’t keep up with their increasing awareness of the details of the world or because an educator has repeated the outdated idea that writing rather than drawing demonstrates increasing maturity.\textsuperscript{52}

Whatever the reason, the result is that visual children lose a valuable learning tool and more verbal kids lose a communication tool that speaks to a variety of people.

\textit{Developing Ethics}

Journals also lead students of all ages into thinking about their ethics as they reflect upon what they observe and consider their actions. Bruce Mathews and Cheryl Riley, who are compiling an extensive review of outdoor ethics education, point out the value of such a direct plug-in of ethics to experience. They describe two basic problems with ethics education—teachers setting the agenda, and choosing abstract problems that don’t relate directly to the students. Instead, Mathews & Riley point out that:

- Students understand issues and ethics more fully if they have a personal interest in the problem being discussed
- Ethics education needs to be grounded in the particular community and cultural context of the students.\textsuperscript{53}
Both of these issues can be addressed through journals if teachers allow students to choose issues for discussion based on entries in their journals. In this way, students are guaranteed to be working on issues they care about and that come from their culture and community.

Journals also help students view their world in a more intuitive, nonlinear way than is normally taught in schools. By promoting this sort of thinking and evaluation, journals also can lead students to think of ethics in the broad context of how our actions affect everything around us. This sort of holistic thinking engages students of both genders who might be left out of the more prevalent ethics education methods of moral dilemma and values clarification. It is also at the heart of what many environmental educators believe to be a changing paradigm in the way humans view and value the Earth.

Making Connections

Journals are used in many disciplines to help connect the material to students' lives. Phyllis Edwards, a curriculum director in Santa Cruz, California, encourages teachers to have students keep journals so that they analyze the facts they learn instead of just regurgitating them. They put the information in their own words, describe how they could use the information, and then think about what the information means for the world. She says a journal "requires students to go beyond inference, to look outside text into their own lives to add new meaning." By adding problem solving, students are analyzing problems and creating solutions by applying what they have learned. These two extensions take traditional learning to a very high level not often found in schools.
Linda Wasom-Ellam, a professor at the University of Saskatchewan, believes that "a crucial aspect of comprehension is the ability to ask appropriate and probing self-questions." She noted that students often began a journal entry with a rhetorical question that helped them understand and synthesize what they were learning. Furthermore, students "speculated on their learning, engaging processes that reflected independent thinking. Existing ideas were connected to new experiences." She concluded that journals can make learning active and personal, allowing students to use their previous experience to interact with material. In this way, they acquire ownership of what they are learning.\textsuperscript{57}

Nancy Cothern cites other studies that show that journal writing organizes thoughts, identifies feelings, records knowledge, and documents personal histories. These journal characteristics create "a tool for facilitating a greater understanding of the transitions which are a part of life, as well as being an appropriate place to connect literary events with life."\textsuperscript{58} I would like to extend her final comment by saying that if journals are an appropriate place to connect literary events with life, they are also useful in connecting any events—including environmental—with one's life.

**Journals in Environmental Education**

The effectiveness of environmental education (EE) is centered around the idea that connecting what we learn with what occurs in our lives will lead us to action. A thorough EE program typically begins with building the foundations of awareness through studying the ecology of a local environment. The building continues as students begin to connect the effect of their actions upon the environment, to investigate relevant issues, and to take action as consumers and citizens.
As we have seen with other education examples and research, journals play a role in this building process. Field journals fulfill the role better than any other kind of journal because they combine field observation skills, drawing and writing, and reflection. Although field journals can be simply lists of species observed, they are most useful as learning tools when students use journals to explore the “why” of what they observe. Students then lead themselves into investigations of how species interact within an ecosystem.

Field journals may become increasingly important if environmental education returns to the basics of “old-fashioned” nature study. Mike Weilbacher, a environmental educator who has taught workshops around the country, recently issued a call for this return to basics:

The road to environmental literacy begins with nature study. . . How can you teach interdependence without naming the partners in the relationship: squirrel and oak, swallowtail and spice bush, hummingbird and cardinal flower? And how can you ever teach diversity without naming the things that we are diverse in?

To think globally, we must teach locally. Teach names. Teach life cycles. Teach life habits and histories. Restore nature study to the special place of prominence it deserves in the profession of environmental education, for nature study is far from a quaint, irrelevant, Victorian pastime. Nature study is the foundation—and the key—to our success. 59

If nature study is the foundation of environmental education’s success, then a field journal provides the long-lasting material for that foundation. Examples from the field amply demonstrate this value.

Patricia McGonegal, a fifth grade teacher, used journals to help her students pick their research topics. She asked them to respond in their journals to this question, “What would you like to learn about trees?” and then helped them choose report topics based on their answers. One child
reported on maples, based on this response: “I want to know about the silver maple. I wonder what bugs live on it and what color bark and why the silver part is more soft and what is the sticky stuff inside the leaves it is gray too.”

When teaching high school students about coral reefs, Sam Mitchell used journals to help free them from linear thinking. By writing about the connections between environmental changes and behavior on the reef, the students began to understand the complexity of this ecosystem. Soon they were questioning impacts of everything on the environment. Mitchell says environmental awareness “sneaks up on them through journals.”

John Owens worked with 7th and 8th grade students who were investigating a stream. He guided their journal entries and included data, conclusions, and some fantasy. Their last entry was to describe what the stream meant to them, the school, and the community. Among other connections they described, one student realized that whatever people wash down their driveways ends up in the stream.

Although environmental education is most frequently taught within the science curriculum, it is also integrated into other subjects or activities. This is the premise behind “Life Lab,” an award-winning curriculum that uses gardens to teach science to elementary-aged children. Their activities include ideas such as adopting a tree and watching it change during the school year, spending quiet time outdoors and writing about the sounds you hear, and tracing your lunch back to its source. Originally, they suggested students keep a “Life Lab Journal” to record observations, draw the garden, and analyze experiments. Now they provide a “Lab Notebook” with ready-made journal pages that dictate what observations need to be made.
Be wary of fill-in-the-blank journals. They are convenient, but can inhibit creativity. If you must provide a format or inspirational quotes, leave plenty of room for the student's own writing and drawing.

Students in Mary Ann Wilkinson's sixth grade class in Pacific Grove, California, map a plot of land carefully so they can compare how it changes during the year.
Baiba Woodall’s first grade class uses journals to record their observations in the field during outdoor excursions related to their science lessons. Woodall also guides them by asking them to respond to questions such as “What do you wonder about?” One child replied, “I wonder how many different kinds of insects are in the pond.”

Two instructors in Lake Charles, Louisiana, are connecting their students with kids across the country using journals on e-mail. Sally Heise and Marie Doucet run a project called “Traveling Biome” that sends out boxes containing information about habitats and inhabitants. Recipients of the boxes are encouraged to send their journal entries to Heise and Doucet. They can also respond to journal questions that the instructors post each week.

In 1994, seven teachers responded to a survey I sent to people who took nature journal workshops with the Roger Tory Peterson Institute (RTPI) in Jamestown, New York. Highlights of their comments follow.

**Mike McGuire** teaches sixth grade in Santa Rosa, California. Each morning his students take “walk-about” around the school and park. They collect words that describe what they sense, then return to class and put words into a shareable format such as a paragraph, poem, or quote. They are encouraged to share but not required to, nor are the journals graded.

Because of training through RTPI, I actively encourage students to draw in their journals. Specific drawing techniques are taught in class and students are given many opportunities to continue to learn how to do contour drawing, gesture drawing, and memory drawing. Students date and describe the weather with each drawing they do. The far end of our play field is lined with 80 foot eucalyptus trees. After doing an observation lesson about trees, students are generally awed about the height of the previously under-noticed trees.
Teaching Teachers about Nature Journals: The Work of the Roger Tory Peterson Institute

The Roger Tory Peterson Institute (RTPI), named after the ornithologist and artist, reaches out to adults around the country from its headquarters in Jamestown, New York. RTPI conducts educational programs designed to “educate and motivate the mentors of children—to create in children a caring attitude about nature that they will need as citizens of tomorrow.” One of those programs teaches teachers how to use nature, or field, journals in the classroom. RTPI’s program coordinator, Mark Baldwin explains their goals for this program:

1. Nature journals are a tool for enhancing observation skills. Drawing from nature can provide us with a bank of rich visual impressions to draw on for writing.
2. Drawing is a skill that we can learn and develop through practice.
3. The workshop provides bibliography and sample lessons so teachers can develop their own programs.

Baldwin also says that our observation skills are improved when we sketch:

While making a field sketch, nature itself becomes the teacher, revealing secrets that only the sketching-trained eye can readily detect. What is more, sketching and drawing make recollection [of an experience] more vivid.

During the six-hour workshop, participants practice their observation skills, learn traditional sketching techniques, experiment with creative writing based on nature observation, and identify how nature journals can implement learning strategies. Baldwin also works with participants to identify dozens of ways that nature journals can be integrated into the classroom. After attending this workshop, teachers report using a variety of these techniques in their English, social studies, and science classes.

Because the program is designed to train teachers to teach other teachers, RTPI has the potential to reach dozens more teachers than actually attend the workshops. This potential positions RTPI in a leadership role advocating the increasing interest in basic nature study and in keeping journals.

Sheryl Hockenbery teaches high school biology in Annapolis, MD. Her students keep nature observations in their journals, sketching samples, keeping species lists, and recording their observations. “Using journals helps the students to experience nature in new ways by looking at minute details and at big scenes too.”

Hockenbery gives students full credit for completing journal entries, regardless of effort. “I just started using journals after a workshop in Spring 93—I hope to increase their application in my classes.”

Joan Sanders is a 6th grade math and life science teacher from Crownsville, Maryland. Her students keep nature journals for extra credit, to record what their senses
observe and the ideas, feelings, and questions that result. She encourages them to draw in their journals because it will often trigger the memory better than words and because students whose writing skills are less defined are often more willing participants if they can sketch an observation. "The journal invites attention to detail for some and flights of fantasy for others." 

_Evelyn Suchar_ teaches 8th grade English in Jamestown, New York. She uses nature journals as part of an on-going writing process. She introduces the idea in a workshop each fall, describing drawing techniques, standard entry material (date, location, weather, etc.) and writing techniques. Throughout the year she requires at least one nature journal entry a week. In the spring she conducts a second nature journal workshop that directs students to draw something you observe in nature, research a myth about the subject, and write your own myth. "As a trained nature journalist of the RTPI, I know the value personally in my greater appreciation of the natural world and attention to detail journaling has taught me. I only hope to pass this on to my students." 

_Cheryl Poppenberg_ teaches 4th and 5th graders. They keep three kinds of journals—personal, dialogue, and nature. In the nature journal, they record what they think and see, describe colors, where they are and what the area is like. Poppenberg encourages them to draw because it is sometimes the best way for them to share what they think or see. She assesses the journals by having students share either with the group in a sharing circle or with the teachers.
Bea Nicholls teaches 5th grade in Baltimore, Maryland. Her students keep a naturalists journal to improve their skills of observation, language, thinking and math. They record environmental observations, motivation, and enjoyment. They observe a plant or area throughout the year and observe changes; they use their notes and drawings to look up animals in field guides. She encourages them to draw because “the more they draw, the more they see to write about and vice versa.” Nicholls also believes that “journals are very motivational for students who do not like to write. Also, as they learn to appreciate the environment, they become very protective of it.”

Jo Haney teaches 3rd grade in East Boothbay, Maine. Her students use journals in science. They sketch observations, research notes, field trips, record the weather daily. She encourages them to draw because “observation sketches are a powerful tool for learning especially at this age.” In a sample student journal, you can see the observations, the acquired knowledge, and the sketches. Missing were the connections and reflections that she has observed other students making when they refer back to their journal during the year.

Although most of these examples are from pre-college classes, the effectiveness of journals extends beyond the traditional, formal class. Journals are often required in nonformal schools such as the Teton Science School and the National Outdoor Leadership School. They are also used in the educational programs of conservation corps around the country.

During the summer of 1994, I worked with the leaders of the Montana Conservation Corps to develop the role of journals in their educational program. Young adults who sign up for the corps must meet certain
educational requirements during their tenure, including keeping a journal. I led a workshop for leaders and checked in with several crews during the summer. Although most leaders had been supportive of the idea, the practice of keeping journals often fell off in the reality of ten-hour workdays and camp chores. Those who were able to maintain their journals, though, reported that the practice was valuable for helping them work out the issues inherent in group work and living situations, and for providing them with outlets for creative expression. Although the crew journals were personal, a couple of crew leaders used nature awareness activities to spark increased interest in using the journals. They also encouraged their crews to record and process information about local environmental issues being discussed in the education program.

Most of my other students have been adults attending workshops at educational vacation programs. They examine their world with renewed interest and enthusiasm once they are introduced to field journals. Mark Baldwin, of the Roger Tory Peterson Institute, has also worked with seniors in the Elderhostel program who were eager and skilled at expressing themselves in nature journals.76

As Bioregional Teaching Tools

Bioregionalism, an environmental philosophy that recommends a holistic style of living within ecological rather than political boundaries, promotes education that emphasizes active participation in learning about the interdependence and kinship of humans with all that exists in local ecosystems and "affirms the importance of handing down traditional local knowledge and wisdom."77 Bioregional education is "simply learning about the flora, fauna, soils, land forms, and climates in their bioregion".78
Field journals are uniquely suited to the task of teaching people about their bioregions because they encourage us to record what we observe in our local environment, describe our connections to the other living things around us, and allow us room to create those connections. Although I didn’t find educators using journals specifically to teach about bioregions, people who emphasize holistic environmental ethics and learning about the local ecosystems are teaching about bioregions.

An example from my own experience illustrates this point. In July 1994, I taught a three-day journal workshop for kids who lived near the Nature Conservancy’s Pine Butte Swamp Preserve in Choteau, Montana. I covered the basics of field journals—what they are, what you record in them, how to draw and write effectively in them—and I also led the students through a series of mapping and observation exercises designed to illustrate the idea of bioregions. The students mapped their arrival at the schoolhouse, the school yard, the route from the school to a nearby riparian area, and finally the route taken to a mountain stream. Their maps included plants and animals they observed at each site and along each route. The series culminated as we gathered around a map of Montana and identified where we had been and how all the water systems we had studied and mapped were connected. We traced their flow into larger and larger rivers until we had “flowed” out of the state. The word “bioregional” was mentioned in the last hour of the last day, when they already understood the idea. They carried home their own personal descriptions of the word in their journal entries—descriptions that contain more power than any one sentence on a chalk board.

Students who attend eight-week wilderness sessions of the Sierra Institute at the University of California, Santa Cruz, often begin their class
journals by answering a list of bioregional questions about where they usually live (page 124). They repeat the assignment at the end of the program, but answer it in terms of the region where they have been living for eight weeks. According to institute director Ed Grumbine, the students clearly see the impact of their learning because they know more about the bioregion they are visiting than the one they live in.79

**Leading to Action**

By connecting students to what they are learning, journals can also lead them to action. Bill Hammond says that “people choose to act not from a cerebral or pure rational stimulus but from an emotional (limbic/reptilian) stimulus. Thus, they act because they feel, value, believe . . . and the information and data available reinforces these emotional stimuli to action and may shape the approach to action.”80

Randy Mills, a high school social studies teacher, describes this example: He read a student’s journal entry that described his anger about a particular school policy. He asked the student if he could bring up the issue for discussion in the class, and the student agreed. During the discussion, the students decided to prepare a presentation to the school board about their concerns and their suggestions for change. They didn’t get everything they asked for, but they did achieve some change. Mills says, “Before people become active citizens, they need to feel that civic action has some personal meaning.” He concludes that journal writing “can help students understand how their lives are connected to the school and the community. In turn, this activity may cause many students to become active in school and community events and in the political decision-making process.”81
Since the mid 1980s, environmental education theorists and researchers have been insisting that the final goal of environmental education—taking action—is too often overlooked. Journals can play a specific role in creating the impetus for this final step by leading people to action as they question their surroundings. Ed Grumbine touched on this idea in his master’s thesis in environmental studies at the University of Montana:

Exploring a different external environment directly leads to questioning internal values. My most successful programs have fully integrated the study of ecology and management problems with inquiry into the values that underpin man’s relationship with the natural world.

When we look back at the examples covered in this chapter, we find several significant examples of journals leading to action. Sam Mitchell’s students discovered that “almost everything we do impacts the environment.” John Owen’s eighth grade science class realized that “what we pour down our driveways winds up in the stream.” If instructors look for these entries, they then have the key to connecting effective action strategies with what students care about. They then have the opportunity to guide students into appropriate action within their local ecosystem, within their bioregion. They have the perfect opportunity to give meaning to the tired but still true axiom, “Think globally, act locally.”

**Into the Future**

Although journals are widely used in education today, they are not universally accepted. One of the biggest complaints about journals involves privacy. This issue became the subject of national debate in the 1980s when the U.S. Department of Education held public hearings on the Hatch
Tips & Troubles

Teachers often resist using journals. A frequent complaint is that journals are time-consuming and hard to evaluate. If teachers can be flexible in their requirements, though, they will find journals to be manageable and valuable aids, and ideal evaluation tools. Journals clearly track students' understanding of a subject and their work in the class, and thus provide performance-based assessment in many subjects. If you allow students to select what entries they share, you give them the option of privacy and you allow them to evaluate their own work. You also reduce the amount of reading and checking you must do.

Veteran teachers recommend these time-savers:
• Check for entries but don’t collect to read.
• Have students select entries for evaluation.
• Assign each student a folder for journal entries they have selected for you to read or evaluate.
• Scan student-selected entries into computer.

To protect student privacy:
• Establish privacy rules at the beginning of the school year and follow them.
• Make sure students understand what issues you must report to legal authorities.
• Don’t read the journals; check for use by asking students to hold up or flip through pages.
• Allow students to select what you can look at.
Edward Jenkinson, who has studied the question of privacy in school journals, also suggests that teachers:
• Remind students that good writing often includes personal experience, but do not ask for specific information about the personal life of the family.
• Request non-secret, non-threatening feelings, thoughts, or beliefs
• Establish that class journals are not diaries, but are journals directly related to the coursework.

To encourage student use of journals:
• Keep the same kind of journal that you ask of students; work in your journal during the same time that students work on their journals.
• Schedule journal-writing time into the class, at least once a week.
• Schedule sharing sessions, but make sharing optional.
• Consider keeping the journals in the classroom
• Check out “Exercising in the Classroom” in Part Three, Chapter 6 for journal activities.

Amendment, more formally known as the Protection of Pupil Rights Amendment. Disgruntled parents complained about teachers who asked students to describe their feelings or opinions about anything.

This outcry led Edward Jenkinson to study the question of privacy in school journals. He points out that “many students reveal secrets about themselves and their families because they trust teachers . . . When such information is volunteered, it is certainly not an invasion of privacy.”

Instructors who are concerned about invading student’s privacy can continue to use journals as teaching tools by establishing guidelines for appropriate entries and directing journals.
toward particular subjects. They can also take more advantage of the uniqueness of field journals to provide a combination of creativity, concreteness, and crossing curricula.

Even so, instructors must tailor the use of journals to their students' learning level and age. Hannah Hinchman, who teaches the art of creative journals, is particularly concerned about asking students to engage in activities that their age group is likely to rebel against. For example, if she were teaching middle school kids, she would focus on concrete observations. "Kids at that age want to explore; they aren't interested in feeling," she says, "so it seems pointless to ask them how they feel about a flower or a rock." She also wonders about the wisdom of assigning personal journals in high school. "I can't imagine being told I had to do something that is so intensely personal."88 Once again, by focusing on field observations and connecting such observations to one's life in however one chooses, educators can answer these concerns with any age group and still use journals effectively.

As the Roger Tory Peterson Institute and independent workshop leaders continue to train educators in the unique role of field journals in education, awareness, and action, the use of field journals may increase in schools as it has in the general public. The flexibility of style ensures the continued popularity and usefulness of journals. If so, then we will be preparing a new generation of note takers whose observations will provide them with hours of pleasure and provide the world with mountains of valuable information about our local and global environments.
Notes for Part One

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PART TWO
FIELD JOURNALISTS
“Do you mind if I get my journal?” Hannah Hinchman asks me as we begin another session of interviews. “I’m more relaxed if I can draw.” She dashes to the studio that sits behind her warm log house in Dubois, Wyoming, and returns quickly with her latest journal tucked under her arm. The hardbound book betrays its nonstandard size when she places it on the table next to the previous three journals, all 8 x 10” books with cloth covers and fine paper made from recycled fibers. This book, ordered from a special paper supply house, opens to off-white paper that is already wrinkling from the damp of watercolors and ink. Hannah’s fine eye and attention to detail are filling its pages with calligraphic writing and sketches of the landscape around her high arid home along the banks of the Wind River.

Hannah draws what catches her eye, wherever she is. She has described her work as creating a “field journal of my life.” She explains that “I don’t hold the journal in reserve for just the time that I’m on the trail or outside. I give the same kind of curiosity to anything that’s going on. That makes some people uncomfortable that I call this a field journal, because I draw interiors and people. If you see the world as a series of events, as I do, you want to capture the human creature too.”

Tonight, she notices a jar full of flowers that we picked that afternoon as the sun set behind the Wind River Mountains. Already the petunias had felt cold; a hard freeze was due that night. She places the jar on the small dining room table, leans back in the green ladder-back chair and props her clogs up on the table. She reaches into the zippered green pouch that contains her
pens, pencils, watercolors and other tools, and extracts her favorite—a double-pointed sumi brush pen that will express her interest in broad black lines upon the softly colored paper. I press “record” on the micro-cassette recorder, a red light flashes on, and the tape begins to quietly unwind. We continue our discussion begun the night before and that continued this morning as Hannah calmly sketches the flowers in her journal, volume 52 of a series begun more than twenty years ago, when she was 17.

Growing Attentive

When Hannah was young, her family moved to a “bleak new subdivision” across town from the Aullwood Audubon Center in Dayton, Ohio. She remembers being introduced to nature at the center through field
trips with her third grade class. She returned to the center often, learning about nature and honing her birding skills.

"I was quite an ornithologist at age 11. I didn't keep a journal but drew birds all the time. I worked hard at learning how to draw—not from life, but from books. Drawing from life doesn't appeal to kids at that age because it's too wide open. I wanted everything to be neat and accurate."

Like many naturalists, Hannah found peace and security in the outdoors. She tells a story from elementary school: "I began to experience panic attacks in school, so I would always sit in the back of the room so I could run if I needed to. I didn't know what it was, I'd just bolt. The school was urging my mother to send me to a psychiatrist. Instead, she took me to Florida for a few months and I could do whatever I wanted. I was outside all the time, exploring and walking on the beach. It healed me. When I came back to school in Ohio, I worried that the terror might return, so I started writing a novel. It turned into a huge novel—500 pages—and it guarded me because I was in school but not in school at the same time." That novel, which she still has, was a forerunner to the journal. "It taught me to trust that this creative act of writing would protect me."

"I began my first journal when I was 17, and at the same time I returned to Aullwood and rediscovered my love for nature." That first journal, now shelved beside the other volumes from the past 20+ years, reveals an observer who sketched plants and animals, drew cartoon figures, and filled pages with descriptions of her friends, her life, and her growing passion for the natural world.
As we look through this first journal, we discover direct connections with the current journal lying open on the table. In it, she drew a map of a trail and described what she discovered along the trail. “I set out upon the Big Woods Trail determined to follow and map it correctly. I did, and in the process discovered the location of the great oaks.

Wow! That trail is my own now, and the places are named by me.” Today Hannah often maps her walks and names places for natural events she witnessed. For example, in the first journal she named “Vireo Valley” for the little white-eyed vireo she met there. Later, she continued this tradition. One of her essays describes how she came to name a certain ridge near Dubois after the animals she observed there. Her delicate line drawings provide another thread through the volumes. Her drawings now are often bolder, but still employ lines to transfer the essence of a living thing to the page; her writing even more expressive.
"I come from a writing family; I had no model for being an artist. I’m not sure where this came from. My mother is a writer of mystery and suspense novels and historical romance. She was writing when I was home, so I was used to seeing her at her typewriter in her corner of the bedroom. I never disturbed her. I was proud of a mom who had that kind of artistic endeavor. My brother, Lew, and his wife, Sandy, write together about environmental topics, and they’ve recently published a book about political philosopher Hannah Arendt."

"I thought I had a little facility for art, but there were all these people who were better than I was. So I didn’t begin to imagine that I might make something out of art until I was in college. I occasionally took art courses, but was definitely drawing in my journal all the time. Once that started to develop, it took its own course.”

"My journals became a constant in a really disorganized and chaotic life. My dad was a wild liver, a gambler and drinker, not very financially responsible, but charming and lovable. He was 44 when I was born; he never paid much attention to me. I barely registered on his consciousness. We ran out of money for college, so I joined my parents in Florida. I didn’t want to be there, so I used the journal to visualize and construct a future. It held me together; I spent a lot of time on the beach studying the birds.”

**West to Wyoming**

Hannah Hinchman arrived in Dubois, Wyoming, during a summer break from Earlham College in Indiana. She was close to finishing her undergraduate degree, a program she cobbled together in English, art, and science. She came to spend one week at the National Audubon Society’s “Camp of the West,” a week won in an essay contest sponsored by the
Columbus, Ohio, chapter of the National Audubon Society. Her parents lived there at the time, and her mother had called and encouraged her to enter.

“That was it for me,” she remembers with a laugh. “I had chosen the Wyoming camp because I already had a mythical connection to the mountains from when I was 14 and spent time on a dude ranch in Colorado. This time, I abandoned all my other plans, going back to school, everything else. I stayed here all summer. The climbing instructor at camp asked me to illustrate a climbing manual so I spent the summer drawing hands tying knots.”

Hannah spent the late fall and early winter in a small cabin outside Rocky Mountain National Park in Colorado. “This was one of the most intense creative interludes of my life,” she recalls. “I was totally alone and living a rigorous, austere life—the joy of creative discipline.” Then she returned to the east briefly, but not to finish her interdisciplinary degree at Earlham.

“In college I took botany, geology, ornithology, but they all ended up in statistics and I wasn’t interested and I couldn’t get past it. I wanted to be a teaching naturalist, so I attended the naturalist course that the National Audubon Society taught at their nature center in Sharon, Connecticut.”

“The Audubon naturalist method in the field is an extraordinary dialectic method. If a child or adult noticed something, we’d all hunker down and there’d be a long question and answer session encouraging speculation,” she explains. “But I could never pull it off, I was too shy. So I abandoned the idea of being a teaching naturalist.” This conclusion coincided with a call from a small newspaper in Wyoming, *High Country News*, which calls itself “the Environmental Watchdog of the West.” The publisher told her, “We don’t know you but would you like to come out and be our production manager at
our newspaper?” Hannah said “Sure!” even thought she didn’t know anything about graphic design or typography. She went out and learned.

“That was in 1977,” she remembers. “Through that job, I immediately got into the heart of the environmental movement in the West. I also began writing and illustrating a natural history column, and got serious about art.”

By 1980, Hannah had returned once again to school in the east. This time she enrolled at the Portland School of Art in Maine and stayed to earn her Bachelor of Fine Arts. To describe her life at that time—she was married, a housewife as well as a student, and lived without a car—she opens one of the journals she filled during those years. Beside a drawing labeled “Squalid Laundry Woman,” Hannah now reads with laughter how she described herself during one gloomy day: “slogging down today in melting snow, sweating in my sweatshirt, I feel like one of those greasy fat women who go to the grocery store in slippers and curlers…”

We laugh together in horror and fascination. Today Hannah lounges in sweat pants while working, but never leaves the house without clean hair and clothes. She shakes her long blond hair and continues reading from the journal, her blue eyes sparkling: “More stories of squalor: croaking at everyone Friday night then lying out flat with a gross cold on the TV bed, unwashed hair, unwashed face, dirty crumpled nightgown that I’ve worn for two days because all my other rat clothes are dirty, stumbling around the chaotically messy house in gray wool socks, somehow cooking. . . . Outside the snow is discolored like a bruise, standing water is greenish.” Clearly this was a time that she was writing more about people than nature—an ironic twist for the woman who even then called Wyoming and its wide open spaces home.
Hannah returned to Wyoming each summer while she was attending art school, and moved back permanently in 1984—no longer married, a housewife, or a student. She worked for two local newspapers, the Dubois Frontier and the Jackson Hole News. By 1988, she had decided to try to make it on her own as an artist.

One crucial assignment helped launch Hannah into her successful career. Joan Nice, who had been editor of High Country News in the 1970s and went on to edit Sierra, asked Hannah to write an article for Sierra about keeping field journals. That three-page article, which appeared in the January/February 1986 issue, caught the attention of Gibbs Smith, founder of Peregrine Smith Books, a publishing company that makes a point of discovering previously unpublished writers of the Rocky Mountain region. He called Hannah and asked her if she would be willing to do the book. She worked on it, without an advance, on and off for four years. She finally quit her newspaper work and quickly finished the book.

"I still like the book, its informality; it seems like an encouraging book. I'd like to do another one because I've learned so much from teaching journal-keeping courses. I had never taught when I wrote that book, I just described the exercises that I did in my own journal. Now I've lots more tried and true methods."

Her revelation, of not having taught the exercises to other people, astonished me because I had experienced Hannah's teaching and found it to be a magical mix of inspiration and practicality. Hannah and I had met in 1991, inside the fluorescent glare of the historic bunkhouse of the old Buffalo Ranch in Yellowstone National Park. She had driven two hours north from Jackson, Wyoming, to this rustic way station in the seldom-visited Lamar
Valley to teach a class called “The Art of Keeping a Field Journal.” I was one of eight students, and had driven two hours southeast from Bozeman where I had rented a car at the airport. I was more than two thousand miles from my home in Virginia, on my first visit back to Yellowstone since I had left in March 1980 after living a year in the explosive country of Old Faithful. I was relishing the opportunity to spend five days studying the land and recording my observations. I was also looking forward to meeting someone else who taught what I taught—the method and art of keeping personal field journals.

At the end of that week, I hunched beside the window of the plane and stared back down into the wild country I had just left. My journal was full—72 pages jammed with notes and drawings and maps—and my heart was aching. Filling those pages had reconnected me with Yellowstone in a way I hardly expected. I felt as if I had renewed correspondence with a long-ago lover. I knew I would return, and the fact that I did has a lot to do with the power of journals and of Hannah Hinchman as a teacher, artist, and friend.

The ensuing three years pushed Hannah into artistic success and prominence. Her book, A Life in Hand: Creating the Illuminated Journal, is selling well. She participated in a conference about art and nature sponsored by Orion magazine, she continues to teach at a half dozen sites around the western United States, and she writes a column for Sierra magazine. When I visited her in September 1994, Hannah was preparing to go on assignment for Sierra to document a two-week trip on the Colorado River as it slices through the Grand Canyon.

“I’m not a water person, not at all,” she protests as she tells me about this trip. “Why do you think I live in the middle of Wyoming, in arid country?” We laugh, both knowing that dryness was only one of the reasons for her
connection to this country full of mauve and ochre badlands beneath soaring snowy mountains.

**Illuminating Students**

"I don't think of myself as a teacher; it's not native to me. I was so rattled that I could hardly carry out a thought," Hannah recalls. "It's gotten a lot easier. I really watch for that little spark of understanding, and I don't talk as much. I want the class to do, not listen. I'm also more confident about helping students. Now, when I see someone doing a drawing that could be better, I might say, 'Hmm, that's a beautiful drawing, but what if you were able to use a wider range of pencils? Do you know what your 6B pencil might do?' And they say, 'Ah!' as they try a new tool."

"That 'Ah!' makes teaching worthwhile. . . Plus, getting to be out in the country where these places are." Hannah has taught journal-keeping for the Yellowstone Institute, the Teton Science School, the Snake River Institute, and the Sun Valley Center for the Arts and Humanities.

Teaching affects Hannah's journals and vice versa. She develops exercises as she works in her journal; after she teaches them to students, the exercises often reappear in her journal in a different way. For example, she came up with the idea of an "event map."
This event map traces Hannah's experiences as she explored an area in Yellowstone National Park.
“When I go to a new place, I often combine a semblance of a map with what I see along the way,” Hannah begins. “It has to do with coming to a place and tracking your movement through it and paying attention to what happened to you. To me, an event is whatever draws your attention. So if you’re walking along and your attention is fixed by a yarrow beside the trail, make a note of the fact that you’ve noticed it.” She goes on to explain that event maps can be as simple or elaborate as you wish, and can be any scale. Generally, they look like a meandering line that shows the route you are traveling. Scale is unimportant—you may show a few hundred feet for half the map and then the next five feet take up the rest of the event map. Legends or small drawings can be fit into the contours of the map or pulled out to the side.

“For some reason when I go back to look at these things again, they’re the most effective way to bring a time and a place back. It has something to do with the sequence and the selection of things.” She thinks for a minute and continues, “That mix of the seen, the felt, the land forms you travel over, the time of day—an event map captures and encapsulates a day better than any narrative or sketches. I think it has to do with learning to see the world as a constantly unfolding event rather than a collection of things.”

When Hannah teaches, she believes in doing the same exercises that she asks her students to do. “While they’re off doing an event map, I’m drawing one too.”

Her journals are also filled with exercises she’s discovered from other people. She tests them out, adapts them to her style, and then might share them with her students. One example is a writing exercise called “clustering.”
A student told her about this method, which was described in great detail in *Writing the Natural Way* by Gabriele Rico. She briefly described her version: "You choose any sort of word that you consider to be a core word and begin to free associate. You write down other words or phrases as they come into your mind. Occasionally the branch that you take will lead you off in a strong direction so you have a whole chain of thought going that way. Then you may start another one. After awhile it begins to radiate and you find connections amongst the chains; then you have a whole new level of material that you can then organize into a piece of more formal writing."

One of Hannah’s most original exercises describes a way of observing with your entire body. "You have to feel the thing that you are drawing," she declares. "When you are drawing a spiked leaf, you can’t just look at it; you have to feel it, the prongs on the edge of it, the curve, viscerally feel it not just look at it, feel the curve in your body. You don’t have to move the pen in a certain way, it just means that the information has to register in your muscles and body. You identify with it. It’s a sort of a felt measurement."

The three exercises mentioned above—event maps, cluster writing, and drawing viscerally—are all new to Hannah’s class since I attended in 1991. This freshness accounts for why some of her students have taken her workshops more than three times. Her students include people with a basic interest in natural history who know they will learn more if they keep notes but they want to do it creatively. She’s also taught architects who want to learn different ways of sketching, artists who want to add the verbal to their sketchbooks, and teachers who take her techniques back to their classes.

Hannah knows of at least 30 former students who continue to work in their journals on a regular basis. "I’ve been dreaming of a rendezvous of
former students, not as a teaching thing, but getting together in some wonderful place. Doesn’t that sound like fun?”

**Influences**

Just as Hannah continues to inspire her students, so she continues to be inspired by a variety of sources. Among other journal keepers, she counts John Muir, William Henry Holmes, and Henry Thoreau as important inspirations.

The first influence though, came from Ernest Thompson Seton. Hannah read his book, *Two Little Savages*, when she was twelve. “It’s the story of two kids who go out into the woods and do all sorts of tracking and tool making. He had drawings all through the margins, so he became my first model for combining art and writing.”

“Muir was the next; I remember reading a Sierra club version of *My First Summer in the Sierra* that included his drawings. Then I got interested in calligraphy and found Sara Midda’s book, *In and Out of the Garden*. She turned simple sketches into little works of art.”

Each page of Midda’s small book features a small illustration or set of drawings around which she writes about her observations. It’s a style I immediately recognize as one that Hannah has adapted, no, *transformed*, into her own art. From Midda, Hannah also learned the value of recording collections of images rather than making a sequential recording of what she sees. Hannah uses this technique to create her unique illustrations that she now sells in galleries and contributes to *Sierra* magazine—illustrations based on her journal sketches and notes.

Hannah says that Thoreau’s journals have affected her the most. “I’ve never seen observations recorded in any other form so clearly. John Muir was
an equal observer, but he tailored his notes to become an essay, so you don't feel the directness of being there.”

"Thoreau used to walk along the railroad track all the time and he was fascinated by a cut in the bank not only because he could see the soil horizons but also because of the erosion patterns that were happening on a small scale there. So he spent two pages describing how spring meltwater ran down the sand, how it moved sand around, and how it created alluvial fans and lobes. That's one of those unnamable and unmeasurable phenomena that I keep coming back to again and again. He made an exhaustive study of the way things work, the way things move, how they act and what they do. And that opened doors to a way of being a naturalist that I hadn't realized before, that you don't necessarily have to translate it into statistics and tables. It can still be done in a narrative way and it's just as valid. I believe that with all my heart. In fact, the narrative way may allow you to notice new kinds of information that you wouldn't notice if you were following a more systematic way of recording information. People who keep systematic records are usually tracking species. Nature's phenomena are far more varied. We need to expand our categories of what is studiable and how it's studied.”

She returns to Thoreau: “I'm touched by his loneliness and the struggle he had between the sensuous and discipline. He was torn apart by it. He'd say things like 'I fell in love with a shrub oak today,' and then describe the colors, the motions, the lights, the shadows, the headiness of life in the raw. Then he'd withdraw and say 'the life of the mind is more important' and try to fit that to his idealized view of nature. It's a classic battle between denying the body and insisting on the higher things. I don't know which won out. He may have quietly made peace between the body and the physical and his mind,
with his lists and his tireless natural history studies. That’s a battle we all face today."

“If I were to guess how my journals will evolve, I imagine I’m going to follow the path that Thoreau did. It used to alarm me a lot when I first started reading his journal. He started out with all sorts of high-blown poetic longwinded—and I thought at the time—gorgeous genius, running with an idea. But in his later years he got more interested in keeping lists of plants and when they bloomed. Now I see why. It was part of his cryptic language. He could say ‘Saw swamp mallow blooming today’ and that would then call up many years of associations and other experiences. But that was all he had to say. It got more terse and private. I think in my future journals there’s going to be more of what I’m looking at than me looking at it.”

Creating a Journal

When Hannah faces a blank page, she never experiences the paralysis that is common among other journal keepers. Instead, she says, “It’s always an adventure; I relish a fresh page. I let the pen poised above the page for a while and then it plunks down and I begin. I love the open ended feeling of the blank pages, I can arrange them anyway I want to. I try to avoid the convention of starting in the upper left hand corner. I like how it changes, I want it to feel multi-layered, bits of three dimensionality.”

Sometimes Hannah takes a year or more to fill one journal. “If I have any rules, that’s one—that you don’t have to feel compelled to write in it everyday. It should be a natural narrative that’s a cross-section of your life. It’s not at all fitting to think that you have to put something down every day. Instead, I let it fill up and fill out.”
"My other rule is that I don't tear out anything." This rule has led to the loss of some of her journals in the past. "A boyfriend began burning my old journals because he didn't want to read about other men. I caught him after he had burned only a couple."

Hannah's journal isn't with her as much as it used to be because she is using the bigger format. When she used a 5 x 8" book, she'd carry it in her purse all the time and whip it out at any moment. "Now I'm a bit more self conscious," she admits. "I generally take it with me, but I won't take it out at a restaurant. I don't like the spectacle it creates."

If she isn't carrying her journal, she'll usually have a smaller notebook and then transfers ideas and sketches to the journal.

"I may wind up going back to that small format," she muses, "but I love the freedom of the big page. Still, I have a real yearning to have my notes and sketches all in one place, at least some part of my life in one place. It probably goes back to that time when it was my life line. It really troubles me to think that now there are a few little side channels in that smaller notebook."

As we discuss journal formats, I mention that I've been considering using loose-leaf paper because I can easily pull out one page to copy, I can carry just the paper I'll need that day, and the format encourages a more formal way of keeping notes. I wouldn't abandon the creativity of my current journal, but would use the loose leaf pages to create a more formal record of observations. Hannah agrees that she is leaning that way too, but isn't sure what she is going to do.

"I've been reading Thoreau for a long time and realize that even though he wrote his observations in a narrative form, he was really conscientious about recording everything he saw. I don't think he took a journal with him
in the field, it was always a compilation when he came back from a walk. He was so careful, he really did want to amass a body of knowledge. I don’t feel compelled to systematize, but I’d like to add a layer of usefulness to the journal so they’ll be useful when I’m gone. At least a little portrait of where I’ve lived and walked."

We discuss how scientists handle this dual purpose of journals. They often keep a journal but extract information for species accounts. We both agree that creating species pages—one page devoted to observations for one animal—might be a good idea, and easy to refer to as we record our lives in our journals.

Hannah voices a concern, though. "The only thing I worry about is that if I got too interested in that form, I might feel compelled to go along looking for everything, and would be less likely to stop and get lost in some detail that I noticed. I want that opportunity too, instead of feeling that I need to catalog all the time." When I point out that we can bend the rules to make them work for us, she concludes, "Well, I guess there’s no reason why a little systemization couldn’t be added."

Reflecting her flexible evolution of style, Hannah’s choice of blank journals also varies. She enjoys trying different ones, always in search of the perfect volume that contains fine, off-white drawing paper within a sturdy binding. She assesses her recent journals and notes that the previous two, volumes 50 & 51, had great paper within a binding that is now coming loose; her current journal uses paper poorer than she expected and is also badly bound. She’s impressed with my current set of journals, all from one company. The paper is whiter than she prefers, but it is smooth and held within a binding sewn strong with 12 stitches.
Along with her journal, Hannah carries a kit of drawing tools. “Even when I’m in the studio, all the art stuff is in the kit ready to go out. I take the kit into the studio rather than take the studio out in the kit.”

When I have a chance to rummage through her kit, which is a long green zipper cloth bag emblazoned with “Snake River Institute” in white, I find a set of pigma micro pigment pens, sizes 01 to 08, a set of Mont Blanc pens, a drafting pen, a Sakura sumi brush, a dozen other assorted pens and mechanical pencils, one bottle of brown (sepia) ink, several well-used erasers, a hand lens, a piece of index card cut into a window frame for framing sketches and landscapes, and a watercolor set with her current palette squeezed in neat shining lumps of color, one to a compartment.

I mention one item missing in her kit that I often find other naturalists carrying—a ruler. I seldom carry one because I prefer to measure things with my body. This simple method imprints the size firmly in my mind. She is politely aghast that anyone would want to carry a ruler. This reaction reflects her spontaneous style of journal keeping; a style that can be inhibited by tools of precision such as rulers.

“I’m a naturalist but not a methodically trained naturalist. I’m more interested in the unnamed phenomena than I am in collecting data, so it would never occur to me to carry a ruler in the field. By unnamed, I mean the things that don’t get measured or get studied. You can do an incredibly in-depth study of clouds and the way they change during the day, you can’t measure it, it’s much bigger and doesn’t lend itself to quantification. You can study the different shapes that water makes over rocks, stones, big stones, no stones. And the only way you can render that is to describe it eloquently or
draw it accurately. There are times as a naturalist when categories will fail you but you need to remain attentive and interested.”

Hannah believes that attentiveness opens you to the unexplained, the unnamed, the miraculous. “All the miracles that have happened to me are natural events,” Hannah says, then describes two examples. “In college, I was up late and exasperated about not being able to get a paper to turn out the way I had wanted to. I had just about given up when I heard a noise on my window sill. Curious, I pulled back the curtain and a barred owl was sitting there and it hooted. Another miracle occurred as I listened to a few thrushes who seemed to multiply until I felt like I was hearing 30 or 50 thrushes singing—an extraordinary grouping.”

“There are three or four others miracles, all natural history phenomena that start out being normal but extend past what’s possible. That must be the way that I’m led or taught through those sorts of things. And so I pay attention. I consider them miracles in the truest and most unexplainable sense of them being a message from some other place, something hidden behind the world that we see everyday. I was raised Catholic so I tend to call them miracles; magic raises the image of the occult, the paranormal; and it doesn’t seem that way when these messages come to me. They are something very intimate. I don’t like to talk about them though, I’m nervous describing them.”

**Focusing on “Hand & Eye”**

Hannah shares her visions and experiences through her teaching and through a column, “Hand & Eye” that she creates for each issue of *Sierra* magazine.
"I was asked to contribute suggestions for columns in 1990; and they liked my ideas for combining the views of an artist looking at nature and a naturalist looking at art. The point of view switches back and forth, and I concentrate on one idea per column."

This journal page was one of many that inspired a column, "Bahamian Dreams," that appeared in the May/June 93 issue of Sierra magazine.
“My journals help me formulate what I’m going to do with the column,” she says. To show what she means, she leads me through the process she used to create one of her most enchanting columns, “Bahamian Dreams.” She pulls the appropriate journal from the shelf and flips through the pages, stopping at a spread filled with wavy lines of text punctuated by bright tropical fish. “The text for the article came out of notes, very much boiled down. Then I took sketches and made them more formal and arranged. The final illustration looks like the way I would arrange a journal page, but I wouldn’t spend six and a half hours on a journal page.” She shows me pages of frogs, foliage, and more frogs.

When we come to a row of sketches entitled “Palmarama,” we both laugh. “I thought I wanted to do a whole thing about palms,” she says. “Then I thought I wanted to do something about the rocks, but the rocks are where I saw this lizard,” she says as she points to a page filled with quick sketches of a curly-tailed lizard, one pose I recognize from the Sierra column.

“These are my attempts at drawing the chiton, and here is the beginning attempt at the conch, which I didn’t like. All of these sketches contributed to the final design, and I actually drew the beach pea directly on the final layout while in Eleuthera.” When I flip back through these pages of notes and sketches, I can trace some of her thoughts as they evolved into the essay she eventually wrote about a week of “idiotic idleness” during which she filled 19 pages.

“About every third issue I do a full page illustration, like the one from the Bahamas. Otherwise the sketches are all kinds of things. In one issue, they actually lifted the sketches out of my journal that I drew while on vacation in Florida. When I was there, I set myself a project of doing ten drawings a day.
I felt far from drawing because so much had come into my life—business matters, teaching, graphic design—that kept diverting me from this thing that I like to do. So I decided to make drawing a task. I could tell my family that I couldn’t go to the mall or play tennis because I had these drawings to do. It was phenomenal, amazing. I worked on getting the essential information, and I succeeded to some degree. I disappeared into these drawings. I gave each one as much time as it needed. I was able to linger with all these beautiful marks on this horseshoe crab leg. Just little things, little vignettes; that’s what I like best, that’s when the drawings really reflect how I see.”

**Too Much of a Good Thing?**

“Keeping a journal trains you to see what you are not expecting,” Hannah says. “If we want to train naturalists, they need to keep journals. If you are just looking idly, that has a different result. I call it ‘landscape looking.’”

She continues, “It would be a much more sane and positive world if more people kept journals. They’d slow down, begin to feel an attachment to the things they are recording, to take better care of them, see an alternative way of thinking to our ‘go faster make more money’ kind of mindset, not be so ambitious. Do we really need ambition?”

Even though Hannah wishes more people kept journals, she wonders about the wisdom of using journals extensively in schools. “I hear from teachers that everybody keeps journals now, and that just makes me shiver with dread. What was such a rebellious practice for me, a private practice, becomes just another assignment. I can’t imagine. It alarms me, gravely. I really don’t approve of it; especially the misguided teachers who are trying to ask fourth graders and fifth graders how do you feel about it. Well, they aren’t feeling then. They aren’t supposed to be! They’re supposed to be out of their
emotions and in their bodies exploring the world. That’s not the time for an introspective journal.”

She shakes her head with concern, and adds, “There’s not a thing we can do about it now. The idea has taken hold and has a life of its own. Let’s hope that the process keeping journals will become so intrinsic that kids get through the sourness. Maybe they won’t abandon it? It becomes a habit and they hate the fact that it’s a habit but they keep doing it, then it blossoms into other things? That’s the most optimistic outcome—habitualness. Once you’ve finished one volume, then you say ‘Aha, there’s a period of my life contained in there.’ and you go on to the next volume and that’s it. In fact, it becomes obsessive.”

Hannah then asks me if I heard a recent story on National Public Radio about the guy who does nothing but keep a journal. “He can’t go anywhere because he might fall behind in his journal. And he’s reduced to getting up and walking to computer and writing about what he eats. If you take it to the most grotesque level, all the entries are ‘I am keeping a journal. I am keeping a journal.’” Then she laughs, and suggests, “Maybe if we could get him sketching, he would break out of this routine!”

Into the Future

Hannah plans to concentrate on her art, rather than teaching, for the next few years. She is preparing for two major art shows, one in upstate New York and the other in Sun Valley, Idaho. Both feature the work of artists, writers, and musicians whose work revolves around the environment.

She has been in only two other shows, both of which sold out. “That felt good. That was an indication that I really was on to something I wanted to do and it turned out to have struck a note with lots of other people too.”
She is also preparing a new book about the valley in which she lives. She envisions a book divided as the valley is divided, into four regions: river & hay meadows, badlands, foothills of the Absarokas, and the tundra plateau summits. “If I can get funded so I can give it my full attention, then I will get quite systematic with my field journal. The keys will come back out, the binoculars will never be out of reach, the spotting scope will be in hand all the time. Introspection will play no part of it. . . . Well, just a little, what I select; it’s all felt in the choices, what is chosen, and how it’s executed.”

“At this moment, that’s the art I present to the world, what I’ve been developing all this time, a beautiful illustrated page that is taken from a journal, but is more formal.”

“I’m on a definite path over the past year and a half, away from introspection and toward field notes. The journals started with field observation, went through many years of introspection, and are now coming back out again. That seems right; I don’t have as many problems to solve.” She hands her current journal to me, open to a page of two drawings highlighting a plant found along Rose Creek, near the Yellowstone Institute, and a map of the creek’s watershed. Her brief comments describe only the difficulty of drawing while being bitten by gnats. “This is a classic example of not needing to write about my responses; my responses are felt in what I choose to draw and how I choose to draw it. It’s revealed in the attention that gets brought to the page. So I trust it will stay that way. The field journal aspect is on an upswing. But I still define a field journal as something wider than scientists do.”
CHAPTER 2
REVEALING WILD DETAILS:
JIM HALFPENNY

The irony of our first introduction struck me as I stood in Jim Halfpenny's office, looking at journal after journal that he pulled down from his floor-to-ceiling bookshelves. We had met three years ago during the jostling and franticness of conference registration. I had just finished handing out another packet of information when a man planted his hands solidly on the table and looked straight into my eyes. "You're just the person I wanted to see," he said. "I'm Jim Halfpenny, another instructor here, and I want to be sure I get in your class, your field journal class." We shook hands, I told him there'd be plenty of room for him, and that I looked forward to seeing him. As he raced away, I noticed the unusual pack he had slung across his shoulders. Later I would discover it held his own field journal, and that this man who was so intent on getting into my workshop—which I had taught only a few times—had been keeping field journals for more than twenty years.

In September 1994, I found Jim behind his house in Gardiner, Montana, gently removing poppies from a blanket of sand that had dried the delicate blossoms into a brittle, paperlike substance still full of that deep orange that decorates yards throughout the summer. He and his partner, Diann Thompson, had been experimenting with drying methods. The sand and truck method was rating the highest. The glasses of sand containing the poppies had sat in Jim's truck cab for three days at the Bozeman Airport while Jim was away at a conference. The vehicular oven had speeded up the process and produced far better results than the microwave.
Such attention to detail and design of experiments marks Jim as a classically trained scientist; the subjects of this experiment show his appreciation of the beauty he finds in nature. Preserving some of that beauty also reflects Jim’s lifelong passion for casting animal tracks and for accurately recording what he sees in his field notes.

**Looking at the Journals**

“Kenya 1975” in large black letters identifies one of Jim’s early field journals. I open the book to a set of pages filled with measurements, drawings, and notes of different tracks. Each track is labeled with its true size, the location where found, the kind of habitat, and a few field observations.

Jim taught himself the art of tracking animals as he ran up and down the muddy shores of the Platte River in Nebraska. “There was lots of mud and plenty of prints to follow and cast. I also collected snakes and other river animals—my parents let me bring all sorts of animals home if I wanted to study them. So we’d often have snakes in the bathtub.” Jim continues, “My family hoarded things. After my mom died, I cleaned out the
house and found jars of salamanders that I had preserved when I was a kid.”

Jim stepped around a pile of research notes and reached for another journal, labeled “Greenland 1975.” As we look through its pages, Jim comments, “The farther you get away from them in time the less you refer back to them. Look, every animal I ever trapped is documented.” We look at a series of maps in the back of the book, maps that describe glaciers in fjords and show travel routes. “We’d use these maps to return to an area where we were doing research.” In another part of the journal, we found track records of Arctic fox. “This is bringing back some things,” he mused, “I have a lot of tracking stuff in here that I didn’t remember. I’m starting to put together some books on carnivores and I might use some of these measurements.”

Jim has already published one book, A Field Guide to Mammal Tracking in North America, that grew out of his tracking notes. It provides comprehensive track information plus proven methods for finding and interpreting those tracks—and for recording what you find. (He has published two other books, Climber’s Guide to Southeast Wyoming and Winter: An Ecological Handbook, that were also based on his field notes.)

When Jim led me into his overflow office where files are stored, I immediately noticed the white plaster casts of huge bear feet. One was larger, much larger, than my head—and clearly from an adult male grizzly. “Those were made at the Cooke City dump,” Jim explains. “The town doesn’t think bears come to the dump. I’ll take that to the town meeting next week.”

Then he pulled down a cardboard file box packed with folders. He explained that he filed his field notes according to subject. For example, he pulled out a purple folder that contained many years worth of mountain lion field observations. Things that aren’t field notes go in a folder other than
purple. "When I'm putting together a book or an article, I refer back to these notes time and time again."

**Teaching Tracks**

Through Jim Halfpenny, thousands of people have learned to study the stories of animals found in their tracks. He has taught at the Yellowstone Institute, the Teton Science School, the National Outdoor Leadership School, and for organizations such as the Nature Conservancy and the National Wildlife Federation. Jim also has trained naturalists in several national parks, and teaches tracking to local and state biologists who must track threatened and endangered species such as wolves.

Jim began teaching when he was a teen in the Boy Scouts. He led natural history classes at scout camp each year while in high school and for two summers while he was in college. At the University of Wyoming, he led mountain climbing trips and organized one of the first winter ski tours of Yellowstone National Park. From there he began teaching for the National Outdoor Leadership School (NOLS) in Lander, Wyoming.

In 1969, Jim put together the first mammal tracking class at NOLS. He also put together winter biology programs for the school. While leading these winter trips, he began developing field equipment suited for winter use. For example, he helped designed a jacket with arms that hung straight down to end of knuckles, so you could just curl up your fingers to keep them warm in the jacket. He and fellow instructors also developed a ten-person, ten-pound tent so that an expedition needed to carry only two tents for twenty people, instead of ten tents—a savings of 80 pounds and a gain of great body warmth.

When someone first hears of Jim's extensive winter teaching experience, they often comment, "Oh, you must like cold." Jim replies, "No, not
particularly. But I tolerate it, and I make sure my students use damned good equipment so that we don’t get cold.”

Jim also began developing his unique style of field journals when he began teaching at NOLS. “Course leaders were required to keep a log of what went on during the trips, so I was doing that back in ’67. We always encouraged students to keep notes, a journal. And starting in 1971, with the first winter biology courses in Yellowstone, we actually handed out field notebooks that students were expected to fill out. The field notebook included biology information and charts to fill out, plus blank pages for their own observations.”

He laughs as he remembers what happened to those first notebooks when they went out in the field. “We were photocopying the journal pages at that time. We soon found out that when those copies got cold—and it was often colder than forty degrees below zero—all the letters fell off. So you’d open your journal to find all the letters down in the folds of the book.”

Other than letters falling off of copied pages, Jim claims there’s nothing particularly unusual or hard about keeping field notes in below zero weather. “You just keep one hand in a mitten, the other hand in a glove so you can write. When you’re working at 10, 20 below, you get used to working without gloves. If a finger starts to get cold, just tuck it in your armpit for a while. Use pencils instead of pens—the ink freezes up. Tape recorders come in handy when the wind is blowing too hard to write, and they’ll be OK if you keep them deep inside your jacket when you’re not recording.”
Journal Evolution

In Jim's crowded bookshelves, we managed to find what he thought were his earliest field journals—pocket-sized spiral books crammed with pencil and pen notes, tracks, maps, and data.

Jim's journals have evolved from small spiral-bound books to a format he enters directly on his computer.

“I've experimented with all sorts of journals—bound journals, small journals, big journals,” he said. “I don't like bound notebooks because I always have a problem with arranging information. I would keep my journal in the front, but the species lists in the back. It was hard to integrate all the information and still be able to find it easily. That's why the Grinnell system works so well.” Jim discovered this systematic way of keeping field notes in 1976. “Grinnell’s system—of recording field notes in a journal and also in separate species accounts—solved this problem of muskox notes here on page one, later page twelve. It's a better way to organize notes by a long shot.”

Today Jim continues to adapt the Grinnell system to suit his needs. In 1985, he developed reproducible pages for journal entries, species accounts, and other regular features of the system. They are loose-leaf, 8-1/2 x 11" sheets...
that fit into the binder he sometimes still carries in the field. He also still provides these pages to students for their use in his classes. But his own note taking has evolved further. He has designed a 3x5” field notebook that contains pertinent track data and room for recording measurements and descriptions of animal tracks and sign. This notebook is his preferred field tool because of its small size and weight. He also has entered his Grinnell-style sheets onto his laptop computer for direct entry while in the field or after he has returned home.

Although a laptop weighs more than a 3x5” notebook, Jim often carries it into the field. He can enter all of his notes directly, bypassing the transcription of notes at the end of the day. And he can utilize a neat bit of technology to analyze the tracks that he finds.

Jim rummages beneath papers beside his computer and pulls out a set of calipers. “These read directly into the computer,” he says as he lifts up the cord that connects them to the computer. Then he calls up a file that compares canine track information, pulls open the calipers to the length of an imaginary canine track, puts the cursor in the proper cell of the table on the screen, and pushes a tiny button on the calipers. The measurement of the track appears on the spreadsheet. “The program compares the measurements with parameters of domestic dog, coyote, and wolf tracks, and places the track in the appropriate group,” Jim explains. “This speeds track measuring beyond belief; plus, I have an idea right away if we are in the presence of wolves.”

Jim isn’t directly involved with the wolf reintroduction in Yellowstone National Park, but he has been called on to identify tracks that may belong to wolves who have arrived in Yellowstone on their own. Wolves have been rumored to be in Yellowstone for several years now. One was photographed
in Hayden Valley, an area of the park known for the large numbers of elk and bison. Seven miles north of there, Jim happened upon wolf tracks—the first that he could confirm as foot prints of these threatened predators.

“It was exciting,” Jim remembers. “We were playing tourist. We didn’t have a single piece of equipment with us. So we covered up the tracks with branches and drove back to our house for plaster, and returned to cast the tracks.”

**The Role of Field Journals**

Being afield without equipment is not Jim’s usual mode of travel. He usually carries a huge backpack stuffed with video gear, camera gear, first aid supplies, plaster of Paris, his notebook, and sometimes his laptop computer. Although Jim doesn’t recommend that people carry that much equipment, he does wish that more wildlife watchers kept good field notes.

“There are classic examples of people in Yellowstone who should have been keeping notes but haven’t,” Jim says. He mentions the cadre of dedicated bear watchers that descend on the park each May to observe black bears and grizzlies digging for tubers and searching for elk calves. “Some of these folks have been coming here for years, but have never kept notes. Imagine what we could have learned from their observations!”

That night, a friend of Jim’s from Colorado dropped by to visit. She regaled us with tales of the bobcats and mountain lions she had observed coming to feed on deer carcasses at her home in Colorado. The next day, Jim pointed out that she had cited conflicting numbers of animals while she was describing her experience to us. “When I first heard about what she was seeing, I got her started on taking field notes,” Jim remembers. “Memory is a major problem; we always think we can remember details, but we can’t. She can refer back to
those notes, but I'm afraid it's not all down.” The notes that she does have, though, Jim believes provide valuable behavior information.

“In the older days, the people using field journals tended to be the Joseph Grinnells, the Olaus Muries, people who were hard core professional trained,” Jim says. “whereas now there’s a lot more amateur naturalists. A lot of people keep dairies, but they haven’t taken that next step of thinking what a field notebook should be.”

Jim defines a field notebook as an organized system of keeping track of what happens in the field, what you observe in the field, forcing yourself to think about it and ask questions about it and then bring it home and organize it so you can later retrieve it.

“I wish I had met somebody when I was much younger who said ‘Jim, do this.’ I wish somebody had taught me to keep field notes when I was in boy scouts when I was 11 years old. I still have little things I did in boy scouts, my first plaster cast, a little book I put together on reptiles and amphibians—but I don’t have any notes.”

Jim wishes that more people today would follow a systematic field notebook system. “Otherwise, if you want to know about elk tracks, you have to go back through 15 years of journals one page at a time to find the information. A field notebook system is organized whereby the items you are interested in—flowers, landscapes, snow crystals—would all be in one spot. You can do that with nature journals, taking them one step further, breaking things out; seems like it would improve your learning. That formality, forcing yourself to think and work along those lines, is an excellent skill which too many classes avoid, they avoid technique.”
In his classes, Jim describes these reasons for keeping field journals:

1. Our memory goes with age; even during the course of one day you start to forget.
2. Field notes improve the quality of what you do. They improve your thinking process. After you make observations—that’s the simple part of field notes—then you need to think about what you’ve written down and ask the reporters’ questions: Who, what when, where why and how. You also can derive hypotheses from your observations and questions to test later.
3. The third point I make is that good, consistent field notes add authority to your work. You can tell park rangers that you saw a wolf and they’ll probably dismiss you. But if you can show notes of track measurements and behavior, and show that you keep such notes on a regular basis, then they might listen to you.
4. The long term collection of notes on a given topic can be valuable in a variety of ways. For example, to write a chapter on canines, I can refer back to all of my field journals for information.

"Field journals are also a source of pride," Jim suggests. "Our friend who watched cougars shows a lot of pride in what she was able to observe and describe. There’s pride in knowing your natural history and having a record of it."

Jim also believes that our field journals will provide information that will be significant in the future. "A lot of our knowledge of the west is from Lewis and Clark’s journals," he points out. "We can look at their journals and see how we’ve changed the land since their time. We are going to see another change of that magnitude in the next 50-100 years as global climate changes, and this time it will be better documented. People who have been keeping notes about their orchard or backyard, that little plot of trees down in the corner, they are producing records of the change that is occurring."
A Naturalist's World

As an ecologist, Jim seeks to understand systems. He has studied the ecology of algae in Antarctica, the impacts of pika and pocket mice on Colorado's alpine tundra. Jim is also interested in how living things worked together in the past. For example, he and a colleague dissected packrat middens for pollen that allowed them to discern climatic patterns in the past.

Jim's interest in past ecosystems led him to collaborate with paleontologist Martin Lockley in 1989. They traveled to the rift valleys of Tanzania to study how tracks changed along the shorelines of lakes that shrank during the dry season. They compared these tracks with those found along the drying shorelines in the western United States at the end of the Cretaceous. Lockley has found what he describes as "dinosaur highways" following what used to be the shoreline of the inland sea. By studying the tracks in the ancient sediments, paleobiologists find some information about the plant and animal communities. Could the tracks give us any more clues about the ecosystem of the time?

Jim's role was to study the tracks and sign found in Tanzania. He wanted to determine the ratio of plant-eaters and predators. He also wanted to know which animals might not be represented in the tracks because they didn't frequent the waterline or because they left only traces of tracks that quickly disappeared. He concluded that tracks alone provide insufficient data to paint a picture of the range of animals present in any given location.

While working on this project, Jim continued to direct a long-term mountain lion study in Boulder, Colorado. He wanted to find out if human-lion interactions were increasing as humans expanded into the foothills surrounding this small city. He advertised in the local newspapers for
volunteers to help him conduct the study. The people who signed up received instruction in tracking techniques and in recording what they saw in systematic field notes. They organized themselves into tracking groups that followed systematic routes that made sure all areas were covered, and then they began collecting data.

The mountain lion study continues under the direction of another colleague now that Jim has left Boulder. In 1992, he moved closer to Yellowstone National Park where he could concentrate on studying large mammals. He also decided to expand the small business that he had been developing.

"I founded 'A Naturalist's World' to teach ecological education, primarily through field classes with a research flavor," Jim explains. His "odysseys" provide intense and extensive study of a given group of animals. For example, soon after I interviewed Jim in September, he and his partner Diann Thompson left for Churchill, Manitoba, where they led several sessions about polar bears. Other classes in the bear series take students to Yellowstone or British Columbia. Jim's goal is to provide the opportunity for people to study animals in their habitat—something few of us are able to do anymore in our developed world.

All of the programs also create interactions with local people and environments. "Native culture in BC is loggers and rednecks," Jim explains, "and that's important to bears because they have to deal with people. I invite local people to teach the group about the biology of the animals and how they interact with people in that area. In Africa, I made friends with native people ahead of time. The students had to be a part of the native culture, learning the language and visiting with the natives in their homes." By encouraging...
encounters with people and wildlife, Jim shows his students that none of us lives in isolation, we all are connected in some way.

Jim is also developing educational materials with his desktop slide and video equipment. “When I’m on the trail now, I carry a huge backpack full of my video and photography equipment,” Jim says. “I use a big lens so I don’t intrude on the animals, and I look for behavior, tracks, scat, anything visual that describes the animal.” In order to find this visual material, though, Jim has to use all of his tracking skills—smelling and tasting the air, listening for the slightest sound, being alert for any kind of change. And he also continues to record these observations in a little blue 3x5” notebook that fits inside a small pack hung from his belt—just like he did when he first began to take field notes, more than twenty years ago.
CHAPTER 3
PROTECTING WILD PLACES:
WILL KERLING

Visions of Jumbo

To begin a portrait of a passionate naturalist, an activist, an open space advocate, paint the image of the mountain that rises beside his house, a mountain that shines gold against charcoal skies in the late afternoon of a stormy, blustery October day; a sensuous, fertile, reclining nude of a mountain that bears the name of a circus elephant. If you stand beside a certain hedged-in white cottage on Locust Street in Missoula, Montana, your peripheral vision fills with Mount Jumbo.

I climbed to the top of Jumbo recently for the first time. I followed the dirt track as it wound around the hawthorn homes of bears and lions; I followed the track as it dipped into the saddle past horses and mules and passed the mysterious circle of snow berry that I had found a few weeks before. I panted as my legs began to push against the steep grade that led straight up through conifer trees cool and sweet smelling. I kept climbing and panting and pushing through trees then open spaces, through chill and warmth. I slowed as I passed a grouse crouched still as a river rock in the grass. I paused to let six mule deer resume their grazing before I ever more slowly walked by. With one final push, I was suddenly looking down again—down on the mound that most of us see as the top of Jumbo but really isn’t. I stood on the top and—as is often the way of mountains—it’s not the top we see from down below. I couldn’t see the down below of Missoula, but I could see north into the Rattlesnake Mountains and forty miles south along the Bitterroots.
When I descended to the false summit, suddenly I could see and hear Missoula, its cars humming, the river flowing like quicksilver through downtown. The Rattlesnake Valley that winds along the west face of Jumbo funneled into its narrow passage before spilling out into the broader Missoula Valley. And then, I scanned down among the gold and copper leaves of the deciduous trees and found that cottage on Locust Street. Down there, down where the leaves were falling and bicyclists pedaling, live Will Kerling and Chris Tonkinson. Together they have introduced me to Jumbo; and Will has shared the records of that passion—his hundreds of pages of field notes.

In His Backyard

“Hopefully what lobbies the loudest will be the place itself,” Will said this about Mt. Jumbo as he discussed an upcoming walk with city council members. They would be hiking on Jumbo, one of the two rounded mountains that form the eastern entrance to Missoula.

Jumbo is already divided from its geological neighbor, Mount Sentinel, by the Clark Fork River, U.S. Highway 200, and Interstate 90. Now houses are threatening to separate Jumbo from the Rattlesnake Wilderness and National Recreation Area. They are creeping up the low, broad saddle that connects Jumbo with the higher, more remote mountains. This saddle provides a safe migration route for elk and mule deer that descend from the Rattlesnake to Jumbo’s sunny slopes for the winter.

Will and other open space advocates have been working for years to secure that saddle and all of Jumbo for wildlife. Their efforts have been closely monitored by the local paper, The Missoulian. For example, the newspaper published several articles describing the impact of human visitors
on Jumbo’s wildlife, after Will discovered that elk were altering their behavior as human presence increased. From his notes:

Dec. 24, 1991: 12+ elk grazing toward far horizon; observed them from 8:55 a.m.–11:15 a.m.
Jan. 1, 1992: 30+ elk above “L” at daybreak, went for timber between 9–9:30 am. 40–50 elk over horizon at 5:30 p.m. Jan. 5: 10 hikers on face of Jumbo at 4. Elk not out by 5:45. Jan. 6: No elk in morning. 7:10 p.m. 40-50 of them near lone large pine above “L.” As of Jan. 7, the elk are coming out progressively later after dark and going back before daylight. I feel this is definitely because of human activity which includes dogs. A few are depriving the majority of viewing elk next to our city.

Through the newspaper, and through workshops that winter, Will and other activists were able to help people understand that their recreational behavior could stress animals. They also succeeded in limiting human access to Jumbo during the critical winter months.

In April 1993, The Missoulian devoted two color pages to Mount Jumbo, explaining its geologic history, its significance to wildlife and native plant communities. The reporter, Sherry Devlin, opened the article with a description of Will’s field journal. “In an 80-sheet spiral notebook stained by the seasons he chronicles, Will Kerling records the beauty and diversity of life on Mount Jumbo.” She quotes Will and cites his observations throughout the article. On the second page, she featured excerpts from his notes such as, “50-plus elk bedded in forest island near top. . . . at 1:05 p.m., saw the last 21 of the elk going back into the heavy timber to the north on Jumbo.”
Will fills his field notebook with quickly drawn maps to show where he has seen mule deer and elk. He counts them, notes their behavior, and looks for anything unusual.

Will's journals are jammed with quickly drawn maps that point out where he has seen elk. He scribbles descriptions of them eating, resting, running. He has even documented what few biologists thought possible—elk calving on this dry, exposed hill.

He knows the emotion that elk inspire in humans, and so he was hoping elk would appear during his walk with the city council in September 1994. The city council members didn't see elk when they ascended Jumbo's flanks, but they did observe another wonder of this wilderness connection—a mule deer fawn still dressed in a spotted coat. One of them, somewhat skeptical
before the walk, promptly declared that wildlife were more important than houses on Jumbo.

*In the Beginning*

In a way, Will is returning a favor. He arrived in Missoula in 1971 after spending six years in the Navy. He brought with him a deep mistrust of himself and the world—and the familiarity with the woods that came from years spent tracking animals around his childhood home in Pennsylvania.

“I was brought up as a hunter,” Will said, “I started early being in the woods all the time. Like Muir, I took to the woods because that was my friend. I found something I could trust, so I kept going back to it. I always thought the outdoors was so fair. Sure it can hit you hard, but when I follow the basics, most of the time I am safe.”

He began wandering the woods around his new home, the woods in the wild country of the Rattlesnake Mountains, which form Missoula’s northern border. Walking up Spring Gulch one day, he felt completely removed from the city. Not long after that hike, Will had an epiphany as he crossed the Clark Fork River on the Madison Street Bridge. “Suddenly I felt like I was on this planet for some special destiny, that I’m here to be part of big history about preservation.”

Will’s vision has become reality during the ensuing twenty years, as he has used his field notes and observations to turn skeptical neighbors and politicians toward enthusiastic preservation of three significant chunks of open space: The Rattlesnake Mountains, Mount Jumbo, and a cluster of islands in the Clark Fork River.

Will’s familiarity with Jumbo is one of a long-term companion. His relationship with the Rattlesnake Mountains, with which Mount Jumbo is
connected, is the deep bond of those who have been intimate for an intense period of time. Will lived in the Rattlesnake Mountains for one year, August 1977–July 1978, emerging only occasionally to purchase a few supplies. He spent that year studying the natural area, photographing everything he saw and keeping detailed notes.

Why did Will devote that year to one place? He explains, "The Rattlesnake was my best friend, who I trusted. So I thought I could go there and document enough of it and give vision to that place, a vision of what a unique place this is and how crucial that it is that we do something special with it. I had a sense that the community in Missoula was special, that they would understand. So I went for it."

An archivist would simultaneously be enthralled and appalled at Will’s notes. That the ink hasn’t faded nor the pages yellowed is perhaps testament to Missoula’s semi-arid climate rather than the quality of the material Will could afford to use. His Rattlesnake notes are stored in blue plastic binders that anchor hundreds of notes scribbled in blue ball-point ink on inexpensive lined paper.

Among those pages, Will kept meticulous notes about the bird species he observed. Each day he would turn through the pages, each labeled with a species’ name. If he had observed the bird that day, he would describe when, where, and what the bird was doing. From his notes:

Common raven: Sept. 1, 1977—heard one nearby from the air back of base camp . . . voice was changing locations, another indication of being airborne. Saw it and another fly by shortly heading toward Sanders Lake area. Black adults they were alternating flapping with soaring. Soaring on flat wings. Call was a cr-r-ruck.
For some species, such as the common raven, his notes fill nine pages. For more seasonal species, such as goldeneye ducks, his notes cover one page.

Will also kept a daily account of his activities, again describing his hikes or field observation sites. From the first entry in this journal:

This bear was a black cub running in spruce and subalpine fir forest. A herd of mule deer (8-10) were feeding in clearcut (Sect 17 R 18 W T?N) and two fawns were amongst them.

He was especially careful to describe animals he was unfamiliar with or that displayed unusual behavior. Some of these new animals he simply described as “mystery mammals.” One of those mystery animals was a wolverine—a sighting which proved significant in the fight to establish the Rattlesnake Wilderness.

The battle to preserve the Rattlesnake Mountains actually began several years before Will’s excursion. He had worked with a grassroots group, Friends of the Rattlesnake, to establish a campaign to have the Rattlesnake designated as wilderness. When he emerged from the mountains, he had the material to develop a powerful new tool in that campaign—a slide presentation entitled “Sacred Hoop.” More than ten thousand Missoulians attended Will’s presentations during the next year. They all benefited from Will’s notes, which documented the presence of the wolverine and of mountain goats and grizzlies in the wild land so close to a growing urban area.

Interested citizens weren’t the only ones to view “Sacred Hoop.” City and state politicians witnessed the importance of the Rattlesnake area through Will’s photographs, as did federal congressional subcommittees attempting to sort through conflicting claims about the area’s worth. Will’s colleagues in the campaign also presented the program to the major private landowner in
the Rattlesnake—the Montana Power Company (MPC). As the lights went on after the final slide, one of the campaigners noted tears on the face of the MPC board chair's face. That program—and, thus, Will's observations and field notes—convinced the MPC that its holdings should be included in the wilderness and recreation area being established by Congress. Never before had so much corporate land been turned over to the public to preserve an area of that caliber.

"My bottom line is that the Rattlesnake would sell itself through the images we could show people," Will says. "I've always been consistent with my field notes and my politics; I don't go in thinking it would be nice to find certain mammals or birds, I bring back what is there and I think that is good enough."

It was good enough. In 1980, the Rattlesnake Wilderness and National Recreation Area (RWNRA) was established by Congress. As with most environmental issues, the Rattlesnake WNRA has continued to need advocates—and Will's field notes have continued to help protect the integrity of this treasure. In 1987, Will and the Friends of the Rattlesnake uncovered a plan developed by the federal and local government agencies to kill all aquatic mammals within the Rattlesnake watershed. It was a classic case of bureaucratic overkill in response to a natural phenomena that threatened the health of humans. Giardia, a bacteria that can cause humans considerable intestinal discomfort, was present in the water.

During 1987, Will visited one of the beaver ponds more than 40 times to observe interactions among species that used that habitat. His records document nesting by numerous birds, feeding by animals as diverse as black bears and butterflies, plus the appearance of many other species. Clearly more
species than the beaver would be impacted by the plan proposed by the government agencies.

In August 1987, Will's notes became part of an analysis of the beaver management issue published by the Lolo National Forest. In this report, wildlife biologist Mike Hillis cited Will's observations of muskrat, mink, wood ducks, and common snipes. He confirmed that removing beavers would adversely affect dozens of species. Hillis ended his well-documented report by saying that "I have a pile of research data that can be made available." Will's report was a large part of the pile.
Will’s observations of beavers and people during this political process prompted this comment seven years later, “I think one reason why some people hate beavers so much is that beavers show us that we’re really not that damned unique as a species.” Will continued, “We’ve got an ego that just won’t quit.”

**Choices**

A society that values material and career ambitions doubts the sincerity of non-believers. Will has chosen to walk alongside that society, to comprehend its workings, and to work with it to achieve his goals. But his goals have nothing to do with degrees, careers, or material things.

When he was younger, he earned a degree in science education and taught high school math and science for a year. “I have enough background to claim I’m a scientist, but I don’t speak as a scientist and I’ve gone as far as I want that way,” Will says. “Life’s a trade-off—I spend a lot of time settling on what is important to me in the outdoors and how I can share it with people. Reveling in the fact that creatures are equal to us and they have personalities and character and they have some kind of emotion and feeling and passion—that doesn’t lend itself to the mechanical scientific model that has been accepted and taught in our society for so long.”

“A lot of my learning comes from hunting for information, seeking people out,” he says, “that’s one of the best teachers.” He took classes from local plant experts such as Kim Williams, the naturalist who reported for National Public Radio, and John Pierce, a botanist whose collection of hundreds of plants from the Rattlesnake is available to all Missoula residents at the city library.
At one time, Will considered entering a master’s degree program in environmental studies. He enrolled in a few classes, discussed his ideas with one of the professors, and concluded that maybe he didn’t need that advanced degree after all. He could be an effective environmental advocate without it.

“Nowadays I’m definitely more grounded and humble than I used to be,” he says. “I relate more to the spirit that I felt that day long ago when I was crossing the Clark Fork River. We all have so much potential, we all have our own journey. There’s a never ending amount that we can do with that, more than we can do in a lifetime even if we have the knowledge and wisdom.” Because of this, Will says, “I have one lifetime and I want to live it a certain way.”

Will has arranged his life around his connection to nature and to people. He works with disabled people in their homes on a schedule that allows him time to explore the outdoors, work on issues, or tend the amazing herb garden that he and Chris have nurtured for eight years. He lives within biking distance of all of his clients and is frequently seen walking along the Clark Fork River or Rattlesnake Creek.

“It’s hard to use language to describe my connection with nature, but it’s real. I don’t have a day that I’m not communing with nature, I do that every day, I live for that. I wouldn’t be as strong a person if I didn’t.”

**Moving Out: Clark Fork Islands**

“Is he the guy that I see in a big floppy hat down around the river all the time?” a friend asked me when I was describing my interest in Will Kerling’s work. That was indeed Will by the Clark Fork River. During 1994, he spent more than 500 hours documenting the wildlife that use several small islands between the Higgins Avenue and Orange Street bridges. He had casually
watched wildlife on these islands for years as he rode by each day on his way to work. In 1993, he began keeping detailed notes of his observations. Then a friend alerted him that a proposed bridge expansion would threaten the western edge of these islands. Could Will document the wildlife in preparation for a public hearing?

Beginning in January 1994, Will visited the island at least five days a week for at least an hour at a time. “I’m educating myself, surprising some conservationists andanguishing certain business people by what I’m discovering, because the downtown area is teeming with wildlife.” Will has documented 82 species of birds on the islands. Some of them—such as red-necked grebes and yellow-legs—pass through on migration. Others—mergansers, yellow warblers, blackbirds—nest on the islands.

Will’s findings about blackbirds illustrate the value of careful observation. He had been aware that there were a lot of redwinged blackbirds on the islands, but it wasn’t typical nesting habitat for these birds. When he began watching and listing what he saw, though, Will found 22 redwing nests. They were putting their nests right above the high-water mark in the willows.

“One of my best sightings was a mink. I knew it was there, but to go down there and find it is hard work. Well, when you’re not looking, you find what you are looking for. I was watching some young common mergansers and thinking there must be some predators around. About that time I saw one of the predators slinking along the shore, and it was the mink. . . .” Will has also seen beaver, muskrat, chipmunks, and Columbian ground squirrels on the islands.

“All of my notes are being shared,” he continued, “with the engineering firm that’s studying the Orange Street project, the environmental
subcontractor that’s writing the environmental assessment, and also at informational public meetings. I testified a couple of times in front of the council and I’m learning that these field journals are being effective at making change.”

The board of the Five Valleys Land Trust was skeptical about the value of the islands until the executive director, Tracy Stone-Manning, told them what Will had seen. “His notes turned the Orange Street Islands into a viable project,” she declares. “To be honest, if Will hadn’t had that documentation, we wouldn’t have done the project. His notes made it happen.”

The trust now has copies of Will’s notes on file. When conservation groups try to protect a piece of property, they usually commission a baseline report that documents what species are present on the property. Stone-Manning explains, “In a baseline report, someone goes out and walks the property to see what’s there, then goes out again and talks to the landowners about what they’ve seen in the last month. It’s not nearly as long and involved as Will’s observations. To duplicate Will’s work would cost thousands and thousands of dollars. Will’s just doing it because he’s committed, that’s his role, that’s what he’s good at and how he can help. It’s incredible.”

Stone-Manning didn’t exaggerate Will’s importance in protecting the islands. His testimony in the spring of 1994, which featured his careful wildlife observations, convinced the Missoula City Council to recommend that the islands be protected as a wildlife sanctuary and an environmental education area.
Pieces of Preservation

Will keeps his notes in various ways, depending on their intended use. For a wildlife checklist that he is developing for the Higgins-Orange islands, he has “a whole bunch of pages where I list them by families and what I in general observe about them. And then I have nature notes, personal comments, this is tying in field journals with politics.”

“My journals have been disorganized ever since day one,” Will said with a laugh as he looked for examples of his field notes. “I’m doing so much that it’s hard to focus on something that’s not my main job, not a source of income to keep it organized like I’d like. I keep thinking that one of these days I’ll get a fancy journal and draw pictures and make it look more like one being sold on the market but right now my notes are here and there.”

To a casual observer, Will’s notes are indeed as disorganized as he says. But then he describes the notes he’s been taking about the islands in the Clark Fork River.

“I write up what I see each day on these pieces of paper that are falling out of this tablet and at the same time I have an overview from my observations down there that I keep up to date, a summary of different things I think are important. Like today, I’m keeping a count of the different species on the different visits, how many times I see them. For instance, I just came back right before you arrived and I was starting to write in what I saw today.”

Will’s “pieces of paper” have been the start of multiple records for each site that he observes. For Mount Jumbo, he maintains a bound journal describing each outing. From that account he extracts lists of the birds, mammals, butterflies, and reptiles that he sees. These lists are used by university students, scientists, and anyone else who wants to learn about
Jumbo. He has similar lists for his backyard, his neighborhood, and for the parts of the city through which he regularly rides his bike.

**Full Circle**

In a file of newspaper clippings, Will keeps a favorite quote: “nothing in the world can take the place of persistence . . . persistence and determination alone are omnipotent.” He believes that his persistence is a key to the successful preservation of open spaces around Missoula. Will explains another key to his work: “Instead of scattering myself, I pick a focus and become an expert with that. I’ve also learned to balance things out, integrate it all, and feel energized most of the time.”

“I keep dedicating myself to the field work. I grow personally and enjoy the hell out of it, but I also take the trouble to write up this stuff and share it.”

Being outdoors and taking field notes keeps Will balanced. Sharing those notes with the public and with politicians activates Will’s passion. He describes this passion as a contrast to the way that many people perceive nature and politics: “So many times in our culture, we control each other and look at things in a linear way. We stereotype, put things into boxes. And if you are passionate, your intelligence is ignored and you are labeled as an emotional person.”

Will demonstrates a political intuition that catches people by surprise. Tracy Stone-Manning recalled how he captured the interest of one commissioner by simply talking to her about her interests, and then making sure that she observed the animals she cared about when they walked on Mt. Jumbo. “Will is really good at just going about politicking and getting people infectious about the islands or whatever space he’s working on. He gets little recognition in the community because he doesn’t have the advanced degree
behind his name. So many people think of him as some new age gnome who goes off into the woods.”

People’s mistaken impressions don’t concern Will. He simply focuses on the wild places and on the human side of politicians. “One thing I’ve been working on this year is to get as many politicians out there so they have some connection with the issues they’re working with.” This strategy also promotes Will’s belief that wild places will speak for themselves. When he escorts politicians around the Clark Fork islands or up Mount Jumbo, Will often falls silent and lets the land take over the tour.

Will does most of his work in the background, but he doesn’t shy from the spotlight that shines during public testimony. But even when he’s in that political spotlight, he maintains his close connection with nature. At the hearing for the Clark Fork islands, he held a rock from one of the islands in his hand. “I needed a spirit bigger than myself, a spirit moving through all things. I needed my rock, and I needed my friends in the audience.” As he described this, Will leaned back in his chair and looked out the window to where a red-breasted nuthatch was working its way down a chestnut tree. He said quietly, “You know, if more people were enlightened and nurturing themselves and treating other creatures as equal, this work wouldn’t be necessary.”
Notes for Part Two

Full citations appear in the bibliography at the end of the document.

1 Midda 1981
2 Devlin 1992
3 Devlin 1993
4 Woodruff 1983
5 Hillis 1987
6 Stone-Manning 1994
PART THREE

INTO THE FIELD
ON YOUR OWN
CHAPTER 1
BASICS

Today is a fine day for starting a field journal. Find a scrap of paper and scribble a note about the weather—describe how it is different from yesterday. Compare it to this day a week ago. Write three words that describe how it affects your activity right now. Now that you’ve started, don’t stop! Find another scrap of paper, go outside and close your eyes. Breathe deeply as you focus on what your ears, skin, and nose are telling you about your surroundings. Open your eyes and write one short sentence that communicates what each sense told you. Beside each sentence sketch a symbol that visually represents that sentence. Lastly, jot down a couple of questions that arise about what you’ve observed.

Congratulations! You’ve just taken a set of basic field notes. Now you can think about what kind of notebook you’d like to use, what tools you might find fun to play with, what kind of field journal this will be. You’ll find tips for all of these decisions in the following pages, plus basic instruction in field observation and sketching techniques, and lots of exercises to get you going and keep you going.

What Am I Doing?

When you’re ready to move beyond scribbles on scraps of paper, to putting your observations down in a slightly more stable fashion, you’re ready to think about field journals.

What kind of journal best suits your purpose? Perhaps a personal field journal? In it, you’ll record interior reflections and connections with the natural world; you may or may not record information in a systematic way.
Such journals often combine the best elements of a personal journal (reflects one's interior life more than one's external observations) with a creative journal (reflects one's interior life and creates connections with one's external life).

Do you want to keep a personal field journal that might prove useful in the future to offer people? If so, you're joining a growing number of people who have chosen to add one more element—recording data in some sort of systematic way for easy referral.

Because scientists and activists believe these personal/scientific field journals will provide baseline data invaluable in the future, I recommend you find some way to incorporate a system of recording your observations that other people can use. Keeping a running list of species seen and their habitat is probably the simplest. Add notes about their behavior to create a more complete record.

If you are just beginning with field journals, I recommend you keep it simple. Start by finding a comfortable set of tools and experimenting with the exercises described in this chapter. Explore how you work best in the field, discover what interests you most about this process. Let your journal evolve into whatever format best suits you.

**Tools**

**Notebooks**

What kind of notebook is best? Whenever students ask me that, I reply, "One that you will take with you." That may sound simple, but I still face the question each time I walk out the door. I'll settle on one format and be happy with it for a while, then discover that my use of journals is changing slightly and then so will my format. For example, my first field journals are in 5x7"
spiral bound sketchbooks which I could fit into my fanny pack or my jacket pocket. (When I needed to replace that jacket, I looked until I could find one with patch pockets large enough to accommodate the sketchbook.) As I became more comfortable with the routine of keeping a field journal, I got used to the idea of stopping to record what I saw as I hiked and traveled. I also began to feel cramped by those small pages. I switched to an 8 x 10” bound volume whose broad expanses of white paper still inspire me. Unfortunately, the weight of such volumes has led me to leave them home when I’m on long hikes, ski trips, or canoeing. And so I’ve adopted a method that Steve Herman recommends: I carry a 5 x 7” sketchbook in the field and transcribe notes later into my bound field journals. This system has worked well, but now I’m starting to wonder about switching to an 8 x 10 loose-leaf format for three practical reasons:

1. I can easily pull out the sheets I want to copy and use in my workshops.
2. I can pull out and file sheets that discuss particular species, places or events. Later, if I am returning to an area, I can carry those previous accounts without lugging an entire volume.
3. Five to 20 sheets of loose-leaf sketching paper are much lighter than a bound journal or even a 5 x 7” spiral sketch book. However, one field scientist and educator pointed out a major drawback to loose-leaf pages:

   If the wind is blowing, which it often is, your pages can be caught and torn from right under your pen. Hmmm.

If you’re scratching your head or rolling your eyes in confusion at this point, then you might want to review the options described on the chart on the next page. Bottom line? Like I said before, your journal should be in a format that you’ll use.
# Journal Choices

<table>
<thead>
<tr>
<th>Type</th>
<th>Why Use</th>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>lined paper</td>
<td>available in a variety of stores you prefer to be neat</td>
<td>familiarity promotes legible writing</td>
<td>promotes linear thinking discourages creativity disrupts sketches</td>
</tr>
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<td></td>
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<td>promotes legible writing</td>
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<td></td>
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<td>promotes linear thinking</td>
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<td></td>
<td></td>
<td>promotes legible writing</td>
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</tr>
<tr>
<td>unlined paper</td>
<td>available in a variety of stores you prefer flexibility in recording notes</td>
<td>promotes visual thinking by eliminating preconceived styles of writing give you room for maps, sketches</td>
<td>disrupts sketches</td>
</tr>
<tr>
<td></td>
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<td>promotes visual thinking by eliminating preconceived styles of writing give you room for maps, sketches</td>
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<td></td>
<td></td>
<td>promotes visual thinking by eliminating preconceived styles of writing give you room for maps, sketches</td>
<td></td>
</tr>
<tr>
<td>3 x 5 pocket notebook</td>
<td>you always want with you</td>
<td>fits into tiny places lightweight</td>
<td>too small for most maps and sketches limits writing</td>
</tr>
<tr>
<td>5 x 7 notebook</td>
<td>nice compromise between tiny book and larger format</td>
<td>fits into most packs and pockets lightweight</td>
<td>size may limit your style</td>
</tr>
<tr>
<td>8 x 10</td>
<td>sense of permanence</td>
<td>broad sheets of paper give you room to roam in your thoughts and observations</td>
<td>heavy more expensive than other options</td>
</tr>
<tr>
<td>spiral binding</td>
<td></td>
<td>inexpensive can fold pages back into compact package</td>
<td>many spiral bindings cannot withstand field use (abuse)</td>
</tr>
<tr>
<td>sewn binding</td>
<td>permanence</td>
<td>securely holds pages provides sense of value to your work</td>
<td>may get broken in field use expensive</td>
</tr>
<tr>
<td>glued binding</td>
<td></td>
<td>inexpensive</td>
<td>falls apart easily</td>
</tr>
<tr>
<td>loose-leaf</td>
<td>flexibility in how you file notes</td>
<td>lightweight easy to file can carry relevant pages instead of entire books</td>
<td>can fly away on windy day holes can tear</td>
</tr>
</tbody>
</table>
Writing Tools

Just as my paper choices evolve, so do my choices of writing tools. At a minimum, I carry a ball-point pen or pencil stub—anything that will write. I also try to carry at least two writing implements. I accidentally broke this rule recently when I hiked up a mountain where I meant to sit and write for at least an hour. My pen dried up in five minutes, and I had no other with me.

My preference for a writing tool runs to sturdy pens filled with black ink, and my current favorite is the Pilot Precise V Rolling Ball, size 0.7. Unfortunately, this pen has an annoying habit of suddenly leaking. Up until that happens, though, it is a fine writing implement available wherever you buy office supplies.

In The Naturalist’s Field Journal, Steven Herman² devotes two pages to discussing why you should use only one kind of technical pen when taking field notes. His reasons are sound: a technical pen provides a fine line suitable for writing small notes, it can be filled with the ink of your choice (preferably permanent black ink), and its points can be varied. Unfortunately, technical pens have serious faults. They are expensive, they clog easily, they don’t like to fly, and they leak in blobs on your paper instead of on your fingers (as the V7 Rolling Ball does).

You should aim for a pen that you can easily replace or refill, that contains permanent ink, and that you will carry with you. Test your choice by scribbling on a piece of paper that you’ve chosen to use. Spray the paper to see if the ink runs when a drop of rain falls or you spit in excitement at some wondrous sight. Submerse the paper to see if the ink will hold up if you fall in a stream or a child pitches it into a toilet. Leave it in the sun for a few days. If you can still see the lines or words you scribbled, then you have a reliable
field pen. Rumor has it that plain ball-point pens work well, but I personally find them unappealing.

After three paragraphs about pens, I suppose I must say something about pencils. They are fine writing tools that are lightweight, inexpensive, and easy to sharpen with your teeth. However, if you use pencil for writing, be prepared to consign some of your observations to the unreadable after a short while as smudges, smears, and other forms of degradation occur. On the other hand, pencils never run and they make fine drawing tools.

**Drawing Tools**

I often sketch with the same pen that I write with—a reason why I prefer the flowing dark lines of a rolling ball pen versus the scratchiness and indistinctness of a ball-point pen. Using the same tool for both writing and drawing encourages me to switch back and forth between these two styles of recording information. I can sketch the form of a bird and add pertinent notes without lifting my hand from the book.

However, I also keep a fanny pack of tools ready to go around my waist whenever I embark on a hike. Inside the pack, I keep a mechanical pencil, several pens, an assortment of drawing pencils, a Sumi brush pen, a small set of watercolors, and an assortment of colored pencils. I also carry a German pencil sharpener, a knife for the times when the pencil sharpener cannot be found, and two kinds of erasers: a kneadable eraser which is a gray square that transforms into a heated ball of rubber when you knead it, and a “Magic Rub” eraser that is almost as good at picking pencil marks off of paper.
Other Items You Might Want

- hand lens to examine details of a flower or other object
- binoculars to look at animals and landscapes more closely
- portable camp chair to provide comfort during long periods of observation (My “Crazy Creek” chair accompanies me on many excursions.)

Some naturalists also carry small plastic rulers for taking precise measurements that others can easily interpret. I don’t. Instead, I measure with my body—the width of a fingernail, the span of my hand, the height of my hips—so that the information imprints in my brain in several different ways. This “body-measuring” methods enables me to remember what I measured in a way that no ruler can improve.

Carrying It All

As you choose the size and type of notebook you want to use, also consider how you’ll be carrying it. Any of these methods work well for me:

- fanny pack
- pocket
- day pack
- zippered pouch
- protected, zippered notebook cover

Rules & Nonrules

Just as tools are subjective decisions, so are the “rules” you set for yourself about keeping a field journal. The only hard and fast rule should be that you choose rules that work for you, not against you. If you attempt to establish a
routine and then consistently find you are not holding to it—chuck it! Maybe your journal is not a part of your life that you need to regulate.

**Basic Field Journal “Rules”**

- date each entry
- note the weather (temperature, wind direction & velocity, cloud cover)
- note your location

**Rules That Seldom Work**

- any rule that stipulates what you will or won’t do each time you go out
- any rule that tells you to do what you aren’t naturally inclined to do
- any rule that restricts your flexibility, creativity, and powers of observation

**Overcoming “First Page Fear”**

I’ve filled more than ten volumes of bound sketch books with my field notes in the last three years. Yet every time I buy a new book, I do so with a mixture of anticipation and anxiety. Something about opening a never-opened book and finding blank pages is mighty scary to me, and to many other people. Most journal keepers have developed a few ways of overcoming that fear. If you find yourself slamming the book closed before making a mark, consider reopening it and trying one of these ideas.

- Skip at least the first page. Leave it blank and begin writing or drawing on the second or third page.
- Open the book to any page at random and begin there.
- Color the first couple of pages with swaths of watercolor or pencil.
- Design a title page for this volume of your journal.
- Begin on the last page.
Once you’ve made that first mark, keep drawing or writing for a few more pages. By the time you stop, you’ll be committed to transforming that blank book to your field journal.

**Unsticking Yourself**

One sure way to stop keeping a journal is to over prepare yourself. If you find that you’re leaving your journal at home more than you are taking it with you, then consider deliberately taking a break. Leave everything at home—your journal, your pens and pencils and colors, your binoculars, field guides and packs. *Leave it all at home.* Return to your favorite trail or observation spot unencumbered, lightweight, free. Soon enough you’ll rekindle that desire to write or draw again, but until then—relax. Celebrate the freedom to be a part of our natural world.
CHAPTER 2
ACTIVE SENSES—OBSERVATION EXERCISES

Other Than Your Eyes

Most of us rely on our eyes to tell us about the world; we don’t routinely sniff the air, feel the wind, or listen to the subtleties of sound. As you awaken these other senses, you more easily become aware of your surroundings. Try this simple, five minute exercise to help reactivate these other senses we so often neglect.

Sensory Inventory

Sit or stand somewhere you’ll be comfortable for five minutes. Close your eyes. Begin breathing slowly and deeply. Allow random thoughts to flow out of your mind. Ask yourself what can you hear above you? In front of you? To your left? Your right? Behind you? Include everything you hear, including sounds made by humans and our constructions (cars, planes, tools). Now, ask yourself what can you hear that is not human-oriented? If you are in a human habitat such as a college campus or an urban pocket park, you may have to be particularly patient and focused to hear the sounds of birds, squirrels, water, or the wind.

Now ask yourself what you can smell. Alter your breathing if necessary, taking short quick breaths to catch fleeting scents or inhaling even more deeply to capture subtle smells.

Explore your sense of touch by asking yourself what your skin feels. Question your body—Where am I warm? Where am I cool? Do I feel a breeze? Do I feel the sun? Do I feel dampness, or do I feel dry?
After you’ve inventoried your senses and allowed them to tell you about the world in which you are sitting, inhale one last long slow breath. As you exhale, open your eyes slowly. What do you see that you didn’t see five minutes before?

In addition to its role in awakening senses, this exercise also provides you with a transition from our more human-oriented everyday world to the other-oriented world of nature. I used it to help me move from a frantic publishing office into the outdoors during my morning and afternoon breaks. After five minutes, I had left the ringing phones and bustling colleagues behind and rediscovered the chickadees, wildflowers, and flowing water that filled the woods that surrounded our building.

Seeing What We Don’t Usually See

The art of observation includes asking questions that lead to other questions. Answering those questions comes later as you reflect upon what you have observed. For now, keep asking, asking, asking. When you are trying to describe what you see—whether you are using sketches or words—ask questions about what you truly see. What shapes make up the landscape, animal, or other thing? What lines? Can you discern patterns? How many colors do you notice?

Shape

Is this round, flat, triangular?
Is it vertical or horizontal?
Does it look like any other shape I’m familiar with?
Does it contain more than one shape?
Line

Can I trace a horizontal line here?

Are there any vertical or diagonal lines?

Any fat lines? Thin lines?

Example: You can often discern a horizontal or vertical dominance in the growing pattern of a forest. If the trees line up in neat rows you have a major clue that perhaps these trees were planted by humans.

Pattern

What patterns do I see?

What shapes or lines overlap?

Do forms repeat themselves?

Do I see vertical groupings? Horizontal groupings?

As you practice looking for shape and line, you'll find more patterns that combine these elements to create a pattern. For example, study the markings on the face of a tabby cat. Find the shapes that repeat themselves and the lines they follow. Together they create a marking pattern on the animal that is distinctive from any other tabby cat.

Color

What colors pop out?

What variations of those colors do I see?

What colors are the shadows?

Example: Notice the different greens present in just one kind of evergreen tree, then compare its colors to those of other species.
Observation Challenge

If you want to truly challenge your powers of observation, go afield without any field guides or other identification notes. Describe the new animals and plants in as much detail as you can. Soon after you return home, look up the species you described. Can you figure out who they are?

Not only does this exercise hone your ability to observe field marks, but it also reminds you that behavior and habitat are important keys to figuring out the entire picture of what you have observed.

Touching the World

Our sense of touch intimately involves us with what we see. The next time you see a tree that you’d like to describe in your journal, walk right up to it and stroke its bark. Let your fingertips tell you what the tree is all about. Press your cheek against the trunk, rub a leaf against your cheek. Sit down and lean against it.

Of course, you need to be cautious about what you touch. If that tree trunk is wrapped in hairy vines, I’d recommend against rubbing your skin against it. Chances are that hairy vine is poison ivy. That’s a sensory sensation you’d most likely prefer to avoid.

Golden Silence

Leave words behind for a period of time. Spend a half hour, a half day, a whole day exploring the world around you in complete silence. This is especially effective if you are exploring with another person who also agrees to the silent exploration. Record information and impressions in your journal with symbols and drawings and color instead of words.
CHAPTER 3
FLYING FINGERS—FIELD SKETCHING SKILLS

When you translate your observations of shape, line, pattern and color into drawings, you are already creating a solid foundation for field sketching. In this section, I’ll describe two drawing exercises that I learned in art school. They’ll benefit anyone who sketches. Then I describe a few exercises specific to field journals.

Gesture Drawing

Gesture drawing captures activity, motion, transition. You are actually creating a series of sketches, moving to a new sketch each time your subject moves. Your eye races ahead of your mind and allows you to truly see and translate motion and behavior to the page without the interference of your know-it-all mind. In drawing classes, gesture drawing is literally the warm-up exercise.

To try the action of gesture drawing, tape several sheets of old newspaper to a table or wall. Find a broad tipped marker or a hunk of soft chalk. Coerce a loved one or a good-natured friend to be your model. When you are ready to begin, instruct the model to change position every ten seconds. Begin sketching—make broad, loose strokes on your paper, moving fast, looking at the object constantly, letting your hand move as your eye moves.

After a minute or two, ask the model to change position every five seconds, and so on until one or the other of you collapses in hysteria or exhaustion.
Application in the field:
Use gesture drawing to sketch anything that is moving—
animals, water, clouds—and to loosen up your mind and
body to focus quickly on a changing scene.

Contour Drawing

Contour drawing is designed to disengage your
mind from your hand, to let your eye join with your hand
without all of your years of prejudices and preconceptions
getting in the way. If you think you have no problems with

Contour drawing is easiest with subjects who aren’t moving, such as these elephant seals
who might raise an eyelid every ten minutes.
your mind while you draw, try to fill an entire journal page with a drawing of one small flower. Contour drawing flows past the roadblocks we throw up between our minds and what we truly see.

**Classic Contour:** Decide on what you would like to draw. Mentally place it on your journal page. Choose a starting point on the thing you are drawing. Concentrate on that spot. Place your pen on the journal page. This should be the last time you look at the page. Return your eye to the starting point on the thing you are drawing. Concentrate on that spot and then begin to slowly, slowly trace the object with your eye. As your eye moves, allow your pen to move across the paper. Move both your eye and your pen at exactly the same rate. Allow your eye to trace as little or as much detail as you choose. Do not look at your paper until you are finished. Do not tear up the sketch, but do laugh out loud if you wish.

The point of contour drawing is not to render an object in realistic detail. The point is to free your eye and hand so they can approach the subject as honestly as possible. With practice, your contour drawings will begin to replicate what you are seeing with quirky precision.

**Field Contour:** Method is the same as classic contour except that you can look at your page from time to time to orient yourself because, after all, you are trying to create a likeness.

**Application in the field:**

- To help you slow down and focus on what you are observing.
- To begin landscapes—place skyline or horizon, capture basic shapes of geology, achieve perspective
• To sketch things that your mind refuses to see such as the deep well of a columbine flower or the foreshortened limb of an animal lying in the grass.
• To render distinctive shapes—such as heads, ears, leaves—accurately.
• To begin a sketch, then later combine it with gesture drawing or other techniques.

Memory Drawing

You can do this exercise alone, but it is even more challenging to do it with a group of people and then compare notes.

Decide on which object you would like to sketch. Study it for five minutes. Trace it with your eye as if you were contour drawing. Look for shape, line, pattern, texture, color. Smell it. Feel it with your hands. Imitate its shape with your body. When five minutes have passed, turn your back on the object. Go over your observation mentally for a few minutes, then begin to draw what you remember. When you are done, turn back around and compare your drawing with the object. If you are doing this with other people, compare your drawings among the group.

Application in the field:

Sometimes you cannot conveniently draw what you are observing. For example, if you happen upon a squirrel that is busily gnawing on a pine cone, you would scare it away if you slung off your pack to get out your sketchbook. So make a mental drawing of it.

Back-to-back Drawing

Pick a partner. Ask your friend to find a small object or to pick out something nearby. Sit back to back. As your friend describes the object, you
must try to draw what is being described. Increase the challenge by not allowing any questions between you; increase the practice by allowing questions.

Application in the field:

“It’s that round thing, don’t you see? Over there? Right in front of you!” How many times have you wanted to strangle your hiking partners because they see something exciting and can’t articulate what it looks like or where it is. Practicing such observation description will enhance your experience and those of everyone you hike with. It will also guide you to more precise, original verbal descriptions of your observations.

Maps

Maps engage our intuitive and analytical minds and force us to reflect on where we’ve been and where we are going. They can lead you back to a real place and they can also lead you forward into new ways of thinking.

1. The “What Is Right In Front of Me” Map

Sit in one place and draw a map that would guide an ant on a journey within the square yard in which you are sitting.

2. The “How I Got Here” Map

The next time you go hiking, or even for a walk around your neighborhood, draw a map of your journey so that another person could follow it. Ask someone else to draw a map of the same route and then compare your notes.

3. Underground Maps

What goes on beneath your feet? Do ants or moles or groundhogs burrow in the soil? Where to plant roots go? How does rainwater percolate through? Imagine what might be occurring under the ground and map it. Later, see if
you can find out what is really happening. Talk to a local soil scientist or study a nearby road bank or stream cross section. Look up the plants in a botany guide; read up on animal behavior. Add to your map or adjust it as needed.

**Example:** I live in a small city that sits on top of an aquifer. At one public meeting, I was able to see a variety of maps that detailed how the water flowed under our city and how our actions affected that water. Now, when I sit in my backyard, I often imagine that ground water slowly sliding south and west in the loose gravel that I know lies beneath my lot. Drawing such a thing is quite a challenge, but brings instant understanding to many people.

4. **Event maps**

*Go on another hike or neighborhood walk and map what happens to you as you walk. This map is not designed to reproduce the physical aspects of your walk—how far you went, when you turned left—but to record what caught your eye on the trip. The first half of your map might cover one mile, the second half might occupy less than one square yard.*

**Color Challenge**

Leave your pens and graphite pencils in your kit and draw something using only color.

- *Lay in the pieces of a forest or landscape in different shades of green and gold.*
- *Draw a woodpecker with one red swath.*
- *Express your feelings about what you are seeing by brushing a color across a page.*
CHAPTER 4
EYE & MIND—
THE ROLE OF WRITING IN FIELD JOURNALS

Writing in field journals emphasizes the outer world over our inner world, yet we can utilize the same techniques that people use who keep personal and creative journals. In scientific field journals, we need to describe observations, question what we see, connect it with what we know, and reflect on the meaning of what we've seen. In personal field journals, we use the same methods but expand their realm to include how our observations connect to our thoughts and feelings.

Basics

Charles Roth, writing in The Wildlife Observer's Guidebook, recommends beginning with the classic journalism questions, What, When, Where, How, Who, Why. Add How many, How often, and How long—and you've got the basics of what you need to describe in the field. He also suggests that we take copious notes, recording primary observations and details of the environmental context of that observation. 4

Description

Precise description is the goal of writing in field journals. Your words should be well chosen rather than clever or poetic. They should help readers view the object as clearly as you saw it. Once you've achieved this clarity, you can strive for describing your perception of what you were seeing. For example, tropical biologist Donald Perry described an encounter in Life Above the Jungle Floor:
After hours of watching, listening, and daydreaming, I was finally rewarded with a peculiar sight. It looked as though a small, yellow radio-controlled aircraft was banking left around a tree crown and coming my way.5

Perry was describing a beetle that flew by his platform high in the rainforest canopy of Costa Rica. Such descriptions fill his book and are based on his field notes.

When you are trying to describe what you observe, deliberately avoid using terms and images that you’ve heard before. Use words that uniquely describe your view. Those are the words that will conjure up the image for you most clearly, and will catch the eye of another reader.

I remember a long flight across the country a few years ago when I lucked into the company of a man whose observations were wonderfully evocative and original. At one point when we were flying over some crenated canyon country somewhere in the Four Corners region, I gestured for Ron to look out the window with me. As he leaned back into his seat, he said simply, "You know, looking at the earth through an airplane window is like looking at an elephant through a straw."6 His original analogy has forever changed the way I look at landscapes out of plane windows. Now I recognize that I'm still seeing mere pieces of the huge puzzle that is our topography, and as I gaze and wonder, I think about how these pieces fit together into what we know as the United States and how seldom we can see the pieces even from the expanded perspective of flying in a plane.

For students who get stuck about writing, I recommend they pretend to be writing a letter. Think of a friend who may never have seen what you are observing, and write a letter to that person describing what you are seeing, hearing, smelling, and feeling. Use the same language you’d ordinarily use in
a friendly letter, inject some humor and thoughtfulness, strive for a conversation.

**Connection**

Thinking of writing as a friendly conversation assists you in opening the lines of communication with yourself that can lead to experiencing personal connections with what you are observing.

Bill Hammond and his grandchildren teach people of all ages about keeping creative journals. The grandchildren, who are in elementary and middle school, urge their classmates to observe something in nature and then think of something in their lives that they can associate with that natural object. An example might be as simple as observing a ring of mushrooms and then thinking about circular things you enjoy using such as bicycle tires or float tubes.

In a workshop I attended, Hannah Hinchman suggested we focus on talismans. Settle yourself in a comfortable place and then wait for some sound or sight or smell to become dominant. That “thing” becomes your talisman. As soon as you’ve identified it, begin writing in a free association that allows your thoughts to flow one to the next to the next with no regard for what words you are using or the format or coherence. It’s a flowing from the talisman, it’s a tracing of the talisman’s meaning in your life.

**Reflection**

Whether you are keeping a scientific or personal field journal, make reflection part of your routine. Set aside time while in the field or when you are transcribing notes to review your notes and think about what they might mean. Look for connections among what you’ve observed that day and in the
past, consider what you might know outside of what you’ve observed, think about what your reactions are to what you’ve experienced during this time.

Two spectacular examples illustrate the importance of reflection to scientists: Charles Darwin’s theory of evolution found its beginnings as he reflected on field notes written as he visited various islands during the voyage of the HMS Beagle.7 Jack Horner’s theory of social cooperation among dinosaurs grew out of his habit of walking away from the dig where he had focused attention on a square meter and climbing a hill that overlooked the entire site and surrounding country.8

**Event Maps**

Any kind of map can illustrate connections and evoke memories of what we’ve seen on a journey, but event maps are particularly useful for creating connections and aiding reflection. These special maps allow you to interpret what you are observing on your own terms. (See pages 64–65; 126.) They also encourage you to integrate the visual information and mental images you’ve collected during your period of observation.

**Cluster Writing**

Cluster writing uses words in a visual way that helps us break free of the linear practice of writing sentences. This freedom then promotes more creative thinking that often leads us to new connections and reflections. I’ll describe the process below.

*Begin with a blank piece of paper. Think of one word that best describes what you want to explore; write it in the center of the page. The next word that comes to mind, write near the first word in a place that seems appropriate. The next word, write it down near the second word. Write down*
the next word, and the next and the next. If one word is connected to two or more words, connect them with lines. If a word seems particularly important, circle it, write it as large as the first word, give it a separate section of the page.

Cluster writing alone provides insights, but it can also be used as a verbal and visual map to a more finished piece of writing.

**Investigation**

Connection and reflection often lead to a need for deeper questioning or investigation. Do you want to know more about a particular aspect of what you’ve observed? How will you go about finding out about this? Where will you look, and when? Answering these questions may often lead to more questions as you uncover unexpected details and trails.

Tracking mammals provides a clear example of how investigation works. When you find animal signs such as tracks and trampled vegetation, think of them as parts of a story. By looking closely at these clues and by asking questions, you begin to put together a story of the animal who made the signs, what it was doing, if other animals involved, and the impacts of that behavior.⁹
CHAPTER 5
CONNECTING WITH PLACE:
BIOREGIONAL INVESTIGATIONS

Field journals are uniquely suited for learning about our bioregions because we use them to record what we observe in our local environment and to describe our connections to the other living things around us. An action as simple as turning on a faucet can lead us into a series of questions—Where did this water come from? Is it ground water or surface water? What streams or lakes is it connected with?—that begin to define our bioregion. These questions in turn lead to more questions—Is our water supply adequate? Is its quality at risk? What habitats and inhabitants depend on the water?—that develop a greater understanding of how the elements of that bioregion are interrelated.

If you are interested in exploring your bioregion, begin with the questions listed on the next page. They have been adapted from a list originally introduced by Peter Warshall in 1976 that has been adapted by a number of people and has appeared in a variety of articles and books.
Questions to Begin a Bioregional Journal

Where am I?
To orient yourself geographically, answer questions such as:
- Where is the nearest body of water?
- What direction does my home face?
- Where is the nearest open land?
- Where is the nearest trail?
- Where is the closest wild place?
- What is closest wilderness?

Draw a series of maps that identify the answers to these questions, beginning with a map of your home, then your neighborhood, community, open spaces.

Who shares this place with me?
What animals and plants live within a mile of your home? within 5 miles, 10 miles, 50, 100?
Which ones have you seen, either in flesh or signs of?
How often do you see them?
Are any endangered? threatened? vulnerable?

What resources do I use?
Water:
- where does it come from?
- is it treated? how?
- how much do I use each day? each month? each year?
- is there a shortage?
- is there contamination? threats of pollution?

Electricity:
- What company provides my electrical power?
- What is the original source—location and type of fuel—used to create electricity
- What is the real cost?
  i.e. does it disrupt or degrade habitats?
- What alternatives (solar, wind, etc.) are possible?

Food:
- where does my milk and grain come from?
- what vegetables can I grow here?
- what other crops grow in this area?
- where can I purchase food from local growers?
CHAPTER 6
EXERCISING IN THE CLASSROOM

All of the exercises described so far can be done with students if you adapt the experience to your group's age and skill level. Try these ideas for getting students started.

Journal Jump-starts

Ed Grumbine, director of the Sierra Institute at the University of California at Santa Cruz, notes that many students have never kept a field journal before, and so he assigns group exercises in the beginning. For example:

- rising early to watch activity around a meadow
- observing red squirrel behavior in a spruce-fir forest
- censusing birds in a field or riparian area

He suggests having students share their work in pairs at first and then in larger groups as they become more comfortable and aware of what different individuals observe and think about.¹¹

Other beginning ideas:

Test observations skills with a daily challenge:

- Look for three birds, observe their field marks & behavior, but don’t write or draw them. Describe to group.
- From which direction was the wind yesterday?
- When was the last time you felt a raindrop on your face? (conversely, when was the last time you felt the sun?)
- Observe animal behavior and record with sketches instead of words.
How to Start Students with Journals

Keep your own journal and share it with students.

Decide:
- why you want participants to keep journal
- what you hope they will get out of the project
- if you want them to keep a particular kind of journal
  (strictly field, field/creative, personal, ...)  
- if you will be reading all entries or allowing them to choose
- if/how you will guide the journal
- if/how you will grade the journal

Consider:
- setting journal goals and guidelines with students
- providing assignments but allowing them to fulfill whatever way they choose
- encourage, allow drawing and writing

Specifics:
1. Keep your own journal, following the guidelines you establish with students.
2. Experiment with field notes—jotting things down during the day and transferring to main journal at end of day.
3. Be clear about whatever rules you want them to follow; keep rules to minimum.
4. Do not grade for grammar, spelling, neatness, or artistic abilities.
5. Consider asking them to follow these basics:
   - title their journal
   - begin each entry with date, location, environmental observations
6. Respect their privacy. If you want to see the journals, ask students to mark pages you are not to read, and then respect that absolutely.
7. You can guide the journal entries with questions, perhaps one a day or one a week. Allow them to respond in any way they feel appropriate.
8. Encourage them to share their journals. Model this by sharing your own at least once a week, leaving it out for them to look through.
9. Collect and read journal entries by other people.

Daily Activities

- Describe what you have seen today.
- Describe what you have learned or discovered.
- Connect an environmental observation with something personal in your life.
- Connect at least one environmental observation with something you have learned that week.

Other Activities

- Draw an object in three dimensions.
  Describe the same object in words.
- Divide one page into two sections: On one side record observations about an object or place, on other side record what you think
about as you observe this object or place.

- Pick something that seems unrelated to where you are at that moment and find its connections to that place or object.

Observation Olympics

Your own imagination is one of the best tools you have to teach observation skills. For example, I needed a set of activities to use indoors with adults when inclement weather prevented our workshops from moving outside. So I came up with five quick games that used materials found around my house, stimulated visual and tactile senses, and developed the ability to communicate observations. The activities, which I call “Observation Olympics,” are described in detail in the Appendix.

Flexibility is another important key to stimulating interest in field journals. I’ve used one of the Observation Olympics—“Butterfly Dash”—with a group of kids who ranged in age from seven to thirteen. The object of the game is to determine the number of butterfly “species” (actually pieces of colored paper) that “fly” in and out of a small area. The kids noticed subtle differences in how I had marked the butterflies, differences I hadn’t intended to matter. But because of the kids’ curiosity and willingness to challenge me, I turned the activity into an exploration of how species are described by taxonomists. The kids got into rousing arguments among themselves, but they finally came to consensus on how they would report their “findings” to an imaginary conference.
Notes for Part Three

*Full citations appear in the bibliography at the end of the document.*

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1 Herman 1986
2 Herman 1986
3 Hinchman 1994
4 Roth 1985
5 Perry 19xx?
6 Stew 1992
7 Keynes 1988
8 Horner 1994
9 Halfpenny 1994
10 Warshall 1986
11 Grumbine 1992
CONCLUSION
BEYOND THE PERSONAL:
USING FIELD NOTES TO BENEFIT THE ENVIRONMENT

Whatever method we choose for keeping field journals, our observations of nature—formal and informal—provide documentation that will be valuable in the future. Imagine the wealth of information awaiting people in the next century as they turn to the journals of today for help in fathoming the extent of global change and the changes in biological and ecological diversity.

To make retrieval of this information easier, you can develop a system for recording or filing notes that you can use easily and that someone else can also understand. Ideas include:

- Indexing the species, behavior, and habitats you observe at the end of each volume
- Reserving the back five pages of your journal for accounts of the species you’ve observed
- Record species observations in the back of your journal
- Maintain a separate journal for species observations
- Enter pertinent information in a computer file

The key to identifying significant information is to review periodically your notes for connections and trends. Jot these down, pursue them by calling local experts in the field who might have even more information to illuminate what you’ve found. These same people should be interested in what you are discovering too. Add their names to a list of people you can call for guidance in investigating the meaning of your observations.
Learn about how your community functions regarding environmental issues. Does the local government sponsor citizen forums or study groups, encourage people to attend public information meetings? What environmental groups monitor environmental quality in your area? How can your notes contribute to these efforts? Who are the reporters on the local newspaper that would follow environmental stories? How can you approach them? If they are not receptive, what other options—such as letters to the editor—can you exercise?

Constantly look for ways in which you can use your field notes. They provide valuable documentation that is otherwise hard to find—offer them to people who are working to help the environment. In this way, your connections to your environment—strengthened and deepened by the act of keeping a field journal—extend beyond yourself. In this way, your journals can make a tremendous difference—to you, your community, our world.
APPENDIX
**Observation Olympics**

These activities were originally designed as a competition for adults participating in a workshop. Feel free to adjust the age level and complexity to suit your students. And if you’d prefer to create a cooperative set of activities, abandon the scoring system and team format.

You’ll need  
- timer  
- flip chart & markers for scoring  
- miscellaneous items as described for each game  
- people divided into teams of four

1 **Shell Inspection**

Give each team a similar set of objects. For example, I gave each team a set of shells—one calico scallop, one scotch bonnet, one olive shell. They are to describe their shells to themselves in sufficient detail so they might find the shells again.

While they are doing the inspections, draw scoreboard on flip chart. Each team begins with 1000 points.

2 **Butterfly Dash**

You’ll need a set of “butterflies” that appear similar but have a few differences. For example, I prepared four “species” of butterflies with red and blue stripes and dots of either orange or pink. The upper leaf patterns varied within species; each species was identified by the under wing pattern.

Prep the group by explaining that they are in a field renowned for its butterfly varieties. Their goal is to determine how many species they see. They will be more efficient if they work as a team to observe field marks. Give each team one minute to set up their roles. Tell them the one rule is that they cannot move from their seat nor can they move the butterflies. Then, scatter the butterflies in front of everyone.

Count to 20. . . .
Pick them up, scatter them again
Count to 10. . . .
Pick them up, scatter them again
Count to 5. . . .
Pick them up and ask the teams to decide on how many species they saw and to describe each one.

100 points for exact #
100 points for each accurate description
-50 for not identifying enough species
-100 for identifying too many

3 Ocean Relay
Each team attempts to count the total number of shells and shapes as the "tide" recedes.

You'll need a bunch of shells (or some other objects) and one T-shirt. Place the shells in the T-shirt and gather the shirt up in your hand. Lay down the T-shirt and open it for 5 seconds, then gather it up again and shake it lightly. Repeat this four times.

After the fourth "recession" of the tide, ask each team to report the number of shells they estimated and to describe the shapes they saw.

100 points for closest estimate of number of shells
0 points for rest of teams
50 points for each distinct shape they can describe

4 Ball Groppe
This is an identification exercise with a twist. To make this work, you must do two important things:
1. Isolate each group before you hand out the balls.
2. Do not tell them that they will have to identify the balls by feel in Part 2.

You'll need a set of balls for each team. Each set should contain 4 balls that appear different and that have different tactile qualities (kind of yarn, squishiness, weight). See the chart at the end for one way to achieve the variety and similarity you'll need.

Part 1.
Pass out one small bag containing 4 balls to each team.
Ask them to study the balls until they are sure they can identify their set. Do not instruct them on how to identify the balls or give clues about what they are to notice.

Part 2.
Collect all the balls into one big bag or box.
Have the teams draw straws to see who goes in what order.
Team #1 must find one of its balls in the bag or box, without looking!
(You may want to have blindfolds handy)
Each team follows, to find ONE of its balls.
Repeat four times until all balls are claimed.

400 points if find all four balls
300 for three
5 Shell Retrieval

Unveil the shells again.
Using the same procedure as in Ball Grope,
each team must find the shells it had at the beginning of the Olympics.

600 points if find all three
400 points if find two
200 points for one
100 for mistake or inability to find each shell.

Ball Grope Ball Chart
(numbers refer to team)

<table>
<thead>
<tr>
<th>Red Mohair squishy 4</th>
<th>Orange Wool squishy 3</th>
<th>Blue Chenille squishy 2</th>
<th>Linen squishy 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Mohair squishy &amp; linen row 3</td>
<td>Orange Wool squishy &amp; linen row 2</td>
<td>Blue Chenille squishy &amp; mohair row 1</td>
<td>Linen squishy &amp; mohair row 4</td>
</tr>
<tr>
<td>Red Mohair firm w/ rock (black mark) 2</td>
<td>Orange Wool firm w/ rock (black mark) 1</td>
<td>Blue Chenille firm w/ rock (black mark) 4</td>
<td>Linen firm w/ rock (black mark) 3</td>
</tr>
<tr>
<td>Red Mohair firm 1</td>
<td>Orange Wool firm 4</td>
<td>Blue Chenille firm 3</td>
<td>Linen firm 2</td>
</tr>
</tbody>
</table>
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