

Nature Study

A Journal of Environmental Education and Interpretation



Keeping Nature Journals

VOLUME 52, NUMBER 1 2004

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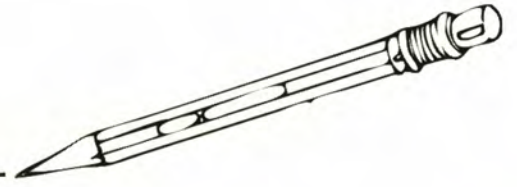
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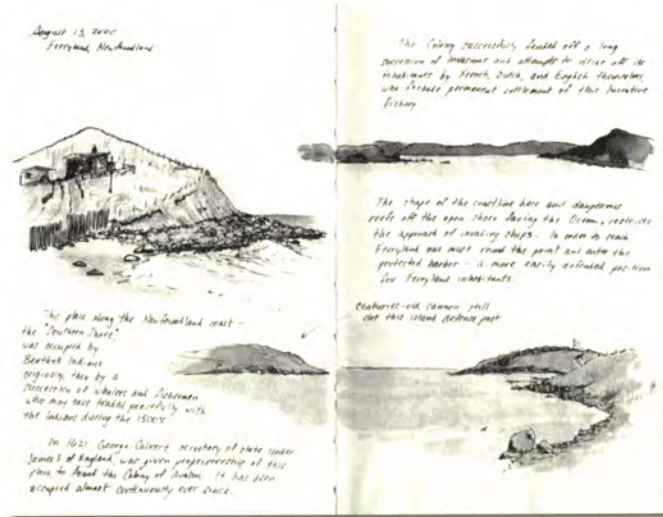
From the Guest Editor

by Mark Baldwin



Nature education is about inspiring awareness, appreciation, and understanding of the natural world. Our goal as nature educators is to train hearts and minds both to love and to know. I can think of no better way to experience first-hand the emotional and intellectual stimulation of the natural world than to keep a personal field journal.

My own introduction to field journals came as a graduate student at Antioch/New England, when I registered for a weekend workshop in natural history illustration taught by Clare Walker Leslie. A book she had authored, *The Art of Field Sketching*, was to be our textbook. Considering my lack of drawing skill I bought the book a few weeks in advance and started practicing. The exercises in that book had a remarkable effect on me. They were methodical, visual, and easy to grasp. Soon, more quickly than I had expected, I was drawing fairly satisfactory representations of what I was seeing.



And – this was the crux of the whole experience – I found my observation skills improving.

The workshop came and went, but Leslie's book continued to resonate with me. I was teaching seventh grade life science at the time. I wanted them to be better observers too. The fact that the techniques – well known to art teachers, yet unknown to me given my training as a biology

teacher – were easy even for me to learn suggested how well they could transfer to my students. I taught them a few of the exercises. They worked. My seventh graders were suddenly seeing and note-taking more accurately. They were getting more out of labs and field work. They were learning how to see. I searched for more books on drawing, nature drawing, and the published journals of artist/naturalists like Frederick Franck, Edith Holden, and Keith Brockie. I bought a copy of Betty Edwards' *Drawing on the Right Side of the Brain*



and did what it said. I was hooked. I dug into *The Natural Way to Draw* by Kimon Nicolaides (who, by the way, was Roger Tory Peterson's drawing instructor) and got hooked even deeper.

I began to experiment with various pens and colored pencils, even watercolors.

Me, a straitlaced, left-brained science teacher, found myself out there at odd moments recording weather signs, animal tracks, birds at the feeder, wildflowers, road kill, whatever caught my eye. Recording it all was soul-satisfying and fun. I have been doing it ever since.

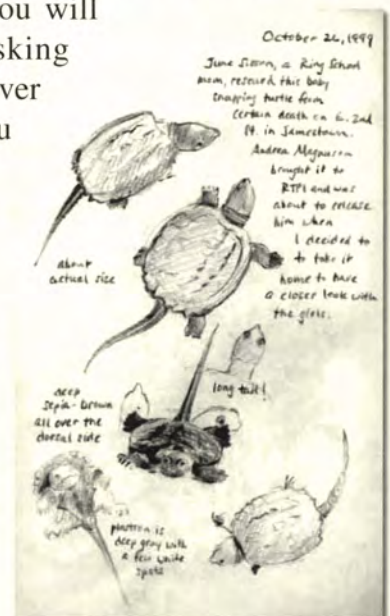
Since then I have found a world of writing and teaching about field journals. The fact that it is



the most trans-
 formative tool
 available to the
 environmental
 educator is no
 longer a secret. Of
 course we still
 have the journals
 of Gilbert White,
 the 18th century
 cleric who cham-
 pioned local na-
 ture study, and the
 journals of Henry
 David Thoreau to

inspire and guide us. But now we also have the
 outstanding books of Cathy Johnson, Hannah
 Hinchman, Clare Walker Leslie and Chuck Roth
 to show us how. There has been an explosion of
 workshops and courses on how to keep personal
 nature journals at schools and nature centers all
 over the country.

This issue of *Nature Study* is for people who
 keep field journals and those who would like to
 give it a try. The most important point I can add
 to what the experts share on the following pages
 is this: keeping a field journal is habit-forming.
 The more you do it the more wonderful — and
 puzzling — your world will become. As your
 journal grows you will
 find yourself asking
 questions you never
 thought you
 would ask. Your
 fine-tuned
 sense of
 wonder and
 curiosity will
 lead you along
 a path of
 personal
 discovery and
 life-long
 learning.



American Nature Study Society

President's Letter

by Steve Melcher

I've been keeping a journal since I was ten years old. I still have that journal from Mrs. Winport's class, and a whole shelf full of journals staring down at me, reminding me of my past. Our sixth grade teacher wanted us to record our thoughts and dreams. This assignment encouraged her class to write something, anything. In searching for something, anything to write, we were obliged to look at (observation skills) and think about (reflection) our world. My world was and still is a world of nature, and my journals reflect that bent. One journal entry from the past details the nest of a robin with a crude but recognizable sketch. Yesterday's entry from the turn of the millennium (2003) describes the blooming of the hawthorn orchard on our preserve in Western New York and the associated warblers. I still need to work on my sketches.

Journals and albums were the trend in Liberty Hyde Bailey's time at the turn of another century. Folks would get together, chat and then sign each others 'albums' with original quotes or those of some favorite bard. I have my great grandfather's 'Album writer's Friend' in which hand written poems and greetings are recorded and signed. A few of the names, I recognize. There are scribblings and beautiful script from Theodore Roosevelt, John Burroughs and Gifford Pinchot. I wonder what the connection was between my grandmother's father, a paymaster who worked on the Panama Canal, and these great men of natural history and conservation.

The importance is the connection. A connection was made between my great grandfather and John Burroughs; and many years later between a robin's nest and a young curious naturalist. Today we are becoming all too disconnected from the natural world. One way to reconnect to the world of nature, with wonderful confirmation that can be revisited from time to time, is to keep a nature journal.

Journals went out of favor in public schools, rarely seen in the past thirty years. However, the alphabet soup of curriculums is reviewing the value of journaling. Journals may be returning. My oldest child Forest, now in second grade, keeps a journal and hopefully will break her old man's record for journal keeping. I encourage Forest to record her thoughts and observations on a regular basis, especially on trips and when my friends and cohorts come to visit. Her sketching skills have already surpassed mine. The treat comes when she reads to us from her journal. Her voice changes, she slows down and travels to the tidal pool in Maine where we saw the lobster peeking out from under the rockweed. She smiles when she reads the names of the dogs on her sled team. She made a connection at that tide pool and in the snows of Minnesota. She was able to reconnect just by reading her own observations and thoughts.

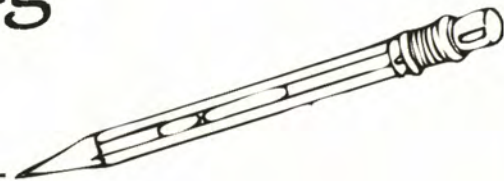
Join with us now and start a journal. If you have been keeping one, share that joy with a young curious naturalist. Help that child to make the connection now enabling them to reconnect throughout their lives.

Yours in Nature,
SA Melcher



Teaching Nature Journaling and Observation

by Clare Walker Leslie



I have learned that what I have not drawn I have never really seen, and that when I start drawing an ordinary thing I realize how extraordinary it is, sheer miracle: the branching of a tree, the structure of a dandelion's seed puff.

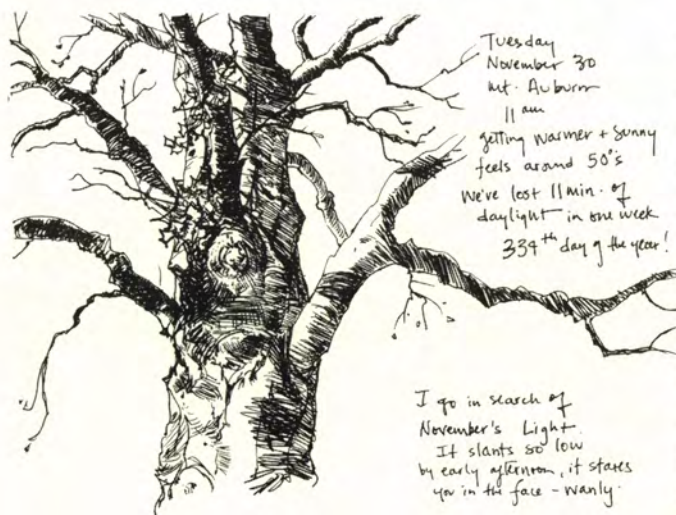
—Frederick Franck
The Zen of Seeing

This article originally appeared in *Into the Field: A Guide to Locally Focused Teaching*, published by The Orion Society, 187 Main Street, Great Barrington, MA 01230, (888) 909-6568, www.oriononline.org.

The nature journal is not a new phenomenon in the history of scientific study, or, for that matter, in the history of liberal arts education. It springs from an ancient tradition of record keeping: tribe, village, or parish records; farming ledgers; native people's accounts of the seasons and hunts; records of scientific expeditions; travel journals; accounts of investigations by self-taught naturalists; units of study in rural schools. Historically, nature journals were part of the curricula in schools throughout Europe and America, especially in the nineteenth century and the first half of the twentieth. In nineteenth-century England, nature journals were immensely popular—even

Queen Victoria kept one. A classic example is Edith Holden's *Nature Notes of an Edwardian Lady*, published in England in 1905 and in this country in 1989.

Throughout history, scientists, explorers, naturalists, and curious adventurers have kept some form of written, and often also illustrated, journal of their observations, experiences, or discoveries. Leonardo da Vinci, Charles Darwin, Carl Linnaeus, Gilbert White, J.J. Audubon, William Bartram, Thomas Jefferson, H. D. Thoreau, Meriwether Lewis and William Clark all kept journals. Before the wizardry of modern technologies, the pen, pencil, or brush was the sole way of communicating what naturalists had seen on their adventures. In our own century, Olaus Murie, Aldo Leopold, Rachel Carson, and Gerald Durrell, to name just a few, have kept up the nature journal tradition.



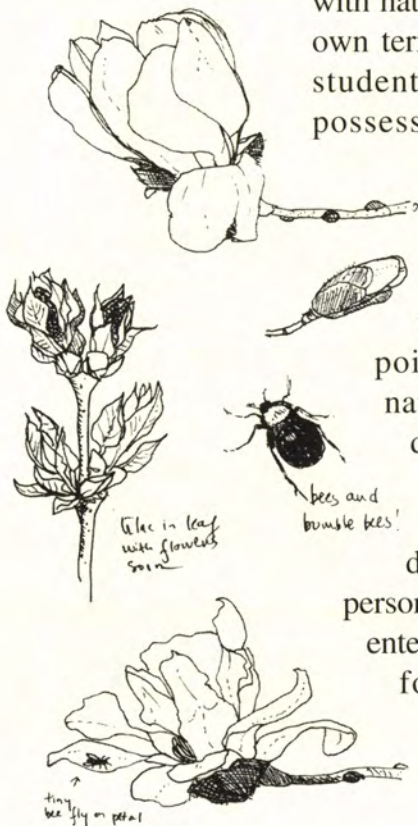
Why shouldn't we continue this tradition of the naturalist's journal? Why shouldn't we have the same fun these naturalists had, poking about in bushes and streams, drawing, wondering, collecting, documenting, and sharing our journal accounts with friends? Whenever I go into a classroom, whether the subject is English, science, history, or math, I find teachers and students eager to link drawing to their studies. We have ample reason today to make nature journals integral to our own study of land. A teacher said to me recently, "Students need ways

of learning how to really see and respond to what lives around them. I can now understand how the very act of drawing something makes you do that sort of aware looking.” And in his foreword to *Nature Journaling*, the book Charles E. Roth and I published, Professor Edward O. Wilson noted, “The creative process is at the heart of natural history observation...it involves the illustrator directly in what he [she] observes.” What is it about the nature journal that gets students so involved in watching processes, patterns, shapes, cycles, and changes in their own immediate landscapes? I still get chills watching a student, perhaps ornery or doubting at first, begin her first drawing of a leaf, then a seed pod, then the cloud shapes above, then a tree outline, and seeing her become so absorbed in the hand-eye process of

April 19 -
 Mount Auburn Cemetery - Camb.
 Sunny - high 50's
 SPRING - REALLY COMING
 Sunrise = 5:56 am
 Sunset = 7:31 pm
 13½ hrs of light now

getting simple shapes onto paper that when time is up I cannot get her up off the ground.

The student has made her own connection with nature, and on her own terms. I have had students become so possessive of their nature journals that they put them under their pillows at night. (I always point out that a nature journal is different from a personal journal or diary. Although personal thoughts can enter in, the primary focus is the natural world around us.)



Nature journaling is hands-on learning at its best. The students are not punching key boards, responding to questions in a book, or answering questions made up by someone else. They are outdoors, looking at grasses, weeds, ants, earthworms, blue jays, sugar maples, poison ivy, and seeing for themselves connections they never noticed before. The proof of their observation is their own journal page.

In addition to offering students a one-on-one connection with their own immediate environment, the nature journal is a wonderfully flexible teaching tool. It integrates many disciplines and allows opportunities for various styles of learning. It offers students who learn visually more readily than aurally a way of using their often keen drawing skills, and can allow time not only for drawing and writing, but also for outdoor exploration and reflection. The possibilities for individualized study are endless. Students may not only create their own journals, but may mark their own plots to study, evolve their own topic of interest—bees, squirrels, local trees, seasonal changes, weather, aquatic life, and so forth.

I know few other activities that, within the space of a 45-minute class, can elicit responses like: “Boy, I did not know nature was so interesting.” “I saw the day.” “I forgot to sneeze.” “I’d skip lunch to stay out here.” Or, as one fifth grade teacher said to me while his twenty-four students were absorbed in drawing insects on shoulder-high goldenrod and asters beside the soccer field, “Why can’t learning be more fun, like this?”

Nature Drawing and Nature Observation

A teacher may be thinking, “Sounds like a great idea. But how can I teach nature journaling if I can’t draw?” First, let me say that you *can* draw. Everyone can. It’s just a matter of overcoming the memories of the art teacher—or your big sister, or best friend—who told you that you

couldn't. Anyone can learn to draw. It takes a good teacher, time, practice, and patience—as with all learned skills.

I teach a week's course in Drawing Nature at the College of the Atlantic in Bar Harbor, Maine. The course attracts mostly teachers who want to integrate drawing into their classes—in social studies, math, English, environmental studies, science, outdoor education, or primary school studies. Many who attend claim they cannot draw. We draw and study the varied ecosystems of the rocky coastline, and teachers leave with drawing books filled with their studies, with ideas for carrying these methods into their classrooms, and a feeling of genuine accomplishment. They learned how to draw, in just one week!

Co-teaching with an art teacher is one option for a teacher without drawing experience who would like to introduce nature journaling to a class. But given current teaching loads, the art teacher may not have time to work with a class in science or English or history, and not every art teacher will be trained to help students do the careful, observational drawings required for a nature journal.

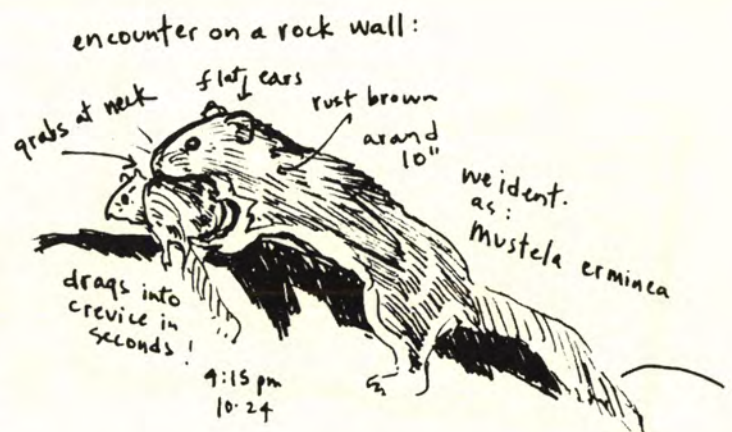
Luckily, it is not really necessary to draw well in order to teach nature journaling. You may draw like an eight year old because that was how old you were the last time you drew anything, but that need not deter you. If your students draw better than you do, you are giving them a great opportunity to excel in something for once. (I insist in all my classes that teachers draw and write alongside students so that they can see the difficulties students are meeting, and help them later.)

The heart of nature journaling is the learning of observation skills, not drawing skills. The drawings need not be great—they may, in fact, be messy and primitive. After all, much of journal drawing is done outdoors perhaps with the wind blowing, or in freezing cold, or a fine

drizzle. Nature journal drawings are meant to provide visual evidence of what a student has seen and learned. They serve a practical purpose rather than an aesthetic one. Artists themselves usually don't consider their field sketches their best work. I once saw the field sketches of the Swedish botanist Carl Linnaeus. They were very primitive and simple, as were the field sketches of John James Audubon, but they captured the information that was needed, which is the real point of such drawings.

Even beginners soon sense the usefulness of creating a visual record of their observations. Once, I had a group of adults (most of whom had never drawn before) outdoors drawing two chipmunks playing along a rock wall. Suddenly, a least weasel shot out of a rock crevice and dragged one chipmunk by the neck scruff down inside the wall. We drew fast, noting stages of the scenario, the size and shape of the animals and where on the neck the weasel grabbed the chipmunk. We then went indoors to show the Audubon Society of New Hampshire that they had a weasel in their nearby wall. No one had seen one that close to their building. We had evidence! And I still have those drawings, marked October 24, 1987.

Though drawing ability need not stand in the way of anyone who would like to teach nature journaling, knowing a few simple exercises and procedures does help.



Equipment

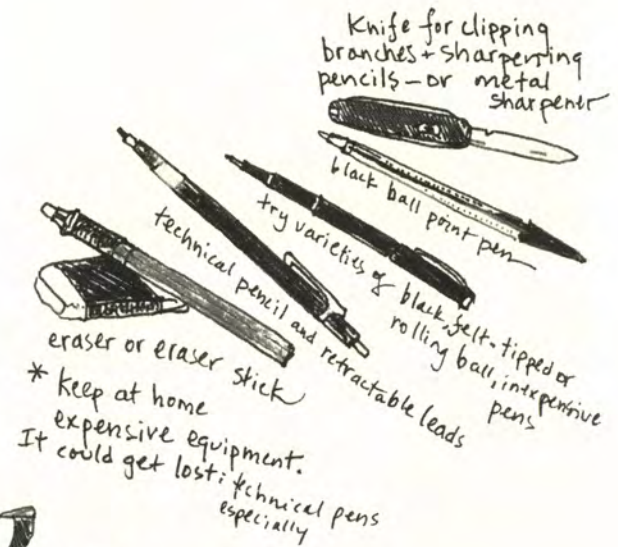
For any initial journaling project, the equipment is very simple. Before investing in expensive, hardbound blank books, try using sheets of 8"-by-11" plain white copy paper and any pencils you can find. The common school pencils—#2 or “soft”—are fine. For older students, you may want pens as well—ball point or felt-tipped. Colored pencils, crayons, or watercolors can be added later, when students go over their field sketches back in the classroom.

Use a hard surface, such as cardboard, a textbook, or a clipboard on which you can lay paper and draw firmly. If drawing indoors, magnifying glasses and microscopes may be useful. Outdoors, I take along one guide to wild plants and one guide to birds for quick reference. Collecting bags are good only in areas where you know you can legally collect specimens to draw more carefully once back indoors.

I don't take a folding stool, only a small backpack with my drawing equipment and outdoor provisions: mittens, dark glasses, water bottle, several guide books, *Farmer's Almanac* for weather, sun and moon information, etc. You want to be able to move freely with your students and not be fumbling for your equipment as the sharp-shinned hawk streaks past.

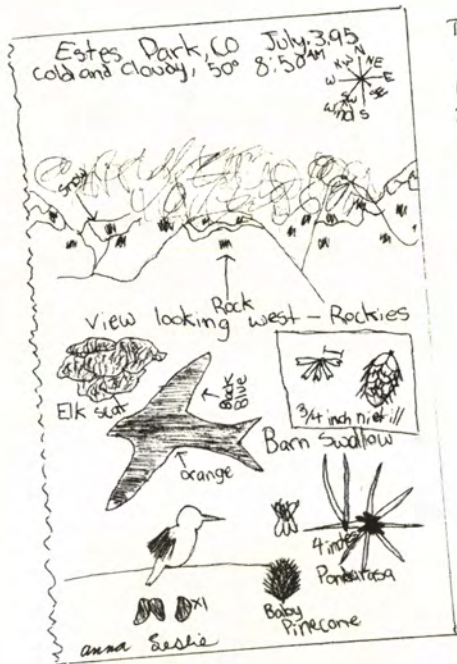
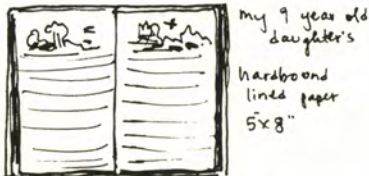
I recommend having a variety of field guides and appropriate books on habitat studies available in the classroom for students to refer

to. I believe that copying from field guide illustrations can be a very useful way to learn to draw. At the same time you can show students how involved the professional artist still is today in illustrating scientific material. Have them notice the number of illustrations in their texts and charts on their walls that were done, not by a photographer or by computer graphics, but by an artist's hand.



a shoulder bag or backpack where you can keep everything, ready to go outdoors.

When our family traveled across the country, some of us kept drawing journals, some of us written journals, and some of us took photographs.



They all did some Nature Journaling:

when I ask the students, “What’s going on outside?” If you start in the spirit of adventure, your students will not be bored. “Is it fall, winter, spring?” “What’s happening to the trees outside?” “What animals do you know live nearby?” “How would you describe your landscape?”

Let’s say you are walking with the class around the schoolyard or along a nature trail. Imagine that you and your students are Sherlock Holmes, sleuthing out things to draw—varied leaf shapes, fruits and berries, animal evidence, sounds, buzzing insects, confusing warbler shadows, cloud patterns, a bird flitting by, a mountain landscape. Keep the initial assignment very specific, such as drawing three differently shaped leaves on the ground, or two contrasting insects, or two different birds on the pond. This will be easier than beginning with “Draw whatever you want.”

As soon as students spot what it is they are looking for, they should stop and draw a quick, one-minute-or-less sketch and label the size, color, and the name, if they know it. (Especially with younger students, it helps if the drawing has been labeled “crow,” “oak leaf,” “gray squirrel.” That permits you to say “So Sarah, you saw a squirrel walking a phone wire,” rather than “What is that thing at the top of the page?”) Students should not be afraid to have messy pages. Later on indoors, with better lighting, they can redraw something again and again if they wish, and refer to field guides or collected specimens.

Keep the first effort fun and task-oriented, like a treasure hunt, until you and your class get in the rhythm of drawing from your own discoveries. Even for students who are resistant to going outdoors, having a very hands-on and specific assignment can help. I have had students say they were “allergic” to nature or “afraid of bugs.” Once drawing, once engaged looking for things to draw, the itching, sneezing, scratching usually stops.

Into the Field

Before going outside, you will need to decide where you are going to go: a local wetland, prairie, desert, country dirt road, mountain trail, wooded path, park, beach, rocky coast, backyard, or schoolyard. Once there, start by observing the season, time of day, weather, and the components of this habitat you have chosen. Decide what you want to focus on first: plants, flowers, leaves, insects, birds, or clouds.

Often, when asked to introduce nature journaling in a school, I do not know the interest level of the class, or the degree to which the teacher will be involved, or perhaps even the habitat. That’s

Some Suggested Exercises

The following exercises are based on a three-hour workshop I held with ninth graders in a combined English/religion class in Environmental Topics at Northfield-Mount Hermon School in Massachusetts. The thirty-six students and their panel of four teachers had already begun writing and drawing in hardbound journals, which they would use through the fall as an integral part of their course on local land.

Before we began the exercises, we discussed briefly what a naturalist is and how naturalists have kept journals of their field observations through the centuries. We then talked about how we would describe the elements defining the land where the school was located: trees, rock walls, woods, farm fields, pumpkins, rivers, low mountains, mowed lawns, old brick buildings, leaves turning color, foxes, shifting weather, skunks, weeds, squirrels, crows, and so on. We listed these on the board under the topics of animals, plants, geology, and human features. (You can add smells and sounds too, if you wish.)

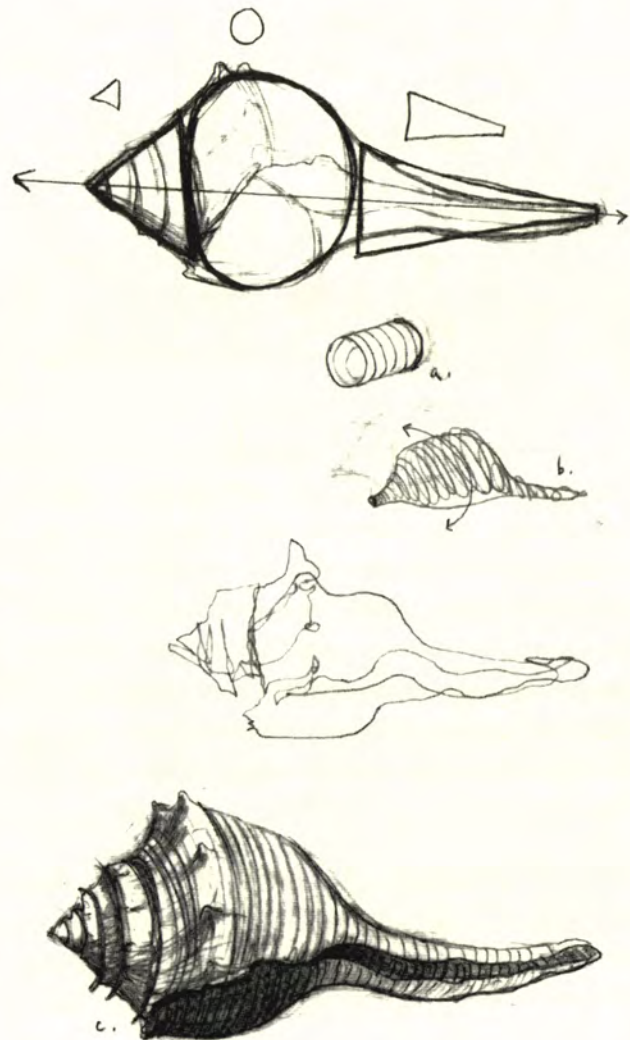
We were then ready to do the following exercises:

1. Students take out their journals. On the top of a blank paper, they put the date, and their name (if they are using single sheets rather than a notebook). I ask why date is important when studying nature. (Time of year, seasonal changes.)
2. Below the date, they write where we are. I ask why place is important to record when setting up a study. (It defines habitat and elements within habitat.)
3. They note the time of day. What effect does time have on what we see? (It affects not just light but animal activity.)
4. Then they write down the present weather, which may shift within the hour. What influence does weather have on what we are about to explore? (Again, it influences animals and plants.)

5. Temperature reading and barometric pressure can also be added.

6. We might also add the length of the day and night, according to an almanac or daily newspaper, and the phase of the moon. (In addition to connecting us with the sun and moon, this recording helps give a sense of the ancient reconnoitering of time.)

7. Next, I ask the students to go outdoors, but in silence. We walk across their schoolyard to a spot where we can all gather in a standing circle. I ask them to listen and write down three sounds, under the heading "I Hear..." These might be cars, people's feet on the grass, birds, crickets, airplanes, or whatever. I then ask them to write a brief stream-of-consciousness sentence or poem, such as, "I feel the cold wind under the dark green tree but the sun brightens me."

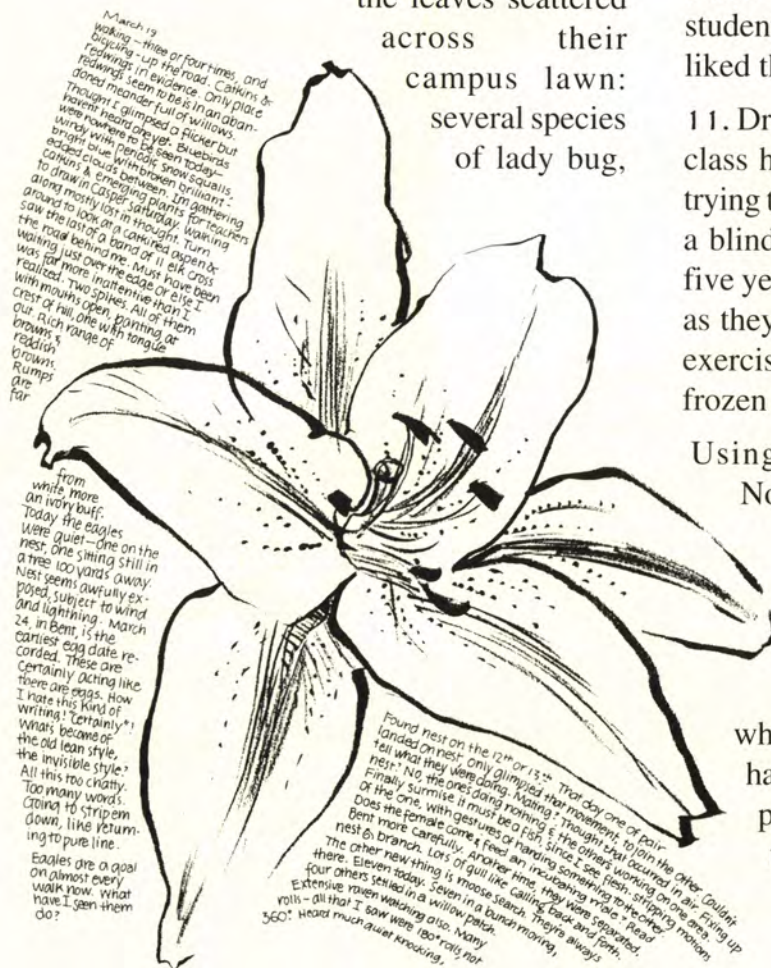


8. Looking at the ground: The students look down and find three contrasting leaf shapes, either of groundcover plants or fallen leaves. These might be crabgrass, plantain, clover, or a maple leaf. We use simple line drawings, and label the size and color and key features of the leaf as well as the name of the plant, if we know it. Each drawing takes no more than two minutes. I stress that these are drawings for identification, not for an art prize. We do not discuss drawing technique, even though I am drawing with them.

9. Looking at eye-level: Now I ask the students to draw three objects they see at eye-level. These might be part of a tall plant such as a goldenrod or aster or thistle; several leaves of a shrub such as multiflora rose or buckthorn; or several insects on the plant or shrub.

The students at Mount Hermon were fascinated by the various insect evidence they found on

the leaves scattered
across their
campus lawn:
several species
of lady bug,



mite egg galls on maple leaves, spiders, leaf hoppers, and numerous unidentifiables. I told them to draw the unidentifiables carefully enough so they would be able to find them in a field guide later. We got into a spontaneous discussion on how insects make the transition to winter—through reproduction, death, partial freezing, and so on. Interestingly, it was the twitchier boys and the less engaged girls who became the most interested in these bugs and spent the longest time drawing them. (Here was a great opportunity to lead these students into a whole fall study on insects.)

10. Blind contours of leaves: I ask the students to sit down in a ring, and pick up one leaf to draw. They have to look at it very carefully, turning it in various positions, to try to really see it well. Then, without looking at their paper, and without lifting their pencil once, they draw the whole outline, all the veins within, and any insect nibbles they see. The Mount Hermon students laughed, relaxed, and found they really liked these spidery drawings.

11. Drawing trees, using a blind contour: If the class has never drawn a tree before, I suggest trying to do a blind contour first. The act of doing a blind contour forces five year old and fifty-five year old alike to see a tree as the tree is, not as they think it is. I find it the fastest and best exercise to get any student drawing, no longer frozen in fear and frustration.

Using a full page in their journals, the Northfield Mount Hermon students stood in front of a magnificent, sixty-foot white pine and drew the whole thing—trunk, branches, needles, cracks in ancient bark—without looking at the paper. There were howls of laughter and whoops of pleasure as students found they had “really drawn the tree.” The 36 students proudly held high their journals showing their white pine blind contours. The teachers said, “If only we had a camera. The students were astounded at how

much they liked their drawings. This was only the sixth drawing of the morning's session and already they were feeling better about drawing than they had expected. They next drew a blind contour of the nearby sugar maple. Each outdoor drawing of a tree should take no more than ten minutes. (If you do not do a blind contour, I recommend the drawing be no more than 3 to 4 inches high, as bigger gets simply too full of branches and leaf detail.)

12. Looking at the sky, wind, weather: I ask the students to draw a 2-by-3-inch box anywhere on their paper. In the box, they draw in what they see overhead, and put in compass directions on each side of their box and an arrow for wind direction. During our workshop there was an apparent weather change going on. I asked the students what they thought the weather was going to become. They could see that the haze was burning off and soon we would have full and muggy sun. They were right. In New England, anyway, weather is an ever-changing and integral element of all we study outdoors.

13. The full landscape: If there is time, I have the students draw another box, this time 3-by-5 or 6-by-7 inches, and in it draw a shape map of the landscape in front of them. The steps are as follows:

- ④ Begin with the top of the trees, or mountains, or water, as it meets the sky. Draw a line where sky and land meet.
- ④ Drop down to the bottom of that vertical land mass and draw where trees and ground meet.
- ④ Using simple images, draw in the trees, buildings, cars, or whatever you see within the view in front of you.
- ④ Label what you draw and write any other topical information underneath, such as location and time of day and weather.

In this three-hour class, the students spent almost twenty minutes on their landscapes, but five to ten minutes can be fine, especially if the weather is not favorable.

April 19 -
 Mount Auburn Cemetery · Camb.
 Sunny · high 50's
 SPRING REALLY COMING
 sunrise = 5:56 am
 sunset = 7:31 pm
 13½ hrs of light now



tilec in leaf
with flowers
soon

bees and
bumble bees!



tiny
bee fly on petal

14. Along the way: While a class is drawing, unexpected events may occur: rabbits hop by, a crow screeches into a tree, perhaps a hawk swoops past or even an owl. I always tell the students to stop whatever they are doing and quickly sketch what may then vanish. (I often

yell out, “Draw now! Identify later.”) If it does vanish, I urge them to draw it from memory. At Mount Hermon, I found one ninth grader busily drawing a gray squirrel that had scampered past, while the rest of the class was still drawing the white pine. That’s what you want—curiosity and engagement.

The students at Northfield-Mount Hermon will continue with the sequence of exercises, going outdoors weekly with their class and teachers and then doing related journal exercises for homework. They will use the nature journal as fully as they can over the term, to get a sense of local place, habitat, and ecosystem.

Nature Journaling with Your Class

The exercises I have described can be modified to meet the requirements of the subject, the structure of the course, the season and weather, students’ interest, and the teacher’s own expertise. The nature journal can include more poetry than illustration, more plant study than animal study, more backyard study than schoolyard study. In some classes it may be

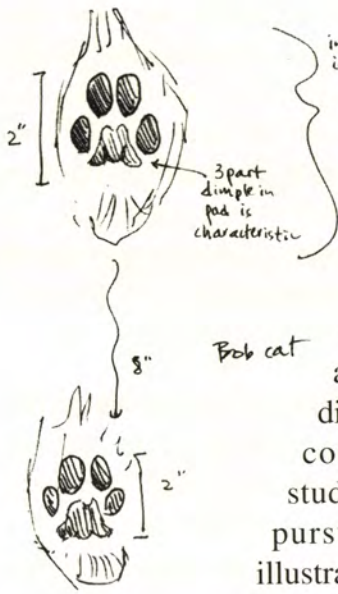


possible to allow students to choose their own focus. One student may want to use the nature journal for weekly weather observations, another for careful studies of local amphibians, or a study of a local pond or other habitat through the seasons. An individualized approach can help encourage students to continue the nature journal on their own, as part of a lifelong practice of environmental observation and recording.

The nature journal can also be shared within the class or the school. Drawings from student journals, for example can serve as illustrations for calendars and note cards that are sold for fundraisers. Some teachers have made the nature journal a group project, creating a publication for the school or the wider community.

Ron Cisar, a friend who teaches high school biology in Omaha, Nebraska, wanted his students to use drawing to study their local habitat but wasn’t sure how to fit it into the course. The answer: Every year his honors students each choose one week, five days, during which they create a daily journal entry about their home place. All the weeks—a full year’s observations—are then xeroxed and compiled in a booklet titled *A Naturalist’s Journal—The Beauty of Nebraska*. One student wrote: “Saturday, April 11 - the full moon is a dull yellow as it hangs low in the sky.” “Sunday, April 12 - Strong winds! gusts of up to 45 mph a small butterfly fights to stay in flight against the winds.” A pen drawing accompanies each entry. Ron Cisar, who has been doing this project for five years, tells me he thinks it doubles his students’ awareness of where they live.

In another example, a secondary school in Delaware drew on the combined expertise of an art teacher and a biology teacher to create *A Naturalist’s Notebook*. This was a year-long project in which eight students carefully identified and drew both plant and animal specimens collected from the property around the school and added their written journal



entries. Both teachers worked together to give the students drawing and scientific skills.

The booklet was nicely printed, in pen and ink, and distributed to the school community. Several students, I am told, are pursuing scientific illustration studies today.

I have also taught in several colleges where the nature journal becomes the basis for further individualized projects. In these month-long winter study courses, students choose a plot of ground on campus to study and record

their observations in a nature journal, including drawings in pen and pencil, colored pencil and watercolor. Students write essays about their outdoor experiences and commentaries on assigned readings. The course culminates in a final project of their own choosing, which might be teaching a class in nature journaling at a local school, drawing and writing about a solo trip, creating a map of a hike, a display of drawings and specimens for a campus exhibit window, an illustrated children's story, or a detailed study of a local species.

Kinds of Nature Journals

All of the following thematic journals have been used by teachers or students with whom I have worked:

- * A garden journal.
 - * A drawn/written study of local birds, mammals, fish, reptiles, amphibians, etc., through the year.
 - * A journal of personal study plots—at home, in a park, in a meadow, on a mountain trail, at school—observed at differing times of day, of the year, and during different kinds of weather.
 - * Seasonal accounts: What grows in my backyard? What is there to see along my street? How do seasonal changes affect the plants and animals where I live? Who migrates or dies or stays as the seasons change?
 - * A journal of a trip, taken alone or with others.
- If a nature journal is not appropriate for your class, you might consider other ways to integrate nature drawing into your studies. A few examples to consider are:
- * Plotting the flora, fauna, land topography, or historical changes on the school campus.
 - * A map of your town—historical, social, or geological, perhaps indicating plants and animals. Show the changes over 5, 40, 100, 200 years.
 - * A trail guide for a local nature center or school property.
 - * Illustrated classroom newsletters describing studies of local places.

Journaling and Environmental Awareness

None of the projects and suggestions mentioned requires extensive travel or exotic surroundings. Nature journaling focuses attention on wherever you happen to be, which is most likely the local schoolyard or nearby park. In recent years environmental educators at The Orion Society and elsewhere have been stressing the importance of studies that help students bond with their

immediate surroundings. It is easy for children today not to notice the streets they walk on, the plants at their feet, the birds above their heads, or the phases of the moon. But this neglect spells loss, for both students and their surroundings. As the Parish Mapping Project in England put it, “Everyday places desperately need our attention—partly because they are changing so fast, and not always for the better, but also because tremendous benefit is to be gained from a personal involvement with your own locality.” The link between the kind of exercises I teach and this kind of local attention was brought home to me vividly one day last March.

I was out in a small wooded lot next to a suburban elementary school journaling and drawing with a group of fourth graders. It had just snowed so we were following and drawing the tracks of an unexpected variety of animals—gray squirrels, mice, a cat, dog, crows, even a raccoon. Suddenly, over the murmuring of the children, I heard the familiar “squucking” of several courting wood frogs. The teacher knew about the significance of wood frogs as indicators of healthy vernal pools. In New England, we are working hard to protect many of these threatened watery plots. This particular bit of woods was slated to become the site of housing for the elderly. As we discussed this dilemma with the students, they grew very excited about showing their drawings of the pond and the wood frogs they had seen to their parents and then, hopefully, to the local conservation commission. Maybe, they thought, their drawings could make the town aware of what lived so precariously in the future path of the bulldozer.

I could cite many other stories about what happens when children—and adults—open their eyes to the world around them. For our book on nature journaling, Charles E. Roth and I collected a wide variety of quotations from a range of students, teachers, artists, and naturalists. This is one I particularly liked:

Something about this January has been different from my first two winters in Williamstown and I don't think its the weather. I think it is my eyes. January looks different...Carrying my journal with me around campus and looking closely at the shape of branches, needles, and the pattern of prints in the snow, I started to realize that life was still out there in winter, we just had to look for it differently.

—Tim Stoddard

Williams College, Williamstown, MA
January, 1998

Bibliography and Resources

General Texts On Drawing Nature:

- Frederick Franck, *The Zen of Seeing: Seeing Drawing as Meditation*. New York: Vintage, 1973.
- Jack Hamm, *How to Draw Animals*. New York: Putnam Publishing, 1982.
- Cathy Johnson, *The Sierra Club Guide to Sketching in Nature*. San Francisco: Sierra Club Books, 1991.
- Charles Knight, *Animal Drawing: Anatomy and Action for Artists*. New York: Dover Publications, 1959.
- Clare Walker Leslie & Charles E. Roth, *Keeping a Nature Journal: Learning to Observe and Connect with the World Around You*. Pownal, VT: Storey Books, 1998.
- Clare Walker Leslie, *The Art of Field Sketching*. Dubuque, IA: Kendall/Hunt Publisher, 1995.
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Illustrated Naturalist Journal Books:

Keith Brockie, *One Man's Island: A Naturalist's View*. New York: Harper & Row, 1984.

Hannah Hinchman, *A Life in Hand: Creating the Illuminated Journal*. Salt Lake City, UT: Peregrine Smith Books, 1991.

Hannah Hinchman, *A Trail Through Leaves: The Journal as a Path to Place*. New York: W. W. Norton, 1997.

Edith Holden, *The Nature Notes of an Edwardian Lady*. New York: Arcade Publishing, 1989.

Janet Marsh, *Janet Marsh's Nature Diary*. New York: William Morrow, 1979.

Virginia Wright-Frierson, *A Desert Scrapbook: Dawn to Dusk in the Sonora Desert*. New York: Simon and Schuster, 1996.

Other Books To Look For:

Children's Books: A number of well-known children's books use a nature journal style: those by Beatrix Potter, A. A. Milne, and Astrid Lindgren, to name a few.

Nature and Science Books: Second-hand book stores will have older nature and science books, written before the advent of photography and computer imaging, which are beautifully illustrated in pen and ink, ink wash, and pencil.

European Nature Journals: There are numerous European illustrated nature journals, most now sadly out of print. Look for books by artists such as: Donald Watson, Keith Brockie, Elaine Franks, Janet Marsh, Beatrix Potter, Rien Poortvliet, Gunnar Brusewitz, Lars Jonsson, and an aggregate of wonderful books produced by the international Artists for Nature Foundation, with gorgeous color



reproductions of paintings by many of the world's top naturalist artists today.

A search by your local bookstore, library, or Amazon.com may come up with many other books under the title of Artist/Naturalists or Illustrated Nature Journals. Sadly, many of the best nature journals never make it into print. All the more reason to print your own classroom's journals and spread the word that nature journals are a superb way to integrate curricula.

Other Sources:

The magazine *Wildlife Art News* is a good resource for what is happening with nature and art in this country: 4725 Highway 7, St. Louis Park, Minnesota 55416.

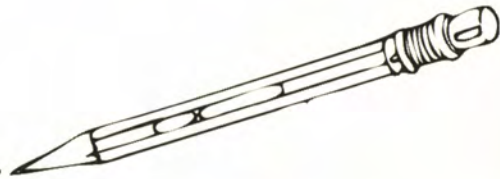
The Guild of Natural Science Illustrators is an extremely useful news-letter covering workshops, lectures, and methodologies on the subject of science illustration. Courses in natural history drawing are sometimes offered by science museums, schools, and organizations: P.O. Box 652, Ben Franklin Station, Washington, DC 20044-0652.

Clare Walker Leslie is a nationally recognized naturalist and teacher of field sketching and nature journaling. She is the author of several books including Keeping a Nature Journal: Learning to Observe and Connect with the World Around You, co-authored with Charles E. Roth. She lives in Cambridge, MA and Granville, VT.



The Historic Naturalists

by Cathy Johnson



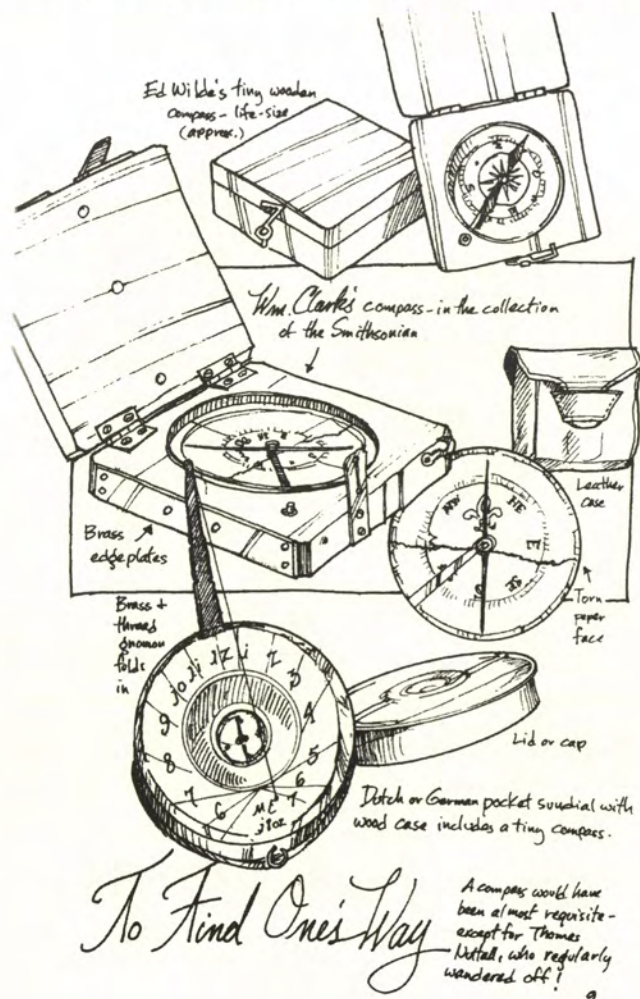
We are a people in love with the outdoors; a thousand different roads lead us beyond our doorstep and into enchantment. Our interest may have had its roots in a solitary childhood filled with wonder and imagination, as mine did, evolve as a result of Earth Day environmental concerns, or develop from a hobby-become-passion, like birding-but it is nonetheless an integral part of us, as individuals and as a nation. Our fascination has its roots woven deep into the fabric of this country's beginnings, and we have much to learn from the historic naturalists. We have built on the foundation of their curiosity, their wonder, and there is no less to be curious about today.

The study of nature has intrigued observers of this continent for 500 years and more. To some, such tenure is a surprise, as though our generation invented the sciences of biology and botany—and the pleasure of a nature walk in spring. Instead, interest in the natural sciences is as intertwined with our history as the more familiar litany of wars or westward expansion. The records left by these men and women, their words and field sketches and paintings, comprise our body of knowledge about the natural history of this country as it once was. They give us a benchmark from which to compare the present.

The first explorers brought with them naturalist-artists to record their findings; such wonders would have to be seen to be believed. Finding a land crowded with new plants and animals, a possible source of dyes, spices, medicinals and other riches, Europeans played catch up to learn everything they could.

How exciting it must have been to discover the strange, colorful fish that swam the coastal

waters of 1585, as did John White, the first governor of the Lost Colony of Roanoke. Imagine what it must have been like to be Mark Catesby, studying and painting the wildlife of 1740 Carolina, more than half a century before John James Audubon began his landmark work of cataloging the birds and mammals of America. I have a marvelous book entitled *Catesby's Birds of Colonial America* (Alan Feduccia, editor, Russell Peterson foreword) that brims with his paintings and notations, complemented by the text of the artist's own book about his travels in the years 1731-1743.

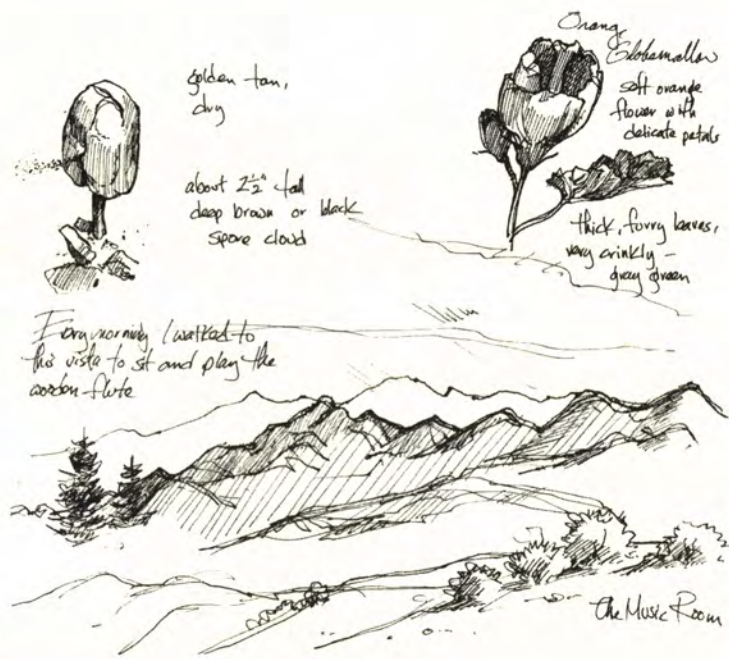


It's time-travelogue, a fascinating bit of our natural history.

Meriwether Lewis and William Clark were commissioned by Thomas Jefferson, himself a confirmed student of the natural sciences, to do far more than find a route to the Pacific. They were charged with discovering and cataloging the resources of the new Louisiana Purchase—the plants, animals, minerals, and indigenous peoples found there. Even as late as 1804, we wondered if we might find mammoths and mastodons in the wild, mountainous regions. Their huge, fossilized bones had already been discovered—why not the creatures themselves? The plant collections, sketches and exhaustive notes kept by the men of the Expedition of Discovery still educate us today, 200 years later.

As early as the 18th century we find the beginnings of concern for conservation. The Swedish naturalist Peter Kalm, who visited this country in the mid-18th century, commented on the reckless use of resources by the colonists. Sixty years later, the naturalist John Bradbury made similar observations in the Missouri Territory. The balance has always been delicate.

Women also studied the natural sciences, or natural philosophy, as it was sometimes called. Maria Sibylla Merian left her adopted Holland at the age of 52 with her younger daughter, to study the insects and flowers of the Dutch colony of Surinam in South America; at the beginning of the 18th century such a venture was nearly unheard of. It was not only the fact that she was a woman that made her accomplishment so unusual. At that time, much natural history illustration was often more fancy than fact. Merian painted on the spot, and although there are errors in her work, they are far more accurate than most. They are also some of the most beautiful natural history illustrations ever seen.



Merian's 1705 *Metamorphosis Insectorum Surinamensium* yielded both great beauty and an important scientific discovery. She was the first to record the life cycle of insects, from egg through larva and pupa to adult.

Jane Colden (1724-1766), daughter of Cadwallader Colden and acquaintance of Benjamin Franklin, John and William Bartram, and Peter Kalm, published the first illustrated flora of New York in 1749. Her drawings are quite accurate, if sometimes a bit crude, but her notes are exhaustive and her descriptive and observational skills impressive. Combined, they tell us a great deal about what plants grew in the locale as well as season and growing habit.

One of the best known of the early herbalists, John Gerard, occasionally included a seed or root in the beautifully realized drawings in his huge study of useful plants; Jane Colden cataloged the progression of literally dozens of plants in her *Botanic Manuscript*. Few modern field guides are so complete; she foreshadowed the approach of the Peterson guides by 200 years.

Colden even discovered several new plant species; her observations were astute. Plant samples she had collected were sent to Carl

Linnaeus, who formalized the system of naming plants, animals, and so forth with the Latin binomials by which we know them today; the system still bears his name. Perhaps because there was such a prodigious stream of samples from the New World, or because Linnaeus had already named a plant in honor of her father—or perhaps because she was a woman—there is no plant today named after Jane Colden.

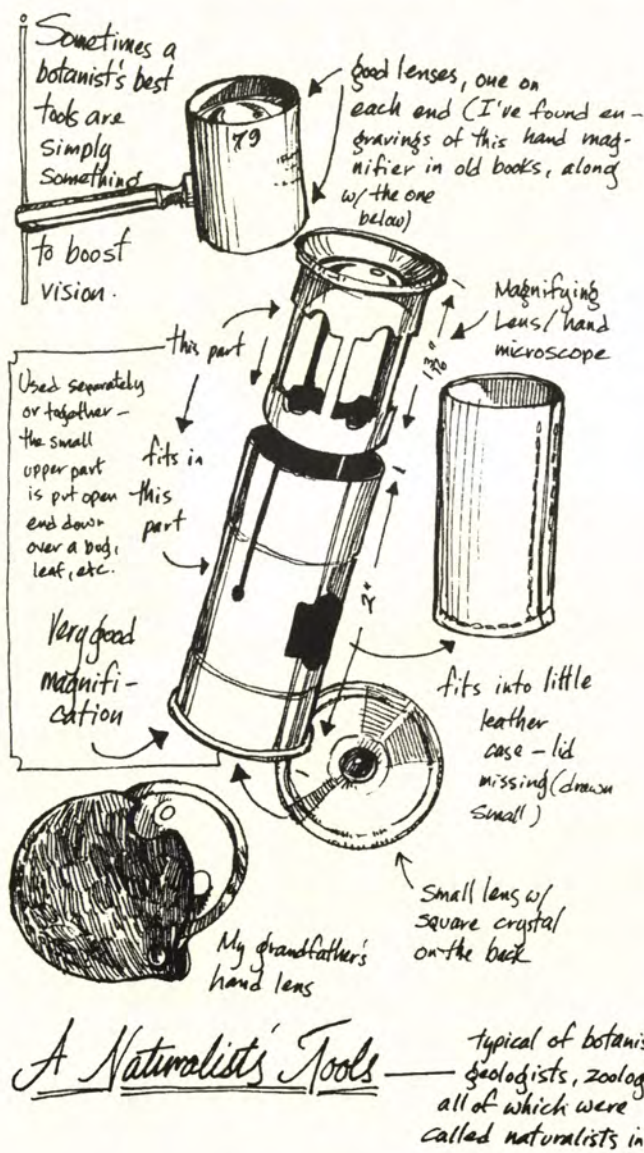
Given the temper of their times, women's involvement in natural history was often in the more socially acceptable study of plants as medicinals or dyestuffs. Most early women naturalists studied their nature "by way of the

garden, the artist's brush, and the writer's pen," writes Marcia Myers Bonta (*Women in the Field: America's Pioneering Women Naturalists*.) Some went beyond this to agricultural studies in crop improvement. South Carolina history identifies at least three women so occupied: Martha Laurens Ramsey, Martha Daniel Logan, and Eliza Lucas Pinckney. Ramsey experimented with olives as a cash crop, Pinckney devised a profitable method of growing indigo, and Logan, who lived from 1702-1779, wrote the *Gardener's Kalendar*, which became a standard gardening book in the Carolinas. All three followed their interests in nature to find a field of study both useful and unusual for their sex.

The study of plants continued to capture the imagination of many women in the 19th century. By 1822, New York botanist/geologist Amos Eaton said "I believe more than half the botanists of New England and New York are ladies."

The more familiar names belong to the men who recorded our natural history, but dig a bit deeper and you'll find many women—sometimes daughters, sisters, wives or sweethearts of these men, sometimes not. Mary Townsend, sister of ornithologist John Kirk Townsend, wrote and illustrated *Life in the Insect World* in 1844. Susan Fenimore Cooper, daughter of James, penned a book of observations called *Rural Hours*. Though we hear far more about her father's "Leatherstocking Tales," *Rural Hours* received glowing reviews from William Cullen Bryant. It was mentioned in Henry David Thoreau's journals four years before he published *Walden*, itself perhaps the best known naturalist's journal in the world.

Lucy Say was the wife of naturalist/artist Thomas Say, who accompanied Stephen Long's 1819 expedition to the West. In addition to her wifely duties, she illustrated not only some of her husband's writings but Holbrook's *North American Herpetology* as well. So much for the image of the delicate



Victorian woman fainting away at the sight of a snake! As I sketch the small copperhead that visits my cabin's clearing, I feel close to Lucy and her important work.

This clear-eyed considering is part of what we have to learn from the historic naturalists. Things we might have thought frightening, disgusting, or sinister become fascinating when we give them the respect they are due—when we pay attention. When we sit quietly and observe a spider going about its business we discover that not only does it have its place in the biosystem, which may have been intellectually, if not emotionally, obvious to us, but that it possesses its own aching beauty. I used to be terrified of spiders, with the ancient, unexamined fear of The Other. Once I began studying them, sketching them, my fear dissipated like dawn mist on the river.

The talented Maria Martin helped to illustrate some of Audubon's prints, adding plants and insects. Graceanna Lewis (1821-1912) was trained in the natural sciences as were many Quaker women; she wrote and illustrated *A Natural History of Birds* in 1844. Mrs. William Starr Dana created the first popular field guide, *How to Know the Wild Flowers* before the turn of the century, and I grew up reading my grandmother's tattered copies of Gene Stratton Porter's nature novels, reveling in the magic of the natural world in those pages and wishing I could grow up to emulate her.

Part of my personal interest in these people is bedrock practical—the material culture of their work fascinates me. What did they use for colors? What kind of brushes did they have? What did they work on, and how did they preserve their sketches? But the broader appeal is what they recorded for us to find and marvel over—and protect.

Interest in the natural sciences burgeoned in the Victorian era and the early 20th century. Dozens of books were written on the subject; keeping a



nature journal was a popular pastime, as it has become again today, thanks to people like Clare Walker Leslie and Hannah Hinchman. Collections of wild flowers, insects, birds' nests, and so forth were common, and the mania for collecting may have driven some species to near-extinction. Coupled with the no-holds-barred hunting practices of the Victorians as they explored the West and drove back the native peoples, it's a wonder there is a living thing yet to be seen.

There are many records of a single hunter killing several hundred birds in a day, photographs of great piles of wolves and coyotes and other predators killed for bounty, and bison shot for their hides and tongues—or merely for the “sport” of it, leaving the carcasses to rot. Today we are more cognizant of the relationships between predator and prey and the tenuous balance of nature. We try to protect what's left and restore the balance where we can, and our studies take the form of photos and field sketches; hunting is now regulated by law—much to the good of wildlife. And in places there are hints and whispers of what it might have been like when the historic naturalists were discovering this land centuries ago. It never fails to excite me when I come upon some marvel that I recognize from Kalm or Colden, Catesby or Audubon.

Other familiar names join the galaxy of great American naturalists at the approach of the 20th century, and the concept of conservation began to temper the love of collecting—which was often no more than the taking of trophies. Again, we learned much from the historic naturalists, concepts that still shape our journey.

John Muir was the founder of the Sierra Club—and some might argue, of the modern conservation movement. He convinced Theodore Roosevelt to set aside land for the first national parks, his beloved Yosemite among them. Roosevelt was himself important to the conservationist movement, as was his friend, the naturalist John Burroughs.

At “Slabsides,” his tiny retreat near the Hudson River, Burroughs wrote an astounding number of natural history books. Considered a romantic by some, he nonetheless wrote “Nature is just, gives pound for pound, measure for measure, makes no exceptions, never tempers her decrees with mercy...And in the end, is not this best?” I think of Burroughs’ words whenever I encounter proof of nature’s laws. Our world is complex, not sweetly sentimental; it’s as lusty as life itself. The survival of the fittest is not just a catch phrase, it’s a description of the food chain where we occupy top billing, by blood if not by choice. There is no place for softness here. Sentimentality can blind us to the real needs of the world around us.

In this century the writings of Henry Beston, Edwin Way Teale, Ann Zwinger, Ed Abbey and Aldo Leopold (and many others) continue the tradition. The latter was considered by many to be the father of the modern conservation movement, taking up the standard of Muir, Roosevelt and Burroughs. Leopold’s book, *A Sand County Almanac*, outlined a land ethic we still follow today—or should if we expect to reverse the pattern of abuse and neglect that began with the first colonists and continued through the Dust Bowl of the thirties and the burgeoning use of chemicals to replace more labor intensive farming practices. His death in 1948 cut short an assignment as United Nations advisor on conservation.

No mention of great American naturalists would be complete without Rachel Carson. When she rang the alarm on DDT in her book *Silent Spring*, we were well on the way to losing the lovely

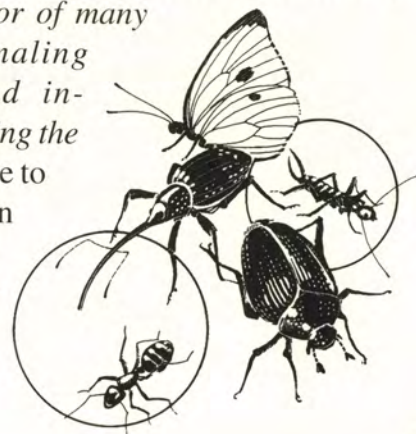
voices and bright colors of many of the birds that delight us today. Their disappearance would have been more than aesthetic. Like many species now on the endangered or threatened lists, these birds are indicator species. When they’re in trouble, we’re in trouble.

We’ve lost many pieces of the puzzle already, from the awkward, flightless dodo bird to the passenger pigeon. Scientists tell us that chorus frog populations are in steep decline, and the sounds of early spring are less vibrant, more subdued. Many invertebrates have given up and checked out, never to return; the plant world has been impacted even more. With recent discoveries of the healing properties of the Pacific yew and echinacea, among others, can we afford the loss?

The early naturalists celebrated the astounding variety and abundance of this New World. Today, naturalists write as often as not of what we’ve lost—or what we’re about to. It is important work, more urgent and more somber than the happy work of discovery.

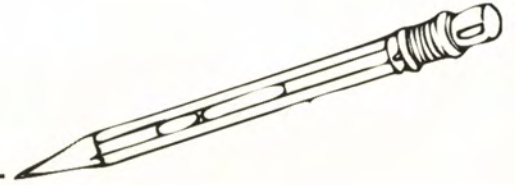
But nature is resilient. With care and attention, it can regroup. Consider the songbirds, the bald eagle and the trumpeter swan, all taking a step back from the precipice of extinction. We are intelligent people; we love our wild things and recognize their value. And we will fight to preserve them—and the legacy of the historic naturalists—come what may.

Cathy Johnson is a highly acclaimed naturalist, artist, and author of many books of journaling instruction and inspiration, including the Sierra Club Guide to Sketching in Nature. She lives in Excelsior Springs, MO.



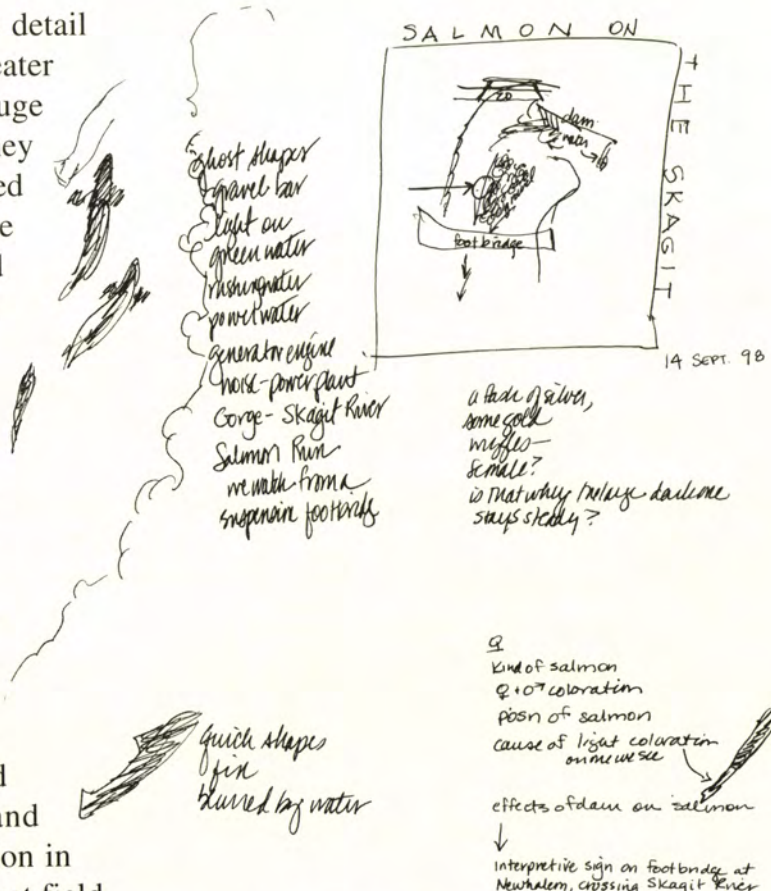
A Journey Back

by Carolyn Duckworth



Seven cloth-bound 8 1/2 x 11 books detail the first five years of my life in the Greater Yellowstone Ecosystem. They seem huge to me now, heavy and unwieldy, but they represent a period when keeping detailed field notes and creating complete records using notes, sketches, and watercolors were how I got to know a new place.

During those years—1995 to 2000—I followed an intensive format for keeping field journals. If I could carry the big book, I would—and the pages would be crammed with notes, maps, etc. But more often, I would carry a 3x3 spiral sketchbook in which to scribble lists of species seen, behavior observed, questions, maps, ideas. In either case, when I returned home, I would review the notes and rewrite them in a more orderly fashion in the big book, which was my permanent field journal. I picked up this technique from the Grinnell system, as described by Steven J. Herman in his book, *The Naturalist's Field Journal: A Manual of Instruction Based on a System Established by Joseph Grinnell*. The scribbling by day and review by night ensured I saw as much as possible while in the field and remembered even more as I rewrote and redrew the information a few hours later. This process embedded the day's events firmly in my head and clearly in the journal. Long a technique used by scientists, including my neighbor Jim Halfpenny (who introduced me to Herman's book), it has provided me with a



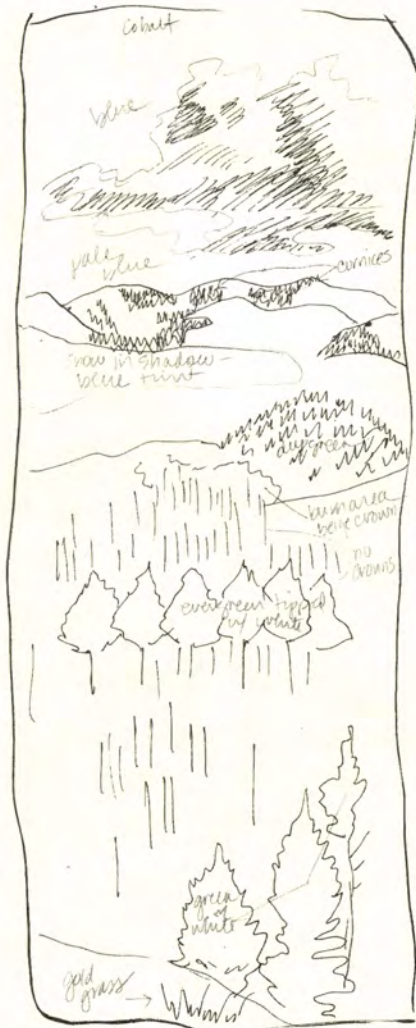
wealth of information and ideas that continue to generate creative ideas today.

For the second year, I am writing captions and seasonal field notes for a calendar produced by the Yellowstone Association. Last year the deadline was too quick for me to carefully review the field journals; but this year I've had time to look through each one for ideas. I've come up with a list of daily field notes or examples of monthly natural history events for several years worth of calendars. A few examples:

- in February, look for ravens flying in pairs, perhaps courting
- watch ravens building nests in early March
- bull elk begin growing antlers in April
- look for bull moose in velvet in early June
- when young coots first appear on certain ponds
- when humps and horn buds begin to show on bison calves
- the dates of the record floods of 1996 and 1997
- which wildflowers bloom when and where in the park
- which years the August “autumnal events” occur (snow for a day or two)
- when young Swainson’s hawks learn to hunt (early September)
- some sagebrush can be tall enough to hide a grizzly bear

I’ve found renewed respect for these notes so laboriously taken and renewed my field journal commitment—neglected since becoming a full-time publications manager for the National Park Service. I’m also pleasantly reminded of how much freelance work these field journals generated, including workshop ideas.

One of my favorite classes began with field notes from September 10, 1995. A quickly sketched angel shape is followed by bold brush stroke letters, “The Angel of Echinus,” then a long column and following full page of black ink recording the night’s events. I was visiting Norris Geyser Basin with a friend, planning to watch Echinus Geyser erupt in the light of the full moon. We expected no other people, but: “We came chattering up the boardwalk to the rail practically tripping over two people sitting in the corner by the tree. . . . They rose, introduced us to Snookie the rooster. . . we began hearing about Echinus’s spiritual qualities,” including the healing properties of its spray and the fact that an angel appears in the eruption during a full moon. My friend, who usually talks incessantly, and I were dumbstruck. After the eruption (during which these two people and their rooster had climbed over the railing to stand in the spray), we walked quickly back to our car and jabbered the entire 40 minutes home about what we had witnessed.



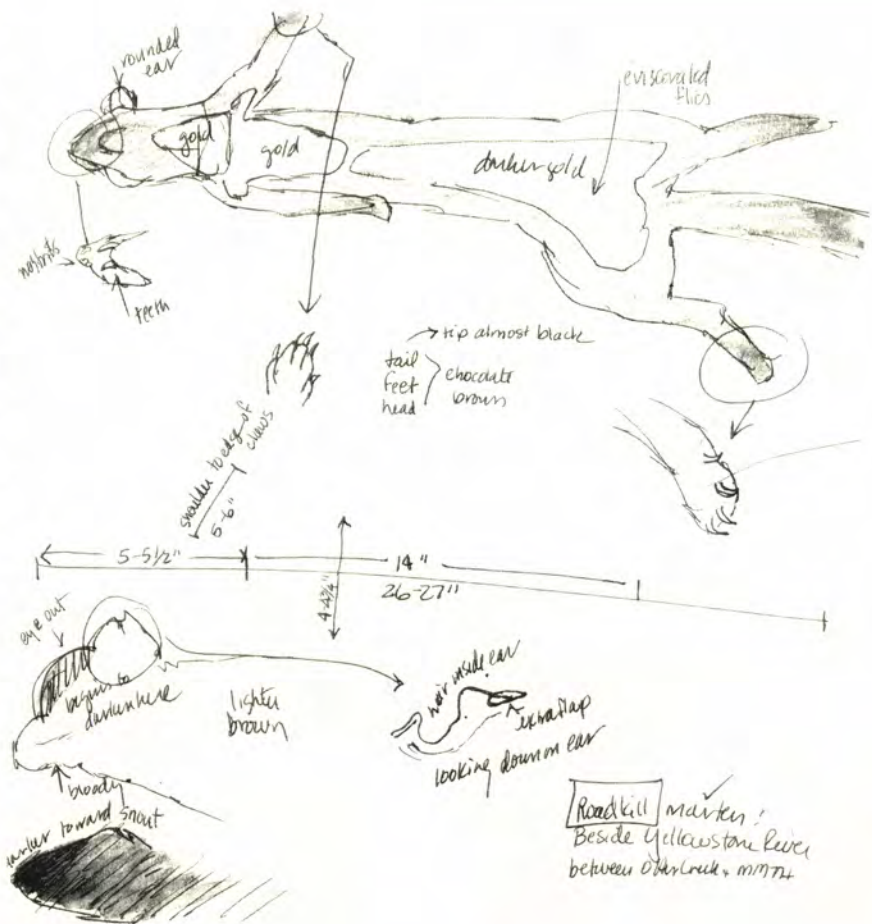
4 January 98
732°, snow slushy on road

Fresh snow gives the park a look of solid winter of few animals. I know better, having seen the elk highways in the older snow of '31 die. I like this illusion for today, and hope the warm weather doesn't linger—although it often brings more snow. Here, I study the landscape & finally locate six elk—familiar silhouettes of grazing & resting



ELK CREEK OVERLOOK

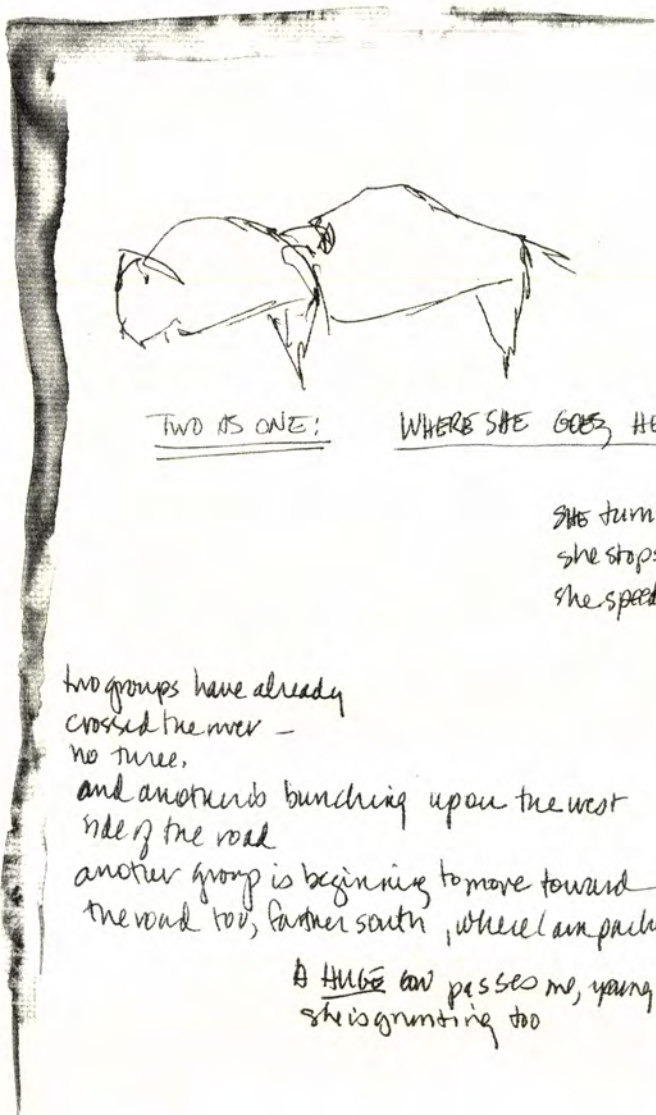
That night, and the notes I took, became the genesis for a class I taught for the Yellowstone Institute the following two years. Entitled “Angels of Echinus: Exploring the Norris Geyser Basin,” it was scheduled around a full moon. The daylight hours were filled with sensory exercises, writing and sketching assignments, and periods of geyser observation. The second day ended with an optional night visit, during which I told the story of the Angel of Echinus, finishing right before the geyser erupted. Alas, the class can no longer be taught in the same way: since that time, Echinus has developed an unpredictable cycle that eliminates any chance of ending a story right before an eruption.



About ten miles from my house is a short boardwalk nature trail that I visit four to six times a year, so I have field notes about its flora and fauna during all seasons. In 1997, I thought of using this trail as the site for field journal workshops—in addition to knowing the area so well, I liked the site for a class because it had benches in strategic locations where students could work for extended periods. On July 6 of the following year, I handed out small blank books to each student, and as they began their journals, I opened my own. I had begun a class-only journal using the same small blank book; I kept the class roster there, wrote the class lesson plan ahead of time each week, and demonstrated field journal techniques such as species lists, quick sketching techniques, making behavior maps. I also noted carefully which assignments worked and which didn't. (Guess which list had the most entries with a group of kids ranging

from 7 to 13 years old!) Those latter notes have helped me develop other workshops for young people.

My field journals travel with me, and during those years I traveled a lot. September 1998 I was driving through another major ecosystem—that of the Columbia River in the Pacific Northwest—and taking notes as I stopped and hiked in the North Cascades, watched salmon mating on the Skagit, and marveled at the concrete immensity of the Grand Coulee Dam. At that time, I was simply taking notes as I always did, sketching the salmon, recording an interpretive sign whose message I questioned (that Pacific Light and Power's dams actually helped the salmon?), describing my thoughts as I sat in view of the Cascade peaks, etc. But within a month I was using those notes as reference for a freelance job that I accepted soon after returning home. The job: write an



5 AUGUST

8:30 pm or later
9ish

Hayden Valley

clear
calm
almost full
MOON

(WILD About Salmon, 1999, Idaho Department of Fish and Game and Idaho Project WILD, p. 7)

The following year, another assignment from Idaho sent me back to my field journals. This time, I was writing an educator's guide to the wetlands of Idaho. I had decided to begin each chapter with a description of some experience I had in or based upon a wetland. I used my written comments from a recent community meeting about a development in a

wetland, newspaper accounts of homeowners losing their cottonwoods in the 1997 floods, and my field notes about searching for frogs in this arid environment. The first chapter "People and Wetlands" begins with a spring frog search:

Each spring this woman comes to this pond, high on a plateau in the Rocky Mountains. . . . She comes up here because the sound of frogs is one she knows from her childhood in Virginia. . . . In the Rockies, though, this woman has found this one wetland near her home and learned that the pond and meadow dry up by mid July most years.

(WILD About Wetlands, 2001, Idaho Department of Fish and Game and Idaho Project WILD, p. 2)

Last year, a colleague asked me to write a couple of essays for consideration in a series of middle school anthologies. The first essay she requested was for the volume about the coast of the Southeastern United States. I knew exactly

educator's guide to salmon for the Idaho Department of Fish and Game. My field notes provided some of the text:

Picture yourself underwater at spawning time; this is what you would see:

The female hovers close above a bed of gravel; she is facing into the current. Above her, a male hovers. Downstream a little ways, another male or two might be holding position in the current. they occasionally dart in to challenge the dominant male; he chases them away and quickly returns. The female is partnerless for only a few seconds

where that story was—in a field journal I had kept during a retreat on the Outer Banks of North Carolina. I had abruptly made this trip in April 1997—at the end of a winter that had seemed to never end. The island, Ocracoke, is second in my affections only to Yellowstone, and I hadn't been there in five years. At the last minute, I had pulled out all the books and field guides from my suitcase and put in a blank book. I had decided my "job" on this retreat would be to fill

the book with notes and sketches. And from that book, I wrote the essay, which includes this:

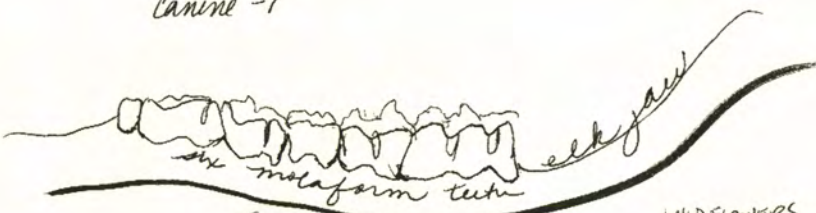
The wind is pushing the tide almost to the dunes and blowing the sand horizontal. I lean into the wind and walk east. My eyes water and my head is so bent against the wind that I can't see much more than the sand. Oh well! I'm just about ready to turn around when I make out the shape of the sea turtle carcass I had seen the evening before. I trudge up to it, curious if anything has eaten it during the night. Nibbled, maybe. Fourteen sandcrab holes potmark the sand around the carcass; one is almost two inches across. I wonder, how many crabs will be fed by this turtle? How many birds? Insects? Other creatures? I turn and let the wind push me back toward camp.

The essay will not be published in that series after all. But on a cold wintry afternoon like today, it sends me back to the week I spent on Ocracoke Island observing, walking, writing, and painting—and testifies to the enduring value and power of field journals.

Carolyn Duckworth is a writer and avid keeper of field journals. She serves as publication program manager at Yellowstone National Park, and lives in Gardiner, Montana.

HIKE TO TROUT LAKE 9:40
begin

ungulate jaw - elk
molariform - 6 - wear down in front
incisors - 3
canine - 1



First ridge 10:00 AM

10:15 south side of second hill

basal leaves for many years
menublooms
& dies
miner's candle? NO!
green guttae
monument plant

Fragaria speciosa

10:20 we arrive

I gasp the glistening water
The wind picks up as if to push us
on the final few yards

as the big group arrives at ~~the~~ lake inlet
a dozen big trout flee (?) into lake

we see one jump
Then I see others in the stream
flash of orange - dorsal fin

high brassy dipper
deep resonance of its
soft melody of grass

WILD FLOWERS

- sticky geranium
- strawberries
- white phlox
- lupine
- larkspur
- paintbrush
- ~~larkspur~~
- duckweed
- avena
- heartleaf
- arnica
- arrowleaf
- balsam root



parts don't have to remain in proportion to each other. If I'm snared in a rich web of events alongside the stream, for example, that section of the map enlarges itself and becomes denser. However, if I make a special discovery, like a nest or a den, I'll try to include site coordinates so that I can be sure to locate it again.

As maps go, it's more like the fifteenth-century *map-pa mundi*, produced in the early stages of world exploration, heavily illustrated, with detailed insets of particular regions. And it certainly has ties with Australian aboriginal "songlines" that record time, sequence, and significance, as well as topography. Its purpose is to create a trail of encounters as you, the explorer, move through a particular place, at a particular moment, asking, "What's going on here?"

You are both active and passive in this exercise:

active because you are alert so certain things catch your eye, and may arrest you enough that your attention to them itself becomes an event. And passive, because things suddenly happen to you, in front of you, that are independent of your selective perception (unless heightened attention is some kind of a strange attractor for events).

An Event Map takes shape around a wandering line that mirrors your path, whether purposeful or erratic. Along it will appear symbols that mark the approximate site of an event, with at least a few words indicating what has happened, or is happening. Pulled out into the margins, or keyed by letters, numbers or some other method, might be a quick sketch, a careful drawing, or a play-by-play depiction in words, images, or invented notation.

Questions arise, and questions are events: make a note of your question along the trail, and what

in your surroundings, if anything, prompted it. Some of your entries on the map will be brief, others will show signs of microscopic examination.

Right now, there's no need to know the names of anything you encounter, beyond being able to tell bird from insect. Because of your involvement, you'll probably yearn for names but save that for later, and concentrate now on "what's going on."

The tendency when doing an Event Map, at least for me, is to come to a complete stop. If you find you can't go on, that there is too much occurring in your immediate vicinity, just let your route-line end in an explosion of images and observations. I call that a "Rapture." You'll probably be pretty well used up when the time comes to go back to your starting point, so don't feel compelled to map your route back. An Event Map with a Rapture is strange looking, harder to interpret as a map, but it remains true to experience.

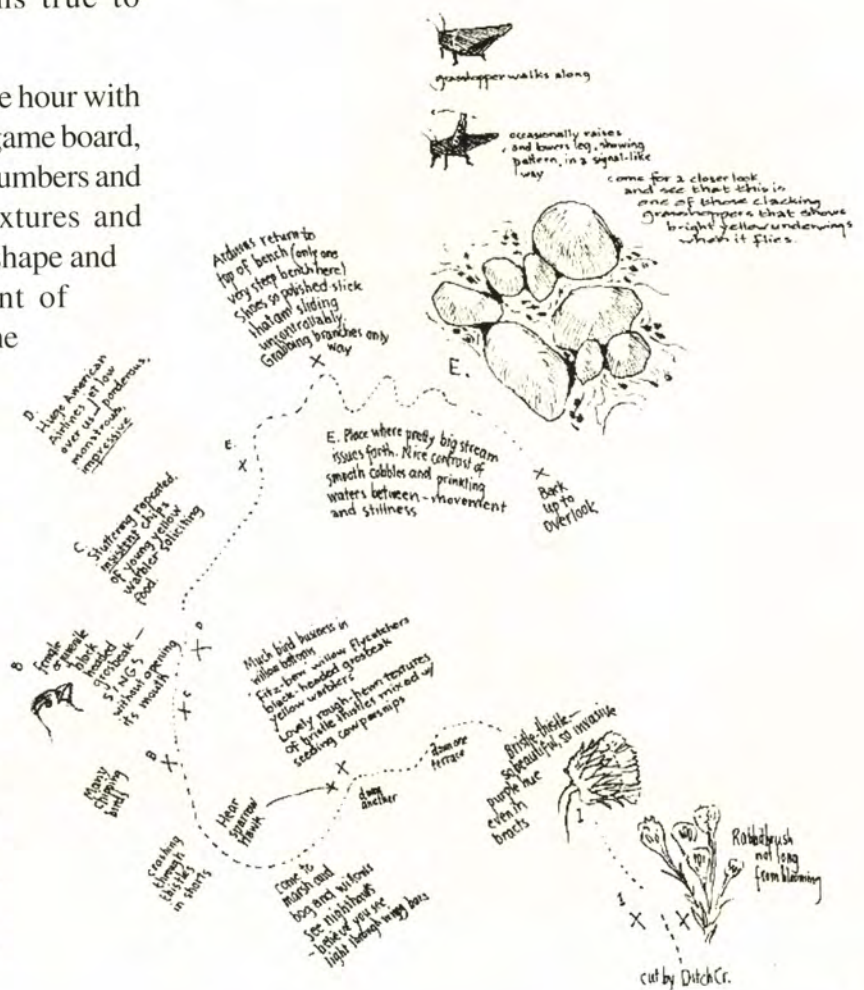
More likely, you'll finish the day or the hour with an artifact that looks something like a game board, full of little detours, doublings-back, numbers and letters, enlarged areas, invented textures and patterns; impressions of movement, shape and gesture; and diagrams reminiscent of football plays. Part of the delight of the Event Map is its tendency to shift emphasis, style and scale according to the flow of events.

Looking back at a two-page event map from August, 1993, in which most of the drawings are very simple, even cartoon-like, I can still unroll a whole string of vivid sense images from that day, many that aren't documented on the event map at all. All of these peripheral details, like the exact level of humidity, what I was wearing and which knapsack I carried at the time, certain fallen logs, the way voices sounded in that

little valley, and bits of conversation exchanged must be mysteriously encoded on these pages, though they reside in no particular drawing or phrase.

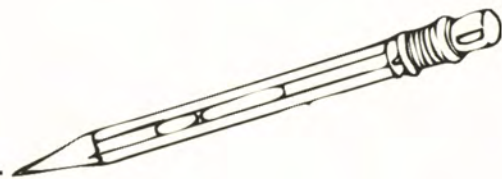
Event Maps have the power to reconstruct a particular day for me more effectively than any other form of recording I've found. Their power may have to do with the fact that they preserve a sequence, an unfolding of an adventure through time. Or that they include odd details, not just the obvious categories of features we think we should notice and link together. The aura of the day and place somehow clings to them with special pungency.

Hannah Hinchman is an artist, writer, and teacher who draws on her experience of keeping journals for nearly three decades. She lives near Augusta, Montana, where she is working on her third book.



Guiding Students in Learning with Journals

by Rosemarie Franke



Background:

The goal of this project was to design an interpretative hike, which illustrated the relationships between time and change in the development of landforms through natural fluvial processes and human interventions, for use in an outdoor science program for Junior High School students. A field journal was the central educational tool used to teach basic concepts of geomorphology and to inspire students to practice journaling. I developed a field journal from the perspective of a geographer who was studying the geomorphology of a valley in the front ranges of the Rocky Mountains. Students used the field journal to guide them in their learning process.

The field journal consisted of short entries and simple sketches, which provided clues regarding the types of landforms and processes that could be observed at each site.

Each entry was kept short to prevent students from getting lost in the journal and to keep them searching for clues in their surroundings. The entries were written as reflective thoughts from a geographer and the geographer's observations. The amateur sketches illustrated to students that they need not be polished artists to draw and encouraged students to experiment with drawing as well as writing their observations. Along with the field journal, a

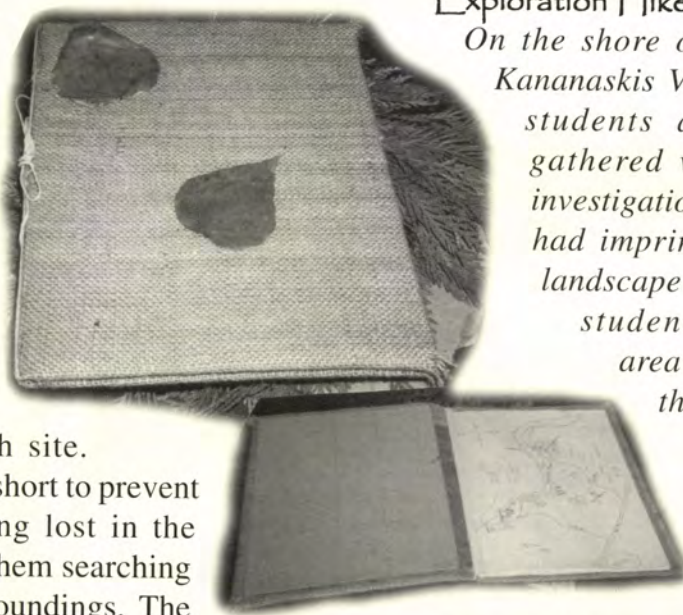
map was produced to guide students to the sites where the journal entries were recorded. The students used the map and the journal to lead the hike and search for evidence of change on the landscape.

Often students do not know where to begin in journaling and they may be unfamiliar with the practice of journaling. By incorporating the field journal with the interpretative hike, students were provided with a sample to guide them in their own journal work. The field journal provided the stimulus for students to embark on their personal journey to creating a journal.

Exploration Hike

On the shore of Barrier Lake in the Kananaskis Valley a group of twelve students and two supervisors gathered with me to begin our investigation. The fluvial processes had imprinted their story on the landscape of the valley where the students could observe the area's history and determine the relationship between land, water, and climate. Before we set out to search for evidence of change, we had a discussion

on the availability of fresh water. Students recognized that fresh water is in short supply and we must be wise in how we manage our water supply. Water affects all aspects of human life from recreation, to hygiene, to survival, and human actions have an impact on fluvial systems. The human element



incorporated into the hike addressed innovative learners who must be able to personally relate to information to be successful learners (McCarthy, 1980). In addition, many students felt a sense of responsibility for learning the material as it had relevance to them personally.



along the way. I decided not to use the word *creative* in encouraging students to make notes as this often puts up a block as many students are not confident in their creative skills and therefore their journal pages may remain blank

It was time to begin our hike. One journal and a map were provided for the entire group to promote teamwork. Students took turns sharing the journal entries and leading the group to the next site. In addition, students carried their own journal with them during the hike. I carefully instructed students to use all their senses and record observations that they made

(Chancer and Rester-Zodrow, 1997). By simply encouraging students to record their observations in whatever medium they chose there were no expectations set and students filled their journal pages with imaginative work. In offering students options in how they recorded their observations, the window opened up for creativity and so did the interest of the dynamic learners who retained information better when allowed to creatively express themselves (McCarthy, 1980).

Entry 1
September 24 - 12:
Sunny clear skies ;
Standing at the dam, 2
stretched out before r
Water in this vast reser
end. How much of this
What kind of a dam cc

Earth.

A water level

I wonder when the dam was constructed? I will head towards the powerhouse and search for more clues.

Entry 2
September 24 - 13:10
Sunny wind picking up }
At the plume I can see a
constructed. It has only been
I can see the change in the
much energy is generated from
much water is required to pre

Plume

Perhaps if I walk towards the
I can see the old river c

Entry 3
September 24 - 1
Bright Sun ✨
Here I have a port
channel carved by v
to the old construct
surrounded by oids
Where will the new

Grave

source?

Maybe if I follow along the river over that stream and through the willow thicket I might find evidence of the river's carving.

Entry 4
September 26 - 9:00
Mix of sun and cloud ☀️☁️
From this shale outcrop, 1000 years of
erosion is evident. The exposed rocks tell the
story of erosion. How does water erode a
substance such as rock? What happens to
the eroded material?

Erosion

abrasion

corrosion

transport

Should I continue along the river past the dredged area I will look for areas where I may find the eroded material.

Daniel led us to our first stop the Barrier Lake Dam. From the dam students noticed how large the reservoir was and the large rocks piled around the dam. I asked my group how often they thought the water in the reservoir was replaced; their answers ranged from twice a year to every six years. Students were amazed to learn that the reservoir held 47 million cubic meters of water and that the water in the dam was replaced 11.4 times a year (Alberta Government). This brought up many questions regarding the way we were managing our fresh water supplies. Then we gathered together and William read the entry from our field journal. The geographer questioned the type of dam this was and students began to



ask about the large rocks around the dam and what was riprap? I explained that Barrier Lake Dam was an earthen dam built of earth and riprap. Riprap was the large boulders piled around the dam, which prevented the earth from being washed away by the water. Ethan asked how an earthen dam compared to a concrete dam. I answered that in addition to the construction of the dam, an earthen dam usually remains in place for approximately eighty years compared to a concrete dam, which will last longer (Alberta Government). This prompted the students to ask when the dam was built. Our geographer had asked the same question, so we decided to move along and search for the answer. The journal was passed

Entry 5
September 27 - 11:15
Hot and sunny ☀️
Looking down toward what the river has done. Character on the river leave the evidence spot? Where else?

Des

Entry 6
September 27 - 13:30
Bright Sunshine ☀️
This is a wonderful spot where the river valley opens up. Why is there a slight elevation from the river bank? What is this spot here where the sunshine?

reason 4 Δ? evidence A?

Entry 7
September 29 - 10:15
Cloudy and strong winds ☁️

The old road / shoreline of the river. It is so massive and that water? Was it at that time? Or is it on? I see another

Back to the road to see the valley's history

Entry 8
October 1 - 14:50
Warm Sunshine some cloud ☀️

From this amphitheatre the beginning of the valley's history is revealed. It all began about 100,000 years ago when the glaciers began to shape the valley. What caused the glaciers to form and why did they retreat?

I always keep my eyes open and alert and I continue to make new discoveries.

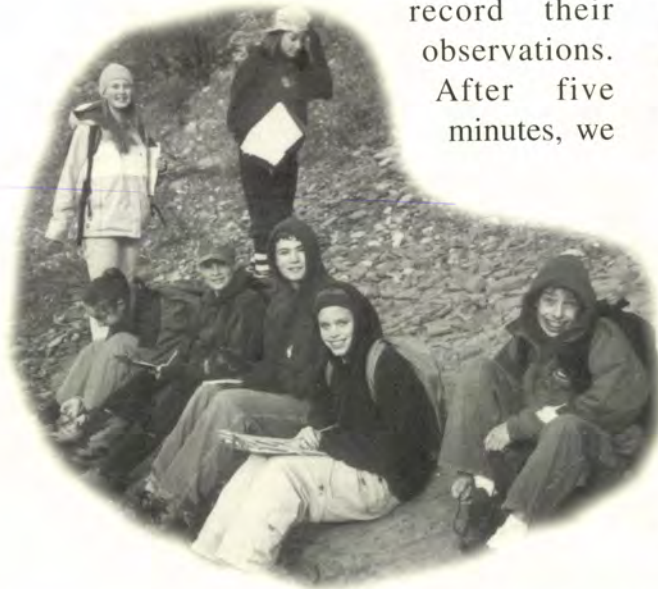
To the east I can see an old road. I will follow this road into the forest and see what else I can discover.

to Brittany who read the bottom of the journal entry and then led us to the next stop.

Just before we arrived at a powerhouse we passed a plume where water from the dam was released into the Kananaskis River. We were fortunate to see this exciting display of water rushing full speed underneath our feet as we walked across the bridge to the powerhouse; water is only released from the dam for a few hours each day. During this time, 12,900 kilowatts of power is generated, enough energy to supply a town of approximately 8000 people (Alberta Government). We rushed to the powerhouse to read our journal and most of the students were observant and had noted 1946 as the date of the construction of the dam. With this information, students calculated the dam's age as 56 years with only about 25 years left until ... what? What will happen in 25 years? The analytical learners who search for facts at each stop quickly recorded every detail and led the way as we decided to follow the geographer's instincts and move ahead to explore the valley for evidence of change (McCarthy, 1980).

As we approached stop three, every direction revealed evidence of change. Our group formed a circle and I asked them to turn away from the

circle and record their observations. After five minutes, we



all turned towards the inside of the circle and discussed our observations. As there was so much to see and everyone had a different view we had lots to discuss. The old river channel was in clear view and it was evident how the dam controlled the flow of the river, and there



were ground springs seeping from the valley wall. Laura opened up our field journal wondering where the ground springs came from. After the journal had been passed around, Lee proposed that the ground springs may be coming from the reservoir, seeping through the earthen dam. Over time there could be a new stream channel created along the edges of the dam where we saw the ground springs. A shift had occurred from a question answer style lecture to a discussion led by the students. As we were leaving this stop, Alex had remarked that this was a special place where we could observe changes from the past and changes in progress all at the same time.

As we crossed the creek and ducked underneath the willow branches we found an eroded shale outcrop. We were moving back in time, our geographer informed us that this outcrop was eroded about 1000 years ago. Shelby, an innovative learner who enjoys sharing her ideas, began to explain the processes of erosion and deposition and how these processes shaped the valley (McCarthy,

1980). Many students offered ideas and explained processes with little guidance from the supervisors or me.

It was time to expand our observation skills. I asked the students to partner up and I gave each pair a blindfold. One student wore the blindfold and observed the shale outcrop with their hands while their partner recorded their observations. Then the blindfolds were removed and the student observed the same spot and compared their original findings. Students then switched roles so that everyone could experience touch observation. Next we experimented with smell observation. Each student took two pieces of shale and banged the rocks together and smelled the rocks. The smell emitted from the shale aroused many questions from students and stimulated their drive for inquiry. Before we proceeded to the next stop, the group took some time to make some notes in their personal journals.

We continued along the riverbank then turned into the forest and climbed up to an old river terrace. The field journal revealed that we were standing on a river terrace but the group was not certain about the processes involved. I prompted them with ideas regarding climate change and glaciers. Soon they had pieced together the puzzle and realized this was where the river may have flowed roughly 10,000 years ago when the glaciers were melting. While we were discussing climate change, one of the supervisors had laid a bunch of mats out together on the field behind us. The glaciers were now melting and to avoid drowning everyone had to jump on the glacier (the mats). Suddenly 100 years had passed by and the glacier continued to melt, I removed a few mats and the students had two minutes to jump on the mats and save themselves. Students helped each other by linking arms, balancing one another while standing on one leg, and jumping on each other's backs. The practical learners were now fully engaged; they were able to experiment with



some of the concepts we were learning about (McCarthy, 1980). I continued to remove mats until my group was floating in the water. We had experienced deglaciation.

The geographer's journal now led us down an old road to stop seven. As Brittany read the journal entry, everyone was quick to explain the source of water, which had formed the original Barrier Lake. Suddenly Hannah pointed out that she could see other hills in the distance similar to the one we were standing on. We discussed the formation of kames and then I asked about the possibility of another dam in the area 10,000 years ago. A few students had dismissed the idea, as there were no people around at the time to construct a dam. Daniel studied the sketch in the field journal and decided that it was possible that a glacial dam formed while the various glaciers were receding. He then quickly added that fluvial processes did not only carve the

valley but deposited features such as the shoreline of the original Barrier Lake and the kames. Students began to connect concepts and demonstrate relationships between fluvial processes without any prompting.

We reached our final stop where we had full view of the valley and Barrier Lake. I decided that before we read our field journal everyone should spread out and take a few minutes and reflect on what we had discovered and what was left to discover. We then gathered together and Jordan read the final journal entry. With no further instruction from me, everyone offered their ideas on the ice age, climate change, and glaciation in the valley. Sabrina pointed to evidence of glacial presence on the mountains surrounding the valley and Donald linked large-scale changes to large time scales and small-scale changes to small timescales. The students clearly grasped the relationship between land, water, climate, and time. We concluded with a ten minute journaling session.

Conclusion

Using a geographer's journal as a guide to inquiry proved to be successful in intriguing students during the hike. The journal involved students as leaders and gatherers of information rather than passive learners. The process of going out into the field and visually experiencing the geomorphic processes allowed the students to fully grasp the information presented. The concepts were no longer textbook images, but rather actual experiences. Students witnessed results from both previous geomorphic events and processes in action. Further, students participated in a variety of activities and discussions, which reached the different types of learners. Through engaging students' senses and heightening their observation skills, the concepts and experience were well imprinted on the students' minds.

Rosemarie Franke holds bachelor's degrees in Geography and in Leisure and Tourism from the University of Calgary, Canada. She plans to pursue a Master's degree in either Geography or Environmental Design, and a career in environmental education.

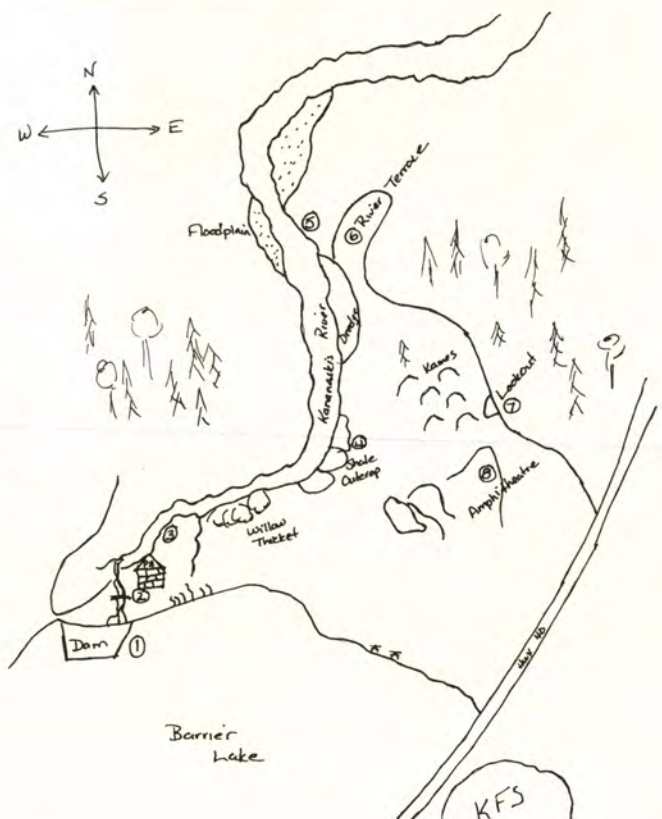
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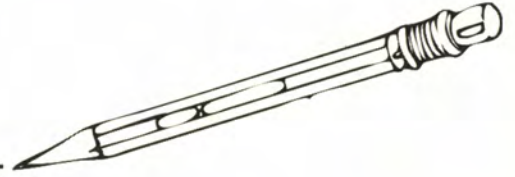
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This project was completed during a University of Calgary Co-operative Education Internship at the University of Calgary Kananaskis Field Station's School & Community Education Program <<http://www.ucalgary.ca/UofC/research/KFS>>.



Naturalist in the Field: Ann Zwinger

by Mark Baldwin



Few writers can match the grace with which Ann Haymond Zwinger connects the reader with the natural world. In such outstanding books as *Beyond the Aspen Grove*, *Run, River, Run* (which won the John Burroughs Medal), and *The Nearsighted Naturalist*, Ann shares the richness and beauty of what she has experienced first hand. Her simple telling of the truth about what she has seen, heard, and felt has promoted the wellbeing of the environment of the western United States, where she has made her home for many years.

How does she do it? Much of the answer lies in the detailed and disciplined notes she makes, in

words and sketches, while in the field. I asked Ann to share some of her thoughts about field journals.

Ann says that, “Keeping impeccable field notes is absolutely essential to what I write. Close observation and clear description capture the essence of place and my reaction to it, and form the foundation for research to be done when back in the library. Carefulness of observation does not always lend itself to flowing prose; sometimes it does and that happily translates almost directly into text. It’s necessary to get down as much as I can quickly and accurately. ‘Just the facts, ma’am.’”

With such a storehouse of facts learned over many years, Ann can often identify a plant or animal down to family and/or genus, even without a field guide in hand, or at least come pretty close. Furthermore, she says, “I can get an idea of dimensions, of sounds and smells, all the evanescent sense-operating reactions that make up a place. I can point myself in directions for research; I keep the last page of my notebook just for questions.” She adds, “Inevitably I forget William Beebe’s admonition to imagine yourself back at your desk asking the questions you *wished* you’d asked, and often have as many loose ends as a worn-out sweater.”

Ann continues, “Perhaps what you’re really doing with any kind of notes is impressing them on your mind until you can use them. Going over them at night is very helpful. The more quickly you review your notes, the better you will retain what you have seen and felt. Within a couple weeks you’ve lost 90% of your recall. On the other hand I am continually surprised

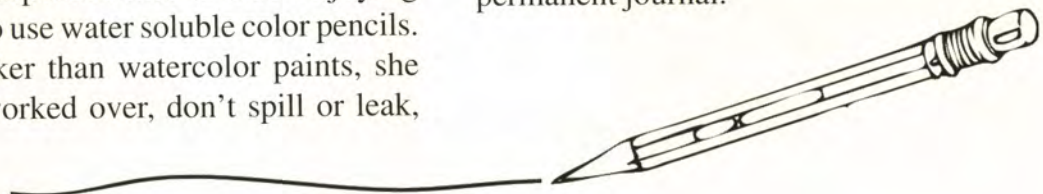
when I type my notes into the computer, at how much I remember and how much I can fill in when prompted by written observations a few days to a few weeks old. With practice you can do pretty well with closing your eyes and concentrating. You can elaborate and call back time and place in amazing detail, but even with that you can't wait too long. You need to be disciplined in the actual note taking, and disciplined in how you handle those notes when you get back to civilization."

About drawing, Ann says, "Sketches are a different way of looking at landscape, and take more time on site although I can do quick sketches in 5-10 minutes. How I work depends upon whether I'm doing a quick, general sketch, or a detailed botanical drawing. If I'm drawing a plant, I can make a general sketch and then do a careful detail of a flower and a leaf, and finish it later; there's a hand control that can be very evasive in the field. Sitting in my tent or at a table is much more conducive to careful work than sketching on the run."

What does Ann's kit consist of? For years she has used a click pencil she got at Safeway. She prefers a pencil that always has lead and doesn't have to be sharpened. She is also enjoying learning how to use water soluble color pencils. They are quicker than watercolor paints, she says, can be worked over, don't spill or leak,

and are easy to travel with. For magnifying specimens in the field she uses a double hand lens with a 10x and 20x lens that hangs out of the way on a big shoestring when not in use.

Organizing the data Ann collects in the field is, of course, critical to her work as a writer. She explains, "For journal writing I use two things, depending upon circumstance. For years I've used 3-hole yellow lined paper that I have recently found, being porous, isn't good in a wet climate. I also use a commercially available notebook system that has a kind of hole punch that allows you to peel pages in and out. I use a 5x7 notebook for taking notes in the field; these I put into an 8.5x11 notebook in the evening. The system lets me combine field and retrospective notes and arrange them for future reference. The pages have a nice margin that I use for small sketches and/or key words so that I can come back and pick them out in a moment. For sketching I carry spiral sketchpads that have heavy, sturdy backs and lie flat. I also carry a very tiny spiral notebook in a pocket. Small notebooks give you a chance to put down simple lists and skeletal sketches, your observations *right here, right now* and, if necessary, you can transfer them later to the larger, more permanent journal."

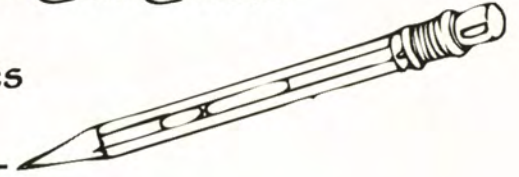


The greatest thing a human soul ever does in this world is to see something, and tell what has been seen in a plain way. Hundreds of people can talk for one who can think. But thousands can think for one who can see. To see clearly is poetry, prophecy and religion all in one.

John Ruskin

Dotted Blues: How Field Journals Can Create Awareness and Action in Local Communities

by Will Kerling




What is a Dotted Blue? A community in the foothills of the Northern Rockies would begin to find the answer to this question on June 6, 2001. On this sunny afternoon, I accompanied a committee member of the North Hills open space preservation group to explore an early homestead property for its butterfly diversity. The old farm homestead and

surrounding land, now one of the few larger properties in the city limits, will be preserved as part of our heritage.

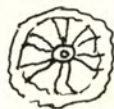


This field trip revealed a mating pair of dime-sized blue butterflies, Dotted Blues, atop a native buckwheat plant (*Eriogonum umbellatum*). I had been searching for several years without success for one or more of the Dotted Blue species among the different native buckwheats in the extensive foothills. Dotted Blues (*Euphilotes* genus) are found in localized populations and each species has evolved with a specific species of buckwheat plant.

June 8, 2001 - Trip to farm homestead - Dotted Blues
 Mostly sunny and 70°
 7 yr. old Paul, his mother and I
 12 species of butterflies were discovered this day.


 ♀ Dotted BLUES
 5 mated pairs discovered later in day

Saw some females laying eggs, also
 Common and Arrowhead Blues were common


 Old wheels of machinery here and there

Other butterflies: *Logan*, *ausonides*, *V. cardui*, *C. philodice*, *C. eurythenis*, lg. yellow *A. wallowtails*, *Lygdemus* and possibly a *Erynnis persius* (would be a new species)

According to my field journal entries, I made three more June field trips to this farm homestead. Dotted Blues were observed and recorded on June 8, 15, and 28. Five mating pairs, among many individuals, were seen on the clusters of buckwheat flowers during the June eighth visit. My field journal of 2000



contains a June record of another species of Dotted Blue, located a hundred miles from the homestead. That day the females were perched atop buckwheat

flowers immobilized by cold weather. A butterfly researcher informed me that Dotted

Blues are so attuned to these native plants, a female will wait for hours to catch ten minutes of warming sun in order to lay her eggs on the flower cluster. The tiny caterpillars consume the flowers in order to grow and eventually miraculously metamorphose into amazing little butterflies with stunning black dots under their wings.

The North Hills preservation group working with our city government considered the discovery of the presence of Dotted Blues and their life cycles very important. The City has an integrated weed management plan for the farm homestead property and other foothill open space conservation areas. Invasive weeds have dramatically altered the foothills during the last few decades, putting the Dotted Blues and other flora and fauna dependent on native diversity at risk. The common weed management approach harms the Dotted Blue at every stage of its development – egg, larva, pupa, and adult. The newly concerned citizens spent the winter deciding how to nurture these blues.

The following year, 2002, found 38 individual Dotted Blues in the homestead buckwheat patch on a late June day; they were having a very good season. Will they have many good seasons in the future? The first effort on the ground to ensure the future of the blues began in the spring by flagging the buckwheat patch. The flagging



served to prevent the spraying of herbicides or pesticides since the homestead land was being sprayed here and there. Public education and action for preserving the buckwheat and the Dotted Blue had begun.



During the buckwheat blooming period, the many sheep grazing in the area for weed control trampled and ate a lot of buckwheat flowers

July 8, 2002 - 4th of July
Butterfly Count of Mts. mt.
Five Valleys survey
Waterworks' Hill &
the farm homestead
the north hills
blue sky 80's slight breeze



E. umbellatum
buckwheat
plant

1. *Euphilotes ancilla* (Dotted Blues) - 38
2. *Papilio zelicaon* - 1
3. *Speyeria nevadensis* - 4
4. *Cercyonis oetus* - 12
5. *Icaricia icarioides* - 258
6. *Vanessa cardui* - 1
7. *Strymon melinus* - 1
8. *Pontia becherii* - 2



while they consumed weed plants. This was unfortunate since the Dotted Blue life cycle is the most vulnerable at this point. By the end of summer people tried a different approach to the weeds around the buckwheat plants.

C o m m u n i t y

volunteers set aside a day for a weed pull. They had such a good time learning about blue butterflies, the homestead era, and each other, that another weed pull was scheduled for the following year.

Five Valleys Audubon local chapter sponsored last year's weed pull and our January 2003 program focused on this most interesting natural history story in our foothills. A history of community stewardship for our neighboring prairie foothills is gaining depth and planning for priorities is an ongoing challenge. Together with the City we will monitor the native habitat restoration at the farm and other open space hillsides through journal tracking of butterfly distribution, population dynamics, and native plant fluctuations. We are presenting programs and field trips for kids and adults on butterflies in the foothills this July. The weed pullers will be back again this year. They are learning to care for the Dotted Blue, first hand.

The community will continue to learn about the Dotted Blues and about our place in history. Taking notes in the field and the associated field



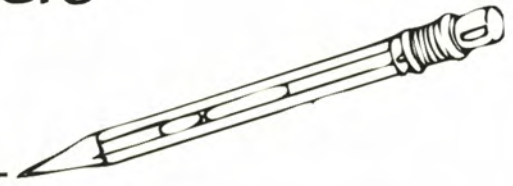
journals can help us understand what we are a part of and how influential we are. Dotted Blues grace our fields like tiny blue gems and our connection to them is here in our foothills.

Will Kerling lives in Missoula, Montana. His detailed field journal has played a crucial role in habitat preservation and conservation in the region he inhabits.



Blessed are the Note-Takers

by Laurence Pringle



A psychiatrist once told me that his patients who took notes during sessions were those with good memories – those who didn't really need to. Nevertheless, the act of keeping a record is vital for some people, myself included. Somebody has to be a list-maker, diarist, and journal-keeper. The compulsion can sometimes be a burden, but the rewards are many.

My nature journal began at age 15. It was entitled, "Bird Notes, 1951-1952." (Like many naturalists, my initial interest in nature focused most passionately on birds.) One day I built a blind, then hid in it taking notes about the

comings and goings of house wrens: "1:58 p.m. – female arrives with food, enters house. Male sings in the berry bushes." After an hour of observations I concluded, "female brought food 12 times. Male brought food 4 times."

My passion for birds was manifested in many ways, including building and maintaining houses and feeders, and improving habitat. My definition of habitat improvement was quite broad, producing entries like "Shot a starling" and "I shot another cowbird." My dislike of starlings and other alien animals (and plants) continues to this day, but the following entry reveals feelings that have changed.

"Sept. 25, 1951 – Just after the sun set down and everything was still, I heard a thrush calling across the meadow, and a few seconds after that a song sparrow gave its song. As if this wasn't enough a house wren bubbled out its song a few minutes later. It seemed as if they were all saying good-bye for the year. This is the end." I had forgotten having those feelings – of sadness and depression brought on by the impending migration of summer's rich variety of birds. In the years that followed, as my interest in nature broadened and deepened, autumn no longer induced those feelings.

Re-reading early jottings, I am frustrated in not remembering the location of some places, including one I called "Bird Heaven." There is no clue in my notes. This carelessness about important details vanished forever in a 1955 college course. Cornell ornithologist Charles Sibley was a stickler about good journal-keeping. I still have his 12-page "Suggestions for Ornithological Field Notes." Many of the



ideas were specific to bird study (threat displays, nesting behavior, fledglings), but the basic wisdom could be and has been applied to virtually all of nature. All across North America there are men and women – including world-renowned biologists – who were introduced to good journal-keeping in Dr. Sibley’s class.

Under “Localities,” Sibley wrote, “If you use some relatively transitory place name, e.g., Jones’ Farm, or Brown’s Woods, couple it with a relatively permanent political or topographical reference point. For example, “Jones’ Farm, 3.5 mi. SE Pineville, Smith Co., Oregon.” He added, “These details are important if your notes (and specimens) are to have permanent value... Assume that someone who speaks another language, lives in another country, and is unfamiliar with the area will use your notes a century from now – so try to make it easy for him!”

If I had known this in my mid-teens, today I might be able to relocate the place I called “Bird Heaven.” In a century my journal writings may not exist, let alone be read, but I still follow Dr. Sibley’s advice. Although my field notes include adventures in southwestern deserts, among monarch butterflies in Mexican mountains, and on New Zealand coasts, most are about observations within a hundred feet of home. Occasionally I note in my journal that I have lived in the same place since 1973. Why bother? Because my address *appears* to have changed, from Germonds Road to Castle Hill Lane. However, there was no move; a little road off Germonds was finally given a name.

People often ask if I base my books on personal experiences with wildlife. The quick answer is: for inspiration, yes, for details, generally no. My book *Follow a Fisher* (T.Y. Crowell, 1973) was inspired by following tracks of fishers in the snowy Adirondack Mountains. I did use details from those experiences. However, most of the information about fishers came from people who

really knew them. I’ve had encounters with many other creatures – black bears, wolves, rattlesnakes, dragonflies, etc. – but my observations are dwarfed by those of biologists who have spent decades studying these animals. They are the real experts.

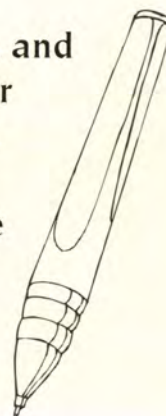
Journals kept by amateurs can be useful in phenology research, for example, in comparing the annual first sightings of migratory bird species, or of flowering times, over decades. They can also have personal practical value. Looking over my notes from nearly three decades of hunting morel mushrooms, I am reminded of a site that needs revisiting next May. Sadly, the notes also bring memories of once-bountiful morel habitats that are now housing developments. Perhaps the same is true of the mysterious “Bird Heaven!”

Someday I may return to my journals and find a treasury of experiences to be used in writing about morels, or 17-year cicadas, or the cycle of life in the backyard pond. Meanwhile the journal pages give delightful memories of outdoor adventures, both far and near.

Laurence Pringle earned degrees in wildlife management before becoming a freelance writer. His one-hundredth book, Whales! Strange and Wonderful, was published in early 2003. In 1983 he received the Eva L. Gordon Award for Children’s Science Literature.

The world is all clues, and there is no end to their subtlety and delicacy. The signs that reveal are always there. One has only to learn the art of reading them.

Paul Shepard



Educator Tips

by Mark Baldwin

The Moon: A Journal Exercise in Inquiry



The moon is a faithful, predictable part of earth's natural environment. We've all looked up and seen it hundreds of times, but it's surprising how many of us cannot explain its behavior: Why it changes its apparent shape, why it rises and sets at different times each day, etc. Your own observations and the records you keep in your journal are your key to understanding the lunar cycle.

Materials:

- Field Journal
- Pencil/pen

Optional:

- Compass. Your moon observations will be more accurate if you use a compass to record its direction.
- Binoculars: Lunar observing is enhanced if you use binoculars or a spotting scope.

Procedure

Consult a newspaper daily almanac, or visit <http://aa.usno.navy.mil/> and click on Data Services in order to determine when the moon will be visible. Record the date and write "moon observation day 1." Once you have found the moon, record the following information:

- 1) Draw the moon's shape exactly as you see it. Also, record the apparent size of the moon. "Hold" the moon between thumb and forefinger held at arm's length and compare its apparent size to the size of a known object. Record this apparent size in your journal.
- 2) Record the time.
- 3) Record the direction of where a vertical line from the moon would intersect the horizon. Use a compass if you have one. If you're not sure what direction you are facing within 45 degrees, do some research to find out!
- 4) Record how high the moon appears directly above the horizon. This may be done approximately using the following method: Hold your right arm fully extended in front of you, making a fist with your fingers facing left. Line up the bottom of your fist with the horizon and close one eye. Try counting the number of "fists" from the horizon to a point directly overhead. Adjust the apparent "size" of your fist so that nine fists count 90 degrees, which is the number of degrees from the horizon to directly overhead. Now you may count the number of fists from the horizon to the moon, and convert this to the approximate number of degrees.

Try to make a moon observation following these guidelines every day if possible. In addition to the above, make notes about the weather: cloud cover, temperature, wind, etc. Use colored pencils to record a visual impression of the moon and your surroundings. Look at the moon through binoculars or a telescope and note your impressions with sketches and words. Following a period of moon observation take at least a few

moments for personal reflection, to write down your thoughts about the moon.

Make a list of questions you have about the moon.

Create a sky map that allows you to record each successive moon observation. Write down or draw any pattern or regularity you notice about how the moon moves.

During the course of the month start to investigate the questions you have about the moon. Address them in any order. Add questions to the list as they occur to you.

When your observations and research have led you to an understanding of what is going on between the earth, moon, and sun to make the moon behave the way it does, construct a diagram or written explanation to share.

Questions for Discussion:

What did you discover about the moon as a result of your long-term investigation? What questions do you now have about the moon? Reflect on the role your field journal played in your moon investigation.



The world is full of magic things
waiting patiently for our senses to
grow sharper.

John Keats

Educator Tips

by Mark Baldwin

Learning How to Use a Hand Lens

Next to your field journal and a pencil, perhaps the most important tool of the amateur naturalist is your hand lens. A simple plastic model with 3X and 6X lenses can be purchased for a few dollars from any science supply catalog. A more sophisticated folding “loupe” with 10-20X magnification is a bit more expensive but well worth the price.

Materials:

Hand Lens
Natural Object



Procedure:

Determine which is your master eye. To find this out, extend your hands to arm’s length with the fingers up and palms out. Overlap your thumbs and fingers to create a “knot hole” effect in the web of your hand. Pick out an object and, with both eyes open, focus on it and then center it in the “knot hole” between your hands. Close one eye and then the other. With one eye, it should stay centered; with the other, it will shift or go completely out of view. The eye that keeps it centered is your master eye.

Hold the lens so that it is very close to your master eye. Bring the object you wish to look at closer and closer to the lens until it pops into focus. This technique is in contrast to using the lens as if it were a reading glass, with the lens held a foot or more from the eye. Using the lens incorrectly in this way cancels much of its power to reveal detail.

Educator Tips

by Mark Baldwin

Use Your Field Journal to Inspire Creative Writing

“When I take a lot of notes in the field, there is a chance that some of the sounds I hear in that landscape will carry over into the sounds of the words I use to describe a place. I work hard on that because I can’t do that again later. . . Recording the weather is also important. . . Bird songs, waves crashing, leaves rustling — all of these things serve as prompts for me when I’m reworking a field journal, particularly for something that I want to use later on as raw material for an essay. It’s the sensory data that I want to record in detail — so that it prompts me as soon as I read it to reexperience a particular moment.” —Gary Paul Nabhan, in a 1988 public dialogue with Edward Lueders and Ann Zwinger. Published in the book *Writing Natural History* by Edward Lueders.



Writing is a process, just like drawing is a process. It helps to think of the writing process as being composed of several smaller tasks: prewriting, drafting, revising, editing and publishing.

Prewriting is the thinking, observing, brainstorming, data collecting and selecting that take place in preparation for writing.

Drafting and Revising are writing the first and subsequent drafts. Adding, deleting, changing, making choices, crossing out, using carets, cutting and pasting, sharing your ideas with others and getting feedback happen here.

Editing is looking for and correcting errors in grammar, syntax, spelling, and so on.

Publishing is preparing the piece for its intended audience.

The last two tasks are done only for the benefit of an audience. If your journal is essentially for your eyes only, the editing and publishing steps may be omitted.

The following exercise will give you practice in using the field journal to enhance the writing process. The exercise employs **clustering**, a non-linear brain-storming process that allows greater access to your creativity during the prewriting stage, and eases the entire writing process. For more about clustering and other techniques for “natural writing,” read *Writing the Natural Way* by Gabriele Lusser Rico.

1. Go into a natural area and let yourself be drawn to some aspect to observe: a particular animal or plant, geologic feature, or landscape. Enter date, time of day, location, weather notes, and any other pertinent information in your journal.
2. After about 15 minutes of observation, sketching and note-taking, jot down several associations that come to mind — words or phrases — that connect with your subject. Don't be concerned here with writing complete sentences, with grammar or spelling.
3. Once you are satisfied with the thoughts you have written down, go back and choose **one** that you would like to use as a topic for a piece of writing. Write that word or phrase in the center of a journal page.

4. Now allow yourself to think freely about the topic and write your thoughts surrounding the nucleus word or phrase. Do not restrict your thinking in any way during this process; simply jot down your associations randomly, connecting them to each other or to the central topic with lines or with arrows as you see fit. Do this for several minutes.

5. Now, look over the **cluster** you have created for connected ideas to incorporate into the first draft of a short poem or narrative description about the topic you have chosen. When you have finished writing, allow some one else to look at the journal page upon which your piece of writing is based, then read your piece aloud to that person.

Educator Tips

by Mark Baldwin

Making a Viewfinder

Materials:

3x5 Card
Scissors

Procedure:

Fold the card in half the short way. About half an inch from the edge cut into the fold, across the top, and back down to the fold. When you unfold the card you will have a window or viewfinder.

Use the viewfinder as if you were looking through a camera lens. The viewfinder will help you focus on either close-up or far-away objects, blocking out the confusing complexity of



surroundings and allowing you to concentrate on one place.

To use the viewfinder for recording in your journal, draw a rectangle similar in proportion to the viewfinder's dimensions (you may trace the edges of your viewfinder to do this). When you sketch the scene the viewfinder will enable you to determine and accurately record shapes, proportions, colors, and so on.

You may want to tape or glue a pocket to the inside back cover of your field journal to hold your viewfinder when you are not using it.

Educator Tips

by Mark Baldwin

An Outdoor Investigation ~ Using All Your Senses



Materials:

Field Journal
Hand Lens
Drawing Tools

Procedure:

Take your journal outdoors into a natural area. Take a few minutes to simply observe your surroundings. Choose some part of the environment to record by drawing and/or writing in your journal. Include some standard information: date, time of day, your location, and a note about the weather.

As you record, try using your sense of touch, smell, and hearing as well as seeing. See the suggestions below. Continue to add journal entries to help you characterize this natural environment, for as long as time allows.

Suggestions for Using Your Senses

What do you hear?

Focus your attention on what you're hearing by making a **sound map**:

1. Draw a circle.
2. Place an X in the center to indicate your position, then start to listen carefully.
3. Each time you become aware of a sound, note its direction, volume and apparent distance away, and represent it graphically in some way.
4. After listening and recording for about 10 minutes, review what you have heard and summarize it in writing.

Enhance your hearing

Think of the way a cat or a rabbit rotates its outer ears in response to a sound. Enhance your own ears' ability to catch sound waves by cupping your hands behind them, and bending your outer ears forward with thumb and forefinger. Listen for a while like this, and note how your perception of sound changes.

What do you smell?

Smell your surroundings intently. Take a bit of forest duff or a few bruised evergreen needles and cup them in your hands. Breathe in the scents. What do they remind you of? How would you describe them? Record the range of odors that you experience to the limits of your perception; both the strong and the subtle. Imagine how the landscape must appear to an animal with a hypersensitive nose, such as a coyote or black bear!

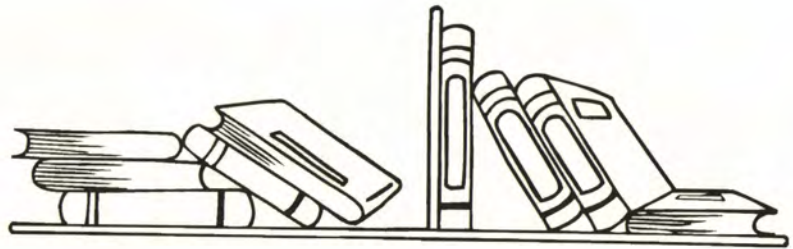
What do you feel?

Choose several parts of the landscape to touch. Use knowledge and caution: know poison ivy and stinging nettles before you start handling things. Note textures in your journal.



Book Reviews

by Mark Baldwin



The Sierra Club Guide to Sketching in Nature

Written and illustrated by Cathy Johnson

Sierra Club Books, San Francisco, www.sierraclub.org/books, 228 pages

This book works for me on two different, yet complimentary levels. My left brain likes it because it satisfies my need for straightforward instruction and no-nonsense advice on how to sketch what I see in the field. My right brain likes it because it is an aesthetic feast.

Cathy Johnson is multi-talented. Her gifts for field sketching as well as teaching, writing, nature observation, and expert handling of many different art media are all evident in this book.

She starts with the basics: essential tools and tried-and-true exercises to get eyes, brain and hand to work in synch. Then she introduces what you need to know about art theory –

composition, light and shadow, and so on – so that you can successfully depict what you are seeing on paper. Cathy is a master watercolorist, so naturally her instruction on how to work with color in the field, whether with pens, colored pencils, or watercolor paints, is excellent.

Useful chapters introduce the joys and challenges of sketching various elements outdoors, such as flowers, trees, animals and landscapes.

This is a very useful book for beginners but in the years I have been keeping a naturalist's journal, I have come back to it many times. I highly recommend it.



Salamander Rain: A Lake and Pond Journal

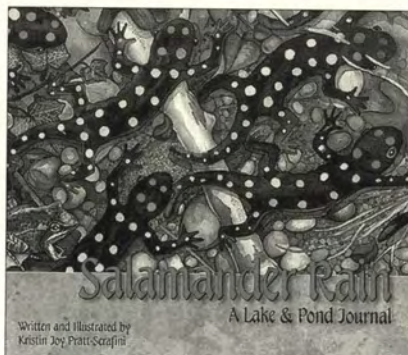
Written and illustrated by Kristin Joy Pratt-Serafini

Dawn Publications, P.O. Box 2010, Nevada City, CA 95959, www.dawnpub.com, 30 pages

Lots of eye-catching illustrations and informative text introduce children to the watery world of lakes and ponds. The book follows the story of Klint and his older sister, Kori, as told through Klint's "official Planet Scout journal." Each page is filled with information about the aquatic ecosystems they visit. It is fun to linger over each journal-style page. Information is presented in small, digestible bits and the illustrations are unusual and very beautiful. I came away from this

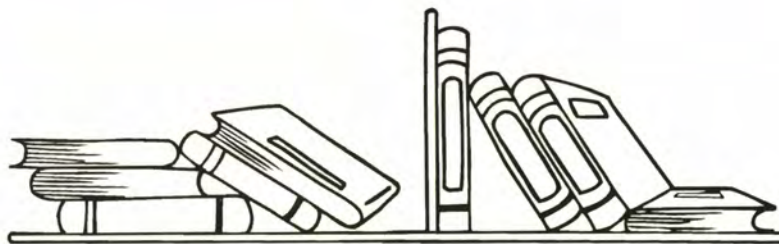
book with two important messages: first, spending time in the field can reward you with amazing experiences (like a glimpse at newborn Northern Water Snakes) and, second, that young people can make a difference when they learn to appreciate nature nearby.

As an added bonus visit Kristin's website, www.planetscouts.org. There you will find tips for keeping nature journals and other good stuff.



Book Reviews

by Mark Baldwin



My Nature Journal

Written and illustrated by Adrienne Olmstead

Published by Pajaro, 3343 Huertas Rd., Lafayette, CA, 94549, www.pajaro.com, 173 pages

Written for older children, *My Nature Journal* is a book to *do* as well as read. Olmstead has created a very nice blend of information and invitations for observation, recording, and reflection.

The book is meant to be used outdoors and banged around a bit as field journals are, with hard cover and “hidden” spiral binding.

Following some introductory information and field sketching instruction, the reader is taken on a series of adventures through five “natural worlds”: woodlands, meadows, ponds and



streams, seashore, and twilight. Under each topic is information that teaches and reinforces basic ecological concepts in terms that are easy to understand and encourage further first-hand observation.

Safety in the field is stressed throughout.

My Nature Journal is a great way to get children into the habit of keeping a field journal. By the end of the book they will have learned plenty about nature and given careful thought to their own role in the natural world.

by John Gustafson

Journey Through the 20th Century: Memoirs

Written by Helen Ross Russell

Published by Xlibris Corp., 2003 ISBN: 1401083277

I thank Helen Ross Russell for writing this memoir, for taking the time and effort to pull all these years of fruitful, sometimes frustrating, experiences together for the edification of all who read it. And I hope that many, many people do read it!

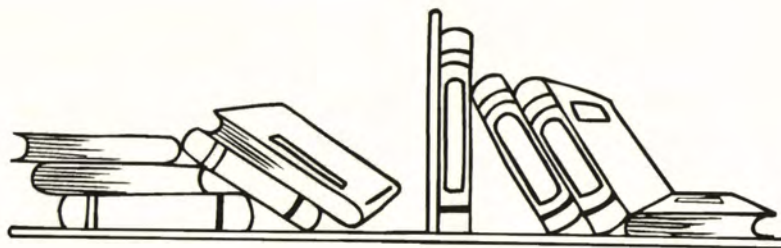
I particularly enjoyed her chapter on “Teaching-Sharing-Learning.” It should be reprinted as an inspirational guide to the whole concept of hands-on, reality based environmental learning - learning for every person, regardless of age. Age in this sense is not school or chronological years but levels of understanding and life-style performance.

Helen’s chapters on the Cornell experience are of particular interest to me, as one who followed closely on her heels. (I entered Cornell after graduating from Dartmouth in 1948, having been urged to apply by my mentor Doug Wade, who replaced Dick Weaver as Dartmouth’s College Naturalist in 1943.)

This is a wonderful book, not only for those who lived through these years with us, but those coming along, for whom the task is just beginning. Helen is an inspiration to thousands, and especially to me.

Book Reviews

by Steve Melcher



A Trail Through Leaves: The Journal as a Path to Place

Written by Hannah Hinchman
Published by W.W. Norton & Company, 1997



Hannah Hinchman lives and writes in Wyoming's High Country. This work represents someone with an abundant curiosity using a journal to explore both the inner and outer wilderness. Through her writings and illustrations, the author

reveals her astounding ability to recreate her observations. These observations have been honed through training and practice. Hinchman does not take her five biological senses for granted. She tells of her passion for smells, sounds and tastes that aid in bringing back the memory of places and events. Hannah first began her search for a place she could 'truly call mine' while working at a nature center as a teenager. Her 'search for self' was aided by the voices of William Wordsworth, Ralph Waldo Emerson, and William Cullen Bryant.

I'm envious of her sketching skills but feel anyone can develop the skills of observation she speaks of.

This book is not just a peek into someone's personal journal but a combination of that peek and also how one naturalist has shown that through keeping a journal one may live more fully in the present. Slowing down to write, sketch and observe helps us to appreciate the wonder of our natural world and be ever thankful for the senses that put us in touch with that world. Keeping a journal can become a way of discovering yourself and developing your sense of place.

The Nature Notes of an Edwardian Lady

Written by Edith Holden
Published by Bloomsbury Books, London
1994 Edition illustrated by Rowena Scott

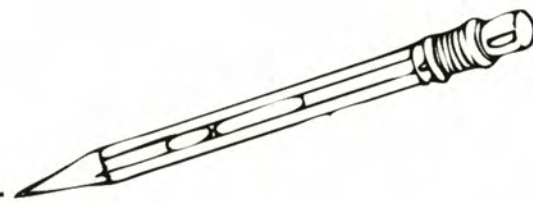
The illustrations in this copy are by Rowena Scott. Ms. Scott, Edith Holden's great niece, and my relative through my mother, was given the copyrights to the diary. The original copy of the diary was purchased by Ernest White and passed down to his daughter, Susan White. Ms. White made the copy available to Bloomsbury Books, and with Rowena Scott's blessing and illustrations, made the current edition possible.

The diary was written in 1905 at Woodside Knowle in Warwickshire, in the west midlands of England. Monthly entries tell of the change of seasons at Woodside Knowle. Edith writes of 'Chief days' for the month celebrated in Edwardian times. 'Candlemas Day' on the 2nd of February and St. Matthias Day on the 24th, are two examples. Each month also has sayings, folklore and a poem or two by contemporary poets of the time such as Longfellow, Wordsworth and Coleridge. My copy has beautiful illustrations, some pen and ink, others gentle water colors.

Nature Notes makes a wonderful 'read aloud' book for your children. The collection of nature related poems, makes having a copy of this volume in your family library well worth while. The only caveat, of course, is the location of the writings and illustrations. That is, I have to explain to my children that the robin and some others illustrated are not the same as our own robin or that the gold-crested wren may not be found in America. But, this could lead to a lesson in the etymology of common names of our own species here in the 'colonies.'

Editor's Endnotes

by Janet E. Hawkes



This issue of *Nature Study* made me reflect on and revisit the stack of handwritten journals I have in my bookcase. My journals tend to be a series of starts and stops and focus on special events such as overseas adventures, family holidays, wilderness voyages, and other significant happenings. Day-to-day events are mostly exempt from my chronicles, like most family photo albums that tend to depict only special events. It also made me think that it is the ordinary activities that lead to the extraordinary. Take for example this publication, *Nature Study*. Only through ordinary tasks of writing, reading, editing, more editing, designing, more editing, layout, and more editing, does it all come together as a whole. Not always apparent are the many people and all the time and activity committed to creating a final publication.

My involvement with ANSS began when Betty Jean McKnight gave me a life membership as a gift. Within a short time, I said I would fill in as editor of *Nature Study* for a year, until a real editor could be found. Since I was really too busy at the time but wanted to help, I solicited the assistance of many interns from the Park School of Communication at Ithaca College, generously funded by an anonymous donor. Now, several years later, I am handing the helm over to another dedicated volunteer assured that the journal will continue and be even better.

Although I did not record or document all the hours it took many people to produce *Nature Study*, the final product stands as a tribute to all their work and dedication. I have always been impressed with the overwhelming generosity of

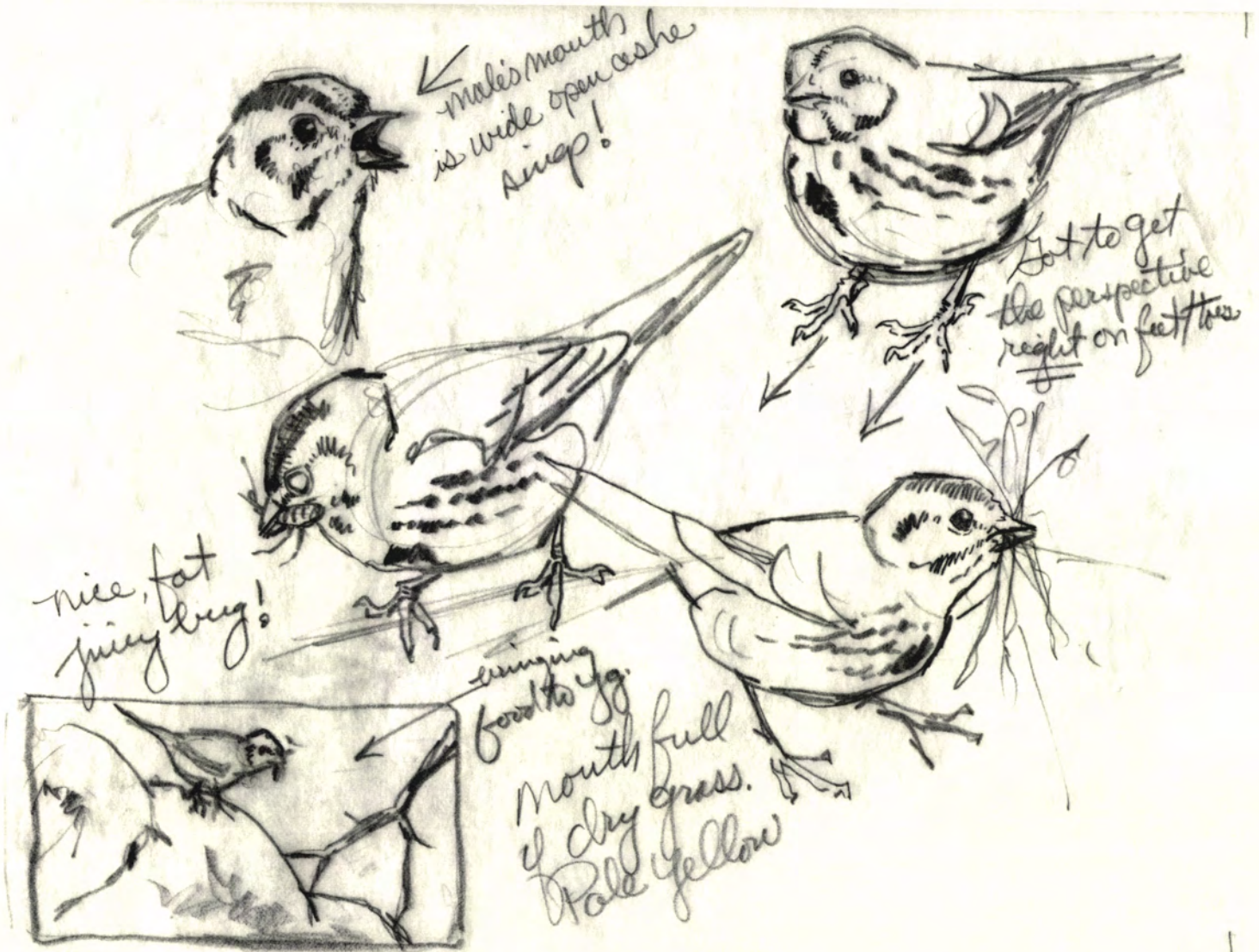
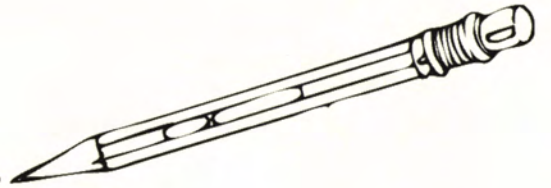
ANSS members and others to contribute their time, talents, and expertise to this publication. With the exception of some “paid” interns, who were truly volunteers given all the hours they provided, *Nature Study* is the product of volunteers and is a labor of love. How else can you explain it.

I want to thank all of the Guest Editors who contributed their time and talents to the journals during my term as editor, including, Steve Melcher, Ralph Lutts, Margaret Barker, Betty Jean McKnight, Mark Baldwin, and of course Helen Ross Russell. My heartfelt thanks to the interns: Tamara DiVasto, Judy Skupsky, Sarah Walsh, Victoria Fuller, Kristin Hammer, Linda Riddell, Jessica Adams, Sarah Bergey, Jessica Botto, Quain Guo, Jayme Hummer, and Diane Salva-Roderiguez who assisted and are much appreciated. I think I was the one who learned the most from the internships. Special thanks to all the Ithaca College faculty and Dean Bohn for directing students to ANSS and supporting our efforts. Thanks also go to John Wiessinger who was always available to provide the Naturalist Notebook or drawings for the issues, Rod Hawkes who provided countless photos to complement the articles, and to Kim Bush and Susan Spear for making the publication look so appealing.

I look forward to being a contributor to *Nature Study* in the future and trying my hand at creating a nature journal. I think I will appreciate the slower pace of observing ordinary things that are truly extraordinary.

Field Notes

by John Wiessinger



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