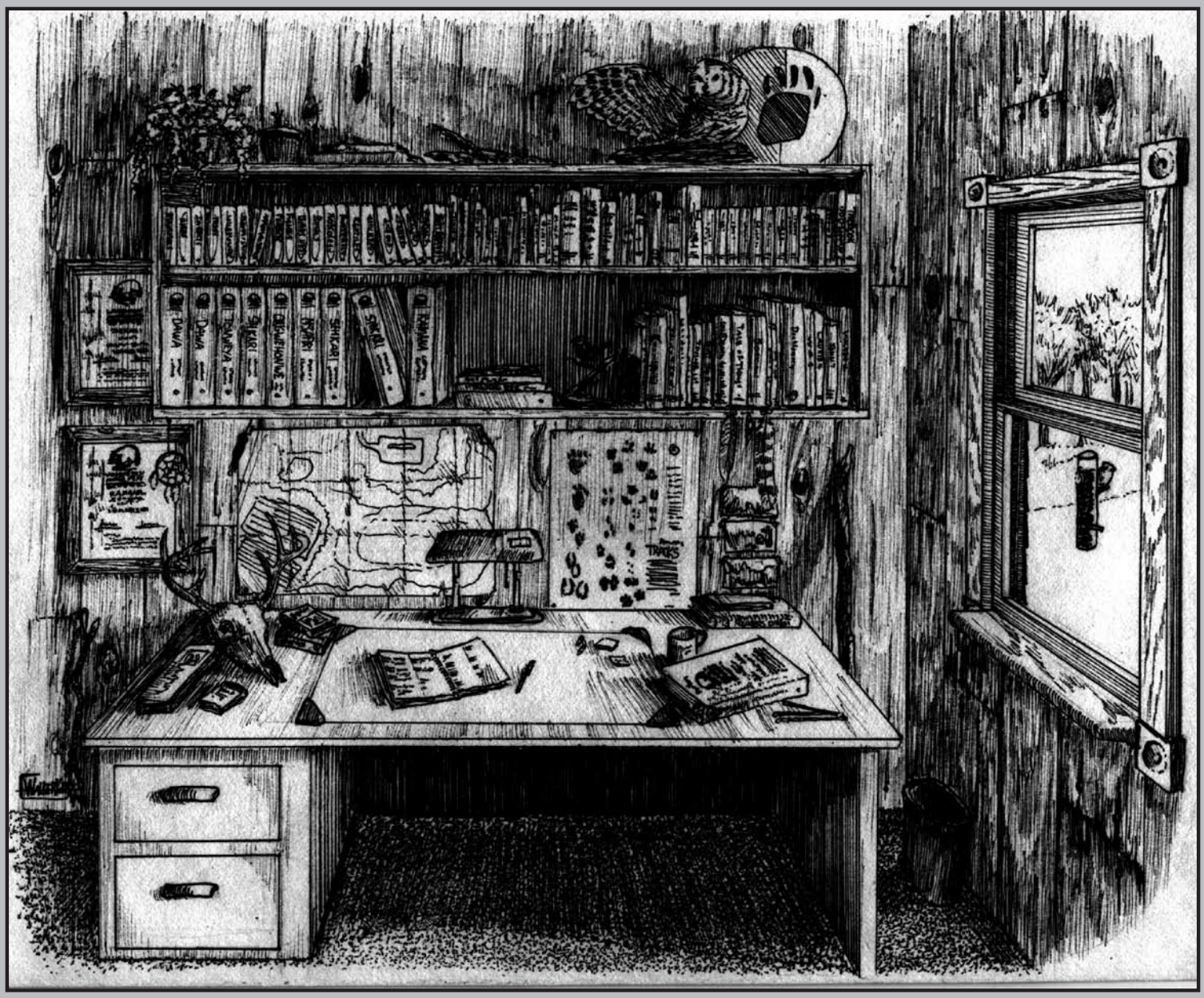
Kamana Two

Resource Trail



Kamana
Naturalist Training Program™

KAMANA
NATURALIST TRAINING PROGRAM™

RESOURCE TRAIL

KAMANA TWO

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OWLinkMedia.com

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Special Thanks & Acknowledgement to Tom Brown, Jr., who through his mentoring of Jon Young, helped to shape the very core of the Kamana Naturalist Training Program.

Kamana Two: Resource Trail, First printing: July 1999

Kamana Two: Path of the Naturalist, © 2001 by Jonathan R. Young
ISBN 1-57994-009-9

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Printed in the United States of America
10 9 8 7 6 5 4 3

TABLE OF CONTENTS

THROWING THE BLANKET

"Throwing the blanket" is a term that was shared with Wilderness Awareness School by Tlingit storyteller Bob Sam. It is a way of saying that the words that we share—through stories, information, and other forms of teaching—are meant always with the best of intentions. It is a way to ensure that all of us are on the same page as we share and learn together. So, before we begin on this latest step along the Resource Trail, the authors, the instructors, and the staff of Wilderness Awareness School wish to welcome you and "throw the blanket" that we may endeavor on this path of learning together.

We are thankful that you have come to read these words that have been generated, collected, and edited by us, the authors. Over the years, Jon Young and Wilderness Awareness School have worked to mentor naturalists and trackers. Embodied in all that we believe, it is our intention is to provide you—the reader and apprentice in this program—the opportunity to experience life through the eyes of a native. It is our understanding through experience that your eyes will become native with the background contained herein combined with your own field experience of these routines.

It is our intention as the authors of these materials to help you, the apprentice, to realize a stronger understanding and connection to the natural world around you, to your family and people around you, and to yourself—if that is how it works out best for you. Most of all, we want to let you know that we only want the best for you the student and that we wish to provide the best experience for you.

If any part of this program offends you in any way, it is not our intention to be offensive. Please remember the intentions of our hearts: to help you, to help the community at large, to create healthy, harmonious, and supportive spaces for learning, and to reclaim excellent environmental quality and a good life for the Future Generations—seven generations into the future.

PREFACE

As Founder and leading mentor of Wilderness Awareness School, it is my job to mentor people in a manner through which they are able to walk informed and confidently in two worlds: the Modern, man-made world, and the Ancient, natural world. Through years of my own experience combined with the combined years of experience of countless instructors from our school, this course has been created as a way to blend both experiences of the world that we all inhabit. This course finds marriage of these two worlds by blending the modern languages of biology and field ecology with the ancient skills of the scout that have been handed down to me by my two main teachers, Tom Brown and Ingwe. Each of these perspectives has value to your experience of the world around you, and combined will help to move you on your exploration of your roots in the natural world at a rapid rate.

Starting when I was just ten years old, I was lucky to meet and become apprenticed to tracker, survival expert, and Apache-scout trained teacher Tom Brown, Jr. Through my teen years as his ever-present "sidekick," Tom opened my eyes in a new way to the world of nature. After nearly a decade as Tom's apprentice in these "lost" arts, I became one of his first instructors at his now world-famous Tracker School. Subsequent to this experience, I continued on to complete a degree in combined studies of native people and nature. In 1983, I founded the school that you are now a part of.

In 1985, I met and became an apprentice to a fantastically interesting naturalist, big-game-hunter-turned-photographer, and otherwise wizened elder who you probably know by now as "Ingwe." His name, which means "the Leopard," was first given to him by the Akamba tribesmen—well-known trackers who mentored him through his childhood and into his adult years in the wilds of Kenya early this century. Ingwe's insights and wisdom caused us to reorganize the programs of the school in 1985, and to this day, Ingwe is known as the Grandfather of Wilderness Awareness School.

My background in awareness training from Tom and Ingwe both helped me to develop a perspective on nature you will soon gain. Many others have also contributed to the knowledge that you will soon gain through your studies in this course, and in due time you will be introduced to many of them. For now, however, I welcome you to this stage of your independent studies and hope that you will appreciate this perspective on the world and its relationship to us, The Human Family.

—Jon Young

HOW TO USE THIS BOOK

The *Nature Awareness Trail* is the main booklet that will guide you through your work in *Kamana Two*. Contained in it you will find the Field Pack assignment sheets (the yellow pages) that you will turn in as you move through *Kamana Two*.

The *Resource Trail* fits in with the Field Packs that you will be completing and mailing to Student Services in the following manner:

- **Field Pack 2.1** Complete and photocopy 1 journal from each path (1 hazard journal, 1 mammal journal, 1 plant journal, 1 indicator journal, 1 tree journal, and 1 bird journal) for a total of 6 journals to send in.
- **Field Pack 2.2** Complete and photocopy 2 journals from each path (2 hazard journals, 2 mammal journals, 2 plant journals, etc.) for a total of 12 journals to send in.
- **Field Pack 2.3** Complete and photocopy 3 journals from each path (3 hazard journals, 3 mammals journals, 3 plant journals, etc.) for a total of 18 journals to send in.
- **Field Pack 2.4** Complete and photocopy 4 journals from each path (4 hazard journals, 4 mammal journals, 4 plant journals, etc.) for a total of 24 journals to send in. Hand in your six Final Reflections (one for each path) here as well.

To begin your work on the *Resource Trail*, simply begin by reading through the booklet. Do this as you begin going through the process of finding your Secret Spot and becoming familiar and comfortable with it. Please, however, ***do not*** read Chapter Eight until you have completed all of your journaling requirements as they are listed here.

As you read through the *Resource Trail* booklet, choose one journal from the list of ten given at the end of each chapter (chapters two through seven) to practice the journaling process with. These first six journals will be the ones that you are to include with the other coursework that you turn in for Field Pack 2.1.

As you finish these first six journal pages, please continue on to create the rest of the sixty journals that you are being asked to create here in *Kamana Two*. Keep in mind as you do them, however, that the outline given above is the order in which they will need to be turned in to Student Services, so plan your time and studies accordingly.

Kamana Two
REQUIRED RESOURCES FOR THE RESOURCE TRAIL

NOTE: Not having these books immediately shouldn't get in the way of you beginning this program. Please read the chapters and be working on your Nature Awareness Trail while you are waiting for any guides to arrive. Purchasing your resources at **www.WildernessAwareness.org** supports a cause you believe in.

* *Audubon Society Field Guide to Trees (East or West) (Peterson's is acceptable, but we prefer Audubon for your tree guide)*

* *The Birder's Handbook: A Field Guide to the Natural History of North American Birds; Including All Species That Regularly Breed North of Mexico*

  FOR EUROPEAN STUDENTS: *The Birdwatcher's Handbook : A Guide to the Natural History of the Birds of Britain and Europe : Including 516 Species That Regularly Breed in Europe*

  (both of the above titles by Wheye, Erlich & Dobkin)

* *Golden Guide to Pond Life*

* *Newcomb's Wildflower Guide (Eastern based, but required everywhere)*
* *Sibley Field Guide to Birds (Western, Eastern) or Peterson's Birds of Texas*

* *Peterson's Field Guide to Animal Tracks or Mark Elbroch's Mammal Tracks and Sign*
* *Peterson's Field Guide to Reptiles and Amphibians (Eastern/Central or Western)*

* *Peterson's Field Guide to Mammals*
* *Peterson's Field Guide to Venomous Animals and Poisonous Plants*
* *Peterson's Field Guide to Wildflowers (Northeastern/central, Pacific, Rocky Mtn, or Southwest/Texas) NOT NEEDED if you have a great local plant field guide.*

  From Kamana One:
* *Reader's Digest: North American Wildlife*
* *Seeing Through Native Eyes,* by Jon Young (if not listened to in Kamana One)

The accuracy of field guides: There are many types of field guides. The ones we require are the "old reliables." These guides, as well as newer ones, are never going to be completely accurate when it comes to range maps. The above guides as well as others we use in Kamana are perfect for the purposes of Kamana. As you grow to become a more advanced tracker or naturalist, you will want to supplement your learning with updated resources, whether they are library articles, the Internet or other field guides. However, for the purposes of Kamana, the guides we require meet your needs and ours.

If you live outside of North America: Attention!

If you are a student who lives outside of North America, or in an area that is otherwise not covered by the field guides that we require, you will want to go through your studies here in a slightly different manner, given as follows.

With each of the six paths of study in this course (Hazards, Mammals, Plants, Indicators, Trees, and Birds), we have listed 10 specific species for students in North America to study. An example is that for the Mammal section, a North American student will need to journal a raccoon, a coyote, a bobcat, a beaver, and a handful more that we have listed to round out those 10 journals. If you live in an area of the world where these animals or plants are not found, you will need to create this list for yourself. To do so, start by looking for similar animals that are in your region of the world. For instance, if a North American student needs to journal a black bear, you will want to look to see if you have black bears in your area or not. If you do, please journal it. If not, look for another type of bear to journal. If there is more than one type, choose the one that is the most common. Apply this same process to all 10 of the hazards, animals, and plants that are listed. Study them to see if they are in your area, and then either journal it or find the closest relative.

Now, if there is not a relative in your area, just look for something that is similar. For instance, if you are asked to journal the hazard *Giardia*, but it is completely unknown in your area, look for something similar in your area. In this case, you may want to do a little bit of research to find out what *Giardia* is (it is a sickness that is caught from drinking infected water), and then look for a disease of your area that is also contracted by drinking infected water. In all, this will translate into some extra work for you, but my guess is that in the long run, this entire process will actually be tremendously beneficial to your learning, so take it like it is—an interesting and exciting challenge that will lead you down many paths toward greater learning and experience!

For each path of study there are also a handful of field guides that North American students are required to purchase. To be able to review and list all of the field guides from around the world is a difficult task, and is one that, to date, we have yet to take on. Perhaps those of you who are studying outside of North America will be able to help us.

First, look at the field guides and resources that are required. You will see that there is a field guide to birds, a field guide to mammals, a field guide to plants, a field guide to trees and that there are also guides to reptiles and amphibians, poisonous plants, venomous animals, animal tracks, and a few others. You will want to find field guides for your area that cover each of these subjects. For instance, look for a local guide to animal tracks. If you can't find any of these guides, don't worry about it too much. It may just mean a little bit of extra time at the library, at a museum, or on the phone with a biologist to do some research. That's okay, but just remember not to spend too much time chasing these things down.

Check www.kamana.org for resource, field guide, and species list information for areas outside of North America

With regard to field guides, something I have found over the years is that there are some field guides that are accurate and reliable and there are other field guides that are, well, somewhat inaccurate and unreliable. Over the years, I've found that the Peterson Field Guide system is perhaps the most ideal. If there are any for your area (I know that there is at least a *PFG to Birds of the British Isles*), use them! If there are no Peterson Field Guides for your area, look for guides that have some (or all) of these following qualities that make Peterson's so great:

- Arrows pointing to the key field marks for easy identification.
- Subject is shown in its "average" or most common and comfortable position. This is important if you can find it. Many field guides show photographs or drawings of animals or birds in exciting "action poses," which makes it difficult for you to see all of the field marks and also to be able to see its skeleton and how it moves under normal conditions.

It is exciting for us to know that there are students all over the world in this program. As you find field guides that you are excited about and that work well for you, please send a small review of them to the student services office so that we may begin to compile a list for future "students abroad." You are the pioneers of foreign independent study, and this work will go a long way toward helping the next generation of students in their studies. Thank you, and enjoy!

Kamana Europe Student Services

Anneke Meijer-Treep is our Kamana Europe Instructor. If you are a European Kamana student she is able to respond to your Kamana work if you would like. She also has the ability to read work in German and Dutch (but responses will be written in English). If you are interested in having Anneke respond to your work please join Kamana.org (if you are not already a member) and look for instructions in the International Students section.

In the International Students section there are also lists of field guides and species to journal for different parts of the world.

CD-ROM and Additional Resources:

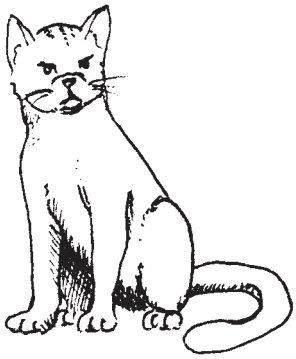
Peterson's makes CD-ROM guides which are excellent tools as well. Whereas we don't want to make students buy any more books than they have to, these CR-ROMs as well as other field guides and nature books will certainly complement your research.

The Resource Trail

An Introduction

by Jon Young

Cats and chairs:



Several years ago, someone did psychology experiments with cats involving partial visual sensory deprivation. In this experiment, two separate groups of cats were raised from "kittenhood" in two different white rooms. All were fed and treated well, given toys to play with, and generally loved as any young cat would be. Perhaps the only aspect of their rearing that differed had to do with the rooms they were raised in. Each of the rooms was white and had black stripes painted on the walls. In one of the rooms, however, all of the stripes were vertical, whereas in the other room they were only horizontal.

All through their rearing, the same cats stayed in the same room at all times until, at some point when they were nearly grown, the researchers brought them together in another white room. In this new room there were no stripes on the wall, but there were chairs—the normal kind of chairs that have straight up and down legs with crossbars on the legs to brace and hold them in place. What took place here illustrates my point more clearly—in black and white, you could say—than perhaps anything else.

As it turned out, when the cats were placed in this room with the chairs, those that had been raised in the room with vertical stripes easily avoided running into the legs of the chairs, but they ran right into the crossbars. They somehow just smacked into them as if they weren't there. Similarly, the cats that were raised in the room with horizontal stripes missed the crossbars, but they would walk right into the vertical legs—again, like the crossbars weren't there. This wasn't just a freak occurrence that happened once in a while. This happened repeatedly. In fact, for some time, both of these groups of cats could literally

not see the crossbars or the legs (depending on which kind of stripe was not on the walls of the room they had been raised in). It wasn't that their eyes weren't working, either, because eventually, after running up against the reality of the situation enough times, they all learned to recognize that there were both crossbars *and* legs. What had happened was that *the sensory input that was missing from their early experience of the world around them became their "cultural blind spot."* It was an effect of their mind, which—through the "hard knocks" of their experiences with the chairs—became trained to perceive what had actually been in front of them the entire time. What is this saying to us?

Now, I'm not saying that human beings aren't as intelligent as housecats, but consider this: Even though our society keeps bumping up against reality, why is it that only a very few people have seemed to recognize the reality of the natural world? After all, like the cats' chairs, it is always there, right in front of us.

Blind to Nature, or "Mother" Nature?

Though we have to admit that placing cats in a room such as that seems like an odd thing to do, the picture that it paints is a clear indicator of the effects of our experiences and a real cause behind the environmental crises that we face today. If we are raised in a world of limited input (like the cats) and we don't have the natural world as part of our brain experience, we are simply not going to "see" it. Therefore it's not going to become part of our value system in any real way. We can discuss it and people will intellectualize about it, but they won't move a muscle for it as they would if it were a loved one in need of help. As the cats have evidenced for us, we are products of our experiences, and that's the *real* issue.

If it were your brother, your sister, your mother, or someone else whom you love and know intimately that was sick or in danger, you'd recognize the problem right away. You'd probably know what to do to solve the problem, too, and act without being told. Doing so wouldn't have to be part of your job description—you would just help because you loved this person, and you would do whatever you had to do in order to care for them. In the same way, if the environment is a friend, a loved one, and a relative instead of just an intellectual idea, we will not only recognize that there is a problem but we will pour our hearts and souls into affecting a cure. Why? Perhaps for no greater reason than because the natural world has been a part of our experience—it's real to us. Just as one can picture the face of a beloved friend or relative, one can

picture the many faces of the trees, the birds, the waters, and the countless other pieces of the world around us. We see the world as a loved one whose existence is inextricably entwined with ours. It is part of our very being and we have a great love for it.

The Lost Connection

As a whole and as a collection of individuals, our society has largely lost its connection to the natural world. As a result, *if a person's experience does not include nature, what happens to his or her brain*? As a tracker and a mentor of trackers, I'm concerned when a person hasn't developed in a way that includes the direct and real experience of nature. Does nature really exist for these people? Though it may sound strange to ask, do they see that there are real and living things other than people in the world? From my experience and my observations, though they do not think that it is so, to these people nature is a concept, an idea, and even though it is tangible and real, it doesn't have much meaning or context for them to understand it with. Thinking about our nation as a whole, it's pretty scary to me to think about the consequences of so many people lacking real-life connections to the natural world.

The one message I hope you get from all of this is that there is something very real going on in the world today—a form of real blindness—and that not many people are aware of it. The part of the brain labeled "The Natural World" and set aside for that purpose hasn't been activated if people haven't experienced the kinds of things you are experiencing in this course. It's like standing behind someone who is stone deaf and talking to them and expecting them to hear and comprehend your words. With this kind of blindness, there is no communication, and there isn't even any *basis* for communication.

What, then, is the most effective way to open people's eyes? In my experience, it's the Alien Test. If people are ever going to recognize that they have this huge blind spot, someone or something has to point it out to them. If you simply get in people's faces and shake a fist, yelling that they're ruining the environment, they'll just laugh at you, or worse. But if they take the Alien Test and discover for themselves how little they know about the world around them, it's an altogether different thing. Following an experience

such as that, we have a basis for communication because they have been introduced to an entirely new world—one that they never realized existed.

It is a rare occasion that I find a person who passes the Alien Test. When I do, be certain that I beg them to recognize their skills and to help me! In the *Seeing Through Native Eyes* tapes, you no doubt heard the story of the one and only man who aced the Alien Test—and then stood in front of the crowd doing frog calls in my face. Following that test, he turned on the other environmental educators that had gathered there and dressed them up one side and down the other. He had taken for granted all his life that everybody knew this stuff, and now he saw that, except for me, he was alone in that room, without a peer.

As he finished yelling at his colleagues that night, I quietly spoke a question to their defense. "Where would anybody in this room have learned this?" I asked him.

"How can they not know this? Every kid learns this when they're growing up!" he scoffed, preparing to continue his assault.

"I don't think so!" I said. "You're going to have to show me those kids. The schools don't teach this, and the parents don't know this stuff. There's no place for people to learn these things." There is a huge hole in our culture; however, at the same time it isn't anyone's fault. It's as if people have been raised in sensory-deprivation chambers. They do not deserve to be assaulted, for in a very real sense these people are "nature-challenged" and they need to be supported and nurtured into their own experience by those who have made connections for themselves.

Some Unexpected By-Products of Awareness

As someone who is himself on the journey to reclaiming his own heritage in the natural world (I've just got thirty years of experience at it), there are some important things that you will need to know as you begin taking your own steps along this same path. When your brain starts to be used in new ways, which include quality sensory input and keen awareness, I've found that some unexpected things happen. You may find yourself getting emotional for some unexplained reason, or crying without apparent cause. I believe that as you use more areas of your brain, you hit little cysts of memory that at one time you folded up and stuffed away in the closet of your mind because they were too painful or frightening to deal with. These could be strong emotions or

memories that your mind felt it needed to wall off somewhere, to create a protective shield for the vulnerable person or experience underneath. There's nothing at all wrong with that; it's a survival mechanism of the mind. But as you begin to venture into the unexplored territory of the other ninety percent of your gray matter, these little boxes are opened and their contents are exposed.

Bodyworkers such as massage therapists or reflexologists will tell you that if you work on a certain part of a person's body, it releases old memories or emotions. This makes perfect sense, because our emotions are anchored in our memories through our senses. Press on an old and unhealed injury from a childhood bicycle accident, and it may trigger your mind to relive that entire experience. I believe the brain does the same thing. We all have memories buried inside different little unused compartments of our brains. As we use more of our senses, we may discover that as a side effect we are running into some of little "buttons" that we've stored in those spaces. So if you start to find yourself crying for no reason after you come back in from your Secret Spot, don't worry—it's totally natural.

People who get really into the art of tracking and nature study find their views of life shifting dramatically, and a lot of paradigms change. When viewed from the other side, these will be poetic, wonderful, beautiful experiences, realizations, and shifts in your perception and outlook on things. Just to let you know, though, they may also be a bit uncomfortable at times and will probably present a formidable challenge to your worldview. It's important to talk with others of like mind about these kinds of things. If it's just me, or just you, it's too easy to pass it off as, "Oh, he's just saying that," but if this happens to your friends who are also getting into nature and increased awareness…well, then, there's something very real going on.

So, if you feel "brain burn" sometimes during your studies in this course, it may be because parts of your brain are getting fired up that haven't been used in awhile—or at all. That's a little side effect to what we're doing here, a process that we refer to as "brain patterning." We're literally creating new patterns in our brains—activating new sections and getting them into use and forming new networks and patterns for your brain to function. Your eyes are going to take on a new dimension—one that you'll appreciate.

The Role of the Brain in Developing Native Awareness

There is plenty of research being done these days that actively

supports what I have observed and have presented to you here, observations which I will restate:

> The circuits that make up the "hard wiring" of the brain—literally the actual physical connections between the different cells that make up our brains—are created by what we experience, what we learn, and how we learn it over the course of our lives.

In other words, *what we experience on a sensory level creates physical changes in our brain!* Similarly, those things that we *haven't* experienced or "patterned" on we literally *cannot* see. Think back now on the experiment with the cats and the chairs, and now read the following sentence *very carefully*. I want you to hold on to this next piece as though it were pure gold. Remember, **it is the things that we** *experience over and over on a daily or regular basis* **that build the strongest connections in our old gray matter**. (The old adage "practice makes perfect" takes on a whole new meaning in this context.) Considering what many of our young people are patterning their brains on these days, that's a pretty scary thought.

So, what do these experiments and observations really mean for us? It's easy to read something like this and say right away to oneself, "That's it. What am I supposed to do?" Well, here is what you can do. Reflect on what I just told you to always remember: It is the things that we experience over and over on a daily or regular basis that build the strongest connections in our old gray matter. Now, that's a two-way road. We've all probably thought of the things that we don't want to pattern ourselves on. But just as simply, if we experience the natural world in a powerful and dynamic fashion on a daily or regular basis, we will build the circuits in our brains that we are seeking here in this course. In fact, this course is designed in part to help facilitate those ongoing and dynamic experiences with nature. The role that the Resource Trail plays in this is to help develop some powerful new circuits and patterns in your brain around the recognition of things from your own local natural environment. You could say that native awareness is a result of sensory experiences that help pattern our brains on the identification and recognition of things around us in the natural world.

The brain works quickly to take partial information—even things as subtle as our feelings and emotions—and match it to information, or "file cards," already in our memory. It's been shown over and over again that the first impression you receive on a subject is likely to be the most lasting. After this initial input, your brain

works to match additional information on the subject to the original and either finds that it agrees, thus reinforcing the original impression or "pattern," or it finds no match and tends to disregard the new information altogether as having no meaning.

For you as the student, this is a big advantage *if* you first build yourself a "mental file card" for each piece that you are investigating. This "mental file card" is essentially that crucial first impression or reference point to which all of your future knowledge and experiences will be compared. Once you have this blueprint for learning in place, all you have to do is build on it. From then forward, when you are out in the field, your brain will simply go into retrieval mode and dip into the filing system, matching your observations to what's already on record. Therefore, in all six tracks of the Resource Trail, you will do background work that will help you to pattern your memory with key information that will help you make quick identifications in the field.

By the time you have completed these introductory exercises, you will have sharpened your senses and refined your skills as a naturalist. You will have a strong set of tools with which to attack your studies, and a firm understanding of the foundations of the Wilderness Awareness School method of learning. Your feet will be firmly planted at the beginning of your incredibly exciting journey into the natural world.

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Tying the Knot of Your Knowledge: the Nature Awareness and the Resource Trails

You may begin to see now that our goal here at Wilderness Awareness School is opening the blind spots created by our modern lifestyle. Once they have been opened, though, what do we fill these blind spots with? You may be able to see the answer already: observation skills. What we have discussed already regarding your mental file cards is just one piece of developing good observation skills. Keep in mind, however, that there is another piece, that is equally as valuable.

There is a difference between looking at a moss-covered rock ("Hmmm. A moss-covered rock. That's nice.") and *looking* at it ("Wow! A moss-covered rock! I'm going to go and check it out!") Without moving your feet from where you stand, you jump out of your eyeballs and float over to it. You pick it up and notice the weight of it, smell the clean, musty aroma of the soil clinging to it, feel the soft spongy texture of the moss, the sharp edges, the tiny indentations, and the cold of the stone. You shrink down to the size of an ant and rock-climb every fissure and boulder

on the side of it. You then become your full-sized self again and zoom back in through your eyeballs and into your brain, where this incredible *sensory experience* is now firmly etched in your memory because you've used all of your awareness to really *look* at that mossy rock. There's an incredible difference between the way most people look at something verses the way you have just looked at that mossy rock, engaging all your senses, as well as your imagination. My whole goal through this program is to give you enough "mossy rock" experiences, so that when you look at something, you look with power. I want you to begin to look the way a hawk looks at an object. That's it. You won't even notice what's happening to the gray matter upstairs…you'll just realize that all of a sudden you've somehow developed some really good observation skills. It is here where your time and focused energy on the Nature Awareness Trail will become especially valuable. The Nature Awareness Trail is the place for you to cultivate your own sensory growth, and it is the place where you build experiences that give strength to the research and mental file cards that you are creating here in the Resource Trail.

Welcome to the Main Course

As you practiced and learned in the first level of this course of study, there is little difference between observation skills and research skills. In fact, getting right down to it, there is no difference, for they both boil down to a simple key ingredient: your ability to ask good questions. If there has to be a difference, it comes from the fact that with one you are noticing trends or patterns that cause you to *ask* the question, and with the other, you are going someplace to seek the *answer* to that question. Truth-be-told, though, possessing one without the other makes for a useless endeavor. So, now that we've gotten some background, it is my pleasure to welcome you to your second step along the Resource Trail in your naturalist studies with Wilderness Awareness School. What this aspect of your studies represents is the result of several years of mentoring students in solid observation and research skills. It is a formula, a recipe, actually—some field guides, a dash here and there of good advice and guidance, and a *lot* of Secret Spot time to taste—to form yourself into a true naturalist with a "native eye."

Take these routines and tools to heart and practice them diligently, for they are all here for you. There is no magic pill to turn yourself into a tracker, a naturalist, a survivalist, or whatever "-ist" you dream in your heart of becoming. There is no pill—except your own passion and your ability to manage your own time wisely

to squeeze these for every last drop that they can yield to give you the greatest results and growth. As has been said before, Wilderness Awareness School is here to be a guide and to work with you, but we cannot and will not provide your passion and drive. You have to do this for yourself. If it means waking up at 4:30 every morning to go to your Secret Spot or to journal, do it! Milk every moment for what it's worth. If you are making a pot of tea, use that time wisely and journal while you are waiting for your water to boil. If you go to the doctor's office, take a field guide and read that instead of one of the waiting room magazines. Make every moment count and you will succeed. It is all here for you to practice.

The instructors in our student services office hear from students regularly who are having fantastic success with these routines. People are doing it all across the country—even around the world these days—and having tremendous results. Don't allow yourself to fall into a trap of thinking "I'll never get there." Thinking that way is a waste of time. Would you rather think like that, or use that time to get yourself that much closer to your goal? No, it won't happen overnight, but keep visiting your Secret Spot regularly, practicing Awareness Exercises, and journaling, and the rewards will be there for you. Throughout this process, too, keep in mind that when you complete this level of study, there are many more levels waiting and begging for you to move on to them! Now, it's time that I heed the advice I've given to you and not waste any more of your time. I'm sure that you understand my point. Without further ado, let's turn to Chapter One and get started....

Chapter One

Part I

The Power of Questioning

When I was eleven years old I found a turd in the woods. This thing looked like a dog turd, something we've all seen…a little lawn deposit. Maybe you've even stepped in one, an experience which I'm sure you'll agree gives your awareness of turds a little boost, and causes you now to look for them out of the corner of your eye. True, you may ignore empty pop cans and cigarette butts along the sidewalk, but when there's a turd, if you've ever stepped in one, now it's like a flag. You're "patterned" on the effects of turd-stepping. You might say it's one of your modern-day urban survival skills. Anyway, by age eleven, I'd stepped on my share of turds, so they kind of stood out from the landscape for me.

One day when I was eleven, I was out walking in the woods behind my house. On that walk, I found something that was shaped just like your normal dog dropping, but as far as I could see, it didn't have that familiar pasty orange color that comes from eating stuff out of a can or a bag. It didn't have that old and bleached look I was accustomed to seeing, either. I had to really *look* at it again because it was silver and seemed even to be furry. I'd never seen a dog turd like this before.

Like any good, budding tracker, I tried to picture the dog in my mind by looking at its scat. I tried to picture it in someone's house eating fur, but it just wouldn't come to me. Does this dog lick itself so much that it has hairballs or something? How did it get so much hair in its scat? Was it bald now from licking all its own hair off?

So I just stood there looking at this little pile on the ground, thinking, "Wow, what is that thing?" It looked just like dog poop in every respect except for the color and the fur in it. When I stooped down to look closer I caught a scent on the breeze of skunk, but a sort of oily version, almost musky. I recognized this scent from other places on my way to fish at a local pond through the forest and meadows. Still, I knew it was a dog, it had to be, couldn't have been anything else as far as I was concerned. But it was still a mystery.

Continuing on my adventure, I walked a little farther and I found some dog tracks in the mud—at least what I thought were dog tracks. I started looking for this same scat and tracks every time I went fishing, and I began to see a pattern. My nose was attuned now to that musky-skunk scent and each time I smelled it I searched for tracks and scat. Sometimes I found tracks, sometimes scat, rarely both and often neither scat or tracks—just that scent. It usually was by a faint trail leading off into the thicket.

I kept finding tracks and scat in the same kind of places. One day I finally asked Tom Brown about them. "Tom, I keep finding this dropping in the woods that I think is dog scat but it is made up of hair and bones. There's also this scent around that reminds me of oily skunk, almost always near or at the droppings. I can't figure out what it could be because it doesn't seem to be made of the things that I know dog turds usually are, but there are dog tracks nearby. Could there be foxes around here?"

He just looked at me, smiled, and said, "Could there be?" He shrugged his shoulders and didn't say anything more. Then he went into the house and came out with an old edition of *PFG to Mammals*, and put it in my hand. "Why don't you go home and read this thing and find out?" After giving me a couple exciting tips to practice with my new book, off he went, in typical Tom style, without another word on the subject.

As soon as I opened that field guide, I completely forgot those fantasy-world books about dragons and whatnot I had been reading before going to sleep. Instead I started reading the mammals guide, the first real field guide I'd been introduced to. This book was better than any fantasy adventure for me, because I had a real-life mystery to solve!

When I looked in that book, I found out there were not only red fox in the area, but also gray fox, which I didn't even know existed. This may have been my first real insight about mammals of my region. I had glanced at the little Golden guides before but

never really studied the foxes because I just didn't think there were any around. Well, with the help of that field guide, I soon solved the mystery: It was fox droppings! To verify this find, I sat on a high cliff overlooking an area that had fresh tracks daily. I sat all day from the earliest dawn and *was* rewarded! Early one morning, I saw the fox and realized the power of tracking. Now I wanted to learn to tell gray fox from red fox tracks and droppings, and in time I was able to do that. This is how a tracker is born: out of curiosity and a desire to know and solve the mysteries that are found all around.

Resource Surfing

The hunt for mammals under Tom's request was a real eye-opener for me. My mind started running at a thousand miles an hour. I encountered names like "mountain phenacomys" and "eastern pipistrel." What were these things? The pictures weren't on the same page as the text and the map, so I only had a vague idea of what these things were. I had to go to the plates (pictures) in the center of the book to find out what these animals looked like! I found that a pipistrel was a bat and that a phenacomys was a lemming-like mammal similar to a vole, which was like a mouse that lived in tall grass.

Wow! There was so much to see and learn, and I was curious about all of it! From skimming through the pages of this book and then studying the family tree in the front of the Golden guide, I really began to understand something about relationships, similarities, and differences in the world of mammals. This is what I call "resource surfing." A good coyote teacher like Tom Brown knows that these books have a big appeal when there's a mystery to solve. It's called "catching the moment." All Tom had to do was give me a clue and ask me the right questions. He started me on resource surfing when I was eleven, and by the time I was eighteen I was beginning to get a handle on tracking. My time studying the mammals and their relationships to one another really helped me build the background knowledge that I needed in order to know what was there, what it looked like, how it behaved, and what was similar to it in terms of size, sign and tracks. My journeys through field guides were indispensable for this process.

A LEGACY FROM EARLIER TIMES

Classical Natural History and Native Wisdom

The work of the world's great naturalists is the legacy that we have inherited in the form of field guides and other resources. The efforts of these early naturalists are worth noting. Some of what this program focuses on is based on the classical naturalist approach to studying nature: using observation, research, journaling and creating your own resources about your local environment. The difference for us today is that we have so many more resources at our fingertips that our job is made much easier than it was for those early pioneers of the field. To this perspective we also add the all-important, empathetic power of a tracker: developing our mind's eye and our full-bodied appreciation of what we study.

Olaus Murie did some absolutely inspired work in the creation of his work in the *Field Guide to Animal Tracks*. John James Audubon was another naturalist who became famous for his work with birds. Today his original drawings and paintings are nearly priceless. Roger Tory Peterson, the editor and creator of the renowned Peterson Field Guide series that we love so well, is another good role model. His work in creating the first field guide to birds laid the groundwork for what was to become an entire system of identification based on field marks and line drawings. This system is based on Peterson's expertise as an observer and avid student of nature, and all of the authors that he selected for his series of guides have shared his respect for this system of identification and for depicting their subjects in what I like to call "average posture." This refers to the posture or stance in which mammals or birds or other wildlife are most likely to be observed by the naturalist or tracker. This is the system we teach and endorse.

Another author to pay attention to is my own mentor, Tom Brown, Jr., expert on tracking and wilderness living. From his childhood and continuing even to the present, he has been an avid naturalist in the classical sense. He keeps weather journals, a nature museum, and maintains an extensive collection of guides and resources on the natural world. As you have read already, his work with me in my early years was based as much on this modern approach as it was based on his own training with a Native tracker.

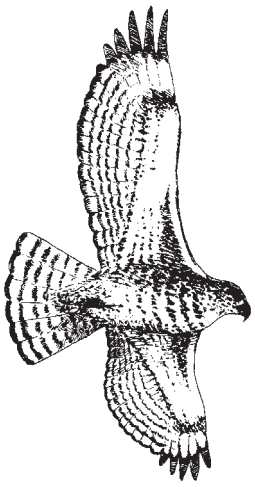
Being a naturalist is the foundation for learning tracking and survival in the fastest time possible. An intimate knowledge of nature breeds the wisdom and common sense necessary for interpretation of the natural world, and the resourcefulness which comes

from observing the interactions between wildlife and their environment. In this way, native, indigenous people are trained naturalists. The only differences between them and students of Wilderness Awareness School are their culture, the language with which they express their knowledge and understanding of the world of nature, and the resources that they have available to them.

Considering these things, we see that there is true value to your growth to explore the perspective of the classical naturalist, for if practiced diligently, this approach will continue to take your skills as a tracker higher and higher. However, the classical naturalist's perspective is just one piece to your learning. Which might present somewhat of a problem, for while there are many good mentors and role models for you to follow in the realm of classical natural history, where do we go to develop our skills as a native tracker? Well, that is another reason why I am here, to point you in the right direction and help you to get on your feet. With what I am about to share with you, you'll be up and running in no time.

> The attitudes, skills and wisdom of native elders are entirely translatable to our modern context and language. The primary perspective difference between scientific observation and native observation is one of empathy. We strive to train students to look with their hearts as well as their heads. We need more people who look at things as part of a living, meaningful system of life, and not random chemical reactions to be observed coldly as commodities only. As you will find through your studies, it only takes a bit of effort to get to know the environment through the study of natural history guided by the basics of native lore and an understanding of native teachings and the old ways.

The Red-tailed Hawk: A Symbol of Two Worlds



The red-tailed hawk is a soaring, predatory bird from the group known as Buteos who are large and thick-set, with broad wings and wide, rounded tails. Buteos often soar high in wide circles. Its scientific name is Buteo jamaiciensis. This hawk is known to inhabit roadsides and farmlands all across North America.

In places where science dominates the world view to the virtual exclusion of deep sensory awareness, there has been a loss of spirited connection with the natural world. Science is one language used for describing nature—it is not the only one, however, nor is it necessarily the best. Are there more effective means of communicating important information about the natural world?

Native beliefs are often rich with lore that stimulates our deepest imaginations and gives us a sense of meaning and belonging within the natural world, something that science, with its strict rules regarding objective observation for the sake of achieving reproducible results, can't do. This is not a bad perspective, for many positive contributions have come from this approach. Ask yourself this, however: What if we were to couple native expertise, perspective and lore with the language of science?

Where native people still live according to their original instructions, there is a sense of balance in the local natural ecosystems. They are stewards of their place, for this is a part of their ancient teachings. The collective experience these natives have gained from thousands of years and generations of living in the same place has taught them the proper ways to act in their bioregion—a way of living which is truly sustainable.

Perhaps above all things, traditional native societies are very pragmatic. Any practice that has remained in their culture up until the present day must be useful, for if it were not, it wouldn't have survived thousands of years of use. Often animals and plants are used as symbols representing a deep meaning associated with the properties or personality of the animals and plants. This has a powerful yet subtle influence on the people and their perception of the world around them. According to many traditional belief systems, nothing can happen in the physical world without first coming from the energetic world—from the place of "inspiration," or "spirit." The field of Quantum Mechanics gives us scientific language for this merging of the energetic and physical worlds.

In some cultures, the East represents the place of beginnings; they believe that there is a spirit that dwells there which represents the power of inspiration. East is seen as the place of creativity, of the Creator's energy uniting with our minds for the benefit of our communities. In many places, the red-tailed hawk is a symbol of this, for it flies high above and it sees the big picture. It is the symbol of beginnings, ideas, visions and inspiration.

The red-tailed hawk represents all that is in the form of vision. For leaders today this should include the vision of caring for the earth. It is important for us all to carry in our hearts and minds a vision of all learning to respect and honor the ways of nature. This includes envisioning the Earth healing, the peoples of the earth overcoming their own alienitis, and the return to the knowledge that the earth provides for all that we need.

To form this picture each of us must first know something of the world of nature. The Resource Trail will help you to attain this basic understanding and will empower you to learn about the natural world from the perspective of science as well as that of the native.

TAMING THE WILD FIELD GUIDE

One of the common responses of people after they have experienced the Alien Test is, "Yes! I want to know this stuff!" A lot of people have told me they got all psyched to learn nature, went to the bookstore, looked at all the field guides, paid good money, and brought one of them home. Then they went out in their back yard, opened up their new book, and quickly found themselves throwing up their hands with a cry of, "What do I do with this?" They see all these strange-sounding words, and soon they become frustrated. The brand new book gets tossed onto the shelf and just gathers dust.

Instead of letting you sit there with a shelf full of dusty field guides and a bad taste in your mouth, I'm going to teach you how to extract the information from these highly valuable tools. I'm going to teach you how to mine these books for their gold and how to see nature as a wonderful journey of discovery just waiting for you to set foot on the trail, rather than as an impenetrable wall of green.

Let's be honest: Field guides are written for people who already know quite a bit about the subject. It is assumed that the reader knows about taxonomy, and that somewhere along the way they learned some of the background vocabulary. So, in a sense, my job here is to give you a guide book to the guide books. Perhaps a little bit of perspective on what field guides represent will help you before you begin.

Field Guides as Village Elders

In a very real sense, the field guides are your village elders, your herbal medicine women, your old trackers, your successful hunters. These books have many lifetimes of experience right there on every page, just waiting to be dug out. And best of all, these books stay where we put them, unlike the village hunter who spends most of his time out in the woods in search of dinner. Heck, you're lucky if you can get him to tell a good hunting story around the campfire once or twice a year. When he does share, however, you have to listen carefully to the spaces between his words to find the real teachings about how that crafty buck managed to sneak past the hunters who were pushing him through the thicket.

Conversely, your *Peterson's Field Guide to Animal Tracks* is like having that hunter right there beside your comfortable chair every night. Pick it up after dinner, and it will spin you a tale of the wilderness and teach you about how the drag marks in the snow are related to the way that buck crawled out of the thicket on its elbows. Over on your bedstand, your *Newcomb's Wildflower Guide* and your *Peterson's Field Guide to Edible and to Medicinal Plants* are your herbalists. These books, as well as others on the regional resource lists, are just waiting to bring the plant kingdom to life for you, gently introducing you to devil's club, explaining how this formidable-looking plant has been used by generations of native people as powerful medicine. A few visits with these books, and you will begin to see the world of plants as an exciting world of green foods, friends, and healers.

Field Guides as Classic Literature

Roger Tory Peterson's early version of *Peterson's Field Guide to the Birds* was a real friend of mine. It was filled with personal stories, of times here and there with a chickadee or some other bird. The stories really brought the birds to life for me and I longed to have such experiences myself. After I discovered field guides, I often fell asleep while reading by the light of the lamp on my night stand, the musty scent of the old book like perfume to my nostrils. My dreams picked up where the book left off, and I would be on the trail of a flycatcher darting about over the lake or an owl winging its silent way through the forest by moonlight. The next day after school I would be off again with my tattered guides and my binoculars for an afternoon of real adventures, adventures that often led me beyond the twilight to walk on into the night, filled with the magic of my own experiences.

Olaus J. Murie was another mentor of mine, at least from the pages of his book. Murie wrote *Animal Tracks* with that same adventurous, personal style that Roger Tory Peterson used in his old guide to birds. Unfortunately, later editions of the guide on birds has suffered a terminal case of newfangulation and now it's pretty much a dry guide like any other in that respect, though I still consider it the most effective. It is just that the older version served as a personal inspiration, even though it was not as effective as a field guide. Perhaps they should re-release the first edition as literature and keep the modern version intact.

Just a couple of summers ago, fifteen years after I first longed to do so, I finally went tracking in the Rocky Mountains in the very places that Olaus tracked so many years ago. I felt like a part of me had been validated and I had marked a rite of passage into tracking western elk and mule deer. I also visited the Olaus J. Murie Museum which is housed at the Teton Science School in Wyoming. Most of the nature collection that Olaus used for writing and sketching his field guide is housed there. This was a real honor.

Thank goodness that Western Publishing still puts out those colorful little Golden Guides to this and that. There aren't as many species covered as in the newer, more professional guides, but there are lots of very common species that most people aren't familiar with anyway. These are still among my favorite first guides to get for people, young or old. Children could care less about accuracy and little field mark arrows. Children want life, adventure and imagination and these books have an abundance of those things.

Several years ago, at a youth-in-crisis center, I saw many realistic

pictures of birds painted on the walls. The birds were depicted in real-life scenes that taught without words—a kestrel on a fence post in a farm area, with blue skies and clouds in the background; a house sparrow on a tree branch. I found out later that the young man who was the artist had been borrowing the little Golden Guide to Birds, the one with robins on the cover, from his classroom—using the plates for inspiration.

One of Wilderness Awareness School's editors recently discovered a real jewel, *How to Know the Wild Flowers*, a wonderfully descriptive little herbal written in 1893 by Mrs. William Starr Dana. Her descriptions, though not extremely scientific, are filled with the magic of a lifetime spent in the appreciation of nature and give valuable insights into the history and lore of wildflowers.

Inspiration is the key to keeping students interested in a subject, and I was no exception to this rule. If the subject is one that students really love, they will remain inspired and will study continuously simply for the sheer joy of learning. It is an intellectual adventure that opens channels of the mind and imagination.

Sadly, today's newer field guides do not have much to offer in the way of inspiration, and the field guides we recommend to the serious student of nature—though excellent in the information that they have to offer—are no exception. Paintings, photos and line drawings, though expertly done and thoroughly helpful as identification keys, are designed for speedy and accurate reference. This is good and necessary, but I really miss my old Peterson's Guide. You, as a student, need to put the inspiration in the studies again yourself by using your mind's eye, thinking of medicine bundles and lore, and allowing curiosity to surface. So, hang on to those early Peterson's bird guides—they are really classic literature!

Today, many of my adult students thank me for teaching in a way that helps them remember so much. I teach just a few things at a time and give students a real story from my past with some inspirational or spiritual insights to go along with the practical stuff. This is all part of a new oral tradition, and it helps people to remember. I am certain this is part of how those old guides once helped me. And I hope this is what the Kamana course will do for you, with the help of some of those new-fangled, but essential works of modern nature study!

Important Note: Women May Have a Head Start In One Important

Aspect of Tracking!

My love of tracking has only a little to do with the fact that tracking is like dessert to me—one of my favorite occupations. It has much more to do with the fact that those things that make a great tracker also make a great naturalist. Tracking is about observing subtle differences, about learning how to ask the right questions, and about discerning patterns and similarities, and a good naturalist needs to be skilled in all these things. You are a naturalist when you can tell the difference between an American robin and a varied thrush at a glance. However, when your studies have created in your memory three dimensional images of the robin and of the thrush—images so clear that you can not only recall what each bird looks like, but you can hear its call, feel the silk of its feathers against your finger tips, its weight, and the racing of its tiny heart as if you held it in your hand—then you are a tracker and a naturalist with a native eye!

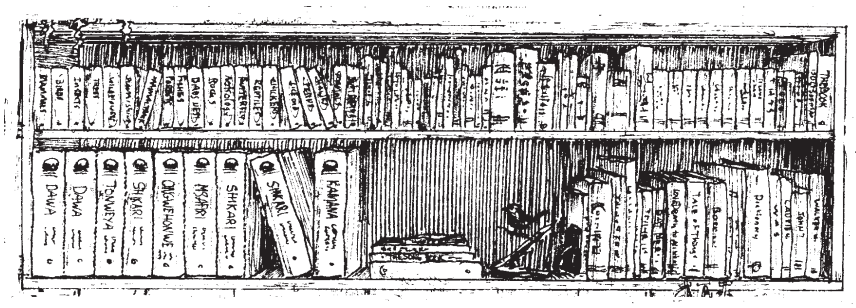
Over the years, I have come to believe that women have an edge when they first come into tracking and learning to see with their native eyes, because both of these arts require paying attention to subtleties of inner feeling, perception, and intuition. Let's face it: Biased as it is, our society (No, not me! Not Wilderness Awareness School!) has made it difficult for men to be comfortable with these "sensitive" aspects of themselves. Surely we've all heard of "women's intuition" since we were knee-high to a grasshopper, but who's ever heard of "men's intuition?" "Men's intuition" exists, for certain. It's simply a cultural bias that has made it difficult for men to honor their gut instincts and feelings as women have "been allowed" to do. Along with your mind's eye and deep sensory exercises, these skills will grow to become an important part of all of your studies as a tracker in this course.

As a result of these things, when you hear us at Wilderness Awareness School say "tracker," please do not feel that we are speaking to one specific gender. That's simply not so. Some of the most dedicated and enthusiastic students in our Tracking Club are women, and it is not uncommon at these classes for the women to outnumber the men. I am so happy to see this happening! When mothers, future mothers, aunts, grandmothers and mentors understand the world through the eyes of a native tracker, can you imagine the incredible gift of knowledge, understanding, and awareness the children and families in their lives receive?

Chapter One

Part II

How is All This Going to Help This Budding Naturalist to Bloom?



Foundations for Self-Sufficient Learning

Now that we are all on the same page, it is time to lay a foundation of understanding that will allow you to begin to see nature through the eyes of a native tracker. From now on, when you look at an animal or its tracks, you will begin to see it as a living problem-solver. Many of the observations we make will be based on understanding the powerful strategies nature has devised to play out the life paths of various beings, from spiders to cougars, to the mountains and the rivers. What are the strategies that each of the players carries? How do these interrelate? This study is a celebration of the spirit that moves through all life—seen through the native eye and learned by observation of nature and asking the right questions with the help of field guides.

The material provided in this chapter will form the backbone of all of your research studies in Wilderness Awareness School's independent training programs. This material is designed to bring the field guides and other resources—from books to audio cassettes to videos to virtually any other resource imaginable—to life and provide a jumping off point for your imagination. As you did in the first level of your studies, here you will continue to learn the skills to literally bring the material in your field guides to life. Your keys to cultivating these tools are synthesizing your mind's eye, your observation skills, your empathy, and your imagination. The result of this kind of study is that everything can become a mentor to you, a learning naturalist.

PREPARING TO STEP ONTO THE TRAIL

In the next section of this book, you will be introduced to the inner workings of your "naturalist's tool kit." These tools will be your best friends and hardest working companions throughout all of your studies in this course. Among other things, these tools include mind's eye viewing, sketching and spirit sketching. I'll explain how each of these tools and processes is important to your learning about nature, and guide you gently through the process and practice of each one as you begin to apply the new skills you have gained to the study of a few selected individuals.

This preliminary study of hazards, mammals, plants, ecological indicator species, trees, and birds is designed to give you some practice with these tools and processes that you will be using from now on. Because this is designed as an introduction and practice of basic skills, the approach here will be just slightly different from what we use in later levels of study. As when building a house, however, laying a solid foundation with the journals that you are about to create is key to building a sturdy structure to house your growing knowledge and from which to shelter and share that knowledge with others around you.

Before we get down to the nitty-gritty details and secrets of learning on the Resource Trail, however, there are a few tips that I'd like to share with you that will help you to stay focused and motivated in your studies. If there is anything that the varied group of individuals that have graduated all of the levels of our Independent Study Programs have in common, it is that they have taken these three tips to heart and used them to their fullest to support their studies.

YOUR STUDY AREA AND OTHER IMPORTANT ITEMS

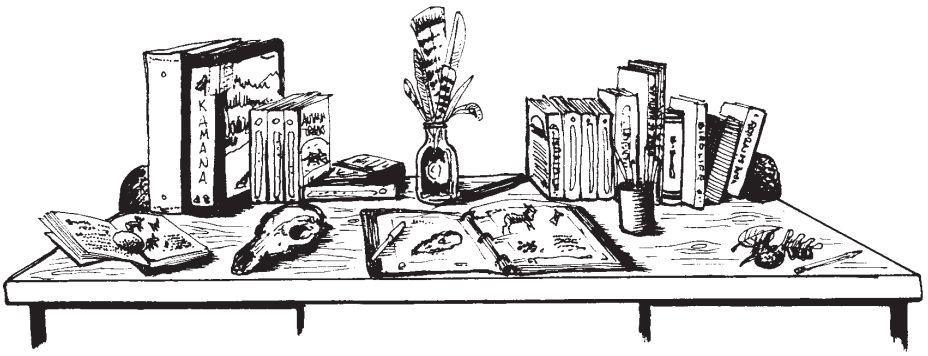
When we begin our work on the Resources Trail, it is important for you to organize yourself in a way that really empowers your learning ability. Your surroundings have a powerful influence on your state of mind as well as on your emotions, so it is especially important that the area in which you choose to do your naturalist studies creates a mood that is inspiring and conducive to learning.

An Indoor Secret Spot

You're going to be spending considerable time somewhere doing your reading, journaling and sketching, so you might as well be

as comfortable as possible. You will want to be certain that your study area is set up in a way that will inspire and invite you to learn and discover new and exciting things about the world of nature. You might think of this as your indoor Secret Spot.

Of primary importance is having a good desk or table that is the right height for you, a comfortable chair, and a good reading lamp. If you have the luxury of a permanent area that can be devoted only to your Kamana studies, you're way ahead of the game. If not, you might want to consider scattering neat posters, photographs, specimens and such throughout your house or apartment. In fact, if you have a desk, go ahead and surround it with photographs, paintings, your own drawings, or anything that reminds you of the natural world, friends or family, or that otherwise give you a genuinely good feeling. Certainly anything that inspires you and has special meaning for you would be appropriate to put in this place. You want these things to be set up in a way that is eye-catching to you so that whenever you catch one out of the corner of your eye, you are drawn into a brief moment of awareness of the natural world. Perhaps these things may even inspire you to spend those five minutes waiting for a phone call or for the pizza delivery to arrive flipping through a field guide or journaling.



Most importantly, however, remember that this is *your* special place, and that you should set it up in whatever way feels right to you. Take good care of this space, too. Keep it neat, and keep a field guide or two and your binder open on the desk. They'll call to you from across the room, and in no time you'll find yourself immersed in a new mystery and adventure.

Nature Museum

Remember to leave room somewhere at your indoor Secret Spot for your growing nature museum. I will always remember the first time that I saw Tom Brown's nature museum, the day we met on the street corner. After he met my father (and the turtle that had brought us together met the soup pot), Tom took me to see his museum. For a young amateur naturalist like me, this was an incredible inspiration. I felt as if I were walking into a very special, magical place.

All the specimens were neatly arranged in rows on shelves, each one carefully placed and lovingly tended. As I wandered around in absolute awe, I asked Tom about this skull, that feather, and that rock. In a few words Tom took me on a journey to the time and place in which he found the object. He painted for me a picture so real that I could feel the wind blowing on my face, I could hear the birds singing from the treetops and see how this skull had been lying just so, attached to a shrew that had literally dropped dead in its tracks.

Your studies in your field guides will likely inspire you to head out to your Secret Spot or your back yard to discover what treasures await your newly trained eye. Like Tom, you will begin to develop a collection of curious and beautiful things you have found in the woods. It's quite likely that any number of things like abandoned bird nests, skulls and feathers, mineral samples, twigs, seashells, wildflowers, and leaves may somehow find their way home in your pocket to be pressed between the pages of a book or cleaned up and put on display. Some will sit there unidentified and call to you each time that you see them. These mysteries will tug at the edges of your awareness from time to time until somewhere down the trail, you find the clue to their identification.

This is the kind of power that a nature museum can hold. It has the ability to anchor you in your experience of nature, and to cause your mind to continually seek answers to the questions it poses, so take a little time and some care in setting up your special little area for this.

The more we stimulate our senses and imaginations as we work, the more our goals as native naturalists are met. Through your indoor Secret Spot and nature museum, you have the tools to take control of your indoor environment and shape it to contribute in powerful ways to your development as a student of nature.

Your Binder as a Rite of Passage

When Ingwe and I first began putting this program together in the early 1980's, we realized that there needed to be some way to provide a sense of accomplishment to our students. After all, by the time they had completed all aspects of the Kamana Naturalist Training Program (the original and founding piece of our current Independent Training Programs), they would have logged somewhere around 600 hours of intense study. That represents a real investment in time, effort and commitment, and it needs to be honored in some way. A martial artist has a belt and a uniform that gives him a sense of pride and belonging to an ancient tradition. Martial arts students have a dojo, a studio where they meet and learn. Students on sports teams have similar icons in their environment: Team players have a gym or a field that they regularly visit, and usually some sort of uniform. Theirs is a sense of belonging and pride that revolves around these symbols and places of regular activity.

Ingwe decided that Wilderness Awareness School needed something similar. This is why we chose the binder for our program. It is something personal that represents the enormous amount of effort that your are putting into your study of nature. We have found that a binder filled with evidence of the time you have invested has a powerful presence. Our students take great pride in this symbol of their study in nature. Their time and effort is clearly visible. Their friends, teachers and parents look upon it with respect as well. Any time the student needs to impress upon someone the serious nature of their commitment to nature study, all he or she has to do is bring out this demonstration of their dedication. This is why our students are required to work out of a binder. In the binder they place their notebooks, drawings, clippings from magazines and news journals, and other important items, and of course, their materials and coursework.

Ingwe's late son, Charles, put so much effort into his binder that it is simply an inspiration to behold. The voice of the wilderness is *alive* on the pages of Charles' work. He has carefully pressed and labeled many species of wild plants, and his journal entries demonstrate a profound relationship with the wilderness. While glancing over the pages of his binder, you can get a feeling for his connection to nature, and you can imagine yourself right there with Charles, roaming free in the great African wilderness.

Today, one of the first students in our program, Matt Arbour, has a 3-inch binder so filled with his field work, pressed plants, articles,

inspirations and other information that he has had to start volume two. We have often borrowed his binder to show to other students in the program, and it has proved to be a great inspiration. There is a sense of tradition now in this practice, for there are no letters after your name, no degrees or certificates available to show for your independent nature study in this course. Your binder, though—this landmark voucher of your efforts—will go a long way towards showing others what you have put into your studies. As you progress through to higher levels of study, too, you will create new binders to add to your collection. It is truly like a martial arts system, wherein the true graduate of a program is the black belt, and the levels leading up to that are all steps along the way. Like the martial artist's belt, too, your growing collection of jam-packed binders will serve as a reminder to you of your own worth as a leader of awareness of the natural world, worthy of respect for the knowledge and experience you possess.

Like I said before, I am sharing with you some tools that have helped many naturalists and trackers who have blazed the trail before to stay focused in their studies while still keeping up with the other details and dreams of their lives. You don't need to have your studies here as your sole, full-time focus. As Tom has told me many times, "It's not the quantity of time that you spend, but the quality that matters."

SHHHHH…! I'M GOING TO LET YOU IN ON SOME BIG COYOTE SECRETS!

Whew! Finally. Listen up, now, because I want to tell you some important secrets. The items that you see on the following pages represent the *very heart and soul* of your studies as a native naturalist—one who has an intimate connection on all levels of their being with their local surroundings. Though these may sound suspiciously like high school biology, trust me, your studies here are as different from what you may have experienced in traditional schools as night is from day. There are elements of poetry, spirit, and power in this study, and you will soon find that the field guides combined with focused field experience and the art of questioning create your real mentoring experience. If you use these in the proper way, your studies will go amazingly smoothly and your skills will grow with strength and power. However, if you do not follow the recommendations as they are laid out for you here, you may end up simply plodding along through your studies, so take heed.

Now that I know I have your attention and that we are on the same page, I want to share a secret with you that is crucial to

your ability to really *learn* and *absorb* what I am showing you. *I can't say this often enough: These are the things that will enable you to learn a great deal in a short amount of time, and retain the vast majority of what you have learned.* It is such an inspiration for me and our instructors when we receive assignments and see how the magic of nature is really speaking to the students in this program—something that is especially true when they have used these tools and processes in the proper way described here.

Big Coyote Secret #1: Learn to See with Your Mind

If you were to take just one skill away with you from your studies in this course, I would want more than anything for you to develop your ability to use your "mind's eye." This involves two pieces. First, developing your mind's eye as a tool for field observation that you can revisit over and over at will, be you at home, in a restaurant, in your car, or at your Secret Spot. The second component to this then involves creating for yourself that set of "mental file cards"—mental stores of the information that you have read, heard, and observed—that you may refer to over and over again to build on your developing skills of observation. The secret to this ability: developing your mind's eye, so pay close attention where directions on the following pages direct you to use it.

Regardless of what it is that you are journaling, when creating each of your journal pages, the overall process for using your mind's eye will remain the same:

•Mind's Eye Process for Journaling

Whether you are aware of this or not, I am describing a process you are already familiar with. This is a process that you were guided through in the first level of this program. Here is how it works:

1) For a few moments, study the illustration of whatever you are journaling.

2) When you have done this, close your eyes and recall the picture in your imagination.

In a nutshell, that's it. Just look at the picture or object with keen awareness, let it really soak in, and then close your eyes and recall what you just saw. This creates a "mental file card" of what you just viewed. As you do this, you will begin to realize that there are pieces of what you studied that you cannot recall with clarity, so

you will probably want to study the picture again and repeat this procedure a couple of times. Take time during your journaling, too, to put down your pencil and revisit these pictures in the same manner. See if you can do your sketches and text completely from your mind's eye without referring to the book. If not, there is no need to worry—just try doing it in pieces.

You should use this same technique as you create the text for your journal as well. For instance if you read "raccoons are also adept swimmers" or "dandelions grow on lawns and fields," close your eyes in that same way as you practiced with the pictures and picture that as vividly as you are able. Doing this helps to solidify what you are learning by creating those memory file cards—images that will return to you while in the field to provide answers to those elusive mysteries. In addition, by using the mind's eye technique you will begin to bring the words and pictures of your field guides to life.

Big Coyote Secret #2: Research! Research!! Research!!!

Now, if you were to take just *two* skills away from your studies in this course, the second one that I would want you to develop above all others is a deep-seated passion and need to research your questions to exhaustion. The passion is something that I cannot give to you beyond saying this: *Give in to your natural, questioning self and do not give up until you have the answer that you seek.* Now, I can help to provide you with one key to your ability to do this, which is to know what your resources are for finding your answers and which of them you will want to call upon for maximum effectiveness. Part of learning good research skills is knowing when and how to consult a resource. As such, as you run across the occasional word or name that is not familiar to you, please consult your dictionary, rather than just skipping over it. After all, one of the goals of this program is to acquaint you with the language of science, as well as the language of nature. Similarly, research the questions that you find yourself asking as a result of your observations and time spent on the Nature Awareness Trail. Pour through your field guides, consult naturalists, and continue to seek your own answers by seeking them out at your Secret Spot. In this course, I will show you how to use field guides and some other resources efficiently. Again, the secret to developing your ability to find the answers to your questions and becoming a self-sufficient naturalist: research, research, research! Pay close attention to the tools and skills on the following pages.

YOUR JOURNAL PAGES

Whether you are studying the hazards of your local environment, mammals, trees, or birds, each of the journal pages that you are going to create for this program needs to include the following pieces. This goes not just for this second level of study, but for each successive level of study beyond this, so you may find yourself referring back to these pages frequently.

Depending on what it is that you are studying (bird, plant, ecological indicator, etc.), the specific details of what you will need to sketch or write about will change. For example, when studying mammals, you will be asked to make a skeleton sketch. Obviously that won't be necessary for journaling plants. Each of the different tracks of study you will be exploring will have its own unique details for you to examine. The details that each of the tracks will require are contained in the later chapters of this book. Again, in this first chapter are the techniques and details that all of these approaches have in common.

To begin, regardless of what you are journaling, each of your journal pages needs to consist of two sections:

- a section for your **sketches**, and
- a section for your **text**.

As a general rule, plan for each of your journal pages to have text on one sheet of paper (or one side of a sheet) and the illustrations on the other. Of course, there will be some variation in this due to how much information you are noting about what you are studying, so just consider this to be a guideline. Some people have suggested that they put text and illustrations on the same page in two separate columns. You could do this if you like. There is no hard and fast rule. As you look at the examples from successful students that have been included throughout this book, you will note some variation in style. How you set it up is up to you and actually helps us, too, because we learn something from people's creativity. In the end, though, it is important that the information is good and the sketches meet their goals. In addition, please be sure to fill in the bottoms of the pages so that we can reference the texts you have used.

After you have begun to have experiences with these animals, plants, and trees in the field, you may want to add more information. Leave the last page, or pages, of your journal for this information. This section could expand to many pages. This is why you

should *not put more than one* species on the pages, even if you only use half a page for information. It will fill up later as you get more experience and run across more resources such as other guide books on behavior, magazine articles, videos and direct experiences from you or acquaintances.

SKETCHING

Drawing is Seeing

After you create a picture in your mind's eye using the process described above, you will turn right around and create it again on paper. In a very simple, straightforward way, you will do a quick sketch of the subject on your journal page.

This is one of the best ways I know of to help people really learn how to look at something. This technique helps you to pattern your brain with a set of mental file cards, which make all the difference in the field.

If you just glance at a picture of a red fox, for instance, and go on to the gray fox and then the kit fox, you're likely to remember something about the red fox for all of 25 seconds, or until you've buried that memory under the next two. But if you dive-through-your-eyeballs *look* at it using your mind's eye as I have described above, and then come back from that experience and sketch what you can recall, not only will you remember what the red fox looks like, but you'll remember the gray fox and kit fox as well.

Remember that *looking* means really analyzing what you are seeing and allowing it to "float" in your mind's eye while you are studying it. Later on when you do journal a fox, you will be asked to concentrate on the camouflage coloration, on how it stands and moves, how the legs are hung from the backbone, and also to imagine touching its fur, feeling its muscles and otherwise getting a more-than-visual sense of it. Don't worry about these specific details for now. They will be covered in each later chapter in this book, and we'll get to them all soon enough. For our purposes here, just remember that each of your journals will include a sketch (or series of sketches) that you have created by using the mind's eye process.

Efficient Observation, *Not* Photocopier Detail

What you're learning to do is track the overall patterns of an individual animal or plant. Many students, because of their experi-

ence with classic "drawing" or art class from school, often think of drawing for this program and immediately begin to focus on the details of faces or on the hair or feathers. That is *totally* missing the point. A good sketch for this course is *not* detailed, nor should it be time consuming. In fact, after some practice with this approach, it should only take you about five minutes per sketch.

You Don't Have to Be Able to Draw to Do Your Sketching!

You don't have to know the first thing about drawing or art to do the sketching we are asking for. Sketching on the Resource Trail is just a very quick drawing with a few lines to capture the basic structure of the plant or animal. It is *not* about being perfect or cute or artistically correct. It *is* about focusing your attention on what is important, such as field marks, structure, weight distribution, branching patterns, leaf type, etc., and on relationships.

Let me repeat: *You do not have to be an artist in order to do your sketches*! In fact, we found that the sketches our excellent artist and illustrator, Walker Korby, created for the original field journals for our Kamana course were entirely too detailed and complicated for what is needed here. When I asked Walker to sit down and do a "journal sketch" as an example of how it is to be done for the journaling process, he created one of his usual masterpieces—not at all what I was looking for. This is no criticism of Walker as an artist, just an illustration of the point that an artistic frame of reference can actually get in your way if you aren't careful.

Though many of my students seem to be, I'm not interested in how cute the animal's face is in your sketch. What the instructors and I are really interested in is you seeing certain key aspects of that animal—certain important points about its structure and such, so that at a glance you've gathered all sorts of important information. That's what I call building a closet organizer for your brain, or a set of mental file cards. My goal is to help you build neat little boxes in your brain to help collect the information and organize it so you can see in an efficient and effective manner. It won't be very long before you'll notice how much your observation skills have improved and how much of what you look at you actually remember.

One day you'll find yourself out hiking with some friends, and one of them will find an interesting little flower. You'll all look at it and wonder about it, and when you all get home, out comes your trusty field guide. The first thing you need to remember is what the flower looked like. You'll turn to the pages with yellow

flowers and your friend will say, "No, it was blue," while someone else will swear up and down that the flower was pink. They'll argue back and forth, but you'll be seeing this flower in your mind as clearly as if there were a photograph in front of you, knowing that the flower was indeed yellow, and that it also had five petals, alternate leaves shaped like hearts, and tiny little hairs all over the single stem.

If I had ten more lifetimes to live in this one, I'd study the brain with great gusto, because I'm so interested in the fact that people see blue where there is really yellow, especially when they are just beginning to use their eyes for nature observation. As we've discussed already, there are some definite physiological changes that start to take place as we begin to really use all our senses to their fullest, and I really want to get to the bottom of it all. It's almost as if people have been walking around half asleep and all of a sudden they wake up and begin to shake off whatever has been preventing them from being fully alive.

Have the Right Questions in Mind When You Sketch

To create this ability to see the important details at a single glance, you will need to know how to zoom in on those important details when you are building your mental file cards at your desk at home. Knowing what to focus on will also help you to become much more efficient at the overall sketching and journaling process. Again, do not feel compelled to copy in exact detail the pictures that you see in your guides. This is not an art contest. The quality of your sketches only matters when looking at the questions they generate for you. These *questions* will in turn become your *focus* as you seek to fill in the gaps of your mental image. In this way, the very *process* of sketching is what is most crucial to your learning. Go right to the point, focus on the various key features of what you are being asked to observe, and sketch them quickly using the mind's eye technique and the pictures in the field guide as just that—a *guide* to the answers you seek!

In addition, if you work from the point of view of really getting a feeling for what you are studying while you are picturing it, you will have great success outdoors at your Secret Spot. Many students find, as Tlingit storyteller Bob Sam relates, that the plants literally "call" you to them, as subconsciously you have become so familiar with the plant and its energy that your instincts can put you in the right place and time. Trackers will say the same thing about the tracks and trails of the animals they spend time knowing in that same way. I know some very skilled and gifted woodwork-

ers, too, who talk of having a similar relationship with the trees. Again, this all begins with building your mental file cards in the way I am sharing with you right here.

SKETCHING: MANY PURPOSES

• Sketching to Focus Awareness

Sketching develops awareness. To sketch something properly for this program, you must practice the dive-through-your-eyeballs kind of looking at an object which I described in relationship to "rock-climbing a mossy pebble." If you have looked at something carefully, you will notice the things which are important, and your sketches will reflect that awareness. What helps kids do this is to think of themselves as traveling out of their eyeballs to the object they are studying to feel, taste, smell, hear and otherwise explore the subject as if they were standing on it. This is an enormously helpful detail that can be easily forgotten so try not to.

• Sketching to Remember

Simply looking at something does not guarantee that you will remember it. But if you go through the actual physical act of putting pen or pencil to paper and creating a likeness of it, your body will help you to remember what you have drawn. Again, this is because of sensory involvement. If you add that layer of emotional involvement as a storyteller, it's as good as pegged in your memory for all time to come!

TYPES OF SKETCHES

• Wrapper Sketches

These consist mainly of surface details. It is a focus on "superficial" quality. This can be helpful for identification through field marks, but do not get hung up in details of superficial significance. What we are looking for goes far deeper and asks you to dive below surface appearances to what is underneath. When you do your wrapper sketch for a mammal, for example, look at the skeletal structure and the average body posture, not just the coloration.

• Frame Sketches

Frame sketches or skeletal sketches focus on internal structure and physiological characteristics. This is important not only to help a

tracker understand the mechanics of the organism and how that relates to its footprints, but also to show how many living things are so similar to others when you strip away the superficial differences. Frame sketching gets you to use your x-ray vision and look beneath surface appearances.

• Journal Sketching

To do a journal sketch, you study an organism's life strategies and discover how its body reflects these strategies. When an assignment poses a series of questions or lists things to emphasize, please label your sketch with answers to these questions. This will help emphasize the important details to remember and to sketch.

• Mind's Eye Sketching

This is essential to all the sketching you will do in this course. It is very important that you understand and do this as directed. It is simply the practice of picturing the object in the mind's eye before taking pencil to paper. It is the exact opposite of copying a picture from a book. Dragging the subject through your senses in this way builds the "file cards of the imagination," which we will depend on later for quick and easy identification out in the field.

• Spirit Sketching

You may then choose to do a "spirit sketch" of your animal or plant. This is different from your regular sketches, in that it focuses on the spirit, or "medicine bundle," of the plant or animal, capturing its essence in just a few strokes of the pencil. Spirit sketching is the art of capturing the personality, mood, or medicine bundle of a being with just a couple of lines and what realizations you make about the individual being studied after you have done your first sketches of it. This is like Zen poetry applied to sketching.

TEXT

After creating a good set of visual references for your study subject, you will apply your mind's eye techniques to the written text. In general, you are after short and concise bits of information that will help you to continue to form a complete mental picture and profile of what you are studying. Reading through the text about

your subject, let it "sink in" for a moment, and then write down the important points on your journal page. What is needed here is to capture the *essence* of the printed matter. Be careful here: There is *no need* to regurgitate every word you read. Again, it's all about capturing the essence. Read through things, digest them using your mind's eye, and then write short and concise information. Go quickly, too—there is no need to go slowly through this.

By far the most efficient way to create your journals is to read the text information first from the point of view of important questions that we will give you in subsequent chapters. Over and over, students have taught us that the most productive approach to these questions is to:

1) train yourself on the questions;

2) use the questions as your guides to consult your resources; and then,

3) *in your own words* summarize information that stands out to you.

Use the mind's eye method by picturing in your mind the material as you read it, then turn and write. Again, from a memory point of view, simply copying is nothing but a waste of time.

Following this routine, you will write what it is about each subject that interests *you*. Remember to move quickly and to not get bogged down writing a thousand pages for each plant, or thinking that we want you to copy word for word from the books. Keep it short, to the point and efficient.

Text on the Sketch Page?

You will probably find it helpful to write certain information in the form of brief notes to accompany the pictures that you have sketched on the other page of your journal. These might be things such as length, height, wingspan, size of leaves, time of flowering, etc. Most every student has found, in customizing this process to fit their own interests and styles, that some short form of text alongside their sketches is a good idea. So, experiment with this and with your text and sketches in general to come up with your own unique style. Try things out and see what works best for you.

Latin Names—It's All Greek to Me!

When reading through your field guides in creating your various journal pages, you will undoubtedly come across what are known as the "Latin" or "standard" names for whatever your subject is. These names are generally italicized and have two parts, such as Lutra canadensis (river otter).

For our purposes here in Kamana Two, simply note what the Latin name is and include it in your journal. Don't worry too much about what it means, and don't worry much about other classification information such as Family or Order. In the next level of study, we will go into much greater depth about these things and the crucial role they play in your abilities to learn efficiently about any area that you go into.

LAYING THE CORNERSTONE:

SKETCHING AND JOURNALING AS A SENSORY EXPERIENCE

The cornerstone to the foundation that you will build on the Resource Trail is one that will help to construct that set of mental file cards we keep referring to. As I pointed out a while back, the first time you encounter a "factoid"—a little bit of information—your brain goes into search-and-retrieval mode and looks for something to match it with. *If* you have encountered this factoid previously, and *if* you attached some meaning to it, your brain has already created a little file card for it, and has something to match this new experience to. In the case of canine lawn-deposits, the first time you encountered one—perhaps while you were in a less than aware state—you may have had occasion to create the following mental file card:

> "Factoid—Odd-shaped brown mass lying on the lawn. Shape: oblong, with constrictions at uneven intervals along its length. Size: about one inch in diameter. Other notes: smells BAD, difficult to remove from shoes."

The chances are rather good that the next time you catch sight of one of these, even out of the corner of your eye, you will attach meaning to it, or to the consequences of ignoring it. However, if you have never stepped in a fresh Purina-log, your file card may not exist. I'm not saying that you have to go around stepping in everything that you want to remember. That's not what I'm saying at all. The point is that your awareness of the lawn-deposit was *anchored in your memory with a strong sensory and emotional experience.*

Sketching and journaling as we instruct you to do them in this program will become strong sensory experiences that will anchor the subjects firmly in your memory. *Build on the emotional side yourself with some imagination and some real bonding while studying.* That is why it is important not to try to do all the mammals in one day, but to digest them slowly, say at the rate of two or three maximum per day. This will allow you the quality time necesary *to create a strong mental picture and imaginary link to the subject you are studying.* Imagine, for instance, that you are going to have to make up a story for a child to teach them about this animal. What things would you focus on in its natural history? What in the pictures can you focus on to make the difference? Besides this, use the mind's eye techniques as laid out in this book.

I need to repeat that: If you do your sketching and journaling *according to the directions* that follow, you *will* build yourself

a good set of mental file cards. When you go into the field, the images and information from these file cards will pop into your awareness when you encounter something which triggers *the memory of the sensory experience* you created while drawing and writing about it. Not only that, but the process will be much more fun.

The mistake comes in when people think that I want them to simply draw a detailed, perfect sketch of the animal or plant, and to write in detail all of the text associated with that. Digest first, extract the jewels for yourself, and then express yourself like a storyteller.

"SURGE FORWARD,
CUT LIKE HOT KNIFE THROUGH BUTTER!"

—Professor Pahn, University of Washington

With these methods and these tools under your belt, you will, indeed "cut like hot knife through butter" with the rest of the material in this course. So sit back in your comfortable chair, turn on your reading lamp, and enjoy some insights into the world of nature studies with a *native* eye.

It's Time to Let You in on One More Coyote Secret…

If it's taking you more than 20 minutes to half an hour to do your journal work, you're caught in an advanced-level study of nature, which means that you're getting in too deep for the purpose of this program!

Remember, we are still in the first levels of study here. What you are doing now is designed to give you an excellent foundation of knowledge and a wide variety of experiences in *most* aspects of the natural world—it is *not* designed to give you a Ph.D. level education of a *few* things. So please don't think that you have to know every single thing about everything that you study in this course. Remember, background and a good introduction is what you are after here.

One of the other important goals of this section of the course is to teach you how to study nature in the most effective and efficient manner possible. And to do that it is imperative that you really develop your skills as a "tracker of information." This means that you must learn to look at a few tiny details of one lifeform that you are studying and draw broad generalizations and conclusions

from them. It means that you learn to look at a set of tendencies and general characteristics and are able to apply this knowledge to a new individual. It also means that you develop the ability to glance at a new mammal, or plant, or tree and "instinctively" recognize its essence, its "medicine bundle" as it were.

There is one student who *insisted* on spending three or four hours drawing every mammal. This student ignored our instructions on mind's eye journaling and sketching and spent all this time doing it his own way, and in the end after all of his hours of hard and focused work, it turned out that he simply didn't get what I was looking for. This student was trying to make the sketches look like professional artwork, which you know by now is not at all what is important. If you want to really learn and remember the things that are important about an animal, if you want to move on quickly to the next item on your list, there is a certain mind-set that you will need to get into.

The Strategy—Go for the Spirit, Not the Details

The time you're spending actually sitting and gathering information and writing about the animal should only be about 20 minutes. If you work on the weasel tonight and tomorrow you know you're working on the river otter, tonight when you've finished the weasel, just look at the otter and start to get a feel for what it's all about. Tomorrow while you're out doing other things, you're thinking about the otter and you're waiting for it to hit you, for otter-energy to rise within you. Maybe you suddenly get the feeling that you are actually an otter, sliding down a mud bank and playing in the water or whatever. Maybe it's just a picture of one that keeps coming into your mind's eye. When you really have a feel for the animal, sit down and just blast through the assignment!

Why bother remembering anything
if you can look it up in a book?

—Albert Einstein

It should not take 20 minutes to read one page in a guide—it should take more like three minutes. You don't have to read through all the books that you can find on your subject, either. Surely, you can do this if you like—I don't object—but you don't have to. It's your choice. But you can empower your senses to dig in and go very quickly and get the important things out of just one guide, maybe two. Dive in and get it, dig it up, and pull it

out without rationalizing too much. Like writing a poem, just get a feeling for your subject and then put to it the words that come to you. Go for the spirit, not the details. You'll never remember the details anyway, and besides—you know where to find them. Don't worry, because I'm not going to ask you, "Hey Jenny, what's the gestation period of a shrew?" I'm not after that here. Neither are the instructors. If you are ever faced with a question like this, you can simply say, "Just a minute, I'll get my mammals guide."

Please mark this page in this book. Circle this section in red, put a tab or paperclip on the page, do whatever you need to do so that you can find it at a moment's notice, for this is your "crib sheet" to some of the most important tools I have shared with you!

Using Your Mind's Eye: Drawing the Riches Out of Your Studies

Sketching

1. Open your field guide and choose the illustration you wish to sketch. Quiet your mind by practicing a sense meditation for a moment or two. Then shift your attention to the illustration and study it carefully for about 15 seconds, noting important details.

2. Now close your eyes and picture the illustration in your mind's eye as precisely as possible. Hold this image in your mind's eye for another 15 seconds or so, and then open your eyes and check the illustration against what you visualized.

3. Now really *look* at the illustration and practice the art of questioning. Send your senses out through your eyeballs to the object in the illustration. Pretend that you have the real, live specimen before you and that this is what you are observing. Spend only a minute or so doing the following:

- Look at it closely; notice the overall pattern and structure, the shadings and coloration. Notice any details of field marks.

- Pick it up and see how it feels in your hands, how the weight is distributed, what its mass is compared to its size; is it heavy for its size, or light? What is the texture of its skin, fur, feathers? What do its claws, foot pads, hooves feel like?

- Sniff it. Does it have the aroma of earth clinging to it, or does it have the smell of something which lives in the water?

- Listen to it. What sound does it make as it moves through its normal habitat? What is its song or cry?

- Use your imagination and think of its strategies. How would you tell a story of this being? What is its essence? *There is no right or wrong here*! Just use your instincts.

- What are the structures that will help you identify it? Where are the little arrows pointing in the field guide? How is it different from others closely related to it on the same page?

4. Then close your eyes and visualize the plant or animal in the illustration again. You can repeat this process a couple of times, noting new details each round.

5. Allow your mind to clear. Closing your eyes, ask the plant or animal to appear again in your mind's eye in whatever form it would like to take. Allow whatever image appears to take shape and observe it, again for about 15 seconds, then open your eyes.

6. Study the illustration one more time and then CLOSE THE FIELD GUIDE and proceed to sketch the plant or animal exactly as it appears in your mind's eye. Really think of time efficiency—detailed, beautiful masterpieces of artwork are **not** needed …what **is** needed is something that captures the structure, strategy and field marks of the animal.

You should only spend a *couple of minutes at this whole process***.** As the course progresses you will find that your sketching improves in capturing the essential details of the illustration in a surprisingly short time. If you laboriously draw every vertebrae in the mountain lion's back in your frame sketch, and carefully pen in every whisker on its chin, you've missed the whole point. Quick, efficient, effective capturing of the essentials is what is called for, not museum-quality works of art.

Text

The writing that you will do for your journals is really the written counterpart of mind's eye sketching. It is just as important for you to do your writing in an effective and efficient manner as it is to do your sketching in the same way!

Your writings for this course should be a reflection of you. It is not necessary or even desirable to sound like a biology professor; a poet would be more to the point, for poets capture the feeling and essence of a subject, create images in the reader's mind and evoke emotions using a minimum of words.

Let your wording and phrasing be what comes naturally to you. This will give the instructors in our student services office a real feel for whether you are getting the material you are studying. Anyone can copy phrases from a guide book, but if you understand what the books are saying and express that knowledge in new ways that have meaning and create pictures in your own mind, we'll know that you really "own" the knowledge. Plus, once you have studied these plants and animals using this mind's eye process, you will remember nearly everything about your subject. Doesn't that beat memorizing something the night before the test, only to forget it the next day?

1. Open your field guide(s) to the section for the plant or animal you are studying. Again, quiet your mind for a moment or two. Then go to the text for your subject and read through the section quickly. As you read, try to picture in your mind's eye what you are reading about. If you read that the opossum gives birth to very premature babies weighing only about 1/15 of an ounce, picture a tiny, wiggling, hairless little pink pile of skin about the size and weight of a sunflower seed.

2. Now close your eyes for a moment and allow yourself to recall any key phrases or important words or concepts which stayed with you. Let yourself go over these for a couple of seconds and see if others come to you. (15 seconds)

3. Open your eyes and jot down the key words and phrases on a piece of scratch paper. Then refer back to the text again, and quickly skim the section, checking for additional information that jumps out at you. Keep in mind the instructions for each track that will tell you what information is important to look for. Make additional notes on your scratch paper if you wish.

4. Now CLOSE THE FIELD GUIDE and write your journal text for that subject, referring back to your scratch paper notes as needed.

That's it for the text. Just as in sketching, you have dragged this information through your mind's eye and created pictures and other sensory and emotional attachments that have stored its essence deep in your memory. Your ability to capture the essence quickly and efficiently will improve with time, so be patient and keep moving forward. Practice is the only thing that will make this permanent.

FOOD FOR THOUGHT

As you begin to create your first journals of hazards, mammals, plants, indicators, trees, and birds, take some time and reflect on the questions given on the next few pages. There is no need for you to write out answers or responses to these. Instead, consider them "food for thought." As such, there are no "right" or "wrong" answers. This set of questions is designed to help you think about what this program is about and what it means to you, for many people misunderstand our objectives. I find that when people think this through and see our point of view through these kinds of thought provoking exercises, they do better in the program.

Jungle lore is not a science that can be learned from text books. It can, however, be absorbed a little at a time, and the absorption process can go on indefinitely. —Jim Corbett, *Jungle Lore*

Refer to the italicized quote above from Jim Corbett, the late, legendary tracker (and close friend of Ingwe's) from the Kumoan region of India. In *Jungle Lore*, he states that he prefers the word "absorbed" to the word "learned." Although we are using field guides and books as texts, we must train ourselves from the very start to think in terms of a different way of learning—"absorbing."

1. What is the meaning of "absorbed" in reference to the gaining of "jungle lore?"

2. How do *you* think learning and absorbing are different?

3. How will all this relate to your time spent at your Secret Spot?

4. Tom Brown, Jr. and Jim Corbett were both gifted with a passionate curiosity. How will curiosity benefit a learning naturalist?

5. What are you curious about?

6. What is the relationship between curiosity and absorbing jungle lore?

Work With Guides

My experiences with Tom Brown, Jr. included learning how to use field guides. Your time on the Resource Trail will be heavily supported by guides, the questions and tracks that I send you down, and *your* curiosity. **Note:** Before you can go too much further you will need to get the right field guides (refer back to "Required Resources" on page xiii).

7. What is "native awareness" to you?

8. How can this differ from a more "academic" approach?

9. What will native awareness do for you, with respect to field guides?

10. What tool do *you* have that can bring field guides to life so that you can extract native awareness from them?

Rebuilding the Foundation

Powerful keys arise from this part of the program. This may change your view of field guides and will hone your observation skills to a fine edge. You will become self-sufficient in your studies of the natural world.

11. What are the tools we ask you to activate to empower your learning on the Resource Trail? (There are four listed as part of a "synthesis.")

12. Do you find yourself using these four tools much today? Please list the four aspects of your awareness below and tell us how you find yourself using them today and in what context(s):

mind's eye

observation skills

empathy

imagination

13. What is the key to a learning naturalist for turning books, videos and other resources into "mentors"? Justify your answer.

14. One native perspective is to see animals as "problem solvers." How does this differ from simply looking at them?

15. How might understanding their strategies, or trying to figure them out, help you gain a powerful sense of understanding them?

Introduction to Research

Research is a scary word for some of you! If you are intimidated by the idea, shift your focus. Good, now let's breathe a sigh of relief. This is really just a fun journey into the world of knowledge and lore collected by many, many naturalists. Many of them are just like me and maybe you: intimidated by what feels "academic." Although, academic is okay too, especially when it is given a spirit of seeking and curiosity. Just relax and enjoy this journey into the knowledge of nature and try to see as a native child might: visiting a world of intriguing information for the first time.

16. What is the element of "poetry"?

17. What is the element of "spirit"?

18. What is the element of "power"?

19. How are these words related to one another?

20. Where do they dwell in you?

21. How can these help make the resources come to life?

22. What does the imagination have to do with any of this?

23. What does a sense of sacred, or a sense of drama, or setting up a special place (like a martial arts dojo) do for a student?

24. How might a sacred sense help you to understand the material as more than dry facts?

Learn to See with Your Mind

Before you go too far in this exercise, sit back and get yourself into a relaxed and easy state of mind. Practice deep breathing for a moment or two. Get a sense of peace into your heart. Think of the feeling you get when you are at your Secret Spot, or in a favorite place in nature. Get into that space. Now answer these questions and take your time.

25. What is your "mind's eye"?

26. Describe an experience you have had with it today or recently:

27. Can you see your kitchen sink or other familiar household object in your mind's eye while your eyes are open?

28. Can you see the same thing while your eyes are closed?

29. Can you picture your bed right now? Eyes open?

30. Where are you "seeing" the images?

31. What do you suppose is a "mental file card"?

32. Do you have a mental file card for your bed?

33. For a sibling, a loved one or a good friend?

34. Describe where this information comes from that you have stored up on a person that is close to you.

35. In what way might you isolate the experiences that cause you to remember?

36. Dream on the image of a loved one or one who comes to mind for a moment. Think about it. Is it only a visual picture? Describe briefly.

37. Does it have smells associated with it? Describe briefly.

38. Are there feelings that go with some of these "mental file cards"? Describe briefly.

39. How complex are mental file cards? How deep do they go into your imagination? Describe briefly.

40. Are they still pictures or do they have movement to them? Describe briefly.

41. Are there sounds or other senses you can describe? Describe briefly.

On Patterning

Reflect on the reading about "re-wiring" the brain.

42. What is your feeling, input, feedback and/or commentary about how the brain is "wired" with respect to learning?

43. How much of modern education supports a "mind's eye" approach to learning?

44. How do the "natural" capacities of human beings relate to nature and perceiving nature?

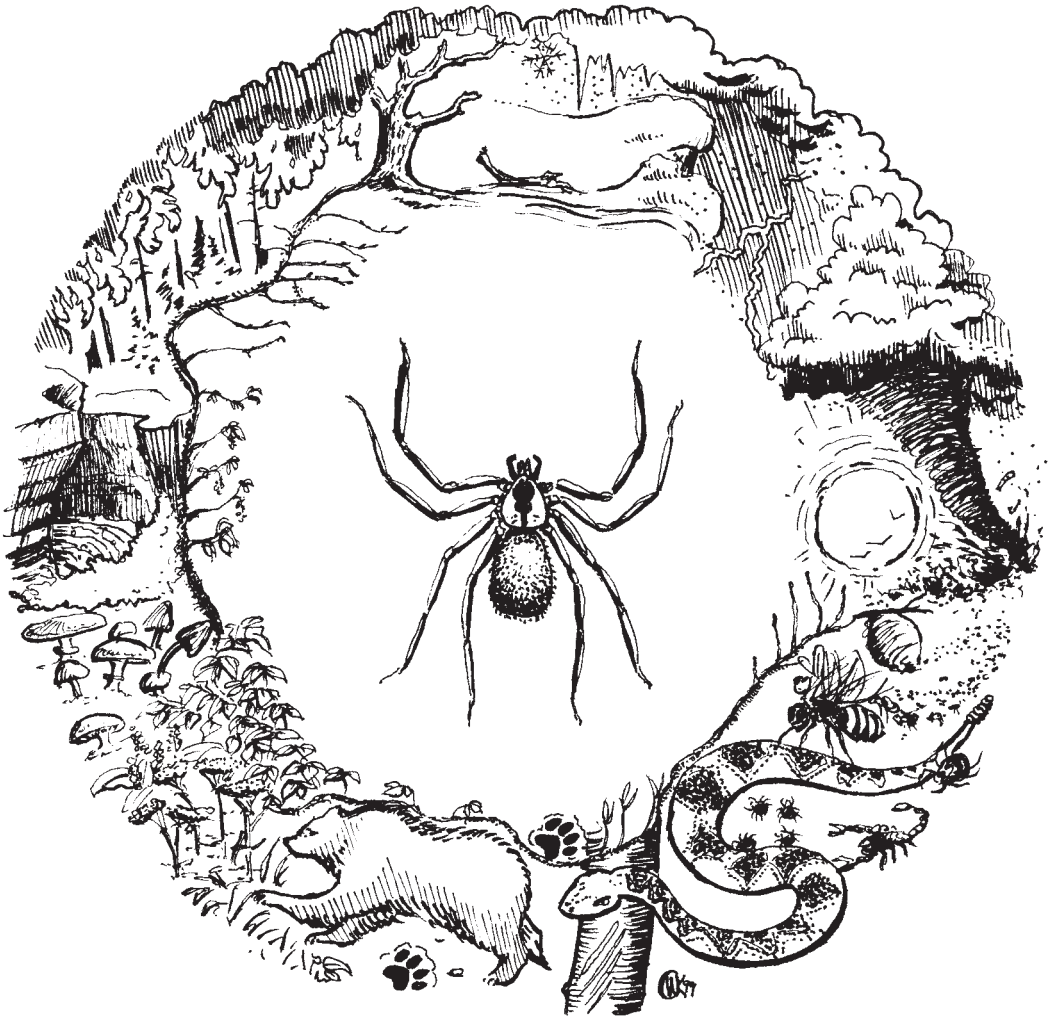
45. Were eyes originally intended for reading words on a page? If not, what were they designed for and how can you work that in to your studies? How can you re-create the natural as much as possible?

46. Were ears designed to hear lectures? If not, what were they designed for and how can you work that in to your studies? How can you re-create the natural as much as possible?

47. Were taste buds designed for Twinkies? If not, what were they designed for and how can you work that in to your studies? How can you re-create the natural as much as possible?

48. How, do you guess, did the senses interact with the mind's eye in the times when humans lived close to the natural world? How can this be re-created in this program?

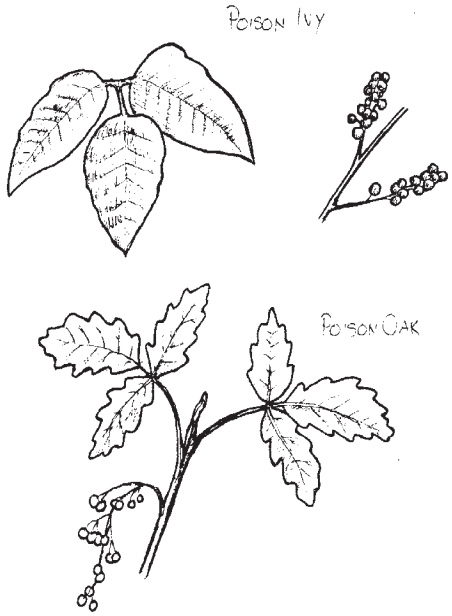
Chapter Two



Hazards

PART 1

HAZARDS



Welcome to Chapter Two of the Resource Trail! In the first level of your studies, I introduced you to why it is important for you to have a well-rounded knowledge of the things that are potentially hazardous to your learning and health in the wilderness.

In *Kamana One*, we focused our studies primarily on those beings that have, for one reason or another, received a bad reputation: spiders and reptiles. It's now time to go further into the world of hazards. There are many things that you will need to make yourself aware of as you dive deeper into you nature studies, for there is more out there than just lions and tigers and bears.

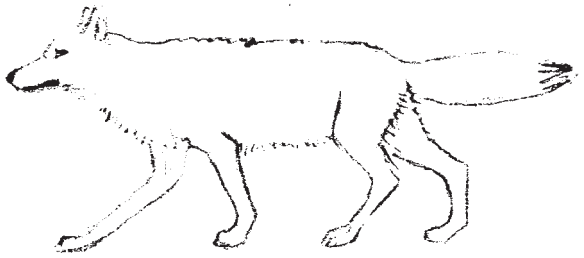
Interestingly, it seems to be a common conception that the greatest dangers to be aware of in the wilderness are presented by large animals: bears, cougars, reptiles like certain types of snakes, and spiders, too. Yes, each makes its own contribution to our need to be aware and pay attention, but there are many others that we need to make known to ourselves. Under what conditions and areas do we need to be especially aware of lightning strikes? Are there certain viruses or diseases that can be contracted from animals in the wild? What real dangers do we present to ourselves in the wilderness, and which ones are fears that we need to overcome? Before we get down to journaling hazards, let's take a brief look at some of these different types of hazards that we may face in the wilds.

HAZARDS OF THE WILDS

LARGE AND DANGEROUS ANIMALS

Despite the best efforts of our forefathers to exterminate them, there are still large predators and other dangerous animals left in the world today. In North America, bears, cougars, and wolves are rare but present in some of our wilderness areas. Of these, only the larger bears pose a consistent threat to humans.

The Wary Wolf



Wolves are shy and reclusive and will do just about anything to stay out of sight of humans. There has *never* been a documented case of wild, natural wolves attacking a human being. Again, for reasons both known and unknown, wolves have gotten a lot of bad press in the past. As far back as medieval times, the wolf was cast as the bad guy, and our European forefathers went on a program of extermination that has extended down to today, with many people holding on to hatred of these animals. Some say that people recognized in the wolf the one truly intelligent and aware spirit in the wild that they could never hope to control. Things not understood are frequently greeted with fear and loathing, and so we have inherited a legacy of negativity with respect to this beautiful animal.

A Drought in Grizzly Country

At the other end of the spectrum, no matter where or when you encounter a grizzly, the best rule is simply *don't*. There are many, many native stories from regions inhabited by grizzlies which let you know about the danger of close encounters, which are best prevented by avoidance. The animal is not bad, it simply is the largest carnivore around and as such has certain characteristics

that we as smaller animals want to avoid. Wherever they are, you want to be somewhere else! They can stand over seven feet, have an incredible sense of smell, poor eyesight and a very short fuse. They are equipped with six inch claws and teeth to match, and they are quite unpredictable.

A number of years ago, I was on a camping expedition with a group of Wilderness Awareness School instructors during a drought in grizzly management country. When we had camped there previously, it had been to study the tracks and sign of grizzlies and other Rocky Mountain wildlife. We kept fire watches, kept an eye out all day for sign of nearby animals and never had any incidents. This was at a time when there had been plenty of rain. The creek was full of water and the fish were happy. We saw otter tracks and sign in many areas of the creek. There was generally abundance everywhere.

One year when we arrived at our favorite campsite there was a severe drought. There were fire restrictions, and it was dusty and dry. Times were tough for the wildlife in that part of Wyoming. All the instructors were saying the same thing, that they had a really bad feeling about this place. I kept hearing it from one after the other, and they were in different camp sites. Everybody was walking around with a case of "the creeps."

Nobody in our group felt comfortable. They kept the fire watch ritual at night with great concern, where the summers before were more casual about the need for this nightly guard. We used to tell the campers that they had to keep watch all night, but then we were never really too worried. There was never any sense of danger. This was the one year that the fire watch was very well manned. You could smell coffee cooking all night long.

We had been there for two nights and a full day when some rangers came through on horseback and said, "There's a very hostile grizzly in this valley right up on this hillside, and it killed two cows this week and harassed some horseback riders. You may want to think about relocating." We packed and left. We would have left anyway, because all the instructors had the same ill feeling. We had been camping there for several years and never got a bad feeling about the place.

There's an important lesson for all of us here. Your "spider sense" will definitely tingle if you practice your Secret Spot routine. You'll just get a sense that things aren't right, that the energy of a place is out of kilter somehow. It is a good idea to learn to trust your feelings.

There are some things much smaller than a grizzly that can be dangerous, though maybe not in such an obvious or immediate way. However unimpressive or even invisible they may be, they deserve our respect and to be treated with caution, for unheeded these threats can lead to life-threatening experiences. These should not become deterrents to our wilderness experience; rather, they should be calls to greater awareness and respect for nature's ability to affect our lives in unexpected ways.

Remember, besides large bear species such as are found in the Rockies and in the areas of the wild north country, there are also the smaller black bears that have been known to attack people, though rarely. They usually only attack when a mother with cubs is surprised, or when campers go to bed with tempting food smells on their bodies. When backcountry campers follow the suggestions of the local authorities, trouble is almost always avoided.

Cougars are a Growing Concern

Lately, in California and Colorado, cougars have begun to lose their fear of human beings. In these two states, cougar hunting has been banned by effective campaigns against animal cruelty. These otherwise well-intentioned groups have created somewhat of a dilemma: where cougar populations were once controlled by native hunters, then by more modern hunters, they are now not controlled in states that have banned hound hunting. In areas I have tracked in California and Washington where tag numbers were lowered there was distinct evidence of the large population of cougars. Coyotes were conspicuously absent from their normal haunts; deer numbers were greatly reduced; and in one area, the deer seemed gone altogether. In certain areas of Washington, the cougars have reduced the local wild goat herd from over one hundred animals to less than one dozen.

The cougar, with few natural enemies, will overpopulate just like raccoons have in suburban settings where their population controls were removed. The only things left to control the raccoons were the diseases rabies and distemper. Rabies was a real problem in the east, as raccoons attacked pets and people and did some considerable harm to other rare mammal populations by spreading disease among these animals, too.

The wilderness traveler does need to be concerned and aware of local cougar situations as they vary from state to state. Here in Washington, there have been some cougar incidences already this year. In California and Colorado there have been some serious

attacks on people, and hundreds of pets have disappeared—credited to the cougars in many cases. Be aware of these incredibly strong, silent and swift predators. They like to take their prey by surprise, so stay alert to the alarm calls of birds, and don't lose your awareness in big cat country. Though incidences are relatively rare, they are more common among people interested in the wilderness, for it is the naturalist who seeks out the backcountry where encounters are more likely. Learn as much as you can about cougars and about how to deal with encounters.

Other Animal Hazards

Though it may be a surprise, the peaceful deer and its relatives have been know to injure people as well. Buffalo and moose have seriously injured and killed unwary wilderness visitors, especially in areas like Yellowstone National Park where some people think them tame and offer them food. Avoid the mentality of "That won't happen to me." Learn to listen to the rangers or other authorities in these places. Get books that tell of the dangers and how to avoid them, and otherwise *go humbly* into the wilderness! As I said, too, it is not unheard of for even deer to inflict serious injury on people with their hard sharp hooves or rack of antlers.

OTHER DANGERS OF THE WILDS

Giardia—Not Just Another Drop in the Bucket

It used to be that you could drink water from any running water source in the northern hemisphere. Those days are long gone, largely thanks to the feces of settlers and cattle in the water. *Giardia lamblia* is a protozoan that has spread from people and their cattle and now inhabits the intestinal tracts of rodents. "Beaver fever" has just about universally infected some aspect of all water sources in North America, and probably has spread throughout many other parts of the world by now. The microscopic organism is spread now by mammals who inhabit watery environments including beavers, muskrats and bog lemmings. Because bog lemmings like grassy environs, even springs aren't safe in lush meadows anymore. It helps to know the tracks and sign of these mammals for this reason.

Giardia causes severe diarrhea, leading to dehydration and even death if left untreated. The effects take from several days to a week to show up after drinking infected water, so you may not know that you have it right away. Your doctor can give you a very

effective medication that clears up this condition in short order, but if you are out on a long trip into the backcountry, this may not do you a lot of good. The best cure is always prevention.

Do not assume that any water source is safe to drink from anymore. Boil any water that you take in the wilds, being sure that none of the unboiled water remains around the rim of your pan, bottle, or other container to re-infect your water supply. How long to boil depends on who you listen to. New evidence indicates that it may take as little as 30 seconds at a **full rolling boil** to kill off any undesirables. If you have enough time and fuel, boiling for the old "10 minute rule" wouldn't be a bad idea, until everyone is of one mind as to how much boiling these critters can withstand.

Other options include the modern charcoal and/or ceramic water filters sold in backpacking stores. Be sure that the one you choose specifically states that it will filter out Giardia. Follow the directions carefully when using it, and know how to maintain, clean and repair it in the field.

You can also carry a little bottle of water-treatment pills, but one use of these, and the taste they impart to your food and water will convince you to try other methods.

Nature's Cure

An old native woman told me that there's a little woody plant that grows in a lot of places locally, and if you chew the root of this plant after you have had to drink contaminated water, it can cure the effects of Giardia. But you have to catch things before they've gotten too far along and you're badly dehydrated. She had her own name for it, but we know that plant as Oregon grape.

Giardia spread through the water systems in the intestines of beavers. So everywhere beavers were, there was Giardia. Then the bog lemmings picked it up and carried it farther upstream. Now even the small rodents like rats, voles and mice carry it. So anywhere there is grass growing right down to the edge of a stream or creek, you will probably find Giardia. Only if you can follow a watercourse all the way upstream until you find the spring that feeds it, *and* you find that there is no vegetation growing around it, can you be somewhat sure that the water is good to drink.

There is only one place that I know of in the world today where you can swim and drink the water at the same time, and that is in the Pine Barrens of New Jersey. The cold waters there are the

color of iced tea, stained by the tannins leaching out of the cedars and oak leaves. This makes the water acid enough that the Giardia can't live, but it doesn't harm us. It is such an incredible experience to be able to dive into one of these pools, with the sunlight reflecting off the smooth surface, and to open your mouth and drink in the water.

There is something about doing this that really seems to connect us with the world on a very basic level. It is as if we too were a creature drinking from this pool at twilight, watching for dangers, drinking in the beauty and wonder of the world around us. Like the image of the rivers once again teeming with fish, try to hold in your minds the image of the waters running clear once more, where we can swim and fish and drink all at the same time.

Rodents—A Cause For Caution, Not Panic

Rats and mice, like other rodents, all have a pair of large incisors in the front of their jaws. These teeth continue to grow throughout their lives and must be kept in check by gnawing and chewing on things. If they are providing garbage pick-up service in the process, so much the better, but often the rodents that live around the edges and even in the middle of human territory are consuming what we intended for our own use. Mice and voles themselves provide an important food source for many predators including hawks, coyotes and wolves. But like so many other things today, rats and mice can be a mixed blessing.

In the Middle Ages rats carried the bubonic plague, transmitting it to humans through the fleas that nestled in their fur. It has been estimated that one quarter of the entire population of Europe, or 25 million people, died of the various forms of this disease during the outbreak in the 14th century during which time it was called "The Black Death." This term was the result of the black-looking skin the victims developed during the later stages of disease. In places, the mortality rate was between two-thirds and three-fourths of the population. It is interesting to note that even as early as the 16th century, Himalayan villagers believed that unusual deaths among rats preceded outbreaks of plague among human beings.

The news media of our own times has been filled with accounts of a virus that struck a number of native people in the southwest with incredible speed and devastating results. The virus was subsequently identified and named the "Hanta Virus" after its place of discovery. It is now known to be carried by the deer mouse, and cases turn up from time to time in unexpected places. The most

recent case was reported in a small town in Washington state. This is a long way from the dry, arid climate of the southwest where it appears to have originated, which causes me to wonder how this virus became known in a rainy climate like the coastal region in such a relatively short period of time.

Many of my students are drawn to study first-hand and in detail the small animals and birds that they may encounter, which have passed to the great beyond. Road kills are one good source of such specimens, but I always caution students to take certain precautions with regards to these things. In Chapter Four, where you will study mammals, I will go further into the potential dangers of handling road kill and introduce you to proper "road kill etiquette." The above stories and information are meant to arouse *awareness, not panic or fear.* As I said, there is little need to fear things in the natural world, but there is every reason to respect those that can cause us harm, and to take the necessary precautions to ensure our safety.

Rabies—Awareness is Prevention

Rabies is a threat in some areas of the country today. We will look more closely at the mechanisms of this disease during the study of ecology, because rabies is very definitely a disease of "civilization." Rabies is almost unknown in wilder areas where populations are in natural balance. Only where there is overpopulation and strong territorial stress does rabies have a chance to take hold, and then it does so with swift and deadly consequences.

What you need to know about rabies is that it infects mammals. It is a disease of the warm-blooded creatures, traveling in their bloodstreams and eventually infecting their brains, causing pain, delirium, madness and eventually death. It is not a pretty thing to see, and it is even less pretty to contract. A few common-sense precautions will save you the painful and frightening experience of undergoing treatment for rabies.

First Rule

Never approach or allow a wild animal to approach you if it is out at the wrong time of day or night or is acting strangely in any way. This should include any wild animal that seems too quiet, too friendly, too docile or listless, as well as ones that may be

obviously ill or aggressive. We all know the friendly squirrel in the local park who comes right up to you and takes nuts out of your hand. That's not what I'm talking about. But if you were walking in the park at night and this same squirrel came up to you, your "spider sense" should tell you that this is strange behavior. Squirrels aren't out at night!

The same holds true of raccoons, urban inhabitants who are particularly susceptible to rabies. If you find one out wandering around during the daylight hours for any length of time, chances are that something is amiss. It is unlikely that it will be infected with rabies, but to be on the safe side, you should stay well away from it and consider calling animal control to have it removed if it persists in behaving strangely. Skunks are also common carriers.

This does *not* mean the odd raccoon who forgot to check his watch at sunrise and is hurrying home to bed. Especially during the long days and short nights of summer, their "work hours" get compressed dramatically and you will tend to find them sneaking a little overtime to feed at dusk and at dawn. But you shouldn't be seeing them still out and about at 10 a.m. or at 3 p.m.

Second Rule

Always have your pets vaccinated against rabies. Your pets run a much higher risk of exposure than you do, particularly if they are "free range" pets, ones who go out in the yard or neighborhood without a human escort. Again, contrary to logic, urban pets run a higher risk of contracting rabies than do most rural domestic animals, but if you have any questions about the history of rabies in your area, consult the local health department or your county extension agent.

Third Rule

If you should ever be bitten by a wild animal, try to have someone capture the animal for observation and possible testing, *and* immediately consult a physician. Rabies is transmitted through the saliva of the infected animal. Even if you do happen to be bitten by a rabid animal, if early treatment is sought, it need not be painful or deadly in humans; there is a vaccine which can effect a complete cure, but again, it must be caught as early as possible.

Ticks—Don't Rest on the Laurels

Ticks are small parasitic Arachnids which are found in almost every area in the United States. In several parts of their life cycle they feed on any mammal or bird they can find in order to survive. For the most part this is not much more than a nuisance to a woodland traveler. However, there is one species of tick that can carry Lyme Disease and another that can carry Rocky Mountain Spotted Fever.

There is a great deal of confusion and fear associated with ticks as a result of the misconceptions surrounding them. This is understandable, since Rocky Mountain Spotted Fever or Lyme Disease can be serious. But there is a way to protect yourself from both ticks and these misconceptions: develop common sense. If you take these steps you have no reason to fear ticks. With this knowledge you gain the confidence to travel freely through the woods.

• Become an expert on identifying the different types of ticks in your area, their life cycles, and in what parts of any given area they are most likely to be found.

• Take a series of simple precautions that will reduce your chances of being bitten by a tick. Practice what is known among Wilderness Awareness School instructors as "Tick Hygiene." This is a follow-up routine which prevents any problems for it gets to the root of the cause.

• Know the symptoms of Lyme Disease and Rocky Mountain Spotted Fever so that if you are infected you will receive early treatment. In both cases, early detection and treatment are very effective.

How to Reduce Exposure to Ticks

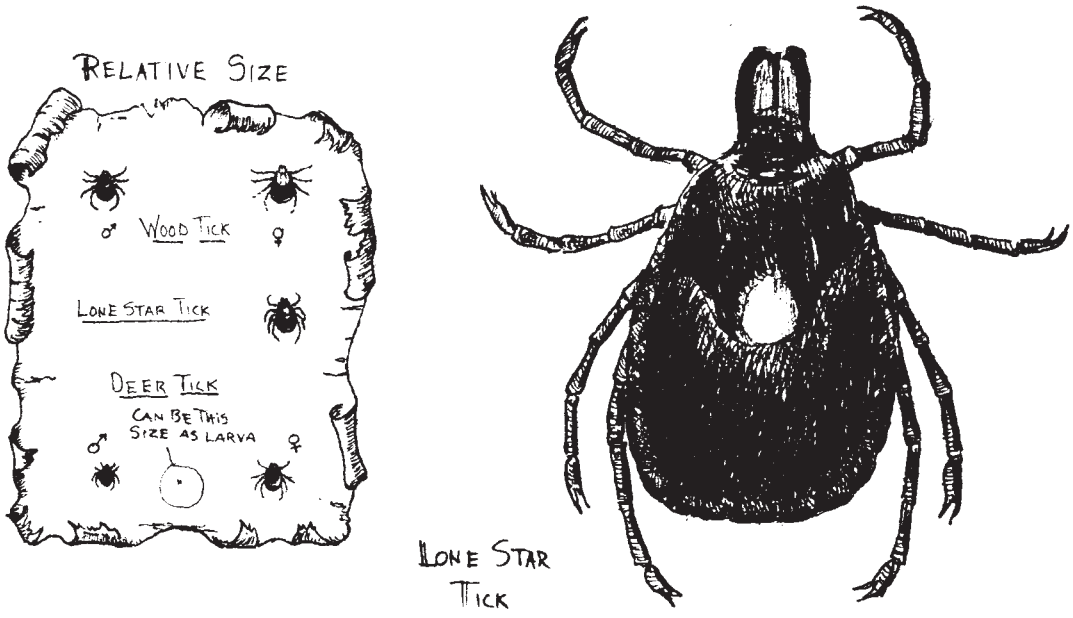
Since we know that ticks actually linger on blades of grass and wait for a potential host to brush against them so they can hitch a ride, rather than parachuting onto our heads from trees, this helps us avoid them in the first place. This does *not* mean staying out of the grass, just knowing their preferences and habits!

Their lives are closely tied to their mammalian prey, so they are found where other woodland mammals travel. If you follow a deer trail, the odds are it is a tick trail too. Deer have regular places where they sleep called "beds" or "lays" and are easily recognized by the compressed grass and deer tracks. Deer have good taste and usually pick very comfortable places to rest, but don't lie

down there unless you are in the mood to pick many ticks off of yourself.

Decompression Routine

We always recommend that you wear "woods" clothes, which you remove upon entering your laundry room, or garage preferably. Hang those clothes up in the garage, or place them *directly* into the laundry, the washing machine being the safest place to put them immediately. This will prevent cross contamination. Some people have been known to get Lyme Disease because someone brought a deer tick into their house on their clothes, or a pet brought one in. Head straight for the shower. As mentioned above, the little deer



tick nymphs are quick, hungry and hard to see. But nature has granted us a reprieve because the little nymphs are also very susceptible to soap and water. After a foray into the woods, it is essential that you take a shower and thoroughly wash your scalp with some type of soap. We recommend Dr. Bronners' Eucalyptus Soap. This is a product that is not too harsh on your skin or the environment, and the ticks can't stand the eucalyptus.

Generally avoiding tick "hot spots" will reduce your risk. Also, when in tick country it is good to wear light colored clothing to help you see them quickly. Tucking your pants legs into your socks will cut off their path up your leg and further limit your contact with them. But the single most important thing to do is to check yourself very carefully at the end of every day for ticks. Even if you never go into the woods, there can be ticks in yards.

Your pets can also bring them in. One study shows that a tick is unable to infect you until it has been attached approximately 12 hours. It is therefore a good habit for people who go into the woods every day to check in the morning, when they return home from the woods, and again at night before you go to bed. A recent article stated that people who understand ticks and check themselves regularly are actually less at risk than those who do not go into the woods and do not check themselves.

If you are bitten by a tick, don't panic. Odds are that the tick that bit you is not carrying the disease, but there are precautions that you must take. If you have been bitten by a deer tick, save the tick on a piece of scotch tape in a dry container of some sort for identification, and monitor the spot that was bitten for symptoms. Contact your health practitioner.

In the many years Wilderness Awareness School operated in one of the Lyme Disease hot spots, we had only two cases of the actual disease in any of our twenty-five instructors who were logging hundreds of hours each week between them all. As a team, we worked in the Pine Barrens and in the areas of Monmouth County known for Lyme Disease cases. We not only traveled in the forests and fields where deer abounded, we also followed their trails and tracked in the areas of highest concentration. This was not because we were suicidal! As trackers, we track wildlife in the areas where they live. I cannot think of any students of Wilderness Awareness School who contracted Lyme Disease while with our programs, and they were in many of the same high risk areas.

The two that contracted the first stage symptoms were both treated right away and have suffered no aftereffects. They both admit that they contracted the disease simply from complacency. Both practiced the tick hygiene routine described above for a number of years and never had a problem. One began to doubt the existence of Lyme Disease and began to ignore the precautions. The other just grew lazy out of complacency from overconfidence developed from the effectiveness of the routine! Don't get lazy! One simple rule of thumb: If you are in deer tick country assume you have them even if you cannot find any; that way, you will always practice the tick hygiene routine!

Mushrooms—Study Them, Don't Sauté Them!

During the course of this program you will study many types of edible and medicinal plant species. Everyone knows that there are edible mushrooms that grow in many areas, but at Wilderness Awareness School we have one simple rule about mushrooms:

DO NOT EAT MUSHROOMS YOU FIND IN THE WILD !

Mushrooms are intriguing beings, members of the Fungi Kingdom under the Five Kingdom system of classification, which we are using. The life cycle and biology of mushrooms is fascinating and if for no other reason, they are worth a few pages of text. However, wild mushrooms as a whole must be considered one of the few remaining "large predators" on this continent. Every year an alarming number of people who should know better succumb to the deadly members of this group.

Mushrooms are found in your *Reader's Digest Guide* near the primitive plants like ferns and horsetails. Unlike the more modern specimens, they do not produce flowers or give birth to live young; they rely on spores for reproduction. As you will discover in your study of the plants later on, spores are a dependable way of reproducing even though so much is left up to chance. The conditions of climate and moisture must be just right in order to grow new organisms.

In the case of mushrooms, spores are released into the air from the mushroom itself to be carried to new locations. When conditions are right, spores create mycelium, threads that grow, spread out and interlace their way all through the growing medium, which can be anything from soil to rotting logs to tree roots and even the bodies of insects. Several years ago, there was a friendly competition going on between several areas in the country to see who boasted the largest living creature. The state of Washington claims to have discovered a single mycelium over 30 MILES in diameter. I figured they won hands down until someone else found one a mile or so larger, or so they say. At that size, I'm not sure how you would know for certain that you were dealing with strands from the same organism…what would you do, dig up 30 miles of ground?

Mycellium can be invisibly active underground for long periods of time, years even, just waiting for the perfect conditions to create a fruiting body (like a mushroom) in order to produce spores. They're patient, which may have something to do with why they've survived for so long on Earth. In any case, at the point in time when conditions are right, the separate, tiny strands of mycelium will join together to form a single structure which pushes up through the soil or tree bark. This fruiting body (a mushroom, shelf fungus, puffball, or whatever else) eventually produces spores that are released to the environment, which go off in hopes of landing in other locations favorable for their species.

Mushrooms come in many shapes, sizes and textures—everything from the familiar creamy white of the little button mushrooms we pick up at the local grocery store to iridescent purples, the bright reds of the deadly Amanitas and the wood-like browns of tree fungus. Their shapes are equally fascinating, being described as everything from wood-ear to cloud-ear to puffball to bird's nest. They serve a valuable function in the ecosystem as part of nature's composting and recycling team, breaking down organic material so that it can be reused by other living things.

Mushrooms are delightful to study, but I cannot impress on you strongly enough that you should NOT EAT WILD MUSHROOMS. I'm going to share enough mushroom horror stories with you now that there should be no doubt whatsoever left in your mind that I am concerned when I say this. This is a precaution Wilderness Awareness School must take when training people in nature awareness. For I have seen too many people mistake easily recognized birds and plants—I know mushrooms are difficult to identify. You are taking chances when you start out alone in this field, for even experts have made fatal mistakes. I am sorry to have to tell you this.

• Last year there was a man in San Francisco who was absolutely certain that the mushrooms he had collected and cooked for his family were the edible ones he was familiar with. He and his entire family died from these "familiar" mushrooms.

• An older couple from New Jersey, who had been collecting and eating mushrooms all their lives, really knew what they were doing. They went out and got a mushroom that came up several weeks early. It was a common one in the area, one that everybody knew and ate all the time, except that this year it came up early. They gathered this mushroom, cooked it and ate it.

They basically sat in the hospital for about five days waiting to die. Their livers just disintegrated right in their bodies. They had no other symptoms except that they got really jaundiced, and little by little their conditions deteriorated. The doctors weren't able to do anything for them.

The weather had been colder and rainier than usual, and it is now thought that the weather may have changed this familiar mushroom in some way, or that the conditions became just right for a similar mushroom to finally emerge that had lain dormant for a long time.

• In Kenya, where Ingwe is from, comes the same story. A farmer there killed himself, his wife, and three children eating mushrooms that were up a little late because they had a late rainy season. Again it was a species that everyone knew were common and edible.

• Tom Brown told me a story of a professor of mycology—mycology, mind you, someone who spent his whole life studying mushrooms—who did the same thing, eating something that was supposed to be safe.

• My editor told me the following story that she says she heard many times while growing up: Her father, Vernon Marsh, worked for a time as a forest ranger in the Olympic National Park. He had a Ph.D. in botany, had been an avid naturalist all his life, and would eventually become a college professor.

One autumn a group of science teachers came to his ranger station on their way out of the park. They had with them a gunny sack full of wild mushrooms which they were planning to cook up as soon as they got back home. Vernon asked if they would show him their specimens, so they emptied the sack out, somewhat reluctantly. There among the edible ones were two of the deadliest mushrooms known on this continent.

The teachers were so upset that they didn't bother to collect the rest of their would-be dinner. They left the pile right there on the ground and "beat feet," as Vernon was fond of saying—badly shaken, but wiser.

So if you want to stake your life on your knowledge...that's exactly what you're doing if you eat wild mushrooms. Those who gather mushrooms for food are experts, and as you can see from these stories, they are taking a definite risk even with their great experience. Many edible mushrooms closely resemble other very dangerous species, and some edible species are actually poisonous at certain times of the year. Mushrooms are beautiful things that deserve our attention, but we tell all our students JUST DON'T mess with mushrooms that didn't come from the grocery store! In Chapter Four, we'll study some poisonous plants, but I'll tell you right now that poisonous plants often taste like poisonous plants—you'll take a little bite, and it'll burn your tongue or taste really bad. But a poison mushroom may not give you any warning at all.

Fire—Let Deadwood Burn in a Firepit, Not on the Trees!

Knowing the number of "Aliens" there are in our society today, I shudder to think about them all out there camping. They often devastate their suburban homelands—imagine their impact on the wilderness! I have seen some pretty odd things in my days as a wilderness teacher.

There are a number of people and groups around the country teaching courses about low- and no-impact camping and backpacking. They are certainly well-informed in many areas, and they are providing a valuable service by helping people new to the wilderness become aware of just how fragile the environment really is.

But one thing that troubles me is the bioregionality of the teachings of many of these western-based outfits. Their teachings are in direct conflict with Wilderness Awareness School's teachings about the northeastern forests and the Pine Barrens. One of these outfits teaches that firewood should always be gathered from the ground and never taken from the trees. That is good for the Wyoming wilderness, but does not wash in the New Jersey Pine Barrens, in many of the deciduous growth-rich forests of the temperate northeast, or in the rain-soaked forests of the northwest.

There are several reasons why we teach our students to take wood from the trees and not from the ground; some relate to the regions we teach in, others have to do with Alienitis versus common sense:

1. Most people do not recognize poison ivy in its woody form and pick up poison ivy limbs from the ground, even below a tree obviously covered with the stuff. In our courses, our students recognize the red, hairy vines of poison ivy because we force them to learn it. Therefore, if they pick dead limbs from trees, they will see the poison ivy and will look for firewood elsewhere.

2. In the Pine Barrens, any wood that falls to the ground becomes home to the many kinds of ants and termites that inhabit the region. These insects make short work of sticks that stay a couple of seasons on the ground. It is disconcerting to watch as the ants carry the larva and eggs they so carefully tend into the flames and die a needless death.

3. Humidity covers the land each night of the year. A stick that lies on the ground will absorb this humidity and make it difficult, if not impossible, to burn.

4. Trees in forest situations shed their lower branches as they become inefficient light gatherers. The tree is shedding them for us to use for firewood.

5. These lower, dead branches, are continuously air-blown and sun-dried; this makes them into wonderfully seasoned, dry firewood.

6. Removing this snagwood keeps the danger of wildfires low.

No Wildfire at Wilderness Awareness School

When the recent fires swept through the Pine Barrens, thousands of acres were scorched to the sand, leaving almost nothing alive. In our Pine Barrens campsites where we have been thankfully and carefully harvesting the deadwood right off of the trees for twenty years, the hundred or so acres we have managed in this way were not scorched but endured a ground fire in some places, and nothing in the rest. You can see where the fire swept right up to the edge of our camp area, parted and went around both sides, leaving ours virtually untouched. If you were to take a walk a few miles down the sand roads from our camp to the primitive camp where Tom Brown's Tracker School runs many of their programs, you'd find the same thing—no fire! Amidst a charred sea of blackened pines, these two sites are now islands of life.

I have found that those people who have argued this point with me also failed the Alien Test. Insufficient knowledge can be a dangerous thing!

HAZARDS OF THE BODY

Being warm-blooded mammals, one of the body's primary concerns is functioning properly. Under certain conditions, your body's ability to function well (or at all) may be hampered. For example, if you break a bone, strain a muscle, or sprain a joint, your body's ability to move in the ways that it needs to will suffer, so it pays to know the limits of what your body can do. Another area of concern for the body is maintaining a certain temperature range so that it can function properly. However, body temperature and physical abilities can and should be stretched, for the human body is a truly remarkable creation that is highly adaptable and can, with practice, do amazing feats on a routine basis.

Cold

When my father, his three brothers, two sisters and their parents moved to the Bitterroot Valley in Montana to homestead during the early part of this century, for the first winter they lived in a 12-foot by 12-foot canvas tent set on a wooden platform. Temperatures regularly reached 20 and 30 degrees below zero, with wind chill factors driving the reality of the cold far lower. Their hair froze to the pillows during the night. To keep their feet warm in the out-of-doors, they wrapped layers of newspaper around three pair of hand-knit woolen socks and the whole thing was done up with a covering of gunny sack held in place with twine. —Linda Cunio

I'm positive that every family has its story of hardship and courage in the face of adversity, but the reality of the situation is that many people today don't have any idea what it is to be really cold! Homes are 68 degrees, offices are 68 degrees, and in between, some people are even protected from the savage elements by a garage with an automatic door opener and underground parking. There are people who spend entire work weeks never setting foot outside of a man-made artificial weather system.

Cold can be a very real and present danger, especially under severe conditions such as the Marsh family endured in that Montana winter. But what most people experience as cold in our society today is, in reality, a mild discomfort. With proper conditioning and some knowledge of bio-control (our mind's ability to consciously direct the autonomic (look it up!) functions of our body), a body can be conditioned to survive comfortably in what would otherwise be deemed severe conditions.

Several of Tom Brown's books talk about the cold-conditioning he went through in his early training. I am certainly not advocating going to these extremes for the sake of getting close to nature, but this does point out how far we have gone in modern society from our natural survival abilities. What I do advocate is finding ways to help your body acclimate to a wider range of temperature than can usually be experienced in the modern world.

When I was growing up with Tom, he often remained in a T-shirt in the coldest winter weather, only rarely donning a flannel. When we shivered by the fire for warmth bundled in our winter clothes and long johns, he would get in his shorts and jump into the dark waters of the Pine Barrens rivers and come out screaming. His hair would freeze on his way to the fire. In the back of my mind, I knew

I would one day have to take that same dive, just to know how it felt. In time, after about two years of winter camping with Tom, I got the nerve and did it. Indeed, I lost my fear of cold. I never got sick as a result of winter cold again. To this day I will jump and play in the coldest of water and feel much more alive because of it. Remember, though, I took my time getting there and we *always* had a way to warm up nearby. This is not something to try if you are already beyond your limits. That could be a mistake.

In some of my classes, I have my students do exercises in the wet grass or snow in their bare feet. I tell them to try this cold-therapy for a few minutes and then to run inside and stick their feet into a tub of mildly warm water or sit in a warm place, then run back outside and run around in the grass some more. I have them repeat this process a half-dozen times or so and then go on to something else.

After repeating this for several days or weeks, their feet finally figure it out: "Oh, she's got us out here in the cold…it must be time to get warm now." And they automatically increase circulation and warm up on their own. It really works. If you can apply this cold-warm response conditioning in other ways in controlled and non-threatening situations, you will be ready for the time when your life could depend on being able to generate your own internal heat source.

Hypothermia—Know the Difference between Discomfort and Danger

I don't want you to get the idea that cold can't harm you—it can kill you, especially if you are tired, injured and/or wet. Don't push your limits too far at once or in situations where you are out of range of help. If you need to test yourself with respect to the elements, do so in the safety of your own back yard, with the company of friends of sound mind, and with a healthy measure of common sense. The key to not getting into trouble is really to use common sense. As with anything physical, the key to conditioning is to push the envelope a little at a time. A lot of little five-minute edge experiences are what's called for, not one gigantic leap into oblivion!

Hypothermia is the lowering of the body's core temperature below the normal 98.6 deg. F., and it can lead to unconsciousness and death if not treated aggressively. The key is to prevent yourself from getting to the point where you need treatment.

Shivering is the body's last-ditch effort to keep you from getting beyond that edge of cold. It is the involuntary rapid contraction of the large muscles, which creates heat within your body. However, if you are too cold already, covered with wet clothes made of a substance that does not hold heat when wet (which is just about anything except for wool and the new "polar" fabrics), or injured, shivering may not do the trick.

The major symptoms of hypothermia include an altered level of consciousness, slow breathing, low pulse rate, listlessness, and mental confusion. The hands, feet and abdomen of the hypothermic person will be cold to the touch. In this state, the person will want to go to sleep.

Treatment includes the gradual warming of the person's entire body. Remove cold and wet clothing, and if no other method for warming is available, body to body contact is the most effective.

The Best Defense is Good First Aid Skills

Read up on hypothermia and on wilderness first aid in a good first aid reference and take a first aid course, including CPR (cardiopulmonary resuscitation). These will give you the skills to begin to deal with emergencies in the wild.

HAZARDS OF THE MIND

Just as there are hazards out there that you can touch and feel (although you probably don't want to do that—after all, they are hazards…), there are also others that are, for one reason or another, present in the mind.

Dark

Some people have an irrational fear of the absence of light, which is all that the "dark" really is. Like the fear of snakes and spiders, could this be a genetic memory left over from a time before the "domestication" of fire, which could turn dark into light and keep large predators at bay until dawn? I don't know.

Dark does pose one very real threat when we happen to find ourselves out in wild places after sunset, and that is *the hazard of our falling or running into something if we try to move around without light*. When you find yourself out after sunset, unless you are pretty much in your own back yard or have a good light source, stay put! It is simply too easy to be severely injured blundering around in the dark in an unfamiliar place. Many experienced hikers have simply walked off cliff edges.

I repeat: If for some reason you should find yourself caught out after dark, find a place to "hole up" for the night. Do not continue on in the dark!

Everything that you learn in the Kamana program is a background study for survival in the wild. I rarely teach wilderness survival as a separate course of study. Many students have remarked to me how they have discovered, after completing the Kamana program, that they no longer have any fears or concerns about being out in nature. Respect, yes; fear, no, for they have come to see themselves as a part of the flow of life, and the natural world no longer is perceived as foreign or mysterious or in some way separate from themselves. This is my hope for each of you that you come to feel as "at home" in the world of nature as you do in your own "home." This is what we call "living fully in two worlds."

After you have completed the six tracks of the Resource Trail, you will encounter survival teachings that draw on your own studies and build on your own foundations.

Discomfort

Like cold, the dark and spiders, the concept of comfort can be a barrier to our enjoyment of the natural world, but only if we continue to let it.

I am a firm believer in the "Five Minute Edge Experience" as the cure for discomfort, whatever form it comes in. If a person has spent most of his or her life cocooned away from the natural elements behind a thermal barrier of central heating and air conditioning, and if their feet have touched only carpets and sidewalks while cushioned by shock-absorbing lug-soled boots—if that person were suddenly plunked down in the midst of a wild area, with none of the amenities in sight, he or she would definitely perceive the experience as "discomfort," among other things.

But if that same person became a Kamana student, then little by little that foreign feeling would disappear. A year or so later, after completing the course and logging many several-minute sessions at their Secret Spot, that student feels right at home down on their hands and knees crawling through thickets, slogging through streams and even wading in the swamps. Nature has become comfortable.

Dirt

As we say the Thanksgiving Address, we give thanks to the many beings who live on and beneath the face of our mother, the Earth. All these creatures, whether "animated" or "planted" or mineral ,eventually give their earthly remains back to the Earth to generate new soil, so that other beings may draw life and continue on. What some people see only as "dirt" is actually the raw material for new life.

Sensing the Soil

Dirt, soil, earth…they all deserve our respect and our thanks, but there is no reason to see "dirt" as a barrier to exploring the natural world. In our Tracking Club, I tell my students that they haven't gotten everything out of the experience unless their knees are full of mud. To really learn and study the natural world you have to get down and get your hands and knees in the dirt, the raw materials of life. It's all part of pushing the edges of your comfort zone. Little children have no problem doing this. They love to play and roll around on the ground, even in the mud. To them, it is something exciting and fun and full of all sorts of wonderful sensations.

You might want to try this sometime when you are out in nature, as a way to tune your senses in to the earth, the soil: Quiet your mind a moment, give thanks for the day, and then tune your awareness in to your senses of touch and smell. Draw your attention in to just your hands, and your nose. Then lie down on the

ground and put your nose close to the Earth. Take a long, slow breath, savoring the smells that come to you. Close your eyes. What images come to mind, what do the aromas remind you of? Inhale again. Is the smell rich and moist, or dry and sandy? Do you detect the aroma of old leaves or wood, or is the smell mostly of a mineral nature?

Take a handful of soil and rub it between your thumb and fingers. What is the texture? Is it wet, muddy, full of little pebbles and pieces of trees or leaves? Is it smooth and slippery? What does it remind you of, what pictures come to mind? If you feel like it, lie down on the ground, place the palms of your hands and the soles of your feet directly on the ground and see what you may feel. This is the stuff that life is made of. Do you have a sense of energy coming from the soil...is there a feeling of potential? Or do you sense quietness and rest? You may not have any images or impressions at all, which is perfectly fine. Just reflect for a moment on the fact that the Thanksgiving Address refers to the Earth as our mother.

Be Informed and Travel with Humility

This text has a limited range—nature does not. Dangers await the uninformed or the inattentive at every turn. But this is *not* a reason to stay home or out of the wilderness! Just practice the same kind of common sense when preparing to go into the wilds that you would practice when venturing into an unknown city: Check out the "problem areas" ahead of time, and for heaven's sake, don't assume that you know everything.

When you venture out of your bioregion, it pays to be humble. There are many types of poisonous snakes that may be unfamiliar to the newcomer. And many non-poisonous snakes mimic the coloration of their poisonous counterparts, often to their own undoing. For the snakes' and your sake, learn to tell the difference. There are many types of dangers associated with travel in the alpine regions—everything from broken bones to hypothermia and Giardia.

The few minutes it takes to learn about the dangers of the area you are visiting will pay huge dividends. There are many good books and guides available, especially in the library, about the region you plan to visit, whatever it is. Do your homework, and perhaps you will not find yourself a statistic of tourism in the backcountry when a sudden storm strikes, or you encounter a poisonous snake or a grizzly.

Regarding Illegal Activity

Though sad, we hear periodic reports from students who come across signs of illegal activities while in the woods.

Should you find or encounter something that is obviously related to a crime or that you do not feel good about, we offer the following recommendations: 1) do not move whatever it is that you have found, 2) leave the area undisturbed, and 3) contact the proper authorities.

Make sure that you can give detailed directions to the site in question. Depending on the situation, be prepared to give a statement to the authorities regarding the circumstances of your discovery as well.

Human Hazards

Sad but true, the most dangerous predator in the world today is the human one. With so many people crowding into our cities, where conditions deteriorate more practically overnight, and with our loss of connection to the balancing and calming effects of the natural world, the fact is that we have to be very aware of everything in the world around us today.

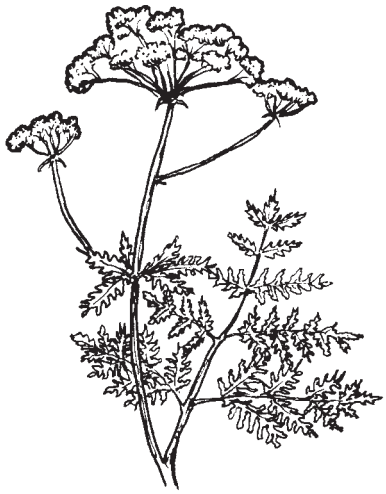
However, I have spent years and years around the fringes of civilization and human habitation with no problems in that regard. This is not to say that you should just take off for the city park or the local gravel pit with no regard for possible problems, for that could be downright hazardous to your health. Part of feeling at ease and comfortable in any place is to have a realistic picture of the actual dangers and hazards of the area. Use your common sense in connection with your awareness skills and, like my group in grizzly country, you will know when it is time to move elsewhere. In the meantime, choose areas to visit that are not obviously party spots, scenes of illegal activities, or habituated by people with a dark mind-set. As always, common sense is your best ally.

In all my years out in the wilderness, either with Tom Brown, by myself, or with groups of students or instructors, I have only had a few iffy human contacts, ones which gave me a definite case of the creeps. But in each of those situations, I was at ease and familiar enough with the world of nature to know that I could have faded off into the bushes and lost myself to pursuit practically in the blink of an eye. This doesn't take years and years of perfecting scout skills. You don't have to be able to heron-stalk a fish for hours on end without making a ripple in the water. What it does take is many trips to your Secret Spot, and developing your awareness skills to the point where you have a sense of the situation before it develops. Jeff Alexander, one of the nation's leading self-defense experts, interviewed dozens of victims of violent crime. In every case, without exception, he found that they had ignored a gut instinct telling them ahead of time that something was wrong. You have a well-developed internal radar for danger. Pay attention to it, act on it, and you'll be fine.

Keep practicing your skills. Together with a good working knowledge of those things in your area which pose a potential threat, these are your best protection from hazards of any type.

Hazards to Your Studies

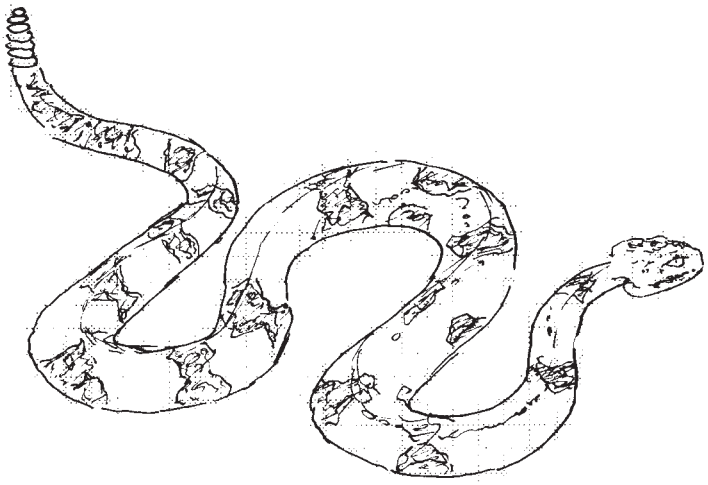
A hazard to your studies is too much talk—from me or from anyone else, so turn the page and let's get down to it and journal some hazards…



One of North America's deadliest plants...
a member of the Carrot family.

Part II

Journaling Hazards



Required Resources:

Peterson's Field Guide to *Venomous Animals and Poisonous Plants*

Reader's Digest: *North American Wildlife*

Additional research time at your local library

Note: Most paths of the Resource Trail are fairly straightforward. In the study of mammals, birds, trees, and plants, there are a few simple resources that you will need to either purchase, borrow from a friend, or check out from the library. Unfortunately, there are very few resources that are specifically written about hazards or about ecological indicator species. *Venomous Animals and Poisonous Plants* is one good condensed resource for you to utilize in your studies here in Chapter Two.

You will also need to seek out information elsewhere. As I've already discussed in the first chapter of this book, there are whole worlds of information available to us today to use in our studies. The library; local, state, and federal health departments; and many other resources are all there for you to use. To conserve your trips to the library, you may want to go there, find information on all of the hazards that you need to research, and make photocopies of all of the information so that you may resume your studies at home at your own leisure. However it is that you study, though, all that you will need to do is be persistent and you will find the answers that you need.

As you well know by now, there are many hazards to consider in your studies here, hazards from animals, insects,

plants, viruses, diseases, and also natural conditions that result from being unprepared. Let's say that you are out exploring your local park with a friend. It's a sunny summer afternoon—certainly warm enough that you and your friend are both wearing T-shirts and shorts. Taking a little adventure off-trail, you do some bushwhacking through a dense thicket filled with late-blooming flowers. You have to go slowly so you don't crash through it, which you've learned from spending time at your Secret Spot, but your friend, who doesn't have a Secret Spot, just thrashed on through.

As you emerge on the other side of the thicket, your friend yelps a brief cry of pain, and you look over just in time to see a worker honeybee (you've correctly identified it from your Hazard studies, and know, too, that it came from the edge of the farmer's field on the other side of the hill where the farmer keeps bees to pollinate her crops) finish stinging their thigh. Your friend says, "It's just a bee sting," and keeps on going. But you soon notice that your friend is lagging behind, and the site of the sting is turning a nasty shade of red and swelling up like a balloon. Your friend begins to pant and wheeze, too, and before you have taken even twenty steps from where the bee sting took place, your friend collapses, unable to breathe. What is happening? What do you do?

Though this may sound like a drastic example taken from a Red Cross first aid course, what I want you to see is that there are sometimes two types of hazards to know about. In this case, the bee itself was a potential hazard, and there was also your friend's condition, which was brought on by a violent allergic reaction to toxins found in the bee's stinger, called "anaphylactic shock." Without immediate treatment, the condition might have resulted in death for your friend. An interesting thing about allergies to bee stings is that many people who are allergic don't know that they are, and it isn't until a situation such as this arises that they find out—the hard way. So, while it is good to know about the honeybee itself, that knowledge is only one side of the coin. The flip side is to know about the potential conditions that can arise from interactions with the hazards, how to recognize their symptoms, and the best course of action for you to take when and if they show. As always, however, the best medicine is prevention. Your study of hazards will increase your awareness, so you can avoid dangerous situations. After all, if your friend hadn't been crashing through the flowering thicket where the bees were feeding, they wouldn't have gotten stung in the first place.

Remember that the backbone of your learning is the Mind's Eye process from Chapter One. To review:

> 1) It is important that you clear your mind and relax before journaling, and occasionally try to picture in your mind the animals or plants you are studying.
>
> 2) Study the pictures and text until you can see them in your mind, moving, crawling, or whatever it is that your subject does. Feel how much it weighs, or what it may feel like to come down with a certain sickness or to be attacked by a cougar or bear. Smell the stagnant waters where you might contract an illness, and otherwise involve all of your senses while you sit there at your desk.
>
> 3) Create your journal page with some brief sketches and text. Remember that we are not concerned with how well you draw, but how closely you pay attention to detail and observe structures and characteristics. It is these skills that tracking and natural history depend upon.
>
> 4) Do not simply list without paying attention. Take a moment, read through the page you are working on, study the illustrations and relax. This is meant to be an enjoyable foray into the natural world of your area. You may never have the opportunity to visit the material in this way again, so sit back and enjoy your work with childlike curiosity and appreciation for the natural world. *You are simply learning a new language, and at the same time you are developing mental file cards and the subconscious ability to discern details of similarity and difference in structure.*

This exercise will help you become familiar with real hazards in nature. If you associate with outdoor programs such as survival schools, camping groups, scouts, or environmental clubs, you may find yourself in a position of leadership when it comes to local dangers and what precautions to take.

Be sure to include the following information about each hazard that you are journaling (not every one of these will apply to each hazard):

- Field marks
- Size
- Signs of its presence

- What it eats
- Range
- Habitat
- Habits
- Disposition or personality (i.e. is it temperamental?)
- Quality of venom or poison
- Sources of virus or disease
- Potential disease, viruses, sickness, or injury that the hazard may present
- Symptoms of sickness, injury, or other danger caused by interaction with the hazard
- Appropriate action/treatment
- How people often contract the sickness or are stung/bitten/attacked
- Prevention—what can you do to avoid being attacked or getting sick?
- News clippings or stories about the hazard or people's encounters with it. Have there been local encounters or occurrences? If so, how recently?

Hazards

On the blank journal pages included in your program binder, create the following 10 Hazard journals. When you are directed to study a member of a group such as "Pit Viper," pick one that lives in your area. If you find that one of these hazards does not live in your area, choose the one that lives closest to you and journal it, for it is still important that you learn about it. *(Note: Make sure you see the review page at the end of this section and examples of Hazard journals before beginning.)*

Animal Hazards

1) A Local Tick

2) Black Widow and Brown Recluse

You already studied these two spiders in Kamana One. However, with the resource that we were using there was no information available on the symptoms of bites and how to treat them. Journal both the black widow and brown recluse together on one page again and include this new information. Feel free to use the spider journals that you did before as a source of information.

3) A Pit Viper

Pit vipers are a group of snakes that locate their prey primarily through heat-sensing "pits" near their nostrils. This group includes the rattlesnakes, the water moccasin, and the copperhead. Choose one that is found in or near your area.

4) Yellow Jacket Wasp

5) Cougar Attack

Cougar numbers are increasing, and cougars are being sighted for the first time in many generations in areas where they were thought to have vanished, so don't assume that the cougar isn't in your area—it just may be. No need to journal a cougar here. That will come later on. Instead, create one page of information including incidents of cougar attacks and how to avoid being killed.

6) Bear Attack

Similarly, there's no need to create a journal on the bear here. Focus instead on how to avoid dangerous encounters with bears. Gather one page of information.

Natural Conditions

7) Heat Stroke

Viruses

8) Leptospirosis

9) Hanta virus

Mushrooms

10) A Local Poisonous Mushroom

FINAL REFLECTION (SEND WITH FIELD PACK 2.4)

When you have completed your 10 hazard journals, think back on what you have read and learned about hazards and common sense so far. How has your knowledge of the wilderness grown from this perspective? Considering what you have learned, any changes in your perceptions, the development of your Mind's Eye skills, and anything else that comes to mind, write about your own perceived growth from this study. Take anywhere from a paragraph to a full page to do this.

Name: _____ Student #: _____

Date: _____

REVIEW SHEET

Keep this page dog-eared in this booklet for easy reference as you go through Chapter Two.

1) Create Your 10 Hazard Journals

Journal the following:
(See yellow Field Pack sheets in the *Nature Awareness Trail* book for the number of journals you have to complete per assignment.)

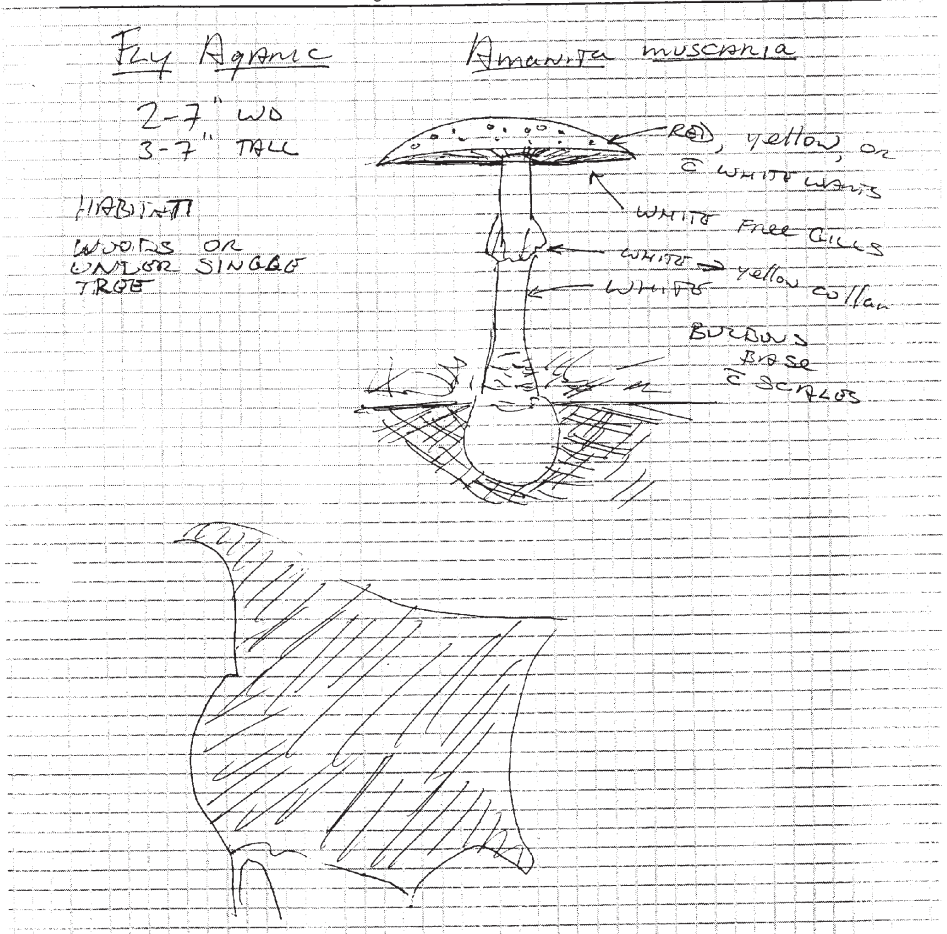
A Local Tick
Black Widow and Brown Recluse
A Pit Viper
Yellow Jacket Wasp
Cougar Attack
Bear Attack
Heat Stroke
Leptospirosis
Hanta Virus
A Local Poisonous Mushroom

As they apply to each, consider the following topics:

Field Marks
Size
Signs of Its Presence
What It Eats
Range
Habitat
Habits
Disposition or Personality
Quality of Venom or Poison
Sources of Virus or Disease
Potential Disease, Viruses, Sickness, or Injury
Symptoms of Sickness, Injury, or Other Danger
Appropriate Action/Treatment
Ways Sickness or Attacks are Contracted/Occur
Preventative Measures
News Clippings or Stories

Remember to use your mind's eye through all of this!

2) When you have completed your 10 hazard journals, write the Final Reflection for hazards for Field Pack 2.4.



Field Journal Section _____ : _____ Date: _____

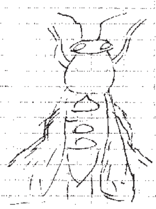
Source(s):

WILDERNESS AWARENESS SCHOOL

Journal by William Wittmann

STINGING INSECTS

Jon Young's Kamana Certification Program



YELLOWJACKET

Vespula spp.

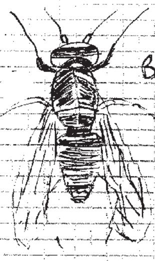
½–⅝ IN Abdomen banded with black and yellow.

Where found: Fields, wood edges, builds nests in ground and in stumps and old logs. Throughout North America

Female yellowjackets inflict a painful sting and will sting repeatedly with slightest disturbance. These steal morsels of food from picnics and are ubiquitous in parks and cities.

Yellowjackets in the woodlands are more sensitive to human traffic than their urban cousins and cause serious encenomations.

Prevention of stings: use insect repellent and avoid disturbing nests.



BALD-FACED HORNET

Vespula maculata

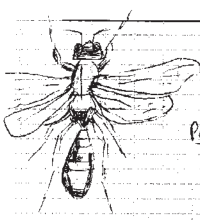
½–⅝ IN Wasp with black and white patterns on face, thorax, abdomen, and first segment of antennae. Wings smoky colored; head broad.

Females build small gray nests out of chewed wood. Females are quick to defend the nest and will sting repeatedly.

Field Journal Section ______ : STINGING INSECTS Date: MARCH 2, 199[illegible]

Source(s): Peterson: Venomous Animals & Poisonous Plants

Jon Young's Kamana Certification Program



PAPER WASP

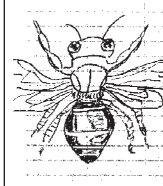
Polistes spp.

Brownish or bronze colored, long-legged wasp, to 1¼ IN. long; middle tibia with two spurs; first abdominal segment is conical, not threadlike as in other wasps

Found on vegetation near water, in barns, houses, wooded areas.

Builds its nests out of paper made with chewed wood mixed with saliva. Inflicts a powerful sting.

* wasps and yellowjackets have smooth stingers which they can use repeatedly.



Honey Bee

Apis mellifera

The honey bee can be a welcome species. The female Honey Bee is seen collecting nectar and pollen. Female workers ⅜–⅝ IN;

Male drones ⅝ IN; queen to ¾ IN.

Its barbed stinger stays in the skin of the victim, and the bee dies shortly thereafter. Honey Bees vigorously defend the ~~nest~~ hive, dying to protect the colony and its precious food stores.

Field Journal Section ______ : ______ Date: Mar 2, 1999

Source(s): 5– Peterson's Venomous Animals and Poisonous Plants

WILDERNESS AWARENESS SCHOOL

Journals by Peter Bacon

Chapter Three

Mammals

Part 1

Mammals

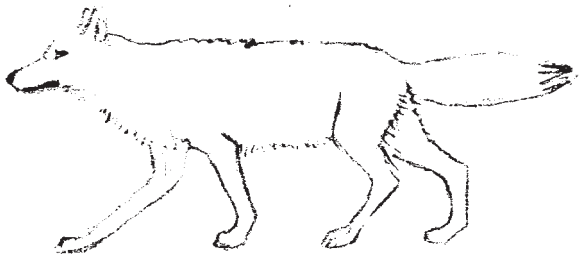
The Arts of Tracking

by Paul Houghtaling

As you read in Kamana One, I was in college when I first became inspired to learn the Art of Tracking. I spent countless hours on my hands and knees at a muddy spot on the college campus down from my dorm room, staring at the tracks of deer, opossum, and raccoon that had crossed in various ways, going from one place to another. Having a muddy place such as this was a real blessing, but it wasn't until I had the experience that I'm going to share with you that tracking began to make sense to me.

When I got my first car at the start of my third year of college, I was very excited. Not only was I now more mobile around town, but I could now make the long drive north to Wilderness Awareness School's Tracking Club. For those of you who aren't familiar with our Tracking Club, it is more or less a regular and casual get-together of tracking students with all levels of experience, where one can learn some useful tips and gain some experience to make their tracking at their own muddy spot more productive. Participants at the Tracking Club are broken into small groups of three or four and rotate around a series of stations that instructors from the school have found earlier in the morning, each station having an interesting lesson to teach the student about tracking. For me, being able to attend the Tracking Club after receiving Wilderness Awareness School's calendars for so long was a great source of excitement.

The first station at my first Tracking Club was one that I will never forget as long as I live. It was the one that hooked me on tracking forever. Down in a dense thicket that was covered with sand from a nearby stream that had recently overflowed was a set of tracks. Upon seeing them—four toes and claws—I was instantly convinced that they were coyote tracks. Wow! A coyote! I had never tracked one before, and this was a real treat. I spent the entire time at the station talking about how the coyote had moved this way and that way through the dense brush, and the instructor at the station just nodded his head a lot, asked me some questions about the tracks, and matched my enthusiasm over the tracks with his own.



At the end of the Tracking Club, all of the participants assembled together around a small campfire where we discussed what we had each seen at the stations. I didn't think they were talking about the station where I had seen the coyote, though, because they kept talking about how this snowshoe hare had been moving through the dense tangle of stems and branches in the thicket. In fact, when the debriefing sessions ended, I wondered why nobody had brought up the coyote that the instructor and I were so excited about. When it was over, though, the instructor—a great guy and now my good friend, Mac Stewart—brought me back to the tracks and had me look at them again. Suddenly, the whole scene changed, because coyote isn't the only animal that has four toes with claws showing. Rabbits and hares do the same thing. There were many differences between their respective tracks.

Perhaps the most important thing that I learned that day, though, was that there is a lot more to tracking than just looking at footprints. Mac had me sculpt the size and shape of a coyote over the tracks, and then the size and shape of a snowshoe hare. Doing this, I saw right away that the stems and branches of the thicket were much too dense for an animal the size of a coyote to move through with any sort of ease. It was now obvious who had made

the tracks. Where was it going, though? Mac and I followed the hare for awhile as it moved through the thicket, made a wild leap across a small rivulet of water, and continued on into a section of the brush too dense for us to follow it through.

"When did the hare go through here?" Mac asked, as I got ready to give up and go home. I didn't know. I again got down on my knees and studied the tracks. Mac pointed out that since it had rained the day before, and since there were no marks from the rain in the tracks, then it had to have moved past after the rain. It seemed as though every time I was ready to pack it up and go back to my car, Mac had another question that brought a whole new aspect of the story to life. I couldn't escape! When I returned home to that muddy spot, I found that somehow, tracking began to make some real sense to me.

In Kamana One, I wrote quite a lot about the power of good questions as your guide when tracking. Again, in *Kamana Two* our study of mammals is all about asking questions. We are going to take a look at the more common mammals found across the country—the ones that, no matter where in the country you go, you will most likely encounter and be able to track. We are going to study how their anatomy, physiology, behavior, and senses combine to create the living being that leaves the tracks and trails we see and follow. Developing this understanding of the animals is of the greatest importance to your ability to track. I spent two frustrated years trying to track before finally studying mammals through this course. Unfortunately, I was just looking at tracks—I was not seeing the living, moving, breathing animal that had walked through, leaving its footprints behind in the mud.

The Five Arts of Tracking are a way to use questions to engage a set of tracks or trails or animal sign when you encounter them. Formulated by Jon Young, the Five Arts are what bring the mental file cards that you are creating for each animal to life and force you to look at them from different perspectives. They also are a set of simple tools you can use any time to uncover more of the endless mystery of tracking. If you are intrigued, I'd recommend the *Shikari Tracker Training Program*, which is based on these arts and the many other skills and techniques that are to be found deep within the tracker's big "bag of tricks." What follows is a brief description of Jon's Five Arts. May they serve you and your Secret Spot studies as well as they have served me.

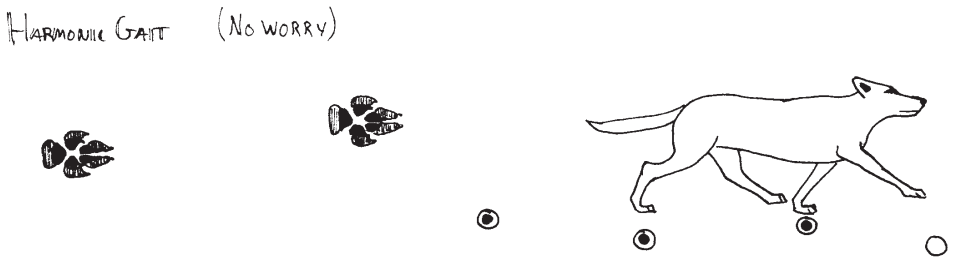
The Five Arts of Tracking

by Jon Young

This breakdown is based on my work as a tracking mentor and represents a helpful outline for people to discover their own interest in the arts of tracking. Surely, any of these five arts can be studied separately, and each one can represent an entire lifetime of learning in itself. Each of these arts is a kind of discipline that requires a specific focus. They vary in difficulty and rewards as well. Some can be learned easily when the student is on their own, while others require some mentoring for relatively quick success. The ability of these arts to draw you further into the mystery and your learning, though, is limited only by how you ask the question.

1. **"Who?"** *Identification of Track and Sign.* This first art answers the question, "Who left this track or sign?" The identification of tracks and sign requires work with guides like *Peterson's Guide to Animal Tracks* (which you will be working with anyway) and some good tracking conditions. You must also get to know the animals themselves. You could look at your mammal studies in this course as the background needed to help you with this art, which can be learned relatively easily on your own.

2. **"What?"** *Interpretation of Behavior.* The second art answers questions such as, "What was that animal doing?" or, "Was it running or walking?" or, "Is it looking left, right, up or down?" or, "What mood is it in?" This is a difficult art to learn without mentoring, but the kind of studying you are doing with skeletons and strategies are vital to this aspect of tracking. With mentoring, it can be learned surprisingly quickly!



3. **"When?"** *Aging Tracks and Sign.* The third art of tracking answers the question, "When was this animal here?" This is one of the most difficult aspects of tracking and requires commitment to *one* place (like the Secret Spot anchor point), an ability to think

like a detective in sequencing past events given certain evidence, a close study of the weather and journaling weather changes at least four times per day, and *lots* of experience. When you are first beginning, don't worry about this art, because it gives little confidence to beginning trackers. Just let it be for now. The Secret Spot routines will help you with this later in ways you will be very thankful for, should you ever get into aging tracks or sign.

4. **"Where?"** Trailing answers the questions "Where did the animal go from here?" and "How far can I follow it?" This, like aging, is an advanced art of tracking and requires tremendous focus, discipline, time to play and practice, good conditions and mentoring. Knowledge of bird language, which you will touch on in other aspects of this program, will come in handy here. Also, your knowledge of place and the habits, strategies and "medicine" of the animals you study will help you a lot. People who play with trailing games or have a good reason to follow animals (such as hunting or other means of livelihood) will be good at trailing in time. In the beginning, trailing could be a bit discouraging.

5. **"Why?"** *Ecological or Bird's Eye Tracking*. The fifth art answers the question "Why does the raccoon use habitual trails?" or "Why does the wolf move at dawn?" or "Why did that coyote suddenly stop, look left and run to the right?" The ability to answer these questions, or indeed the ability to even ask the right questions to begin with, depends on the understanding that a student in the *Kamana Naturalist Training Program* builds through all of their combined studies. You could look at the Kamana program as the "Fifth Art of Tracking Primer," because this aspect of tracking comes from just being a good naturalist—with a sense of how to look at things and good grounding in all aspects of nature study coupled with field experience. This is already what you are learning, so be patient. You will get there!

… and the Other Five Arts of Tracking

6. **"How?"** *The Sixth Art of Tracking, or Empathetic Interpretation*. The next five arts delve into slightly more ephemeral aspects of tracking. This sixth art answers the question "How does it feel to move like a rabbit?" This is the hidden art of tracking and is what makes a truly native tracker so expert at tracking. It involves tracking with your own body as the study in movement. It is a lot like ancient martial arts, which imitate animals to extract their "power," or "medicine" in a Native American context.

Native ceremony, dances, games, songs, stories and art all embody the "hidden tracking lessons" of Empathetic Interpretation. You will find that if you use your mind's eye to the extent that I suggest to you in this program and let some of your rational tendencies rest, you will indeed find yourself becoming quite the Artist-Tracker! Your study of mammals here in Kamana will be greatly aided by looking through the eyes of the storyteller, the martial artist, the imaginative person, the child who plays at being a cat, or anything that stimulates your use of the mind's eye in studying, imitating and looking out through the eyes of the animals themselves.

7. *Spiritual Tracking* is really just your instincts combined with your mind's eye, your collective experience and your faith in the power of your mind to interpret your surroundings. This only comes through experience but will be greatly aided by *all* your Secret Spot activities, exercises for your senses and your Naturalist Inventories. We have a tape available that includes great stories about Spiritual Tracking.

8. *Substrate Study* gives a tracker the experience to know how various substrates behave under pressure. Substrates include soils, grasses, leaf litters, snow conditions and other miscellaneous substrates affected by the physics of track compressions. The study of substrate moisture and atmospheric conditions enters this art. Compressions are the tracks themselves looked at as dents caused by forces applied from gravity and movement dynamics. Kids who play in the mud, sand, dirt and grass, and who play in the snow, have a better handle on tracking than kids who don't. Calling it Substrate Study makes it sound fancier than it is.

9. *Tracking Technique* just helps a tracker work with tracks, sign and their interpretation a bit better. It involves things like working with measuring, tracking sticks, light conditions and hundreds of other little tips that you might not ever think of, which can help you succeed that much faster at tracking.

10. *The Art of Teaching Tracking* is a whole different world from the art of tracking itself. Teaching, mentoring and being with people long-term in these relationships is complex business. There are great musicians and there are great music teachers. The differences can be seen more from their apprentices than from the individual teachers themselves. Learning to teach tracking is a bit humbling at times! We support a group of instructors and students in our local Tracking Club, which helps us all to improve our skills as tracking teachers *and* students on an on-going basis. I have so much to learn myself, but I am glad to have the opportunity to

know my students on a first-name and personal basis for several years, for I learn how they learn—and more importantly how they *don't* learn, no matter *how* much I push *my* way on them. For more info on how I teach/mentor tracking, take the Art of Mentoring workshop...soon!

Where the Trail May Lead

This is the beginning of a long road, but whether or not you are interested in tracking per se, learning about mammals is an integral part of your growth as a naturalist in this program. You will find, too, that the approach we take here is learning how to look out through the eyes of the animals themselves! You will be glad you took the time to get to know your neighbors, and your curiosity will build, as you ask yourself, "If I know they are there, why do I never see them?" and, "How do I know *if* they are there?" That is where tracking comes in. Later, as you develop as a naturalist, you will find yourself wanting to follow animals, learning nuances of their awareness and personality, and even getting to know individual animals by their tracks, sign and characteristic behaviors. This is really fun!

Turd Alert!

As you may figure from these Arts of Tracking, a common theme that runs through all of these arts and throughout Kamana is utilizing your senses to their fullest potential. The best trackers in the world end up being the ones who fully immerse all of their senses in as many different and creative ways as possible into the experience of the animals. One experience that you don't need, though, is the experience of sniffing turds. I don't do that, and I don't want you to do that either! You would be surprised at how many trackers get right in there and sniff those things. Perhaps they think, "If dogs can do it, they can do it." Unbeknownst to them, however, there are a great many parasites that are passed from animal to animal through sniffing. One of these is a parasite that's carried in scat—"poop" to most of us—that can cause severe brain damage to humans. So if you don't want parasites in your brain, don't sniff those things. Don't even touch them. If you just have to sniff or scent a scat to get a sense of its odor, pretend that you are a connoisseur of vintage wines. Wine connoisseurs don't just stick their nose in the mouth of the wine bottle and snort. No. Instead, they elegantly waft the sweet scent of the wine, keeping the nose several inches away from the bottle. They don't want to overpower their sense of smell and make their nose burn with

the strong perfumes of the wine. Instead, the idea is to get a real sense of the smell, so they waft. You should do the same. Wafting will help you to get the essence of the scent, and if you keep your nose ***about a foot or so away,*** you should be out of reach of those brain parasites and avoid becoming infected.

What about older scats? Does this just apply to fresh ones? No. The same thing that I've just explained and asked of you here also goes for the old, dried, shriveled up kind that has almost turned into dust. Those brain parasites can hang around for a long time, so don't think that just because a turd is old, it's harmless. Remember, also, that these days some mouse droppings can carry a deadly disease as well. We aren't here just to study scats. There is a whole field of study around that called "scatology" (yes, it's true), so you can see that we could get into it pretty deep here. Scat is just one small piece of our study, so let's change our focus and just look at mammals.

Road Kill Etiquette—Things You May Pick Up on the Way

Speaking of getting a look at mammals, many students find themselves drawn to studying animals they find that have passed on to the Great Beyond. This is a great way to get to know firsthand the

subtle textures and appearance of hairs and feathers, the texture and shape of feet, and the overall abilities of an animal's body to twist and move as it might have moved about the landscape. These are all valuable things to know, and I'd encourage you to stop and pause the next time you are at a museum or even at someone's home where there is a pet dog or cat. Dogs especially will love the play and attention that you can give them, and you'll gain the benefit of learning about the dog, too. Whereever you can find something to help you learn, take advantage of the opportunity.

Many students have frequently found the opportunity to study wildlife up close by studying road kills. This can be a great resource and valuable place for learning—if you inform yourself and follow good common sense.

Before all else, you need to be aware of any possible laws in your area concerning the legality of picking up road kills. In my old home, New Jersey, so many motorists were running into deer on the parkways and doing extensive damage not only to the deer, but to their often uninsured cars, that authorities finally allowed them to keep the demised deer as a small compensation for their losses. Don't worry, no one was out deliberately trying to run down these graceful animals. The incidents with deer had increased because of overpopulation due to the loss of predators.

Like I said, though, this was in my old home in New Jersey. In other places, picking up deer is illegal. Local laws regarding other animals we may see alongside the road may vary in their legality as well. Likewise, it is illegal in *any* state to possess even a feather of a non-game species. So just be aware that when you stop to pick up that unfortunate critter by the side of the road, it might not be the only thing you come away with.

Beyond the danger of being picked up on the side of the road yourself (by the police—or perhaps by another curious naturalist), the other and far more serious caution has to do with proper handling of dead animals and even bird feathers. The reason for caution: FLEAS. These little critters that cause your dogs and cats so much discomfort are all over the place in nature, and everything from squirrels to mice to raccoons to deer are usually inhabited by them. It is easy to see how these carriers of unsavory health problems come to be spreading their gifts from one end of the country to another. For this reason, IF you handle any dead creature from the wild, please follow the precautions outlined below:

• If you need to move or poke the object of your curiosity to see if it is really dead or whatever, do so with a long stick. Keep well away from the body while doing so. If you see fleas hopping off it, don't go near it.

• If you decide to "collect" the specimen, get a full-sized garbage bag—the kind that you use to collect yard waste and such—and turn it inside out over your hand, arm, and shoulder.

• Using this protected arm, reach out and grab the specimen by an extremity and draw your hand and arm back through the bag, turning the bag down over it in one smooth motion with the other hand. As you draw the bag around the animal, you should simultaneously back away from the place where the animal was lying, thus getting yourself away from any fleas that might be hanging around.

• Immediately upon getting the animal into the bag, deflate the bag and tie the top closed. I always try and place the rolled bag into a brown grocery bag and write on that what, when, where and condition of the animal. Throw the whole thing in the freezer, but only after labeling it well…you really don't want to thaw out a nice package of stew meat only to find out hours later that it's really an opossum!

• Leave the wrapped specimen in the freezer for *at least two weeks*, and know that the longer it can sit in there, the better. Freezing the animal in this manner will kill the fleas and any eggs that may have been on the animal—PROVIDED THAT THE FREEZER IS COLD ENOUGH!

• When you thaw the animal so you can work on it, it would be wise to wear latex gloves. Though it is pretty rare, there are certain diseases that have been known to infect people handling dead animals.

If you are drawn to study mammals in such a close-up manner, I strongly recommend that you follow the methods outlined above. When studying mammals for this course, however, I'd encourage you to simply follow the instructions on the following pages. However you choose to study mammals, whether through the Resource Trail, at your Secret Spot, or on the roadside, have fun, for as many Native people will attest, the animals are perhaps the greatest teachers of the natural world there are.

Part II

Journaling Mammals

Required Resources:

Peterson's Field Guide to Mammals of North America

Peterson's Field Guide to Animal Tracks

Reader's Digest: North American Wildlife

Adding A Background to Your Background Studies

As you begin your study of mammals, it would be a good idea for you to spend some time reading up on mammals to get to know what they are and what makes them special. This can be done with the books you have, including your Reader's Digest Guide, and your *Peterson's Guide to Mammals*, but a good biology book will help as well. A trip to the library can really open some doors with your learning of mammals. You may find yourself falling blissfully into hours of curious reading and page flipping. That's fine, remember this is for *you,* not me. In the next level of your studies, we will focus in greater detail on what distinguishes mammals from the other creatures that abound and on how the different mammals that we are studying here are classified into families and other groups. For now, however, our focus is on the individual mammals themselves.

As with all of the journals that you are doing in this course, your pages will contain two sections: text and sketches. At first, it may take you some time to create your mammals journals, which is fine. This is a process that will teach you quite a lot about how to look at our furred friends. Press your limits, though. Force yourself to go faster with each journal that you do. Ideally, it should take you thirty

minutes to create a single mammal journal—from the first page of your field guide that you study to the last pencil line on your final sketch. Focus as you study and create your pages, and you'll find that you can really milk each of the moments in that half-hour for all that they are worth!

So, it's time to get to work on your mammals! To begin with, I want you to do your text first. As you do this and your sketches, you must remember, too, that the basis for all of your studies is really getting in there and *looking* at what you are studying and using your Mind's Eye. Be it the whole animal that you are studying or just a piece of it, such as its tracks or skull, really use your Mind's Eye to bring it to life as if you held it in your hand. *I can't emphasize this enough!* So, keep this in the front of your mind as you continue on this next path in your naturalist studies.

TEXT

Your mammals text will build upon itself as you go. There are many aspects to understanding the lives of the animals that are behind the tracks and sign that you will find. The many things listed in this section for you to study will bring a real depth to your knowledge of these animals. When creating your text, do so in the manner that the outline describes below, starting each of your studies first with Part I, then adding Part II, and then moving on to your sketches. There is a final piece after you have done both your text and sketches that wraps all of your studies for that animal together, the instructions for which are found near the end of this chapter.

Make each section of your text brief, too. Limit yourself to writing only short notes giving measurements or field marks, and perhaps one or two sentences for some of the longer pieces of your studies. Keep it simple and to the point.

Text, Part I—The Facts of Life

When working on text, read slowly and think about what you are reading. Then paraphrase information according to the list below. *It is helpful to read the text before sketching the mammal.* Read text in the *Mammals* and *Animal Tracks* guides, and in your Reader's Digest Guide as well.

- General description

  Give a brief description of the animal.

  Field Marks

  Length

  Weight

- Skull Description

  This is important. Imagine that one of the instructors placed a mysterious skull in your hand and that it is your job to figure out as much as you can about that animal just from that piece. While you might not know what the animal was, you could tell us many things about what it looked like, what it ate, and so on. Unless you have access to a book such as *Skulls and Bones* or *Eyewitness: Skeletons*, the plates in the back of Peterson's *Mammals* will be most helpful to you.

- Habitat

- Habits

- Diet

- Breeding Information

- Range

  Study the range maps in your Mammals guide and in your RDG and then describe it in your text.

- General Distribution

  How many of them are there per acre or square mile? This is quite enlightening, especially where voles or rats are concerned!

- Economic Importance

  What do "Modern" people have to say about it?

Text, Part II—Capturing the Essence

These are the pieces that you won't necessarily find described for you in any book, video, or field guide. More or less, these things will require you to read between the lines of your resources and draw on what you have learned about the animal already.

Using what you have learned and described above as your background, now I want you to really look at the mammal itself and describe the following:

- Posture

- Weight Distribution

  Is the mammal's weight mostly in front, mostly in the rear, or equal?

- Dominant Sense

  What sense (or senses) does the mammal rely on the most? First look at the animal and ask what its dominant senses are. Take a close look at the face and the animal's sensory structures. Compare it with other mammals in the book. Ask yourself, if I had ears that big, how would that affect my world? Massive whiskers sometimes help animals like cats sneak through the brush without hitting anything. Think about how senses effect strategy. Think this way while studying the nose, eyes, ears, whiskers, shape of face, skin quality of paws or anything else that might affect its perceptions. Maybe it has really big eyes, or its ears are huge. Exaggerate them in your mind a little bit as if you were a caricature artist (the type of artist that draws funny portraits of people that really exaggerate their prominent features, such as a big chin or forehead or squinty eyes). This will help you as you write your text, and also later on when it is time for you to sketch the animal.

- Musculature

- Strategic Physiology

  How is the animal's body specially adapted to best help it to survive?

- Relative Density

  Is the animal light or heavy for its size? Based on what you know already, make an educated guess.

- Enemies

  What enemies does this animal have?

Text, Part III—Optional text Ideas

- Native Lore

  Upon completion of the mammals journal text, you may try to find some information from the vast world of native lore. This will be required for the advanced levels of the *Shikari Tracker Training Program*, but not for this level of study. You could get a jump on things, if you have some extra time on your hands or are particularly inspired by researching to consider questions like:

  What is the Native lore about this animal?

  What is the Native people's perception of this animal?

  How does the Native lore relate to the biology and ecology of this animal as you have studied above?

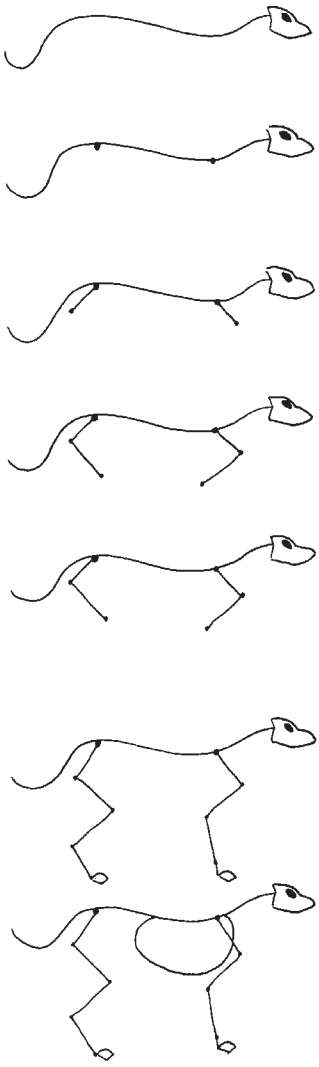
SKETCHING

Rely on what you learned through creating your text to guide you as much as possible. Make sure that each of your sketches is brief and to the point. There is no need to be elaborate or to spend any more time than is absolutely necessary. Truly, each sketch should take you no more than five or six minutes *maximum*—and that's for the bigger sketches only! Your drawings of tracks and sign and range maps should take only one or two.

Start with the Skeleton Sketch

When you draw your mammal, *the skeleton sketch is the most important thing.* I'm not interested in how many ribs, or how many vertebrae there are. I'm literally interested in you creating a *feeling* of that animal on paper. The texts have some skeleton sketches, but certainly not all of the ones you will be journaling. Using your Peterson's Field Guide to *Mammals*, what you need to do is drag the animal through your mind's eye. Get a real feeling for how it sits, stands, and moves and then imagine that you have X-ray vision and picture the skeleton within the animal as it goes about its business.

- First, Draw the Spine



Start with the spine because everything hangs from that. The spine is just a pencil line. If you draw every single vertebra, you're missing the point, because I'm looking for a flow—the gestalt of that spine, the essence of it. Look at the general "shape and drape." Is it almost straight or does it have a definite curve? If it curves, which way does it curve; how much and at what point? How long is the neck, the tail? For now, just draw the spine. We'll give it a head in a minute.

• Add the Pelvis and Shoulder Blades

The next thing is to figure out where the pelvis and the shoulder blades are. Draw these in, paying attention to how big they are in relation to the length of the spine and what angles they form relative to the spine. How is the pelvis tilted? Generally, what is its shape, length, and width? Where are the shoulder blades in relation to the head and neck? Are they long and skinny or thick and stout?

• Then Add Everything Else

After you have constructed the frame (the spine) and have put in the major front and back supports (the shoulder blades and the pelvis), hang everything else on it. The first thing you throw onto this frame is the head. Go for the general architecture of the skull—where the eyes are, how big they are, how big the nose is and what kind of teeth it has.

Then add the legs. Pay attention to relative length, how substantial or flimsy they appear to be, and how they are placed in relationship to each other and the backbone. Make sure that you have the living motion, the flow, captured. You want to be able to see the animal walking, hopping or running with that skeleton. So once you've drawn it, run it through your mental X-ray screen and see how what you've drawn will really move. That's as much detail as I care about as far as the skeleton. The points that I want you to pay attention to are reviewed for you again under "Skeleton Sketch" below.

Skeleton Sketch:

- General Curve of Spine
- Length of Neck
- Length of Tail
- Position of Pelvis and Shoulder Blades
- Position of Head in Average Posture
- Length of Limbs
- Leverage Points
- Stoutness of Bone Structure

Skull Sketch

I want you to also draw a separate sketch of the animal's skull. Once again, the theme is "not too much detail." What the instructors and I are looking for in your skull sketch is that you are able to recognize the points listed below in each skull. Again, don't take too long with this! Two or three minutes are all that it should require.

- Dentition

This is crucial, for it shows diet and is the basis for how mammals are classified!

- Robustness
- Position of Eyes
- Relative Size of Eyes and Nose
- Angle of Face

Track and Sign Sketches

Peterson's Field Guide to *Animal Tracks* will become your best friend. Be sure to study and sketch each of the following (with proper measurements) on your sketch page.

- Front Foot (indicate measurements!)

- Rear Foot (indicate measurements!)

- Track Patterns (include measurements!)
  Most common slow (or walking) gait
  Common faster (or running) gait

- Scat (include measurements!)
  Give seasonal examples if indicated

- Common Sign

- Trail Pattern or Choice of Trail Areas

Range Maps

Use the range maps for each of your mammals that are given in your Peterson's Field Guide to *Mammals* when studying here. Draw one map on your sketch page that includes:

- Original Range (using one shade pattern or color)

- Current Status (using a different color or shade pattern)

- Migration Information
  Historical (i.e., American Bison)
  *Note: Some mammals may not migrate at all

Your Final Sketch—The Wrapper Sketch

A "Wrapper" sketch is a term I coined to describe the focus of the attention of the artist or student making the sketch. It is very common for illustrators to look at the skin and coloration of an animal, especially facial features, and to ignore the skeletal layout and physics of an animal. The RDG sketches are like this. If you really study them, you will see that the animals are often out of proportion, and often in unnatural or unbalanced (physically impossible or unlikely) positions based on simple physics, leverage and physiology. When you do your wrapper sketch, use the Peterson's guide, which gives the average body posture of the animal, and consider the skeletal structure of the animal underneath the skin.

First, Sketch the Body

Now do the body sketch on another part of the page and show the muscles. You might want to do a really light tracing of the skeleton sketch and then pencil the musculature in over that; maybe you

want to start from scratch. But the first thing is to really study the animal, using the Mind's Eye technique we described in Chapter One. You'll say, "Wow, I never realized how beefy that animal is in the back end!"

Do this sketch lightly with a pencil. Just fill in the muscles for the whole body in outline form. Then you throw in some ears, and the eyes, whiskers and its nose. The next thing you know, you have your animal. It doesn't have to look perfectly like the animal, it just has to capture the essence of it.

Finally, How is the Package Decorated?

The last thing that you will pay attention to is the trimmings, the color of the "wrapping paper" that the animal is done up in. Again, we're looking for the big picture, not the fact that the arctic ground squirrel has 11 whiskers and the franklin ground squirrel has 13! Unless it's a road kill, who is ever going to count whiskers anyway? It is far more important that you should focus on the size and shape of feet, or on the number of toes (available from the *Peterson's Guide to Animal Tracks*).

Once you have created your body sketch, fill in the coloration and the field marks. This is all part of the animal's scheme, its life strategy, so pay attention to the colors, the patterns, the shading and the identifying marks. This is why you may want to work in colored pencils. For your mammals work, you may find yourself buying extra brown, gray, black and white pencils, since that's the general color scheme of things that live on the ground. But it's worth it; using colors makes your sketches come alive.

Your *Peterson's Guide to Mammals* will show you the "field marks" with little arrows. These are an important part of your mammals study, since these details are what will help you to make fast and accurate identification of animals when you encounter them out in the field.

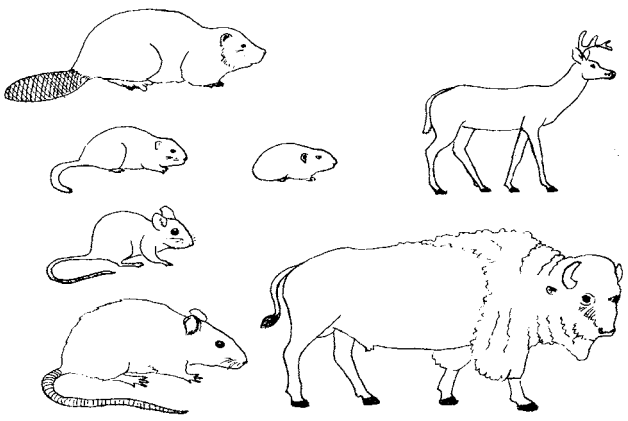
Remember that when you sketch a mammal, on the same page also indicate the animal's length and weight. That's important because you want to be able to picture it in your mind's eye as if you were holding it in your hands, or standing right next to it. That should be your goal, to sculpt it in the air in front of you. If you picked it up, what would it feel like? How heavy would it be? Which end carries the weight? When you sketch and write, that's what you're thinking about. Remember, while we want the range map and the tracks and scat for the information they provide, the

most important thing is not the footprint or the details, but how truly well you know the animal itself.

Wrapper Sketch

Note: BE SURE to use the AVERAGE POSITION as displayed in your *Peterson's Field Guide to Mammals of North America*. This will teach you something about the animal's normal posture. This is important. Indicate measurements next to the sketch as well.

- Field Marks (indicate them with arrows on your drawing)
- Posture
- Weight Distribution
- Dominant Sense
- Musculature
- Relative Density
- Strategic Physiology



OPTIONAL SKETCH II

Spirit Sketch

After you have completed the other sketches, you may want to sketch something that shows the essence or personality of a mammal—running, hunting, feeding or some other action. This can often be done in very few lines

The mind is a thinking machine, not a garage for facts.

—Henry Ford

Medicine Bundles—The Secret to Studying Mammals

Your study of mammals really boils down to the study of Medicine Bundles. What is the essence, the spirit of that animal? If you want to really learn an animal, you have to capture the essence of that animal: Look at the sensory equipment and the colors and shape and decide what the animal is all about.

If I had huge eyes, large ears, small teeth made for vegetation, stripes on my legs, and only weighed about two pounds, what would I be concerned with? I'd want to know where all the predators were! Put yourself inside the animal and look out through its eyes. See the world as that animal sees it. Decide what, in all the field guide texts, is important to the Medicine Bundle of this animal.

Capture the Spirit of the Animal First

Awhile back I challenged my friend Greg Winters on this with the weasel. What did he decide? Here's what he told our Sunday afternoon discussion group:

"A weasel is like a powered slinky with teeth. What's interesting to a weasel? Tight spots, good turns, agility, flexibility, speed. Color—where would you choose to be if you were really dark on top and really light underneath—those kinds of things. Strategies, coloration, dominant senses…that will tell the story. Who does it eat? Who eats it? That creates the mind-set of that animal.

"You're training your eyes to be like a tracker's, to get the big picture at a glance. Ask those questions: What would your strategy be if your eyes were really powerful, but your nose really weak, and you could be on someone's dinner menu? Well, I would walk slowly and stop a lot and listen to the birds for clues of danger

approaching.

"Capture the spirit of the animal first. What Jon wants you to do is literally climb inside the animal, figure out what's the key stuff and then write it down. I don't see how it could take more than a few minutes!"

The Final Piece—Absorbing the Medicine Bundle

Now it's time to bring all of the text and sketches that you have made together in one short and final piece. As Greg just described for you, I want you to write a few short lines at the end of your journal pages that tie together the animal's dominant sense (or senses) and how this relates to its feeding strategy, enemies, coloration, choice of habitat, and diet. Let it come from your heart, as if you were writing a short piece about a dear and close friend. Over the years, many students of this study have found themselves inspired to write a short poem or prose piece here that combines these perspectives on the animal with their own sense of what it feels like to be that animal, and what that animal means to them. If you are an artist, you may want to include a quick drawing or two to express what it is that you are seeing and feeling. Be creative! Whatever form this last bit takes, though, remember my mantra: Don't spend much time on it. Just do it...and then you are done.

Mammals

Create a separate journal for each of the following ten mammals. Yes, in *Kamana One* you already looked at the coyote, the red fox, and the wolf. Given the new resources and aspects to study that are available to us now, however, I would like you to look at them again. In general, there is a choice of animals that you may study (such as the red or gray squirrel). Choose the one that is closest to you by studying the range maps in your *Peterson's Field Guide to Mammals of North American.* Have fun!

1) A Shrew or Mole

2) Raccoon

3) River Otter

4) A Fox or Coyote

5) Bobcat

6) A Red or Gray Squirrel

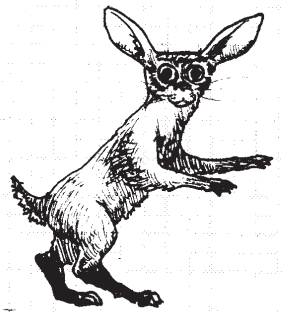
7) Deer Mouse

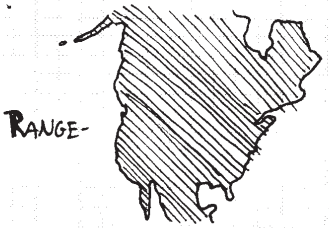
8) Beaver

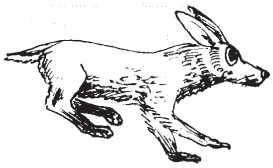
9) A Hare or Rabbit

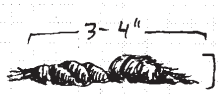
10) White-Tailed, Mule, or Black-Tailed Deer

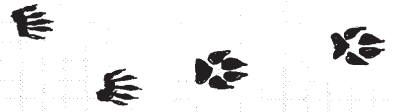
ERAWA - (Wildernis awarnus)











DESCRIPTION - 35"-40" high. 42-50 lbs. Large yellow eyes and pointed snout. Ears are also very large. The fur color is Greyish brown and turns reddish towards the rear. The rear legs are dark.

HABITAT - Found Everywhere. Will den in trees, old woodchuck dens, old building, stumps, rocks etc.

DIET - omnivores. Very adept predator. Will eat small mammals, birds, eggs. A large part of diet consists of plants that are edible and medicinal to humans. They are usually very healthy and sometimes store food for the winter.
- There is no known predator of the erawa.

HABITS - Usually found walking upright, but will be on all fours when stalking or running.
- Very acute sense of hearing, sight, and smell and are very hard to observe.
- Use hands like raccoons and are very dextrous.
- They won't travel very far but will know surrounding terrain very well.
- Are very good tree climbers

REPRODUCTION - Little is known about the breeding habits because they are nearly impossible to observe in the wild because of their acute senses. It is known that they are sexually monomorphic and seem to be attracted to Bluegrass music.

CLASSIFICATION - Kingdom - Animalia
Phylum - Chordata (vertebratae)
Class - AWARNAE
Order - Awarnivora
Family - Canavecyonactylidae.

Field Journal Section 8 : Unusual Critters *Date:* 11/11

Source(s):

WILDERNESS AWARENESS SCHOOL

Journal by Walker Korby

FINAL REFLECTION (SEND WITH FIELD PACK 2.4)

In a short paragraph, think back on your reading about mammals and the Art of Tracking in this book and from your work in Kamana One. How has your knowledge of mammals and your surroundings grown from studying them from the perspective of a tracker? Write about your own perceived growth from studying mammals in this manner.

Name: _____ Student #: _____

Date: _____

REVIEW SHEET

Keep this page dog-eared in this booklet for easy reference as you go through Chapter Three.

1) Create Your 10 Mammal Journals

Journal the Following:

A Shrew or Mole

Raccoon

River Otter

A Fox or Coyote

Bobcat

A Red or Gray Squirrel

Deer Mouse

Beaver

A Hare or Rabbit

White-Tailed, Mule, or Black-Tailed Deer

Create the following for each journal:

Text, Part I

General Description
Skull Description
Habitat
Habits
Diet
Breeding Information
Range
General Distribution
Economic Importance

Text, Part II

Posture
Weight Distribution
Dominant Sense(s)
Musculature
Strategic Physiology
Relative Density
Enemies
*Native Lore

Sketches

Skeleton Sketch
Skull Sketch
Track and Sign Sketches:
- Front Foot
- Rear Foot
- Gait Patterns
- Scat
- Common Sign
- Trails

Range Map
Wrapper Sketch
*Spirit Sketch

The Final Piece

Creating the Medicine Bundle for Your Mammals

Remember to use your mind's eye through all of this.

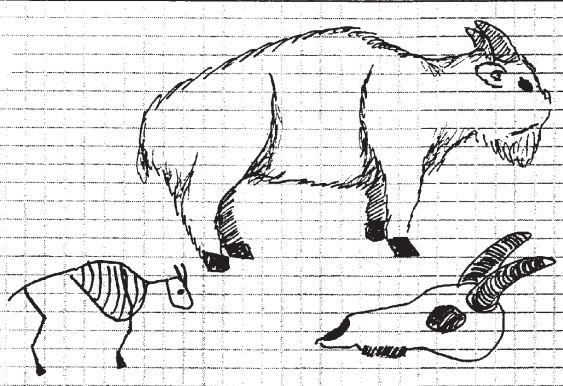
2) When you have completed your 10 mammal journals, write the Final Reflection for mammals for Field Pack 2.4.

Is your binder out of Resource Trail Journal pages? Download templates at www.kamana.org.

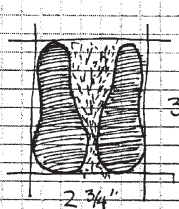
Jon Young's Kamana Certification Program

MOUNTAIN GOAT

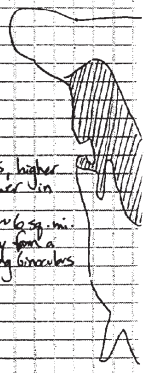
(Oreamnos americanus)



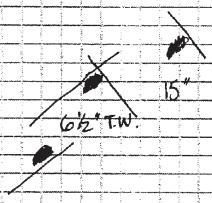
- 3-3½' tall @ shoulder
- dominant sense: smell
- 100-300 lbs.
- casual animal → not used to predators, so is shy and secretive, may jump to death if confronted



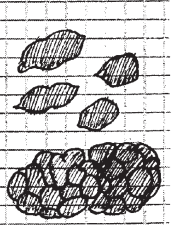
- hooves spongy on inside and usually separate to provide better grip



- mountain areas, higher in Summer, lower in Winter
- home range = ~6 sq. mi.
- usually seen only from a distance → bring binoculars



- diurnal
- lives on and near the rocky ledges and cliffs of mountains
- "the ace mountaineer"
- many fall to their death by jumping when threatened
- usually seen in groups of ≤ 10
- dens on cliff ledges or in caves - good place to look for scats
- few predators, cougars, wolves when in forests near cliffs, eagles when on cliffs
- feeds on grasses, herbs, shrubs, and trees - whatever is available.



Field Journal Section 2 : MAMMALS *Date:* 6/17/97

Source(s):

Peterson's F.G. to:
- Animal Tracks
- Mammals

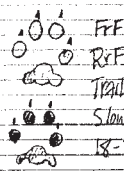
WILDERNESS AWARENESS SCHOOL

Journal by Paul Houghtaling

Jon Young's Kamana Certification Program

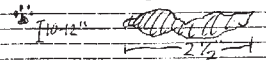
GRAY FOX, Urocyon cinereoargenteus

WT: 10 lb



RANGE

SCAT



Field Journal Section _____ : Mammals Date: 1-97

Source(s): PFG Mammals
Animal Tracks
TBFG Nature Obser

Jon Young's Kamana Certification Program

GRAY FOX, Urocyon cinereoargenteus

Length: Head+body 21-29", tail 11-16"

Weight: 7-13 lb

- Pepper and salt coat with buffy underfur
- Long bushy tail w/ black stripe down length, w/ black tip
- Rust-yellowish sides at neck, ear-backs, legs, and feet

HABITAT
Chaparral, open forests, rimrock country. Dens in hollow logs, beneath boulders, ground burrows.

HABITS
Chiefly nocturnal. Can climb trees to escape enemies.

DIET
Any animal it can catch, from insects to rabbits. Also eggs and fruits.

BREEDING
Mates in Feb or March. 3-7 young born April-May.

ECONOMIC STATUS
Fur has some value. Wonderful mouser. Probably wholly beneficial.

SKULL
- 42 teeth
- Slimmer, less bulky skull than red fox.

Field Journal Section _____ : Mammals Date: 1-97

Source(s): PFG Mammals
Animal Tracks
TBFG Nature Obser

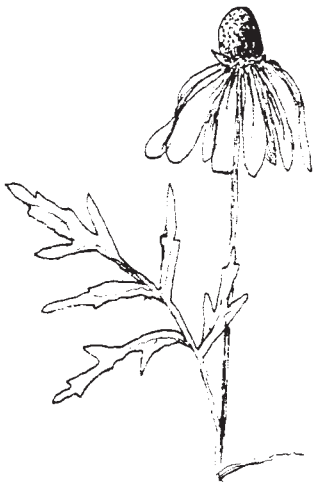
WILDERNESS AWARENESS SCHOOL

Chapter Four

Plants

PART 1

PLANTS



THE SKIN OF THE EARTH

With one mind we send our thoughts and Thanksgiving to the Plant Nations, to the many kinds of plants that live upon the Earth—the mosses, the many grass-forms, the herbs, food plants and the many other low growing plants, for they too have not forgotten their Original Instructions. There are many members of this Nation who sustain those who walk upon this Earth and there are many others who continue to fulfill their duties to take away the sicknesses of the human family.

—Adapted from the Thanksgiving Address
from the Haudenosaunee ("Iroquois") People
Source: Tekaronieneken Jake Swamp,
Sub-Chief of the Wolf Clan, Kanienkahaka Mohawk Nation

In the Thanksgiving Address that is printed above and that you are practicing at your Secret Spot, we thank the Plant Nation for taking away the sicknesses of the human family. Not only healers, the plants are capable of supplying all our needs—from food and clothing, tools and crafts, to the simple inspiration and beauty they provide. Of course, anything to do with nature is a real turn-on for me, but because of these things, plants are one of my favorite areas of nature study.

While plants are fascinating, they present some challenges to the beginning naturalist. As with most any aspect of nature study, to know what you are looking at, you first need to put it into one of a handful of basic categories: bird, rock, plant, cloud, star, mammal, and so on. These

are basic distinctions that most of us learned to make when we were very young. Let's redefine what we mean when we say "plant" to be sure that we are all on the same page.

DISMANTLING THE WALL OF GREEN

When you look at a plant, one of the first things you have to do is decide what category it fits into. With mammals, this job is not so hard, because when we get right to it, a mammal is a mammal. Similarly, a reptile is a reptile. It's pretty hard to confuse a rattlesnake with a wolf. With animals, there are some very basic, and obvious, characteristics that separate them into their respective groups.

When it comes to plants, however, we find that the differences are somewhat blurred. Plants are all green, leafy, and at first look a lot alike. To the untrained eye, they can present a seemingly impenetrable "Wall of Green."

Just to Make Things a Bit More Fun...

We are not only battling the "superficial sameness" of all plants, but also some truly arbitrary classification decisions that have been made by scientists. For instance, you might think a cherry tree is more closely related to an oak tree than it is to a strawberry plant. Surely just as a mammal is a mammal, a tree is a tree, right? Well, guess what? By classification standards, a cherry tree is actually more closely related to a strawberry plant than to an oak, even though one is a "tree" and one is an "herbaceous" plant. We'll come back to this one a little later on.

Furthermore, plants have one habit in common with chameleons that can be downright frustrating to the beginning herbalist: They change to match their surroundings. A plant may have a different size, shape, rate of growth, and even color than the same plant in a different area under slightly different growing conditions. Similarly, just as no two people in the same family look exactly the same (even identical twins have minute differences), no two plants will look exactly the same, even when they are growing side-by-side. Some common ways in which plants may vary include:

- A young plant looks different from an older one.
- A plant in the shade looks different from one in the full sun.
- A plant in rich soil looks one way, one in poor soil another.

• In dry conditions it will appear one way, and in wet another.

• Cold will affect a plant one way and warmth another.

• Plants growing close in clusters or in tight communities will grow in one way; when they have all the room they need they will grow in an entirely different manner.

• Plants that have been mowed, stepped on, nipped by deer or rabbits or otherwise "pruned" will grow with significantly different characteristics than those of the same species that have had no such pruning.

We need to train our eyes to see very specific details that help with identification and the dependable recognition of wild plants. Each of the above listed "physical" factors can affect the way a plant looks in an almost infinite variety of ways. This says nothing of the "genetic" variations that already exist in a population.

The Diversity Challenge

There is one more factor that makes plants a real challenge. There are *so many* of them. If you add up all the trees, non-flowering plants, grasses and herbaceous plants of your region, you will no doubt top a thousand species. Depending on where you are, this number could even double!

Don't panic, though! This is a great challenge to you as a naturalist. As a student in this program you have at your disposal the specialized tools that will enable you to dismantle this wall of green into individual plants and to learn about each of them quickly and well, one at a time.

There are some tricks for separating the "green bricks" of this "wall" into their respective groups that you'll need to know. In *Kamana Three* and *Kamana Four*, I will hand you the keys that will enable you to pick and choose from the seemingly endless variety to zero in on the plants that will give you the greatest knowledge and understanding about your area. As such, my job here and now is to simply narrow things down for you—to give you a handful of subjects to study wherein you will learn to look at plants with an educated eye and with good skills for identification and self-sufficiency in learning.

Spring Training

What should you be trying to identify during the winter or the dry season? Trees are a part of nature that I always teach in the wintertime. It's actually easier to learn about trees when they have no leaves on them. Believe it or not, the leaves on trees can be very misleading when it comes to tree identification because they can vary greatly—even from one branch to another on the same tree! In the winter, the absence of the leaves makes the branching patterns and the bark texture of the trees—both of which are keys to your ability to identify trees—much more obvious.

Just like an athlete who exercises his or her body in the off-season to be ready for the big game, it really pays to exercise your mind in the off-season to be ready for the "big game" of spring. If you're studying plants right now and it's the "off season" for plants, what you are doing is building up a set of mental file cards by doing your journaling and studying through the field guides. You'll find, though, that when everything bursts out in bloom in the springtime, you'll be all set to go out and do some serious identification work in the field.

When you study plants in the wintertime, all that you need to do is get out your books and journal them in the way that I am going to show you here. Even though it may be the heart of winter's cold, imagine that it's a sunny spring day and that you have the leafy green plant right in front of you. Make those pictures come to life from your field guides! When the plants really do come up in the spring, you'll be all set to identify the ones you find all around your Secret Spot. Wherever you are in the cycle of seasons, study away, and when the flowers start to burst out all over…head for the hills!

The "wall of green" is what the untrained eye sees as it looks across the landscape. How do we penetrate this wall and come to know that we're looking at a wild strawberry flower? There are some specific steps we need to take which involve training your eyes and brain to work together to recognize basic similarities and differences among plants. The first step is to realize that the process of close, accurate observation and asking the right questions is vitally important in the classification of plants. Hmmm. There is a character of old whom I believe we can call on here to lend us his expertise with this challenge.

It's Elementary…!

To sleuth your way through learning the plant kingdom, you will need to adopt the super awareness and the keen, questioning mind of Dr. Watson's companion. For now, pretend that you are Sherlock Holmes: Pull out your mental magnifying glass, your keen observation skills, and your ever-questioning mind, and apply them to the details of each plant. Learn to ask the proper questions until you solve your case. If the answers you come up with don't seem to fit, do what the great detective often did: Play the violin. This was Sherlock Holmes' way of quieting his thinking mind, while his subconscious turned the problem over and looked at it from a different perspective. You may not play the violin, but you all have your Secret Spot and your Sense Meditations to serve you the same purpose.

The All-Important Clues

As with most aspects of nature study, the clues to learning plants in an easy and efficient manner are found in knowing what questions to ask. When we take out our mental magnifying glass and look at our cherry tree, oak tree, and strawberry plant again, it still doesn't seem to make sense that the cherry is more closely related to the strawberry. After all, the oak and cherry are both trees. You can't get much more basic than that, right? Each tree has bark and wood and stands very tall, while the strawberry plant is only three inches high and has none of those things!

If we don't focus on bark and wood and size, what do we focus on? It may come as surprise, but what defines the relationship between these three is the flowers. Cherry trees and strawberry plants both have flowers that have five petals and certain combinations of other details. Oak flowers are *nothing* like these. Knowing that you have to ask questions about the flower structure instead of the bark and wood is vital to getting the right answers. Remember what I said earlier—unlike mammals, reptiles, and birds, when it comes to plants and trees, the basic differences are sometimes not what you need to look at.

Train Your Mental Magnifying Glass on the Right Things

Just as in your study of mammals, or any other part of the natural world, there are certain things you want your eyes to be trained on in order to make a fast and accurate assessment of something

you find in the field. For mammals and birds, these things are called "field marks," but the same thing is true of plants. In just a moment we will dive into these identifying features. Before we do, however, I want to say one final piece about the importance of learning these plant identification skills…

If you're contemplating using plants for medicine or for food and you make an identification error, it could cost you your life. You could *die* from eating a plant that you haven't properly identified. That's it. Dead. You don't even get a chance to go back to the minor leagues for more training and to wait around until next spring. I know that you are already well aware of this; just remember that there are certain plants that look just like edibles that are, in fact, deadly. For this reason, it is vitally important that you train your eyes to look at very specific details.

Wait a minute! You may be done, Jon, but I have something to add. Just this afternoon, I received a call from a student whom I hadn't talked to in a long time. Sounding a bit shy about her question, she asked me to describe to her what poison hemlock looked like. As it turned out, she was at work at a florist where someone had just dropped off a bundle of queen anne's lace. As she described the plant she held in her hand, it became abundantly clear that the flowers these people had given to them were, in fact, poison hemlock. Yikes! Think of having that in the flower arrangement on your dinner table!

As it turned out, the people delivering the "queen anne's lace" had just driven alongside the road picking queen anne's lace, without knowing that one of the plant's look-alikes is, in fact, one of the deadliest plants I know of. It shouldn't even be handled without gloves.

—Paul Houghtaling

Not to beat a dead horse, but here is another experience from Dan Gardoqui—one of my longest and most focused students, and perhaps the finest instructor to ever come out of Wilderness Awareness School—for you to tuck away in the back of your mind as you begin to study the plants of your area.

Failing Ingwe's Test

by Dan Gardoqui

We must have heard that story a thousand times. The wise old Akamba man, whom many of us called "Grandfather," would usually begin the tale like so:

"Each time I traveled into new wilderness, my scouts and I would usually use the same test for eating."

Ingwe, with his characteristic deep-toned voice (made more dramatic by his classic British/South African accent) would continue, looking each of us lads in the eye every few seconds. "The first thing I would do is walk up on the plant and smell of it. Next, I would take a very small bit and place it on my tongue, then spit it out. After waiting for a few minutes, if all seemed okay, I would taste a tiny bit of the plant."

His voice would grow more urgent, noting, "You should mix the plant matter with your saliva, but be careful not to swallow. If the plant still appeared to be non-poisonous, then you may actually ingest that tiny bit of the plant."

At this point in the story, Ingwe would frequently remind us of a near-death experience that he had witnessed when some "foolish lad" would not wait to properly test the plant. Grandfather would also tell us of some deadly plant that he had spit out instantly, whether it be in the African bush or the South American jungle, reminding us that our bodies can detect the most poisonous substances if we allow them time to do so.

"The next day," he'd continue, "I would only then go and gather a small portion of the plant, making sure to leave enough for other wanderers and animals." The reasoning behind waiting until the next sunrise was to insure that the plant had no delayed toxic effects. At this point, he would straighten up in his old leather chair, adjust his thick glasses, and raise his powerful voice, insisting, "You should NEVER just go and eat a plant that you do not know. That would be foolish…and in the wilderness, the foolish DIE."

And so you have it. Ingwe's Test. The test was perfected over the course of half a century on at least half of the Earth's continents. Jon Young tells a story that illustrate's Ingwe's faith in his palate and experience with wild edibles. One late afternoon in early summer, Jon took Ingwe to the Pine Barrens of New Jersey for the

first time. Immediately upon exiting the truck, Ingwe was off into the bush, pointing to certain plants, asking, "Jon, this must be a fine plant to eat…and this one, too…and this here must be similar to…," and so on. Ingwe had identified over a dozen edible plants without the help of a field guide. How? Ingwe's five senses were so well developed that his sixth sense would intuitively guide his actions. Grandfather has shared with us the knowledge that when we develop our five senses, our sixth sense naturally develops itself. That remarkable day in the Pine Barrens was a testimony to his teachings. Ingwe often calls the sixth sense our "intuition" or "common sense," but then he is sure to emphatically add, *"…except it's not so bloody common now, is it?"*

So, why did I fail Ingwe's Test? Well, let's just say it had a lot to do with attitude. As any fan of Tom Brown, Jr., knows, attitude is the most important element of any survival situation. A bad attitude usually means a bad experience, and the opposite is generally true as well. Let me paint the picture for you. It was late July in the infamous Pine Barrens, and we were twelve high school boys out on a one-week survival adventure! Day One proved fun—kind of novel. We spent most of the day making our way to camp on foot, principally avoiding detection by cars, dirtbikes, and other humans, as well as picking early blueberries. After putting together debris huts and a group lean-to at our Drop-In Swamp camp, we took a swim, then set out fishing lines with our hand-fashioned hooks. Life was good.

The next day proved a bit more trying. Our bellies were whining about not being full. It wasn't that we were hungry, but instead what it boiled down to was that we weren't satiated. You also have to remember that we were sixteen and seventeen year old punks who didn't understand this. So, we went nuts trying to catch, snare, hook, chase, or smash anything we could. We failed miserably as a group, but a few of us had individual success and shared with the rest of the group. Steamed pickerel on a bed of roasted grass was our first meal (unfortunately two Pine Barrens pickerel don't go far between twelve teenage boys). So, we tried to hunt some more. The towhees and squirrels evaded our throwing sticks. The rabbits ran around or over our snares and deadfalls. The fish swam through our traps. To make matters worse, although we were surrounded by potable water, we were all somehow becoming dehydrated, too! We decided that it was time to quit hunting and start gathering.

Without a field guide to aid our selection of plants, we headed down to the swamp on Day Three. My pal Pa-Tuck and I were on

tuber duty. We vaguely remembered that the roots of a plant we called duck potato were tasty edibles according to Peterson's Field Guide to *Edible Plants*. We concurred and began to harvest. After pulling up a dozen of what looked like gourmet white potatoes, I gladly volunteered to taste the plant to be sure that it was fit to eat.

Stop! Note that I am: 1) really hungry, 2) dehydrated, 3) overjoyed at a potential food source, and 4) rushing to eat. These four elements combined to give me the attitude, "Of course they're edible. Yahoo! Let's eat!" That is what did me in.

With Ingwe's Test in mind (but not in heart), I took a little taste of the root on my tongue. "Yum!" I instantly thought. After waiting for what seemed like an ample amount of time (which was probably, in reality, only a meager and insufficient 20 seconds), I took a big ol' chunk-of-a-bite out of that duck potato. Then it hit me…

Imagine for yourself the sensation of someone wearing a glove that is covered with slivers of razor blades thrusting their hand into your mouth, down your throat, and into your stomach in a hurried and clumsy manner. Repeat procedure again.

Needless to say, I was screaming, gagging, and clutching my throat. Naturally, when the sensation first hit, I ran for water. After splashing a few handfuls into my mouth, however, I quickly stopped that process, for it felt as if I were drinking a pint of grain alcohol directly after that glove emerged, dripping with blood, from my gut (I know you are wincing now). After some forced dry heaves and writhing in the sand, I finally came to.

I was ruined. Absolutely ruined. My attitude became, "Let me die." I was useless. As the immediate effects began to wear off, others had to get me water, berries, grasses and otherwise nurse me back to life. Because of this, the entire trip that we were on became dubbed "The Trip Where Gardoqui Lost His Smile" (and if you know me, you know that I rarely smile). How could I *possibly* continue to smile, though, knowing that I'd failed Ingwe's Test? I had rushed to eat more before waiting to determine if there were any delayed effects of the root. If this were a real survival situation, it is likely that I would have perished. Knowing that much, I just couldn't find it in myself to smile. I even recall avoiding going to the water for fear of seeing the reflection of my pathetic self.

Peltandra virginica, also known as arrow-arum, is a flowering plant of bogs and marshes that ranges from the Great Lakes east

to southern Maine and south all the way to Florida. Its thick, lush green leaves look like arrowheads and its fruit is a cluster of green or amber berries. The "razor blade/alcohol bath" effect that I experienced was the result of calcium oxalate crystals. It turns out, too, that I am not alone in my experience with these nasty little guys. According to the American Association of Poison Control Centers, the active toxins in five of the top ten most commonly ingested poisonous plant materials are calcium oxalate crystals. Other common plants that harbor these debilitating mineralites are jack-in-the-pulpit (*Arisaema atrorubens*) and skunk cabbage (*Symplocarpus foetidus*).

The kicker to end this whole experience is that it turns out that these roots are edible—as long as they are *thoroughly dried*. Calcium oxalate crystals require moisture to remain active in plant tissue. No, boiling does not remove them. The only thing that will cause the crystals to be inactive is for you to dry the plant all the way through. As it turned out, we ended up eating arrow-arum that week in the Pines after someone suggested that we roast it thoroughly. The roasting removed all of the moisture, so while they were a bit on the dry side, they ended up being a tasty and hearty meal.

In closing, when I told Ingwe my story one afternoon in his African-museum-of-an-apartment, he gave me a knowing smile and then shook his head and cane at me, saying, "You boys continue not to listen to me. I am your grandfather. You are very foolish boys, and in the wilderness, the foolish DIE."

—Dan Gardoqui

I think we all have the point fairly vividly, right? Anyway, all these things considered, it's time now to take a focused look at how you should approach the study the world of the "Root People."

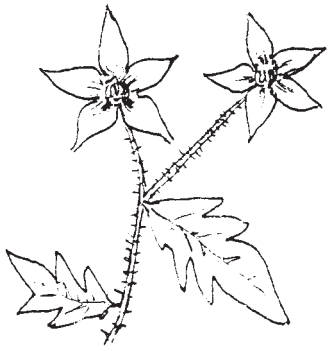
Let's imagine ourselves out in a big open meadow accompanied by a young five-year-old child. We are walking along toward our favorite spot by the stream when we come upon a conglomeration of green things that all have the same general shape and seem to be growing from a stalk-like thing. There are some other things here and there on this stalk that are different colors and are shaped differently from the green things. This is something that we—or our five-year-old—would probably recognize instantly as a "plant," and the first thing any self-respecting five-year-old (or aspiring naturalist) wants to know is: "What kind of plant is it?"

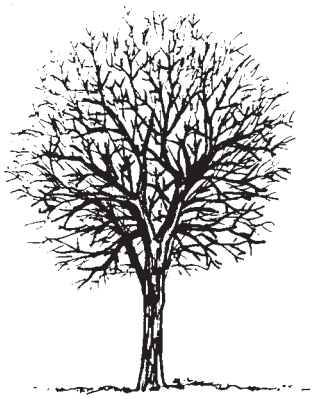
THE FIRST LINE OF QUESTIONING: WOODY PLANT, ANCIENT PLANT, OR HERBACEOUS/FLOWERING PLANT?

#1: Is It a Woody Plant?

"Woody plant" doesn't necessarily mean a tree. If you have studied trees or read ahead to Chapter Six, you know that the word "tree" is an arbitrary term. It means "15 feet or taller" and "3 inches across" at a certain height. There is also usually a reference to the nature of the "trunk" or main stem of the plant. What defines a tree really does seem arbitrary. To further complicate things, trees are not the only types of woody plant. Shrubs and vines are also groups of plants that have taken advantage of having wood. We'll get further into that discussion in Chapter Six.

Taking these rather loose requirements for what does or does not constitute an "official" tree into consideration, you might then be led to believe that all plants that aren't a certain height and diameter are herbaceous plants. Watch out for that tendency! Here in western Washington, there are certain plants that we call "wintergreens" that grow only a few inches tall in the wild. In certain areas, these plants form a beautiful carpet on the ground. But when you really look at them individually, you'll see that they are really woody plants, for each one is supported by a very small (half-an-inch tall), thin, tooth-pick-sized stem, complete with a thin layer of wrinkly bark! Conversely, there are also herbs like wild lettuce or cow parsnip that can easily grow to be 15 feet tall





out in the wild.

How can you tell if it's a woody plant? If the stem is hard, or woody, and you scratch it, you will find that there's a layer of green under the outermost layer. This means there's a living bark

layer there, which makes it a "woody plant." True, some of these woody plants lose their leaves and some are evergreen, so it's not whether or not the leaves fall off that counts. Simply, a tree or woody plant has a woody stem or trunk.

Think back to our oak tree, cherry tree, and strawberry plant. The difference between the cherry tree and strawberry plant—which are fairly close relatives—is that the cherry tree, at some point in its history, more or less "decided" that having wood would be a good idea. Having wood allows the cherry tree to grow taller and stronger with each year, allowing its seeds to be dispersed further and further and allowing the plant to have more flowers on the ends of its many branches than its smaller cousin, who grows only on the ground, can support. Likewise, perhaps the strawberry "decided" that it didn't have the big aspirations of the cherry tree and elected to stay a small herb that grows on the ground. However you cut it, though, when we think of a plant having wood or not having wood, we see that there are just some plain advantages that having wood affords to plants.

How Can I Tell Whether It's a Tree or a Woody Plant or an Herbaceous Plant?

Herbaceous means that it loses its leaves, that it's "like an herb"—a wildflower, in other words. They grow for the summer or the wet season, and then in the winter or the dry season, the above ground parts die back.

Not to further complicate things, but within the world of herbs, there are a handful of different "lifestyles" that you need to be familiar with: **annuals**, **perennials**, and **biennials**. There are some herbaceous plants that stay alive all year round. While you won't see them when you are at your Secret Spot during the winter or dry season, they are there—they've just gone into hiding. Perhaps it's more like hibernation. Anyway, these plants retreat into their underground roots and become dormant during these times. When favorable conditions come again, they sprout new tops and grow up again from those same roots. These herbs are called **perennials**.

One type of example (of many different forms that perennials take on) is like an onion or a tulip—perennials that have bulbs. Every spring the tulip comes up and flowers and then the top withers away, and by the fall you can't find any evidence above ground that there was ever a flower there. But in the winter the bulb is the plant, where all the life energy is stored. Next spring, up come

the leaves, and you see a plant growing there again.

There are other plants who have adopted the strategy of producing so many seeds that they are almost assured that at least one of them will sprout and grow during the next year. They scatter these seeds far and wide by various—and often creative—methods. Once the plant has "gone to seed" in the late summer or so, it then dies off, roots and all. It is then up to the seeds to carry on and produce a whole new plant the next year, a plant which will, in turn, die after scattering its many seeds around. These plants are known as **annuals**, for their life cycle is annual, lasting only one year.

Somewhere in between these two strategies are the biennials—plants that seem to have chosen to extend their stay here for an extra year. Basically, the first year of a biennial's life is all about establishing a good foundation. The seed comes in, grows a good, solid root, and produces some leaves that grow low to the ground. It's a pretty humble beginning. Then, the plant will just sit tight as the winter or dry season comes. When the next spring arrives, the plant builds upon its foundation by creating a large flower stalk, which then produces seeds, then the entire plant dies. Plants that you may be familiar with that practice this strategy are mullein and foxglove. Remember, if the plant flowers and produces seeds in its second year only and then dies off, it's a **biennial**.

So, those are the herbaceous plants…things that grow and die, grow and die—and they do it very successfully, wouldn't you say? Just take a look out your window and see all of the plants that are there. Even if you live in the middle of a big city, take a look around you on the sidewalk, on the ground next to the trees on the roadsides, and along the bases of houses. Plants are *everywhere*, and essentially, that's what they do—grow and die, just being sure there are enough seeds for the next generation to grow and take hold. Through many ingenious approaches, too, these plants manage to feed most every living creature on this Earth!

Unlike herbs, woody plants don't die back. Their leaves may fall off, but the next year they will produce more leaves and more flowers and grow a little taller. The year after that, they will grow a bit taller still. They keep growing on the same stem or trunk. Think of them like a perennial that decided "Heck, if I'm going to keep my roots through the winter and go through all the trouble of growing a new top next year, I might as well just keep my top, too!" Enter wood. We've already discussed this, but that is the role that wood plays—protecting the plant and keeping it from need-

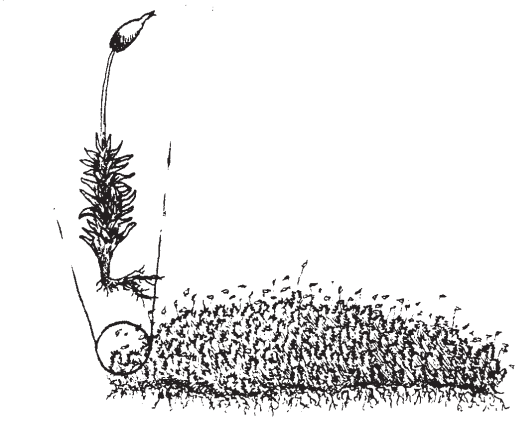
ing to grow an entirely new top each year.

Beyond the presence of wood (which is not always obvious) there is one key feature that you can look for to indicate whether or not a plant is a woody plant or an herb. To prepare for the next year's growth, *woody plants will have buds*! *That is the key—look hard at the base of each leaf on a woody stem to see if they are there!* Conversely, if you look at the stem of an herb, you will find no buds. That's simply because the herbs are going to die back, and as such have no need to make such preparations for the next year.

#2: Is It an Ancient Plant, or Is It a True Herbaceous, Flowering Plant?

You've now determined that your plant is an herb and not a woody plant. Good job! Now, what type of herb is it? Hmmm. Well, we need something to go on. Focus on this: **What are the flowers like?**

Now, depending on the plant that you and I and our five-year-old friend are looking at, you may end up turning to me and saying something like, "*What* flowers, Jon?" That's an important observation to make, because some plants *don't* have flowers. What flowers are is essentially like what wood is—something that at some point in the ancient history of plants someone decided would be a good idea. In actuality, flowers are something that have allowed plants to become the highly successful beings that you just observed out your window or doorstep. Unlike wood, however, any plants that have flowers—be they tree, shrub, vine, or herb—*are* related to

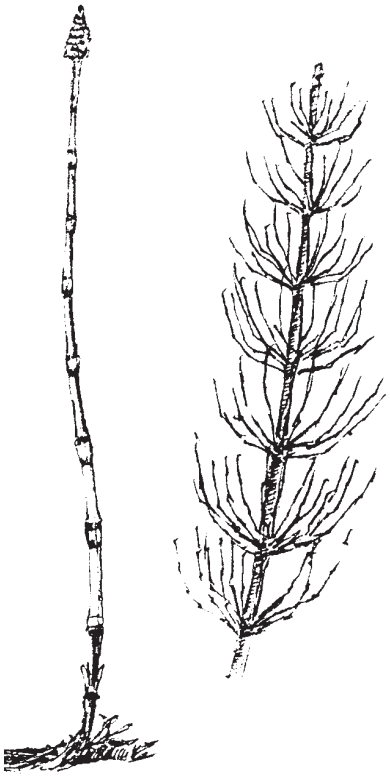


one another more closely than they are to these other plants that have no flowers, but that's not important right now.

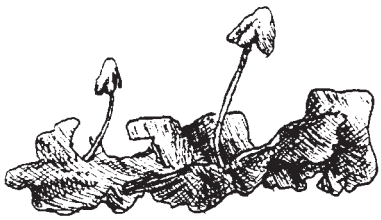
One type of plant that doesn't have flowers is **moss**. We usually don't have to work very hard to identify moss—for some reason,

people intuitively know what moss is. On the Alien Test people almost always identify it correctly. Around here in Seattle it's all over the place: on your roof, in your grass, on the trees, and on the rocks. It looks like a green, lush carpet and it's very soft and springy to touch.

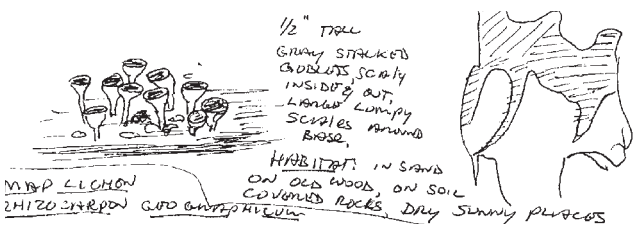
People don't have much difficulty recognizing a fern either. Ferns usually have large, lacy, airy leaves that grow directly from the ground and form a clump of trailing greenery. They tend to grow in the same damp places where you find the mosses. When they first come up in the spring, they're a little green shoot that's all curled over on top, like the neck of a fiddle. These first shoots are actually called "fiddleheads" and some people find certain varieties a real treat to eat in the spring.



Horsetails and **liverworts** are pretty easy to figure out as well. They each have a distinctive look, and there are only a couple of them. If you aren't already familiar with these, check out your RDG. It has some really good pictures of all of these ancient plants.



The many different types of **fungus** are not flowering plants, either. These include the mushrooms, puffballs, and countless other bizarre life forms that you may encounter growing on things at your Secret Spot. These are related also to the **lichens**, which are a truly fascinating type of plant that is actually the combination of a fungus and algae. The relationship that the algae



and fungus have with each other is quite incredible. The algae produces food for the fungus, while the fungus takes root and gives the algae a place to live. Pretty amazing, huh?

So, a true flowering plant is not what I call an "ancient plant"—one that that's reproductive methods pre-date the advent of the flower—the horsetails, ferns, mosses, lichens, and fungi. Truth be told, there are only a few kinds of mosses, and a couple of kinds of ferns, and maybe three or four kinds of horsetail. You only have a few things to look at with the non-flowering plants, and for the most part you can simply pick through the pictures in your field guides and have some relatively easy success finding the one you're looking for. This doesn't necessarily ring true for the flowering plants, however. If you were to make a list of all of the flowering herbs that grow in your area, your list may, in some regions of the country, top one thousand different species! It's really a hopeless task to try to flip through the pages and spot the one you are trying to identify, simply from the pictures. You could be there for hours, if not days. To make matters more difficult, some of the field guides are arranged according to the color of the flower, and guess what…nobody ever thought to tell the flowers to read the book! What is listed in your Peterson's Field Guide under the pink or purple section could actually have white flowers in your area. So where do you go from here?

Flowering Plants

Well, if it's not an ancient plant, and you see something growing out of it that makes you want to go over and smell it, it's probably a flowering plant! That's a rather simple-minded answer, but that's just about what it comes down to: If it's not a tree or woody plant, and it's not an ancient plant, then about all it can be is a flowering plant. Still, though, there is a great deal of diversity in "just" the world of flowering plants that we need to sift through. To do this effectively, it's really important that you know exactly what questions to ask.

#3: Is It a Grass or is It an Herb?

If it is a grass

For most of us, grass may have been one of our earliest encounters with the world of plants, because most people have lawns or parks to roll around in that are mostly grass. Here in the Pacific Northwest, in normal years of heavy rainfall, the mosses give the

grasses a real run for their money, but in most areas the common varieties of lawn grass like Kentucky bluegrass and fescue have no problem holding their own in our backyards. Therefore most of us instinctively know these grasses when we encounter them or their close cousins.

The world's breadbaskets are supplied by wheat, rice, corn, and oats, all of which belong to the grass family, as do sugar cane, sorghum (used in the production of molasses), millet and bamboo. From the Great Plains states through the grain belt in our own Midwest, the whole country is grass. The same is true in Africa, where nearly the entire continent is covered with grass. Grass is a very successful adaptation; it's incredibly hardy and it grows back from the most severe fire, mowing, harvesting, or grazing. That's because grasses grow from the *bottom*, not from the *top* like other types of plants do; so if they are mowed or burned or grazed they can continue growing without interruption.

Conversely, in the rest of the plant world, growth takes place at the outermost edges of the plant. Trees grow taller each year not because they are growing at the base, but because they are stretching at the very top. Leaves unfold from the end of a branch or twig, and then another leaf grows out of the growing tip, and that one unfolds, and so on. Unlike grass, then, if that growing tip gets nipped off, the entire growth process is set back. The plant has to go back to square one, as it were, and start all over—developing its buds, then its leaves, and finally its branches.

What else makes a grass a grass? For one thing, the leaves of grasses all have parallel veins that run lengthwise through them. The leaves are in two parts: the sheath, which wraps itself around the central, jointed stem, and the blade, which usually just dangles out away from the stem and lops over toward the ground. Remember, though, that grasses are flowering plants. It is simply that their flowers look different than many of us are accustomed to, and so they are not always recognized as such. Most grass flowers look more like plumes or feathers than they do what we commonly think of as flowers. When you were little you probably pulled those plumes out and stuck the bottom of the stem in your mouth. Some of these stems are really sweet and good to eat—and they're full of starch, as are the roots! Roasted, they make great survival food.

You can get rather carried away identifying one grass out of a hundred or so possibilities. For our purposes, you just need to know that it's a grass or that it's not a grass. If it's a grass, you know that

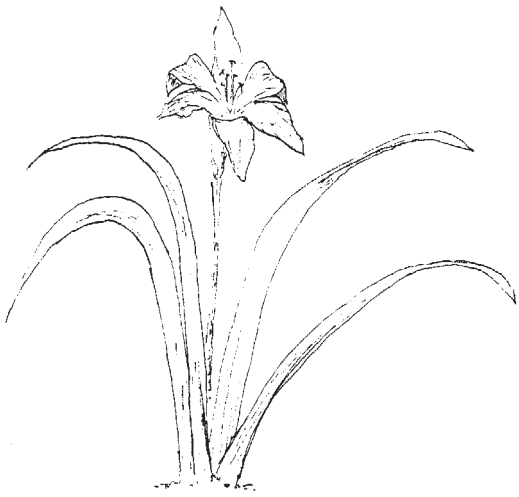
Fine Dining on Cattails

Cattails are one of the plants that any serious wanderer or forager would want to get to know right away. They grow all over the country where there are wetlands, and at any time of the year there is always some part of the plant that will provide food, whether it's the young seed head, the tubers that grow under water, or the new shoots.

Cattails grow in freshwater ponds and marshes and have that familiar dark brown "hot dog on a stick" seed head that develops in the autumn. Native peoples used many parts of the plant for everything from a sort of "flour" for baking to mats and such made from the hollow leaves and stalks. They dipped the mature seed heads in tallow and created a torch that could burn for at least an hour. Check a good ethnobotany book for more uses of this incredible grass.

you probably have either seeds or roots, which can be roasted and eaten; leaves and stems, which can be woven into mats or made into baskets and may provide fuel for your fire if it's dry. Cattails, however, are one grass that I would recommend you become much better acquainted with.

THE SECOND LINE OF QUESTIONING: FLOWER TYPE



This begins the "Newcomb's Method" for training your observation skills for fast and efficient plant identification. The best time of year to learn to identify herbaceous plants is when they're blooming, because the easiest way to identify them is to look at the flower. During the winter, or dry season, you obviously don't have that advantage, so keep in mind that at that time of year it may be difficult to ID the plants you find.

#1: What Kind of Flower Does It Have?

The first division we will make with regards to flowers will be to separate those with easily recognizable flowers and those that have flowers that really don't look much like flowers—those flowers that are said to have "parts indistinguishable" in *Newcomb's Wildflower Guide*.

- **Parts Indistinguishable**

  Flowers with parts that are indistinguishable are generally those with so many tiny pieces of the flower—or so many really tiny flowerettes growing together—that it's very difficult to differentiate one part from the next. Cattails (which are actually grasses), plantains, nettles, thistles, pigweed,

docks, amaranths, and wormwood are examples of what Newcomb's classifies as flowers with "parts indistinguishable." Unless you can picture one of these plants with "parts indistinguishable" flowers in your mind's eye right now, I suggest that you check out the pictures starting on page 399 of Newcomb's and begin to get an idea of what is meant when this guide says "parts indistinguishable."

• Easily Recognizable

What distinguishes plants in this category is that the individual flower is very visible and very obvious. In other words, you have something that is easily recognizable as a flower. Examples of easily recognizable flowers are the daffodils, daisies, and roses. Most people could tell they were looking at flowers if they saw these, and they would probably automatically bend down to sniff them. So would the insects, for that matter. After all, attracting insects is one of the main reasons for a plant to have a flower, because they aid in the reproductive processes of the plant by distributing the pollen grains to where they can fertilize the eggs.

#2: What Is the Shape of the Flower?

Using the "Newcomb's Method" to define our flower, we've now figured that it is a flowering herb and that it has easily recognizable flower parts. Using the Newcomb's Method further, we'll soon know that there are really only two kinds of easily recognizable flowers, and they are distinguished by different kinds of "architecture": there are flowers that are clearly **irregular**, and those that are clearly **regular**.

• Irregular Flowers

Irregular flowers are those flowers that have a different shape or outline depending on what angle you look at them from. Turn now to page 39 of Newcomb's and look at the pictures of the various lady's slippers. If you look at the flower right side up, you see three or four slender things that you might consider petals framing an enlarged pouch that curves downward. If you turn the flower over, of course you're going to get a completely different outline, as the pouch is now on top. A dandelion, on the other hand, would have exactly the same shape or outline no matter how you turned it.

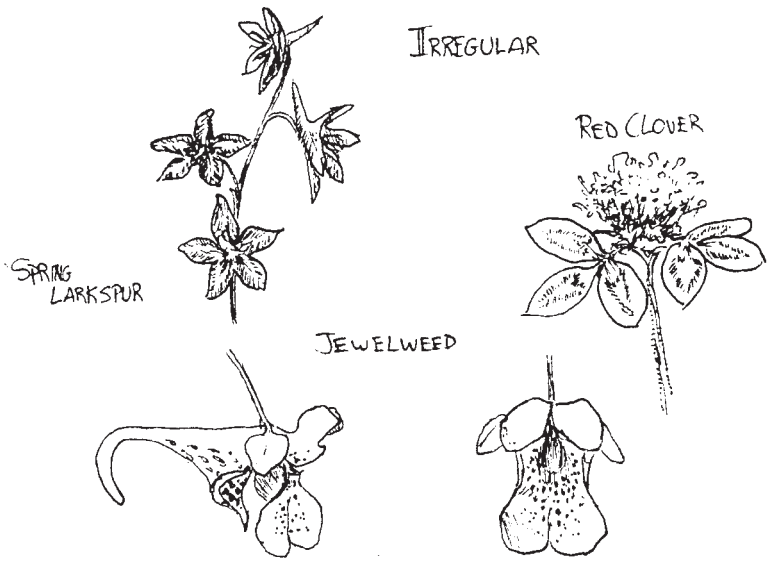
One Man's "Indistinguishable" Is Another Man's "Irregular"

For our purposes here, there are only two choices: A flower is either a "parts indistinguishable" flower, or it's an "easily recognizable" flower. What determines what type of flower is indistinguishable or recognizable, however, is somewhat a matter of personal opinion. There are flowering herbs like skunk cabbage, for instance, which Newcomb's lists under the "recognizable" section that I certainly see a bit differently. The first time you look at that odd-looking green or yellow thing growing out of the middle of the cluster of dark green leaves, you probably don't automatically think of it as a flower. You wouldn't just walk up and sniff it like you would a rose (but if you did you would find out firsthand where the name "skunk cabbage" came from). Newcomb's lists skunk cabbage with other "irregular but easily recognizable" flowers. As I say over and over again: In the study of nature there are no hard and fast rules!

Help Protect the Threatened Lady

The lady's slipper is a valuable medicinal herb that's been gathered almost to extinction. If you are fortunate enough to see this delicate member of the Orchis, or orchid, family in the wild it is worth your close attention and your efforts to help preserve it and its habitat. These flowers are as delicate as they are beautiful, for it takes seven years for one to grow back if it is cut or disturbed!

The lady's slipper flower is irregular, but if you take a razor blade and slice it in half from top to bottom, the left and right halves that remain are mirror images of each other. This is called bilateral symmetry (meaning "two-sided sameness"), and you'll find that this applies to most of the irregular flowers. Many favorite garden flowers fall into this category: iris, orchids, bleeding hearts, and violets. Of course, our good old friend the skunk cabbage has to go and break all the rules—it's irregular, but not symmetrical.



In an interesting twist of plant classification, the botanists who classify what plants are most closely related to one another have decided that the flowering plants that have irregular flowers are all fairly close to one another. That's not an insignificant thing to know, and in fact it will come in very handy to you someday, I'm sure. For now, however, just tuck that one away in the back of your mind.

• Regular Flowers

The definition of a regular flower is that it is radial or circular. Like a pie, no matter how you slice it, as long as you go exactly through the center, you will get two identical halves. The dandelion is a perfect example of a regular flower. No matter which way you cut one, as long as you go through the middle, the two halves look the same. But if you cut an iris or an orchid any way except from top to bottom, you will get two very different looking pieces.

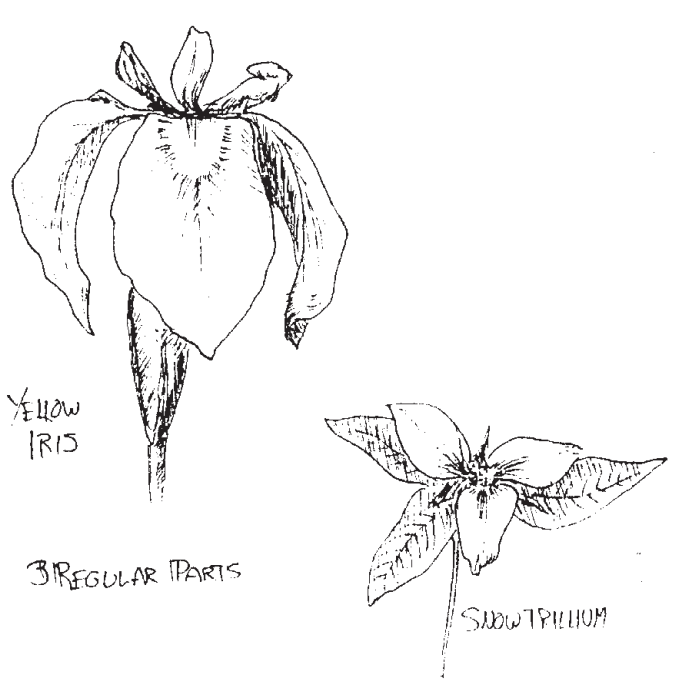
If It's Irregular, You're Finished with the Flower Questions

If it is an irregular flower, there isn't really much more for you to do as far as looking at the flower. Remember, we said that the irregular flowers were all fairly closely related, so you can move on to looking at other parts of the plant such as the leaves. But, if it is regular, you now need to count the number of petals.

If It's Regular, How Many Petals Are There?

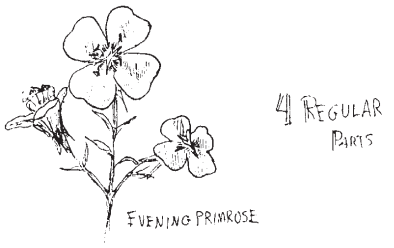
A flower will either have 3, 4, 5, 6, or 7 or more petals. One nice thing is that all the plants that have flowers with a certain number of petals tend to fall into the same family. With plants, there exists what you might call "family resemblance." What this means is that there are some broad generalizations that we can make about the family group as a whole that you can in turn apply to each member of that group. NOTE: This does **not** apply if you are thinking in terms of edibility—in that case, **make no assumptions**!

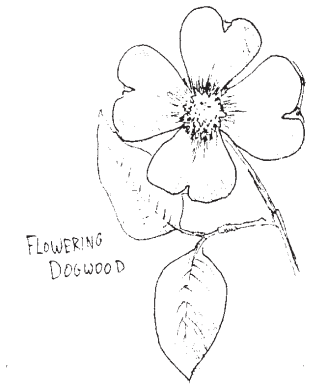
• **3 Petals**—If a flower has 3 petals, it's most likely in the Liliaceae, or lily family. These include the two varieties commonly known as the Easter lily as well as the daylilies, which you may find in your garden. There are many wild lilies such as the water lily or the sego lily, *Calochortus nuttallii*, which is said to have saved the lives of early Mormon settlers of the Great Salt Lake region, the sweet, nut-like bulb having been a staple food of the natives of the area for centuries.



One challenge presented by the lily family is that the petals and the sepals are nearly identical in size, shape and color, giving these flowers the appearance of having six petals. The Newcomb's guide keys lilies as 6 regular parts, while the Peterson's guide lists them under the heading of "Petals 3 or 6" along with the poppy family, orchid family, and iris family. Just keeping us on our toes!

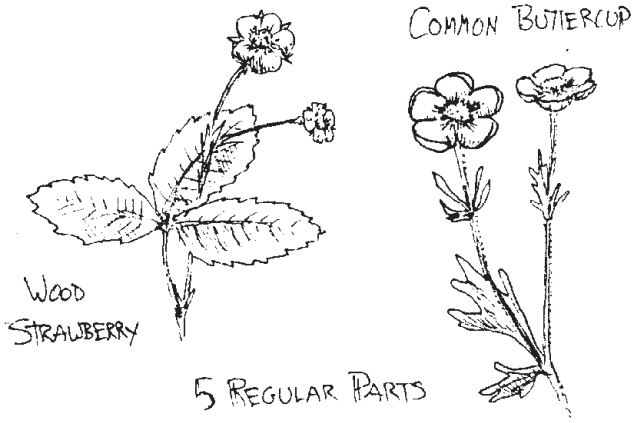
• **4 Petals**—Not true of all of them, but by and large the 4-petaled flowers are mustards, the Brassicaceae family. Therefore broccoli, cauliflower, cabbage, radishes and mustards all have four petals. An example of a wild one that has four petals is water cress. The great thing about the mustards is that they all tend to be edible. So unlike the carrot family, you can pretty much count on being able to eat the mustards.





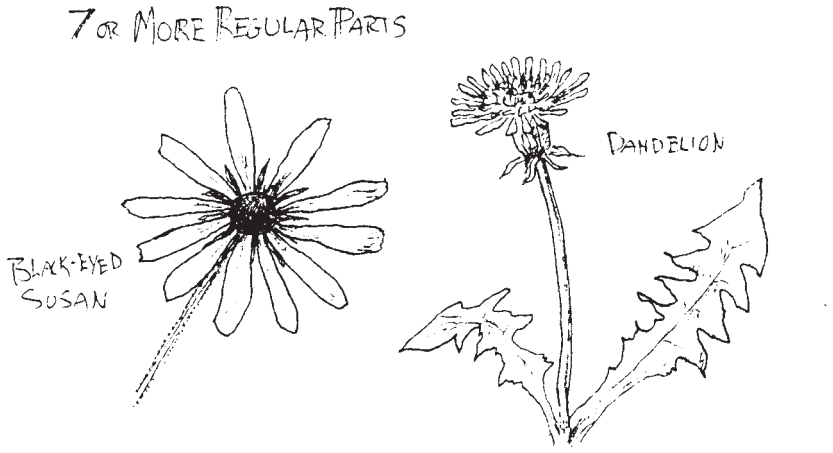
There are a number of other familiar families listed in the 4-petal category in Peterson's field guide, including the evening primroses and the dogwoods.

• **5 Petals**—There are many 5-petaled flower families with both domestic and wild members who are familiar to most everyone. These include the geraniums, buttercups, roses, and carrots. **Remember, don't make any blanket assumptions about the edibility of any plant family, particularly the wild carrots.**



• **6 Petals**—These families include wild onions and lilies (according to some systems). This group contains a number of edible members, but there are many which can do you serious harm. **Remember, don't make any blanket assumptions about the edibility of any plant family, particularly the wild onions.**

• **7 or More Petals**—If it has 7 or more petals, it's probably in the same family. Everything that has 7 or more regular parts all tend to be related to daisies. Fleabanes, asters, sunflowers, dandelions… they are all in the Composite family, which is *huge*.



So, what it boils down to is that when you know it's not a grass; you know it's not a horsetail, fern, moss or lichen and you know it's not a woody plant—the thing to focus on is the flower. The flower can be indistinguishable (you don't know right away what you're looking at), or it's obviously a flower but it's irregular, or it's obviously a flower and it's regular. When it's regular, all that you have to do is count the petals and know that if you hit 7 then

Are You Confused Yet?

Here's an interesting one that I still can't figure out. Your Peterson's guide tells us right out that what we think are the four petals of the familiar dogwood flower are not petals at all—that the flowers are the tiny little yellow things nestled in the middle of these enlarged white "bracts." Even after going to the trouble to explain all that, though, they still put the dogwood in the 4-petal section…!

Perhaps you can see what I mean about nothing in nature being an exact science? Don't let this throw you. It will all sort itself out as you become familiar with the way each of these books "thinks" about plants.

Something else that will help you is just plain old practice and time, as you gain your own experience with learning to really look at these parts of plants. In my experience and the experience of my students, more times than not, it's the user of the book who makes the identification error, not the book itself. No big deal, though. Just go back, study the plant, and run through the identification sequence again.

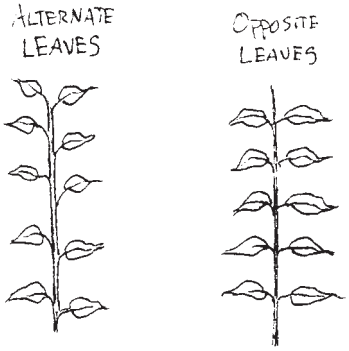
you don't need to count any higher, because if it has 7 parts, it's just as likely to have 10, or 20, or 40, or….

One Last Thing

Remember to notice the color! I'm absolutely amazed at how many people will go through the whole identification sequence and then not even remember what color the flower was—or they'll remember a color, but it will be the wrong one! This will set your ability to figure what type of plant you are looking at back a little bit. In fact, sometimes forgetting the color will make you have to start all over again, such as when using your Peterson's field guide to Wildflowers, which is based on the flower color. So, aside from just being a good practice in observation, noting the flower's color is an important piece for you to do.

THE THIRD LINE OF QUESTIONING: LEAF ARRANGEMENT

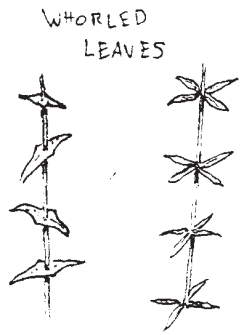
You've now figured out what the plant's flower looks like. In fact, after having gone through this process and really *looking* at the flower, you can no doubt see it in your Mind's Eye as clearly as if you held it in your hand! Now it's time to move on to the next piece of plant identification.



This third line of questioning is where what you are doing starts to look very similar to what you do with identifying trees. After all, trees are flowering plants. It's just that somebody called them "trees" and then wrote a separate book about them.

The next thing you look at with flowering herbaceous plants is the **leaf arrangement**. The general arrangement of the leaves is what you are focusing on.

• **Alternate Leaves**—On an "alternate leafed" plant the leaves grow from alternate sides of the stem. That is called **alternate**. Finally—a user-friendly name that we can deal with!



• **Opposite Leaves**—Another possibility is that the leaves grow in pairs, opposite each other on the stem. That is called **opposite**—also user-friendly.

• **Whorled Leaves or Basal Rosette Leaves**—For the purposes of identification, the Newcomb's guide lumps these two together, but you need to know what the structural difference is. **Whorled** leaves are another possibility wherein the leaves are growing above the ground in a style that is like a little collar circling the stem. The last

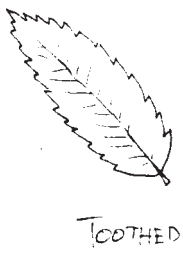
possibility is that the leaves are growing in a **basal rosette**, which is a little collar that is strictly on the ground (not growing up the stem). "Rosette" refers to the fact that the leaves are growing in a round pattern—around the stem—and "basal" refers to the fact that they are growing at the base.

To recap, the first thing you look at in a flowering plant is the flower. Then next thing is the leaf arrangement. Once those have been determined, then we're ready to look at the leaves themselves.

THE FOURTH LINE OF QUESTIONING: LEAF TYPE

You've now determined the plant type, the flower type, and the leaf arrangement. The next and final thing to look at is the leaf type or shape. These fall into four basic categories for our purposes and they refer more to the details of the architecture of the leaf than to its overall shape.

• **Entire**—If the edge is even and unbroken, it's called *entire*. It's entirely there, I guess, like the long, thin leaves of an iris or a tulip.



• **Toothed**—If the edge of the leaf is fairly even or regular, with slight notches or bumps around the edge, it's *toothed*, like nettle or the mints.

• **Lobed**—Lobed leaves have one or more deep indentations that separate them into distinct sections, but without actually reaching all the way to the vein and separating the leaf into separate parts. Maple leaves are *lobed*, as are the leaves of oaks and dandelions.

• **Divided**—If a leaf is divided into distinct, separate sections, or leaflets (where the division reaches clear to the center vein of the leaf), like a clover leaf or an ash leaf, it is said to be *divided*.

PUTTING IT ALL TOGETHER

How do you take these various pieces of seemingly unrelated information and put them all together in a way that leads you to the proper plant in your field guides?

Newcomb's Is Number One!

What we have been using here is the Newcomb's Method for plant identification. Now, I can't recall whether I've explained my

thankfulness to Lawrence Newcomb for the gift that he has given to all aspiring naturalists through the wildflower guide that he has created. Simply put, it is the best that I've seen out there—a true unsung hero of the field guide world. It makes plant ID so simple, and boils it down to the essence of what you need to look at to figure out what a plant is: the type of plant, its flower, its leaf arrangement, and the type of leaves that it has. I've spent all of this time and paper explaining these things so that you will be better able to use this book. I've never seen another guide like it, which is astonishing because the idea behind it is so common sense! This isn't to say that his ID method is simple, however. Be sure to follow the instructions in his book closely, because this is where more people than not go wrong when using Newcomb's guide.

To learn the identity of your mystery plant, the first thing that you have to do is to come up with the three-number key for the particular plant you're looking at. This key is based on the pieces of plant ID that we've just been discussing (we didn't go through all of that for nothing!). Rather than try to explain how to go through this system, however, let's just use it once and see how we do.

For this trial run, let's use one of the Three Heroes of Every Back Yard, the dandelion. Just about everyone knows a dandelion when they see one, and you took time to study the plant for your plant studies in *Kamana One*, so there should be no question in your mind that you've found the right answer in your field guide.

First, turn to page x in the front of your Newcomb's, "The Key System and How it Works." Take a moment to look over this section again. Newcomb's asks five separate questions, but they really come right down to just three things we need to know:

- What is the flower type and how many regular parts does it have?
- What is the plant type?
- What is the leaf type?

On page xi, the book gives you a numerical equivalent for the answer to each of these questions. By combining the three digits, you arrive at the Group Number, which you will then take and use with the Locator Key beginning on page 1 to arrive at your flower.

In the case of the dandelion, the answers would be:

- 7—flowers with 7 or more regular parts
- 2—wildflowers with basal leaves only

- 3—leaves toothed or lobed

Now you have your Group Number, **7-2-3**. Now turn to the Locator Key (starting on page 1) and flip through the pages in the key until you find the Group Number 7-2-3. You will find that on page 11. There you need to make a couple of additional decisions. In this case, you need to decide if the flowers are yellow, or if they are white, pink, or blue. That's an easy one—yellow. Now, are the leaves "2 or more times longer than wide" or are they "about as wide as long"? Again, that's easy—they're longer than wide. This directs you to page 362, where all that is left is for you to check the half dozen drawings and accompanying descriptions to find your good friend, *Taraxacum officinale*—the common dandelion!

The point that I wanted you to pay extra attention to through this process is that you need to refer to the Locator Key to use this guide. I can't say how many people have come to me in a class or called the instructors in Student Services and said, "I'm using Newcomb's guide like you recommended, but it just doesn't work!" Invariably, it boils down to the fact that they didn't pay close enough attention to the plant that they were studying and hence ended up with an erroneous Group Number, or they forgot to reference their Group Number in the Locator Key. Follow these simple steps, however, and you'll find that you'll be sailing on smooth waters.

It's Just That Simple!

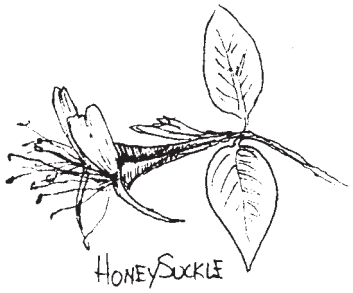
To wrap up our discussion for now, the next time you're out in the field and you find a wildflower you can't identify, you're now well-equipped to find your answer. As long as the plant is blooming, you only have to think about three things and take a mental picture: the **flower** (it has 5 petals); the **leaf arrangement** (alternate leaves); the **leaf itself** (lobed).

Once you put together a mental picture, you can go home and find it in your field guide. You don't even have to lug the field guides around with you any more. All you have to do is keep a piece of paper and pencil in your pocket and write something like "Plant #1 (by the old barn, west side): 5 petals, white flower, alternate leaves, divided."

When you get home, simply look it up and decide whether what you're going to be coming back to pick later that year will be common blackberries, thimbleberries or wild red raspberries.

I can read your mind about this process. "Ai-yi-yi! How am I ever going to learn all of this? This is too much like school!" That's the exact OPPOSITE of what I want you to feel. What we've discussed over these last few pages is merely background information for you to refer to now and again so that you may successfully use your Newcomb's Wildflower Guide. The key to it all: practice. Just get out on your lawn or in the park on a sunny day and practice looking at the plants there using the Newcomb's Method. If you can't practice this because it's a time of year when there aren't any flowers, do what some other students have done: use your RDG to supply the plants for you. Even if your RDG does have the names of the plants in it, don't let that stop you from checking it again with your Newcomb's. In fact, that may be a benefit to you, because you'll know when you are right and when you've made an error somewhere along the way. Just practicing this for a few minutes for a few nights will help you to greatly internalize all of the things that we have discussed here, and in turn make the world of plants stronger in your everyday life!

Part II



Journaling Plants

Required Resources:

Newcomb's Wildflower Guide

Reader's Digest: North American Wildlife

Additional Recommended Resources:

Tom Brown's Guide to Wild Edible and Medicinal Plants

Peterson's Field Guide to Edible Plants

Peterson's Field Guide to Medicinal Plants

Peterson's Field Guide to Wildflowers (for your region)

A trip to the library

Preparing Yourself: Shifting into the Mind of a Plant

As you begin the process of journaling your plants, it would be a good idea to first get yourself into the mindset of a plant. So, the first thing you're going to tell me is that plants can't think, right? Maybe not in the way that you or I use our brains to problem-solve, but plants certainly have needs, habits, characteristics, friends and enemies. A Native storyteller and healer Bob Sam taught us an exercise similar to what I am going to have you do here that his own grandmother always used with him before he ever stepped out in search of healing herbs.

Bob's grandmother used to tell him to wash with no soap and to drink a lot of water before going to bed so as to get into the mindset of a plant, as plants bathe only in the pure rains and are themselves full of water. Become empathetic to the spirit of the plant yourself before searching or really even thinking of plants for your studies here.

Take a few minutes to walk outdoors—in your bare feet, please, if the weather and surroundings permit—with as

few clothes separating you from the environment as is practical. Start with a Sense Meditation, say a short Thanksgiving Address with a special emphasis on the Plant Nations, and then become conscious of your connection with the bare Earth that supports you—either through touching with fingers, or the feet. Feel the rocks and pebbles, the clay and mud. Feel the wind in your hair and against your face. If it is raining or misting, open your mouth and drink directly from the sky.

Root yourself to one place for a few moments. Imagine the bottoms of your feet extending far underground, twisting and twining between the tiny pieces of soil and stone. Feel yourself firmly attached to this one place. Feel the energy flowing from the Earth up through your roots, up through your stem-legs, into your body, and out to your branch-arms and leaf-fingers. Sway with the wind, drink in the energy of the sun, and feel yourself transform this energy into part of your own body. Explore the sensation of being rooted firmly in one place, fed directly by the Earth, the sun and the rain.

While you are there, simply notice any sensations that you may have. Do you have the feeling of being a particular kind of plant? Are you a tiny individual in a huge community of others, like the mosses, or are you tall, stately and solitary, like a mullein? Do you have flowers? What shape are your leaves?

Stay with this "Plant Mind" as long as you feel like doing this exercise. Then gradually let yourself return to your own consciousness and finish your time out of doors in any way that feels appropriate. Take any feelings and understandings you may have gained from this Plant Mind experience with you, and draw from this as you begin your study of plants. You may wish to include your feelings in your weekly Naturalist's Inventory.

Native Only? Not Possible Anymore

There is a definite among naturalists to focus on the preservation of native fauna and flora. When it comes to identification, sometimes it is difficult to be exclusive of non-native species. It really wouldn't make sense to ignore species that are naturalized in your area. The bottom line is that they are living here, naturally reproducing, and are useful in a variety of ways. The birds are eating berries of non-natives and spreading them around. If they are common in your area, you probably ought to plan to know the species—native or otherwise. The kind of plants you are studying in Msafiri are certainly heavily influenced by species that were

recently introduced from around the globe which have become quite comfortable where they are.

With birds and mammals, it is possible to really focus journal work on *mostly* native species. That is because in North America there are relatively few species of birds and animals that are introduced and now naturalized such as starlings, house sparrows and old world rats and mice. Opossums, coyotes and house finches are native to parts of this continent but have moved around a bit in the last hundred or so years, thanks to the influence of people. Trees are best learned from a mostly native species perspective, as trying to learn all the cultivated varieties is confusing and difficult for beginners where people have planted trees. With wildflowers, grasses and other low-and-fast growing plants, it would be impossible to ignore *non*-native species. Trees and other woody perennials grow relatively slowly and spread relatively slowly as well. The wildflowers and grasses, by their very nature, are highly invasive and reproductively prolific! That means that they are very good at colonizing new areas.

Considering this, be prepared to learn about native and non-native wildflowers and grasses in your area. The field guides show them all. Newcomb sometimes tells you if it is native or alien. Many of the other plant resources on identification, medicinal uses, edible uses, crafts and other information include both native and non-native plants as well. When we mention the hundreds of species in an area, that includes a large percentage of non-native species.

Preparing to Study

This part of the course is aimed at giving you solid background knowledge about the identification, ecological significance, survival lore, medicinal actions, edibility and other native lore of local plants. As in all journaling sections of this course, you are learning to make the best use of available resources while striving to build background information. Completing this work on plants is an essential foundation to prepare you for field identification and the worlds of plants that are available to you once you have confidently learned this primary process.

We are going to take the same approach to learning plants as we did to learn hazards and mammals—review Chapter One if you need a refresher on the Mind's Eye approach to journaling, etc.

Setting Up the Journal Pages

There is no exact way to set up the journal pages, as working with hundreds of students over the years has shown us. Whatever works for your style and learning needs, wants, and preferences is what works best! We will include examples of plant journals that other successful students have created just to give you an idea of what you can do with your plant journal pages.

Some students have come up with ideas like sketching a skull and cross-bones for poisonous plants, or simply writing the word "POISONOUS!" on the top of the page. There are students who have made little visual symbols indicating its use as an edible, or as material for crafts such as baskets. Anything *you* want to do to dress things up, or to bring life to the work, is important.

While there is a great deal of creative license involved in your studies here, simultaneously, there are certain "rules" that you will need to adhere to for this process to work. Consider them the backbone around which all of the meat that you are building through your studies will hang and function.

To review, the key points that you will need to keep in mind are:

• The Mind's Eye process is the key to making this work. Use it for all aspects of what you are doing here.

• Be brief and focused. Don't dawdle in your studies or get too lost in flipping through pages. You can do that later after you have finished your journals (I encourage it, actually).

• Don't take too long to do your journals. At first, it may take a little longer than is ideal, but press yourself to get this process down as quickly as you can. Half an hour per journal page for you to read and then create your text and sketches is the longest that it should take you.

• Each of your journal pages needs to include both a piece that is text and a piece that is sketches.

• *You should have lots of fun while you do this!*

TEXT

Identification and Field Information

1. What is the plant's name (or names)?

2. Describe the plant in Newcomb's terms (not the number, but the description in words, i.e., flower regular with 7 or more petals, leaves divided…)

3. What other information is useful for identification?

4. What season does it flower in?

5. Where does it grow?

6. What else does it like to grow with (i.e. does it grow most commonly around a certain type of tree? Is it usually found in the company of some other plant?)

7. Does it grow fast or slow?

8. Is it very common where it grows or is it sparse?

9. Is it an annual, a perennial, or a biennial?

10. Does it prefer full exposure to sunlight, full shade, or something in between?

11. What level of moisture does it prefer?

12. What is important to know about fruits and seeds?

13. How does it affect wildlife?

Information on the Uses of Plants

1. Is this poisonous?

2. Does it have poisonous look alikes?

3. Are there members in the same family that are poisonous?

4. Are there parts of this plant that are poisonous, while other parts are edible or medicinal?

5. How did the natives use this plant?

6. What survival or craft uses does this plant have?

7. Is this plant edible?

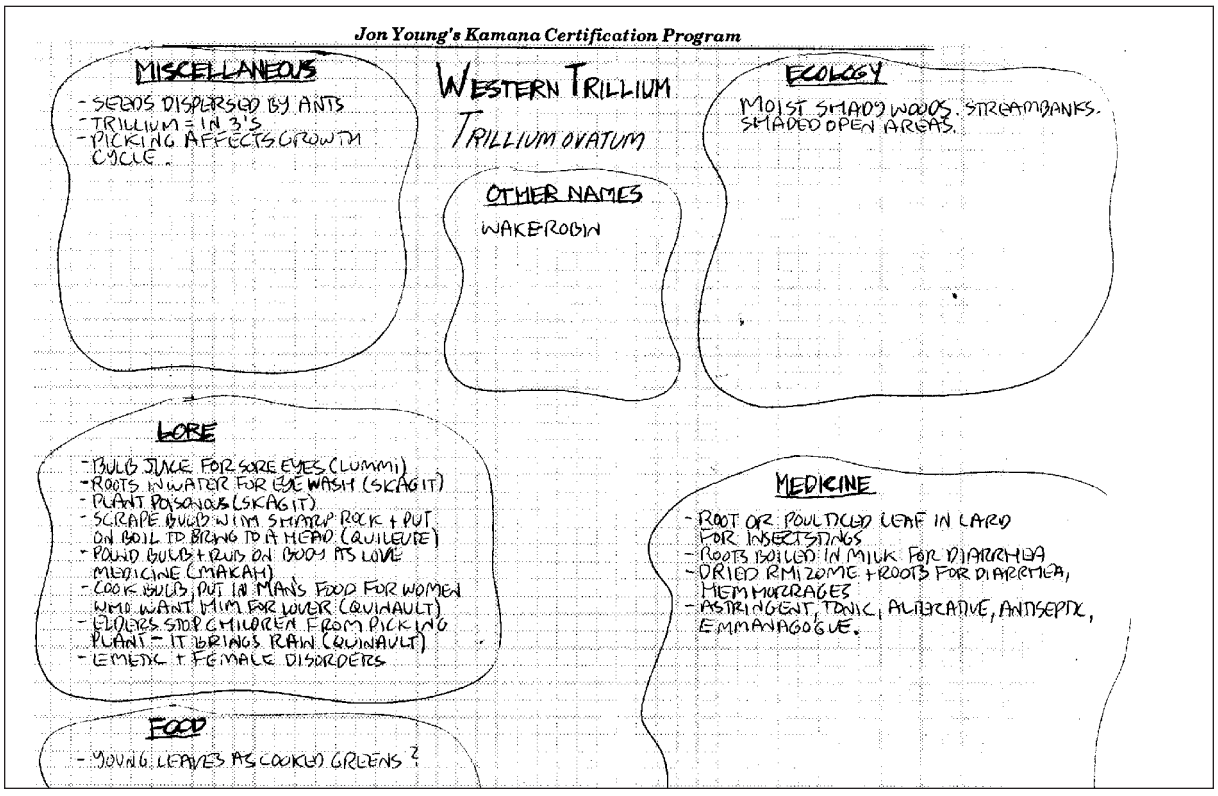
8. Is this plant medicinal?

9. When should it be gathered?

10. How do you prepare it for use?

11. What other important information is there about this plant?

12. Is this plant threatened or endangered, and should its harvest be limited?



Sample text, Trillium
by Dave Franklin

SKETCHES

Sketching plants can be a really fun way to learn about them. It involves a great deal of memory-building aspects of your brain. When drawing the plant, use your Newcomb's-style thinking as the basis for your sketches, and then add additional details as they are called for by the questions that you are being asked below.

Again, use the Mind's Eye technique for sketching to really enhance the memory aspect of learning. Sketching is not meant to be a tedious copying process. Remember also that it is not meant to be a measure of your ability to copy exact and perfect pictures. There is no such thing as perfect and no one will judge your sketching work here at Wilderness Awareness School. We will look at your pictures simply to see *what* you have focused on and how it relates to the goals set forth in the questions. Students who take only a few minutes and do really fast and rough sketches that capture the essence of the plant score equally to students who spend hours on each plant rendering fantastically artistic and professional looking sketches. Remember that this is *not* an art course (which is not to say that it won't help you become a better artist, because it will!).

Colored Pencils?

For wildflowers, colored pencils certainly add something special to the work and the experience, as *well* as your ability to remember the plant and its flower.

Identification

•Flowers:

1. What is the type of flower and what do the petals look like?

2. What do the fruits or seeds look like? How about the new shoots, roots, or any other structures shown in your field guides?

•Leaves:

3. Does the plant have opposite, whorled, alternate, basal or no apparent leaves?

4. What is the shape of each leaf? What are the margins (or edges) of each leaf like?

5. Plants that have a rosette of leaves on the ground through winter are often completely different looking in summer. A clue is what the lowest leaves on the plant look like compared to the ones at mid-level on the plant's stem. Do the lowest leaves look significantly different from the ones near the middle and top of the plant?

•Overall:

6. Does the plant have hairs, thorns or other such details?

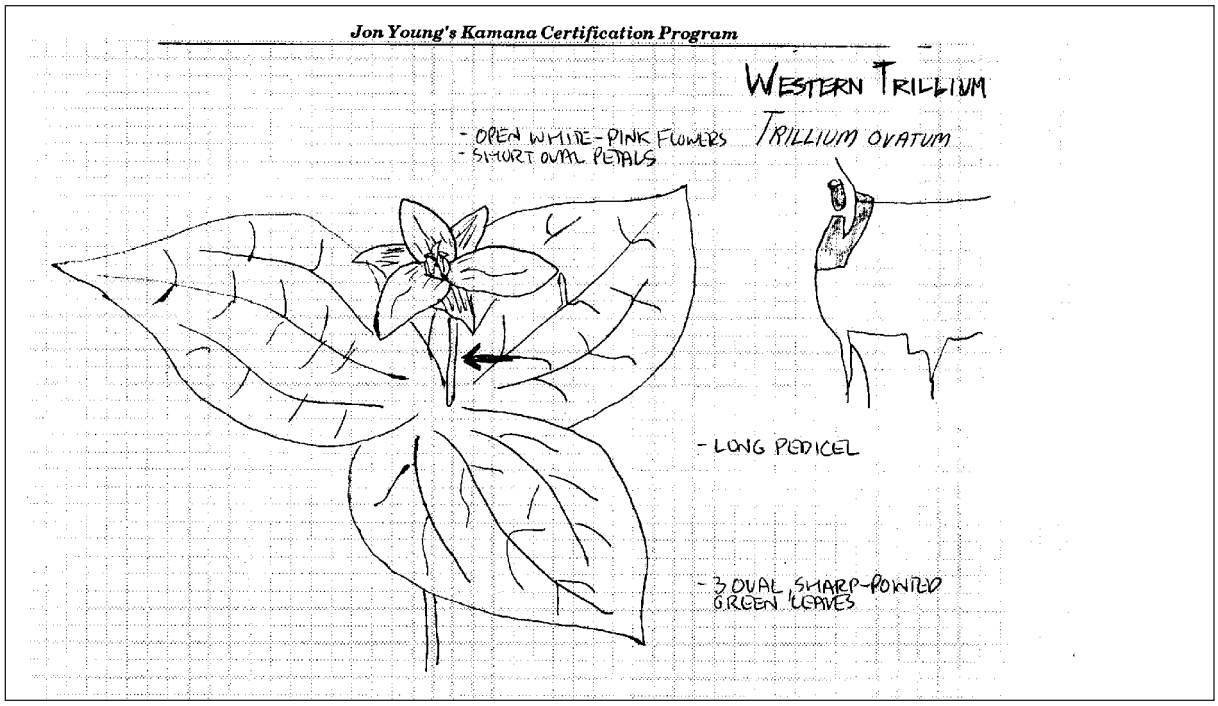
7. What is the type of plant: trailing vine, upright, woody, succulent, and other features of the general description?

8. Are there any parts of the plant that remain after the plant has died back?

9. What does the whole plant look like when these pieces are put together?

Range

If you can find range information, include it as a rough range map. Your RDG has some maps that, even though they are only very rough approximations, will suffice for our purposes here. You don't have to get too worried about this one, however, as plants are pretty darn good at spreading off of the maps anyway!



Sample text and sketch page, Trillium, by Dave Franklin

The Final Piece—Plant Strategy

This next line of questioning helps you to pattern your memory of this plant on a much deeper level:

Spring

Flowers are designed for some pollination strategy, be it wind, moth, fly, bee, wasp, bat, hummingbird, some combination of these, or something else altogether. Flowers are filled with runways and methods of attracting pollinators, or interfering with the wind so that it stalls and eddies around the flower picking up pollen and receiving it from elsewhere. What pollination strategy does this plant seem to use?

Summer

Many annual flowers are great seed producers while perennials, who are established, may not produce any viable seeds at all. What kind of seed production does your plant seem to be demonstrating?

The leaf size and arrangement is often an indication of where the plant grows, whether in shade or sun, damp or dry conditions. What do the leaves say to you about the plant's habitat?

Autumn

The fruit of a plant, be it a berry or a burr, is designed for seed dispersal. What method does this plant seem to be using with its fruit for seed dispersal? (This may not be available to you from the guide, so if not, don't worry.)

Winter

Perennial flowers come back from the same rootstock each year. This has its obvious advantages. If the roots are used for food or medicine, you can memorize the location of the plant, or the kind of habitat it chooses to grow in. Does this plant come from a rootstock, bulb, rhizome or corm?

If a plant is a biennial, it is storing energy during the first year in a great root and preparing for a burst of growth energy for flowering in its second spring and summer. Again, if this plant has an edible root, what does it look like and what do the winter greens look like?

Plants

What follows is a list of the plants that I want you to become familiar with during your studies here in *Kamana Two*. I'm asking you to study the dandelion again because you are now working with a greater set of resources and understanding of plants that will help you to understand this marvelous little plant in a much deeper way.

When you have completed your 10 plant journals, do the brief reflection exercise that follows this.

For those plants that do not specify a particular species (the nightshade and the buttercup) or where you have a choice (poison oak or ivy), you will need to find one that is found in your area by consulting the *Peterson's Field Guide to Wildflowers* that covers your region. When looking up the nightshade or buttercup, search by the *genus* name. More likely than not (depending on where you live), the index will list a handful of species in that genus for you to then look up and choose from based upon the range description provided in the text for each particular plant.

Create a separate journal page for each of the following plants:

1) Poison Hemlock

2) Indian Poke (*Veratrum viride*)

3) Poison Ivy or Poison Oak

4) Stinging Nettle

5) A Local Nightshade (genus Solanum)

6) A Local Buttercup (genus Ranunculus)

7) Common Dandelion

8) Common Chickweed

9) Broad-Leaf Plantain

10) Cattail

FINAL REFLECTION (SEND WITH FIELD PACK 2.4)

In a short paragraph, think back on your reading experiences with plants both before your Kamana studies and after. How has your knowledge of plants grown using the tools that we've shared here? Write about your own perceived growth from studying plants in this manner.

Name: _____ Student #: _____

Date: _____

REVIEW SHEET

Keep this page dog-eared in this booklet for easy reference as you go through Chapter Four.

1) Create Your 10 Plant Journals

Journal the Following:

Poison Hemlock

Indian Poke

Poison Ivy or Poison Oak

Stinging Nettle

A Local Nightshade (genus Solanum)

A Local Buttercup (genus Ranunculus)

Dandelion

Common Chickweed

Broad-Leaf Plantain

Cattail

Create the following for each journal:

Text	Poisonous?	**Sketches**
Description	Poisonous Look-Alikes?	Flowers
When Flowering?	Native Uses?	Fruits or Seeds
Where Does It Grow?	Survival Uses?	Leaf Arrangement
Associations?	Craft Uses?	Leaf Type
Common or Sparse?	Edible?	Details of Plant (i.e. thorns)
Annual, Perennial, Biennial?	Medicinal?	Plant Type (i.e. vine vs. herb)
Light Exposure	When to Harvest?	Remaining Parts After Dies?
Moisture Preferences	How Is It Prepared?	Whole Plant
Significance to Wildlife	Endangered or Threatened?	Range Map

The Final Piece—Plant Strategy

Spring Summer

Autumn Winter

Remember to use your mind's eye through all of this!

2) When you have completed your 10 plant journals, write the Final Reflection for plants for Field Pack 2.4.

Is your binder out of Resource Trail Journal pages? Download templates at www.kamana.org.

WATER LILY
(I)(NA)(M)(E)(!)

Yellow Pond Lily (splatterdock, cowlily, INDIAN P.L.)
Nuphar polysepalum (N. luteum)

- Aquatic per from thick massive (sometimes monstrous 15cm wide × 5m long) prehistoric looking RHIZOMES, FLOWER STEMS THICK, FLESHY, long arising dir from RHIZ.

LEAVES: FLOATING, egg or heart, c̄ 2m STALKS, ROUND IN XS. ARISE IN ALT. (appearing spiral) FASHION from RHIZ, LEATHERY 10-45cm lng.

- FLOWERS: yellow tinged c̄ GRN, or RD. LARGE 10cm. WAXY CUP SHAPED floating sepals ~9. THICK petals 10-20, much smaller than sepals & HIDDEN BY NUM. needlelish STAMENS. CENT. OF FLOW. DOMINATED BY LRG knoblike STIGMA, single-long stalked

- FRUITS: (E) EDIBLE SEED important FOOD FOR NA. Ribbed OVAL CAPS. several chambered leathery DECAYING to LIBERATE NUM seeds in jelly.

- ECO: PONDS, SHALLOW lks. sluggish STREAMS LO → MID. (I) N.W. Rip.

- NOTE: (M) ROOTS & RHIZOMES used by (NA) FOR A VARIETY OF COND. RHIZ CONTAINS STEROIDS, ALKALOIDS, Hypotensive, ANTI SPAS, CARDIOACTIVE, VASOCONSTRICTOR.

(!) LRG DOSES TOXIC.

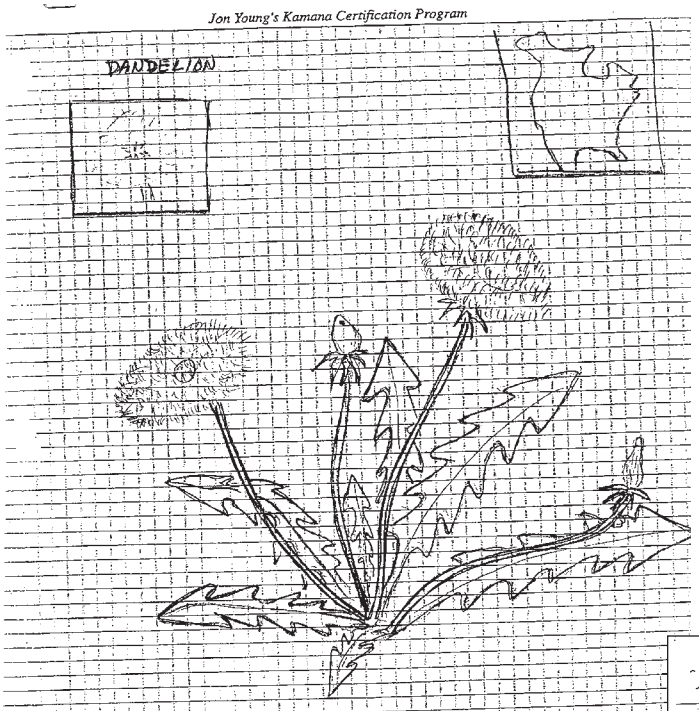
NUPHAR SPP

ROOTSTOCK used like potato. chg water 2-3 TIMES TO SMOOTH FLAVOR, seeds CAN BE FRYED LIKE POP CORN OR GROUND FOR FLOUR.

Journal by William Wittmann

Jon Young's Kamana Certification Program

DANDELION



Field Journal Section _____ : _____ Date: _____

Source(s): N.A. Wildlife . 424

WILDERNESS AWARENESS SCHOOL

- medicinal
- edible

Sub Alpine Evergreen Forest Indicator Plant

Jon Young's Kamana Certification Program

Dandelion *Taraxacum officinale*

Compositae (Sunflower Family)

Bright green leaves have sharply cut and reversed lobes. Bright yellow flower heads. Soft fluffy pappus on long beaked seeds. 2-12 in. Common. all year.

Familiar weed. Flowering stalk hollow, with milky juice. Leaves jagged cut. Flowers yellow. Beaks reflexed.

Where found: lawns, fields, waste places.

USES: Fresh root tea traditionally used for liver, gall bladder, kidney, and bladder ailments; diuretic (not indicated when inflammation is present). Also used as a tonic for weak or impaired digestion, constipation. Dried root thought to be weaker, often roasted as coffee substitute. Dried leaf tea a folk laxatives. Experimentally, root is hypoglycaemic; weak antibiotic against yeast infections (Candida albicans). Stimulates flow of bile and weight loss. All plant parts have served as food. Leaves and flowers are rich in Vitamins A and C. All parts good for blood circulation.

WARNING: Contact dermatities reported from handling plant, probably caused by latex in stems and leaves.

OVER →

Field Journal Section _____ : _____ Date: _____

Source(s): PFG Pacific States Wildflowers p. 220
PFG e/c. Medicinal Plants p. 130
PFG Edible Wild Plants p. 84

WILDERNESS AWARENESS SCHOOL

Dandelion.

Uses: salad, cooked green, cooked vegetables, fritters, coffee. The young leaves gathered before flowers appear, can be added to salads or boiled for 5-10 min. Although the entire leaf can be used, the blanched part just below the soil level is best. Gathered when they are still tucked down in the rosette of leaves, the young flower buds can either be boiled for several minutes and served with butter or pickled. The flowers are excellent dipped in batter and fried. To make a delicious coffee like beverage, bake the roots in a slow oven until brown and brittle, grind and perk like commercial coffee. Leaves rich in Vitamin A.

Early Spring (leaves, buds)
Spring - Early Summer (flowers)
Fall - Early Spring (roots)

Coffee recipe: wash roots thoroughly. Let dry for 6 hrs. put in oven on low for (hrs) until rich brown and brittle grind roots with mortar and pestle. Allow roots to dry in the sun.

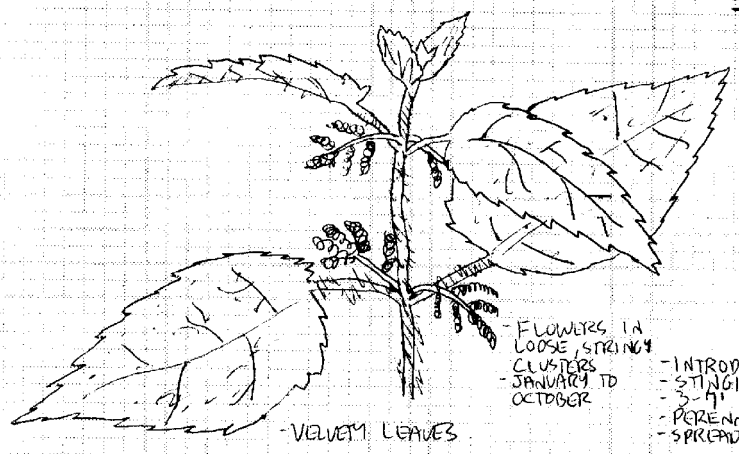
The flowers can be made into wine and the whole plant into beer.

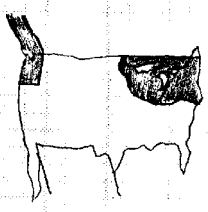
Journals by Barbara English

Jon Young's Kamana Certification Program

STINGING NETTLE

URTICA DIOICA





- FLOWERS IN LOOSE, STRINGY CLUSTERS
- JANUARY TO OCTOBER
- INTRODUCED
- STINGING HAIRS
- 3-9'
- PERENNIAL
- SPREADING RHIZOMES
- VELVETY LEAVES

Journals by Dave Franklin

Jon Young's Kamana Certification Program

STINGING NETTLE

URTICA DIOICA

MISCELLANEOUS

- URO - TO BURN
  DIOICA - MALE + FEMALE ON SEPARATE PLANTS - NOT NECESSARILY TRUE
- EXCELLENT FOR COMPOST
- EXCELLENT FOR LIVESTOCK

- HARVEST
  EARLY SPRING: LEAVES + STEMS, UP TO 1'
  SPRING TO SUMMER: NEW GROWTH
  LATE SUMMER: SEEDS
  FALL TO SPRING: ROOTSTOCKS

OTHER NAMES

INDIAN SPINACH

ECOLOGY

MOIST THICKETS, ROADSIDES, WASTE GROUND, LIGHT SOILS
INDICATES GOOD SOIL.

EDIBILITY

- YOUNG SHOOTS, COOKED
- TOP LEAVES IN WATER, 10-15 MINS.
- YOUNG SHOOTS OR LEAVES IN TEA
- VITAMINS A, C, IRON, AND PROTEIN
- IN SOUPS
- ROOTSTOCK IN SOUP
- REST WITH ACIDIC FOODS.

MEDICINE

- LEAF TEA AS BLOOD PURIFIER, BLOOD BUILDER, DIURETIC, ASTRINGENT, ANEMIA, GOUT, GLANDULAR DISEASES, RHEUMATISM, POOR CIRCULATION, ENLARGED SPLEEN, MUCOUS DISCHARGES OF LUNGS, INTERNAL BLEEDING, DIARRHEA, DYSENTERY
- INVOLVES LYMPHE BLOOD CELLS, AIDS COAGULATION + FORMATION OF HEMOGLOBIN IN RED BLOOD CORPUSCLES
- CNS-DEPRESSANT, ANTIBACTERIAL, MITOGENIC ACTIVITY
- INHIBITS EFFECTS OF ADRENALINE
- KIDNEY + URINARY AILMENTS
- ROOT FOR PROSTATE CANCER
- LEAVES IN ALCOHOL FOR GALL BLADDER INFLAMMATION, HEPATITIS
- ARTHRITIS
- ANTISPASMODIC, EXPECTORANT
- ASTHMA
- HIVES, BURNS, ITCHING RASHES
- CRUSH LEAVES ON NETTLE STINGS
- HAIR RINSE

LORE

- DYES
- BARK: IS PEELED, DRIED, + ROLLED INTO 2-PLY STRING
- DUCK NETS (LUMMI, SNOHOMISH, SKOKOMISH)
- RHEUMATISM, WINTERING (CHEHALIS, QUILEUTE)
- PARALYSIS, WINTERING (QUINAULT)
- CRUSH SPROUT AS POULTICE FOR PARALYSIS (CAHUILTZ)
- RUBBING ON BODY FOR COLDS (SNOHOMISH)
- BATH INFUSION WITH A. GRANDIS, AS TONIC (SAMISH, SWINOMISH, SKAGIT)
- BOILED ROOT HAIR WASH (CHEHALIS, SKOKOMISH)
- SCRAPED STALK FOR SORENESS + STIFFNESS (KLALLAM)
- ROOT INFUSION FOR RHEUMATISM (QUILEUTE)
- CRUSH LEAF TEA FOR DIFFICULT CHILDBIRTH (SQUAXIN, LUMMI, CAHUILTZ)
  "SCARES BAD MEDICINE OUT", RELAXES MUSCLES
- LEAF INFUSION FOR COLDS
- RUB AFTER HANDLING A CORPSE FOR PURIFICATION (MAKAH)
- STAY AWAKE FOR SEAL HUNTING, RUBS. (QUILEUTE)
- CLEAR AWAY TO MAKE REST GARDENS (QUILEUTE)

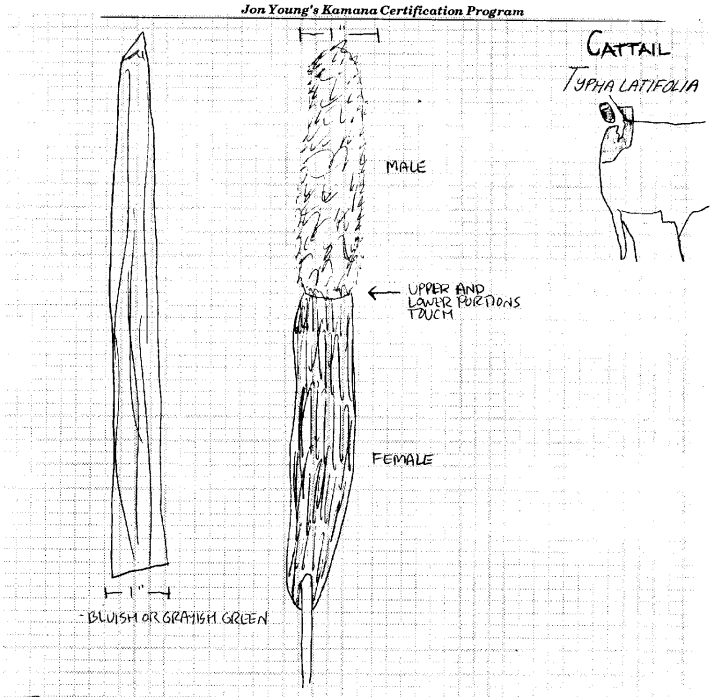
Field Journal Section 5 : PLANTS *Date:* 4/22/96

Source(s):

DWP
EWW
PETERSON EDIBLE + MEDICINAL + WILDFLOWERS
NORTHWEST FORAGING

WILDERNESS AWARENESS SCHOOL

Jon Young's Kamana Certification Program



CATTAIL
TYPHA LATIFOLIA

TYPHACEAE: CATTAIL FAMILY

Field Journal Section 5 : PLANTS *Date:* 4/23/96

Source(s): NEWCOMB'S
PSW

WILDERNESS AWARENESS SCHOOL

Jon Young's Kamana Certification Program

CATTAIL
TYPHA LATIFOLIA

MISCELLANEOUS
- POISONOUS TO GRAZING ANIMALS
- FOOD FOR WILDLIFE.

OTHER NAMES
REEDMACE

ECOLOGY
- MARSHES, PONDS, WET DITCHES, SLOW OR QUIET WATER.

EDIBILITY
- YOUNG SHOOTS RAW OR COOKED + YOUNG STALKS
- GIRLED IMMATURE SPIKES BOILED
- SIFTED POLLEN AS FLOUR
- SPROUTS RAW OR BOILED
- SPROUTS PEELED, BOILED BRIEFLY, + PICKLED BEFORE ELONGATING MUCH
- SPROUT CURE LIKE POTATO
- PEEL TO SPRING, ROOT SIDES AS FLOUR
- INNER STALK & YOUNG LEAVES
- DOWN WITH PILLOW AS GUM

MEDICINE
- POUNDED ROOTS ON SORES BOILS, CARBUNCLES, INFLAMMATIONS, BURNS, SCALDS.
- MATURE FUZZ IN FEMALE ON SCALDS, BURNS, PREVENT CHAFING IN BABIES
- YOUNG FLOWERHEADS EATEN FOR DIARRHEA
- ROOT INFUSED IN MILK FOR DYSENTERY + DIARRHEA.
- POLLEN AS ASTRINGENT, STYPTIC, FOR DYSENTERY.
- STICKY JUICE BETWEEN LEAVES FOR HANGNAIL, TOOTHACHE.

LORE
- USED TO MAKE MATS, KNEELING PADS IN CANOES, MATTRESSES, RAINCOATS, CAPES
- PACKSACKS (GUINAULT)
- BASKETS
- PEELED LEAVES FOR STRING, ROLLED (SHAMANISM) TO MAKE MATS.
- LEAVES EDGES FOR FABRICATION ON COILED BASKETS (CHEMEHUEVIS).
- HANDDRILL, ARROWS.
- FLUFF FOR STUFFING, DIAPERS, WOUND DRESSING
- LEAVES FOR FURNITURE
- SPIKES AS TINDER
- POLLEN IN CEREMONIES FOR ADOLESCENT GIRLS
- BURNED PITHES FROM SPIKES TO STOP INFANTS NAVEL BLEEDING.

Field Journal Section 5 : PLANTS *Date:* 4/23/96

Source(s): EWW
PMP, PEP
NF
DWP
FF

WILDERNESS AWARENESS SCHOOL

Chapter Five

Ecological Indicators

Part 1

Ecological Indicators

The Art of Questioning

by Paul Houghtaling

Questions. Thus far in both *Kamana One* and in the work that you have done here in *Kamana Two*, Jon Young and I have both talked to you at length about the value and power that the ability to ask good questions brings to your ability to learn. Questions create a focus for your attention and awareness, which in turn creates more questions, which in turn draws you and your experience deeper and deeper and causes your knowledge and understanding to grow and grow.

Here in this program, we provide many of the questions that you will need to base your foundation on as you grow as a student of the natural world (and, indeed, everything around you, as you no doubt have already realized). What is it that you can do to share your growing knowledge, passion, and excitement with others around you, though?

From my own experience, I have been in a position of wanting to share my experiences or enthusiasm with others inumerable times. It only seems natural. You go to your Secret Spot, you see something exciting like where a fox walked across the trail, or you found the nest of the pair of robins that you always see, a new flower has bloomed, or perhaps you even heard an owl or saw a raccoon. These things are so exciting to me when they happen that I come home and just have to tell someone about them! Oftentimes, however, their response is—how do you say it—blasé.

Of course, when I bring my story to them, what I really want is for my friends to jump and see their eyes become big and exciting like mine do after an experience like that. In addition, their response is certainly not a discredit to them. After all, if they were to talk about something like painting or cars, I might seem a little blasé, too. So, usually, I just learn to keep my experiences to myself and to share them with my journal each night right before I go to sleep and let my excitement carry over into my dreams, which is a fun way to use that excited energy and keep it alive.

However, in the long run there is a strange effect that sharing my stories and experiences from my Secret Spot seems to have on friends. Just like a friend who is always talking about cars will inevitably cause you to pay more attention to the cars you see, if someone always talks about nature, some people will inevitably begin to notice more and more about the natural world around them. It is a natural way of learning and building curiosity (and one that has today been ingeniously capitalized on in the world of advertising). Just as you would begin to ask your friend the mechanic about your observations about cars, though, when these good friends of yours begin to notice more and more around them, who do you think they are going to come to in search of answers? Probably not their friend the mechanic. No. They will come to you.

I can't say how many times this has happened to me since I first began to study nature. It usually happens while I am outdoors with a good friend that I have shared some of my experiences and passion with (although as often as not it takes place while doing something as "mundane" as watching a bird out the kitchen window while washing dishes). What happens is this friend, who is beginning to notice the birds and the plants and the clouds, turns to me as we watch that bird through the window and says something like, "Every time that I wash the dishes I see that bird over there. What is it?"

When I was still beginning to study nature ("Beginning" is a relative term. If you ask me now, I'm *still* just beginning…), I got so excited during those times. I'd blurt out the name of the bird and then just plow my friend over with facts that I'd learned until their eyes crossed and they were about to fall over backward onto the kitchen floor. I was so excited that they were interested! Each time that this happened, though, I'd again become excited and bowl them over with facts and enthusiasm to the point of exhaustion.

I did this for awhile until I took my first natural history course when I was a freshman in college. I was so excited! I was still very much the beginner, however, and was filled with questions and I made all of the mistakes that a beginning naturalist can make. I can recall standing with a class full of seniors who were majoring in natural history and boldly pronouncing that the squirrel tracks in the snow that led from tree to tree were the tracks of a rabbit. Even worse, I remember looking at a bird through the wrong end of my binoculars (try living that one down!). Needless to say, however, I learned a lot through that class. There is one lesson, in particular, that I still carry with me today.

Near the end of the year, this class that I was in went on a field trip to a nearby state forest. It was mid-springtime, and it was just beautiful out. When we first arrived on site, we went for a short walk as a class through the forest near where we parked our cars, and stopped at the edge of a large canyon. Soaring and gliding in this canyon were several enormous black birds. Their wingspan must have been longer than I am, and they each had a shriveled red head.

"Eagles!" I proclaimed out loud, walking toward the ledge to get a better view. There were a lot of snickers and laughs from the class. I didn't see what was so funny, and I didn't see why I was the only one whose eyes were so wide and bright at the sight of these magnificent birds.

"Those aren't eagles, Paul," I heard. "They're vultures."

Hmmm. Okay. I was wrong. I looked around the group around me, though, and everyone had this strange look on their face as if to say, "why is he here? He can't even tell an eagle from a vulture." As far as I was concerned, I was excited to have seen that vulture, because I had never seen one before. As I sit today and reflect back on that experience, I realize that there was something that

was disturbing about that experience—and it wasn't that I didn't know the difference between a vulture and an eagle. What bothers me today is that none of those fifteen people who were around me stepped forward to simply point out to me that the vulture has a small, red head and that the eagle does not. Beyond that, there were many other differences that I now know exist that someone could have pointed out to me. I consider this to be, perhaps, the other extreme of sharing your experiences and knowledge with people who are curious, where instead of knocking them over with information, nobody says anything to feed the questioner's mind.

Later on in my naturalist career, I began coming to programs with Wilderness Awareness School. When I first began here, I found that I was excited not only by what I learned through the programs that I participated in, but also at the enthusiasm that everyone seemed to have in my stories. *My* stories and *my* experiences—the same ones that often received such blasé reviews from my good and close friends. It was a good feeling to finally share them with someone besides my journals. In their excitement, these people tended to ask me lots of questions about my experience.

"That's great! I wish I had been there to see it for myself. What did it look like?" someone might ask. I'd either tell them, or I'd have to go back and look again, but either way it was fun just because they were into it too! It wasn't like what I had experienced with friends or in that first natural history course that I had taken.

Since that time, I've learned a good deal about how to share my experiences with others and also how to draw the experiences and questions that others have out of them. The basis for this is essentially what you are learning here yourself: asking good questions.

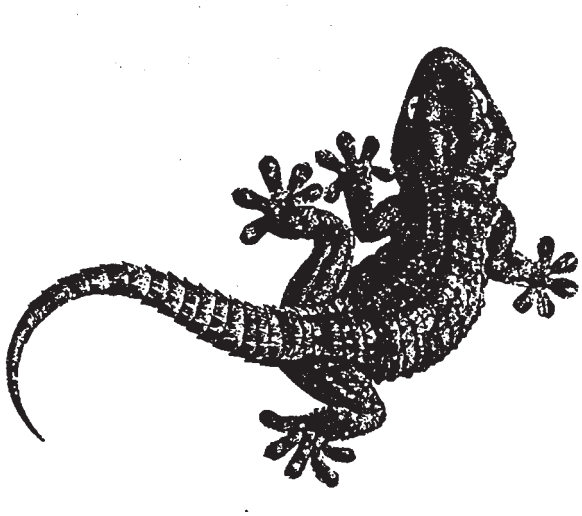
Again, as you are experiencing in this program, your ability to ask yourself good questions will lead to your greater ability to learn about nature. I'd say that the same is true for your ability to help others learn about nature, for if you learn to ask good questions of others, the depth of their own experiences and observation will grow as well.

As the experiences and wonder that you are encountering at your Secret Spot begin to rub off on your friends, I'd recommend that you try your hand at the same techniques you are using in your own studies: Ask them some good questions. Of course, don't overdo it and make them crazy with all questions and no answers.

I learned that one the hard way (It's not the way to keep friends). If your friend looks at you funny, as if to say, "Why are you asking me so many questions when all I want is a simple answer?" then give them the answer. In the end, the point is simply to be able share the growth and interest that you are both feeling about the world around you and all of us at all times—and that's cause for a lot of excitement. Wilderness Awareness School's program *The Art of Mentoring* is a workshop that goes into much greater depth with tools, techniques, and ways to approach the art of inspiring others to learn in the same way that you are learning here. Personally, if you find yourself interested in sharing your own love of nature with others, I recommend that you consider coming to one of these programs. Not only will you gain a greater ability to work with others, but you'll also find that the experience will greatly enhance your own independent studies.

The next time you are washing dishes by the kitchen window and your good friend turns to you and says, "What's that bird that I keep seeing out back?" just turn to them and say, "Well, what did it look like?"

Part II



Journaling Ecological Indicators

Required Resources:

Golden Guide to Insects

Golden Guide to Pond Life

Golden Guide to Reptiles and Amphibians

Reader's Digest: North American Wildlife

Additional Recommended Resources:

Peterson's Field Guide to Forests (for your region)

Peterson's Field Guide to Insects

Peterson's Field Guide to Reptiles and Amphibians (Eastern or Western)

Note: As you read at the start of Part II of Chapter Two, most of the paths of the Resource Trail are fairly straightforward. In the study of mammals, birds, trees, and plants, there are a few simple resources that we require you to either purchase or borrow from a friend or the library to support you in your studies. Ideally, your study of indicator species would be included in this list as well. Unfortunately, however, there are very few resources that are specifically on indicators (no doubt because there are so many of them). Though they are not a required text at this level of study, the *Peterson's Field Guides to Forests* for your area are condensed resources that are available to you here in your studies in Chapter Five. On a trip to the library, you'll probably find that there are many other books that will cover the natural history specific to your area. You may discover that the library will be one of your best friends for your studies of indicators—especially when

it comes to the few insects that are listed at the end of this chapter for you to study. Again, to conserve your trips to the library, you may want to go there, find information on all of the indicators that you need to research, and make photocopies of all of the information so that you may resume your studies at home at your own leisure.

WHAT DOES AN "INDICATOR" INDICATE?

It can seem a bit unclear to refer to any one category or group of animals or plants as an "ecological indicator." Webster's defines ecology as "the study of the relationships between organisms and their environments" – obviously a very broad field. What is an "indicator" supposed to indicate about something so open-ended?

Not all forests are the same. Each animal or plant needs certain things from its environment to allow it to live there. This is the beginning of what ecology seeks to understand. In *Peterson's Field Guide to Western Forests*, the term "indicators" is used to identify certain plants and animals whose combined presence suggests a certain type of forest in which other associated plants and animals are likely to live. According to *Peterson's Guide to Forests*, when you see a red tree vole or hear a spotted owl, these are good indications that you are in the type of forest that they call the "Douglas-fir forest," which then suggests to you the presence of other associated plants and birds that the guide lists. This is one use of the term "indicator."

In Kamana, we use **"ecological indicator"** for a couple of things. One is similar to the way that it is used in *Peterson's Guide to Forests*. For instance, the presence or absence of certain insects reveals links in the food chain. Because it feeds on other flying insects, the presence of a dragonfly says that there are large populations of other flying insects around, generally near a body of water. They indicate the presence of other plants or animals to us.

The other way that we use "ecological indicator" in *Kamana* is for those beings that tell us about the health of a place. Amphibians and reptiles are often the "canary in the coal mine" for natural areas. Their presence or absence can be a barometer for the quality of an environment, and for this reason we call them "indicators," too.

So, as is often the case, there are several meanings behind the use of one word. Overall, however, everything indicates something else. The awareness and understanding of links in the intricate web of life is part of what *Kamana* is all about. So, as you begin each "ecological indicator" journal in *Kamana Two*, it's up to you to figure out what it is these indicators are telling you about your place. Good luck and have fun!

When journaling indicator species for this program, I want you to use the same process that you have on the other paths of this course—namely, your Mind's Eye. Remember, the Mind's Eye process is the very backbone of your studies in the course and is the key to learning to really *look* at what it is that you are learning about.

Thus far, your *Reader's Digest: North American Wildlife* has served you and your naturalist studies well. Combined with your Golden Guides to *Reptiles and Amphibians, Pond Life,* and *Insects* you will be well equipped to study some of the most fascinating creatures in your local region. Additional time at the library will also help you, as will consulting some of the other field guides that you are using for this course such as *Peterson's Field Guide to Animal Tracks*. As always, speed is the key. Don't worry about finding a lot of information for each journal, and acquiring so much information that it takes you an hour and a half to complete one journal. If you find yourself doing this, you've actually missed the best learning opportunity.

For each journal that you create, be sure to watch out for and include the following information. (Just include all of the ones that apply for each journal that you make.):

- Field marks
- Size
- Signs of its presence
- What it eats
- Range
- Habitat
- Its relationship to water
- Habits
- Breeding information
- General distribution
- Enemies
- Daily activity patterns
- Annual activity patterns

Indicators

If you refer to the list that follows, you will see that all of the different indicators we are asking you to create journals for are generalized. This is because, unlike the raccoon, which will be the same species no matter where you go in the country, there are many different species for each member of this list below. Which one lives in your area is something you will need to research using the guides that are required for this chapter. To find which ones live in your area, simply consult the range maps in each and then look up the text for each one that lives near you to see how common it is. Through doing this, your list of indicator species will be tailor-made for the area in which you live.

As with the other sections that you are journaling, I will ask that you re-create the journal that you made in *Kamana One* for your local frog. The reasons for this are the same as they are for the other sections, namely that you now have at your disposal a greater variety of resources and things to examine and study about the frog. So, for whichever one you have already journaled (it should be either a treefrog or a true frog), do it again.

Reptile Indicators

1) A Local Turtle
2) A Local Lizard
3) A Local Garter Snake

Amphibian Indicators

4) A Local Salamander
5) A Local Treefrog
6) A Local Toad
7) A Local True Frog

Insect Indicators

8) A Local Ant
9) A Local Dragonfly
10) A Local Cricket or Grasshopper

FINAL REFLECTION (SEND WITH FIELD PACK 2.4)

In a short paragraph, think back on your reading and experiences with ecological indicators both before your studies here and after. How has your knowledge of ecology grown using the tools that we've shared here? Write about your own perceived growth from your studies.

Name: _____ Student #: _____

Date: _____

REVIEW SHEET

Keep this page dog-eared in this booklet for easy reference as you go through Chapter Five.

1) Create Your 10 Ecological Indicator Journals

Journal the following:

A Local Turtle

A Local Lizard

A Local Garter Snake

A Local Salamander

A Local Treefrog

A Local Toad

A Local True Frog

A Local Ant

A Local Dragonfly

A Local Cricket or Grasshopper

As they apply to each, consider the following topics:

Field Marks

Size

Signs of Its Presence

What It Eats

Habits

Daily Activity Patterns

Annual Activity Patterns

Habitat

Its Relationship to Water

Breeding Information

General Distribution

Range

Enemies

Remember to use your mind's eye through all of this!

**2) When you have completed your 10 indicator journals,
write the Final Reflection for ecological indicators for Field Pack 2.4.**

Jon Young's Kamana Certification Program

Gray Treefrog - Hyla versicolor

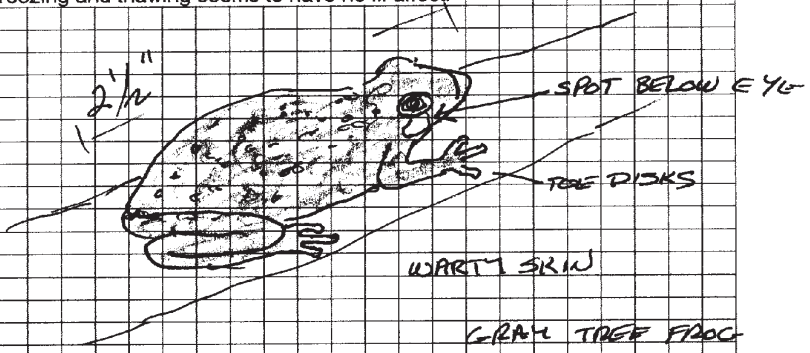
Size: 1" - 2 1\4"

Large rounded toe disks. Adults are mostly gray on the back and legs with white spot or rectangle below each eye.
Brilliant splash of color on the hind legs.
They are large treefrogs. Dry and warty looking.
Males have gray or black throats, females white throats

Habitat: mixed forests, temporary wetlands

They are late arrivals and evening temperatures have to be above 50 deg. before they become active
Male clasps female and fertilizes her eggs. 10 to 40 eggs are scattered on the pond or plants. Up to 2000 eggs per female.
Tadpole stage 30-60 days. Bright orange-red tail and green body
They have toxic skin secretions and red may be a warning signal.

They also have the ability to withstand freezing temperatures
Repeated freezing and thawing seems to have no ill affect.



Field Journal Section — Ecology — Date: August 1997

Source(s): Wilderness Awareness School

Stokes Nature Guide to Amphibians and Reptiles
pg. 47- 55
RDG pg. 193
Warren Bennett S/N 195

Journal by Warren Bennett

LICHENS / PART OF FUNGAL KINGDOM

ALL MIX OF FUNGI & ALGAE. Reproduce By BREAKING OFF, BY SPOOR & A FEW ALGAE CELLS, BY SPOOR FINDING FREE ALGAE.

MOST NOT POISONOUS, ANIMALS USE THEM & THEY CAN BE EMERGENCY FOOD. USED FOR DYE I.E. HARRIS TWEEDS.

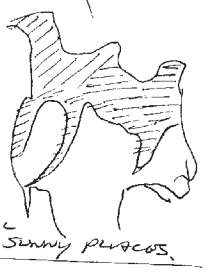
WOLF LICHEN
Lethania vulpina

1-4" HANK TUFTS OF YELLOW OR CHARTREUSE POWDERY SURFACE
HABITAT: ON TRUNKS & BRANCHES OF CONIFERS

Pyxie Cups
Cladonia pyxidata

1/2" TALL GRAY STALKED GOBLETS, SCALY INSIDE & OUT, LICHEN LUMPY SCALES AROUND BASE.

HABITAT: IN SAND ON OLD WOOD, ON SOIL COVERED ROCKS, DRY SUNNY PLACES.



MAP LICHEN
RHIZOCARPON GEOGRAPHICUM

1/2-4" WD. BUT YELLOW TO GRAY YELLOW CRUST & BLK BK GRND. FINE BLK CRACKS. FRUITING BODIES TINY, BLK, SUNKEN IN UPPER SURFACE.

HABITAT: ON EXPOSED ROCKS UPLAND MTNS.

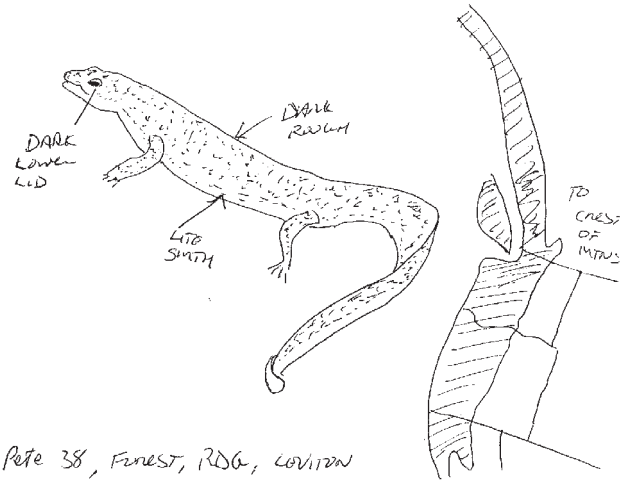
Journals by William Wittmann

ROUGH SKINNED NEWT — NEWT FAM. SALAMANDRIDA
TARICHA granulosa

D- 2¼-3½. DRK LOWER EYELIDS, ABOVE BLK-DK BRN, BELOW YELLOW-REDDISH OR. DRK COLOR STOP ON SIDES ABRUPTLY OR GRADES. EYES SMALL. NOT EXTND PAST OUTLINE OF HD VIEW FROM ABOVE. TEETH IN ROOF OF MOUTH IN V, BREED M- ABV BRN-OLIVE BRD DUSKY PATCH ON EACH SIDE, SMTH SKN, BULBUS VENT. FLATTENED TAIL, DRK PADS ON FEET.

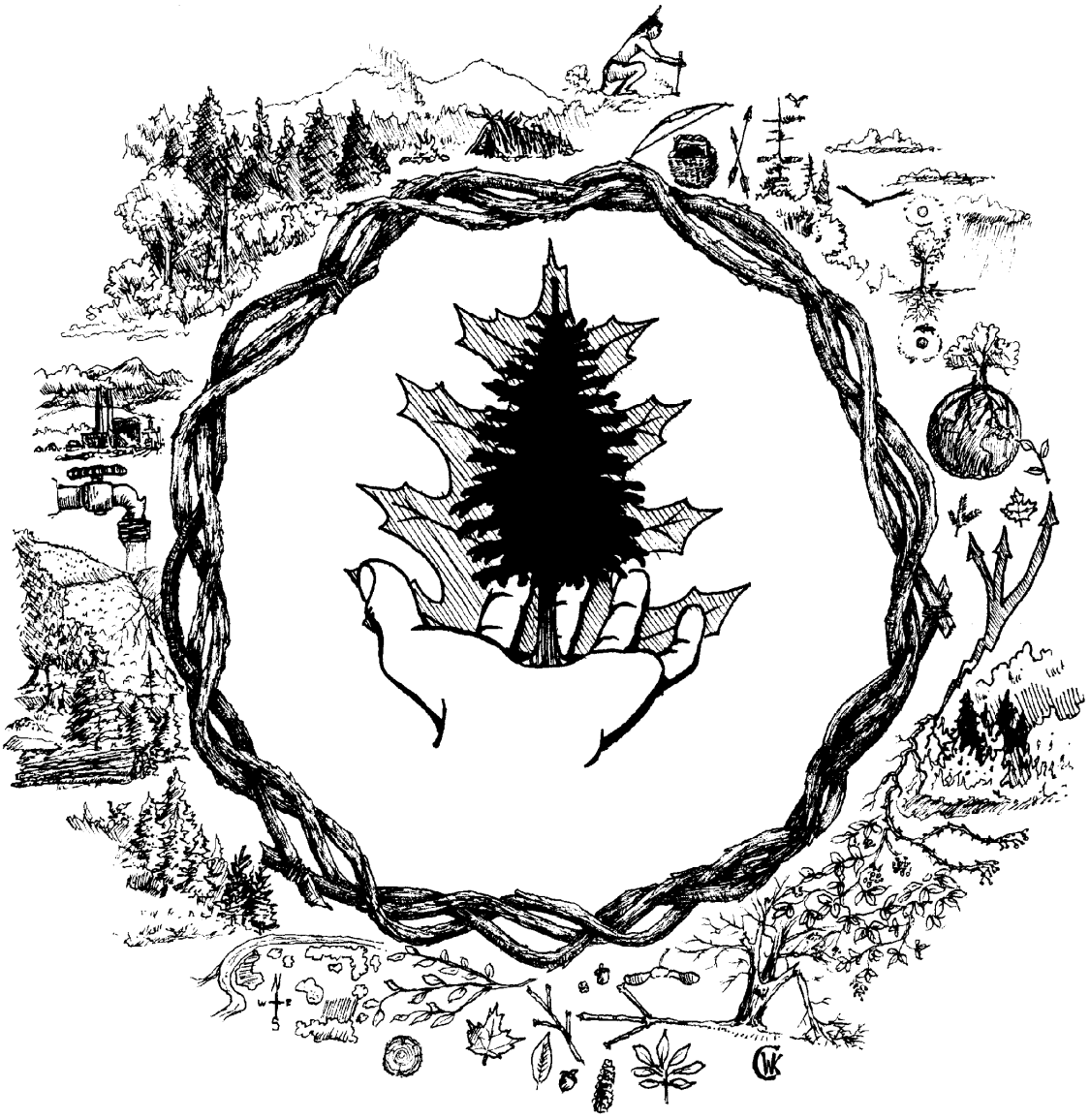
HABITAT- FLDRS GRASSLND, WDLND, FOREST. (I- NW, R, P)

HABIT - BREED DEC→JLY IN PONDS, LKS, SLO FLO STRMS. OUR MOST AQUATIC NEWT. ON LAND CAN BE FND CRAWLING IN OPEN OR STUFF. DIFFERS BY LAYING EGGS SINGLY, & DOES CURLING TP Defense pose. CHEST RAISED to WARN PREDATOR OF NOT TO BOTT - IRRITATING SECRETIONS



Pete 38, FOREST, RDG, COVINGTON

Chapter Six



Trees

Part 1

Trees

Tonweya

In the Lakota language, the word for "scout"—those trained in survival skills—is "tonweya." The knowledge of the scout of any tribe of indigenous people, no matter where in the world they come from, is comprehensive and practical. It is knowledge of the land, the ways of the wildlife, and the needs of their people—and it is grounded in the trees.

In the old days when people lived close to the Earth, it was the role of the scout in the society to be the eyes and ears of their people. If the people needed food, the scouts set out into the different directions across the countryside in search of the nearest herd of game. When it was time for the people to move, the scouts set out in search of a suitable site for the people to move to, one that was both safe and provided for the people's needs for food, water, and shade. When there were times of war or raiding, it was the scouts who were out amongst the hills, watching for signs of approaching trouble and sending word back to the people to prepare themselves in whatever way was needed.

As Gilbert Walking Bull (whom you have read about with your Secret Spot exercise) has shared with us, too, when the children were simply out playing amongst themselves in the hills, these same scouts would watch over them from afar, guarding over them and watching the ways that they each played. Often, nobody knew who the scouts were, but as you can see, the way of the scout necessitated a great deal of knowledge and the lifestyle of a loner.

If we were to look at trees and the roles that they play in the forest, one might say that the trees, like the scout, provide for many of the needs of the many "peoples" who live there. Trees shape the environment, guide the wildlife patterns, affect the plant communities, guide water recharge for springs, create habitats, and provide safe shelters and materials for all sorts of forest inhabitants. The trees also provide materials for many of the necessary tools, crafts and shelters for the human peoples as well.

When we look at trees, we see that their role as providers for their peoples is, indeed, similar to that of the native scout. How is it, however, that the knowledge and skill of the scout is grounded in an understanding of the trees?

Knowledge of trees is knowledge that is fundamental for survival. There are certain elements of survival that cannot be ignored. Without shelter from the elements you are a poor survival risk. Without food and water a person obviously cannot survive. Without the ability to make a fire, survival chances are diminished. Interestingly enough, trees can provide *all* of these necessities, either directly or indirectly in some form or another. Tonweya, "the scout," needs knowledge of the trees to know the survival arts.

It is because of this close relationship between the scout and the tree that this study of trees is named Tonweya.

Tonweya—The Study of Trees

In addition to the importance of trees to the survivalist, knowing about trees provides important background information for the naturalist, the tracker, the herbalist, and all other forms of study of the natural world. You will see how all these things fit together as we go.

Furthermore, to the artist or to the artistic observer, the trees fill another important role in our lives: providing incredible beauty and, as living symbols, reminders for many people of how we should live our lives together. It is my hope for you that through this study, the beauty and function of the trees that stand so tall around us and are "rooted in the past, standing in the present, and reaching to the future," will touch you in the way they have touched me and the many students of this program who have gotten to know the trees in this way.

This study is based on twelve years of training naturalists, survivalists, and students of native lore. The point of view of survival is generally overlooked in the scientific study of trees called "dendrology." The art of native survival draws on the experiences of survival experts and teachers, as well as native lore. Survival and native lore give the student of trees a larger sphere of study in which to delve.

INTRODUCTION TO THE STUDY OF TREES

Trees and Other Woody Perennials

As you read in Chapter Four, a "woody perennial" is a plant that adds wood to its tissues each growing season and continues to grow by sprouting from buds, enabling that single plant to live for several years—and often several centuries. Another term that means the same thing is "woody plant."

Woody plants can be in the form of ground covers, vines, shrubs and trees. As you found out in your studies of plants and will continue to understand through your studies here, you must retrain your mind to think about woody plants in a different manner than you would think about animals or birds. While animals and birds are classified according to rather basic similarities and differences, the world of plants and trees can be a bit more difficult to distinguish.

The word "tree" was created for convenience because it is a popular concept in the commonplace world. Most people have a basic "understanding" about what trees are, even though this information is not based on sound scientific reasoning. Remember in your studies that we are simply mining the scientific information for the valuable information that it provides, but that we recommend that people use these things as a means to gain greater insight and understanding of the natural world. What I am saying to you is that "tree" is misleading. So get ready. We will go into this more later, but taking time to review Chapter Four and the differences between woody plants and herbs sometime before then would be a good thing for you to do.

Trees and Tracking, the Bigger Picture

The same thing that made people lump trees together as a group (that is, their characteristics of height, girth, and durability in the

landscape) has also made them quite important in the development of diverse life on Earth. Therefore, they are very influential on the life forms around and in them. Many species depend on trees for much of their lives either in a direct or indirect manner. This journaling process will help us approach the study of trees from both the practical point of view of a naturalist, a native who uses the tree's products, and a part of the Web of Life that benefits from their presence and interactions with trees on many levels.

Your ability as a tracker and naturalist is highly dependent on your abilities as an observer, your background knowledge, your instincts, and your "detective skills" at the synthesis of information and observations. Trees are such a cornerstone in building the foundation of this process that the tracker must simply get to work and learn them or there will be a tremendous gap in their knowledge of the landscape.

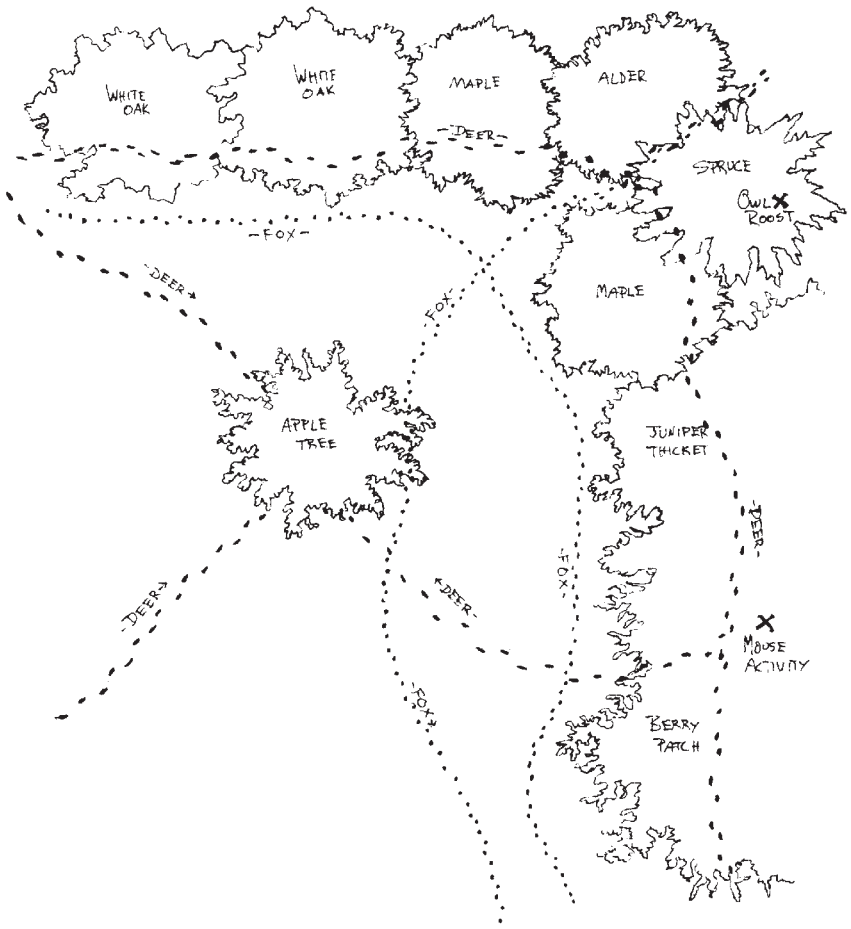
How good are your detective skills?

In *Kamana One*, you went on a brief imaginary walk. Why don't we do that again now. Let's say that the time of year is Autumn as we take our walk through the imaginary forest. In fact, let's say that this forest is connected somehow to your Secret Spot. Now, I'm curious where we should go if we want to see the deer, so before we even take our first step, let's think about where it is that we want to go.

Well, we know from our mammal studies that apples are a favorite food of deer, and through your explorations of the area around your Secret Spot, you know that there is an old and abandoned apple orchard just up the road from your Spot. Arriving there, we are not surprised to find a well-worn network of trails leading to the apple trees during the time when the apples are falling to the ground. Great! Good job! Now keep going there until you can tell me how many different deer visit the orchard and where they each come from.

After a few months of visiting this site, you should not be surprised to see that the trails that were so well worn in the Fall have faded away through disuse in the Spring when there are no apples to be had and the new herbs have grown tall.

If you apply detective process to the world of nature you will soon see that many aspects of animals and plants are highly dependent upon the presence of trees and what they contribute to the habitat in ways as obvious as this and in ways surprisingly more subtle.



In the higher levels of the Kamana program, you will really see and experience how the knowledge of trees is an essential building block in your foundation of background knowledge. You will learn to really appreciate the network of trails that wind through the wild (and not so wild) places and how they are related to the trees, shrubs, and other woody perennials for food, cover, protection, hunting, hiding, denning, and nesting.

Adding Another Ring: More About the Woody Plants

Plants that live from year to year and grow each year from the same "stem" are known as "woody perennials." What makes a woody perennial woody is that it contains wood fibers (also known as lignin). These wood fibers grow in a "permanent" stem that keeps adding in mass and increasing in size each year by adding new wood through specialized tissues found in the tips of the branches and the inner layers of the bark. How tall the woody plant is does

not change the fact that it is a woody plant. You'll find that they may be ankle high ground cover, shrubs, trees, or vines.

Wood as a protectant and structural support is simply a good idea—just like wings are excellent for flying and gliding. Flies have wings. Bats have wings. Birds have wings, too. Flies, bats, and birds are not closely related. Likewise, the presence of wood does not mean two plants are related. It just means that they've both had the same good idea.

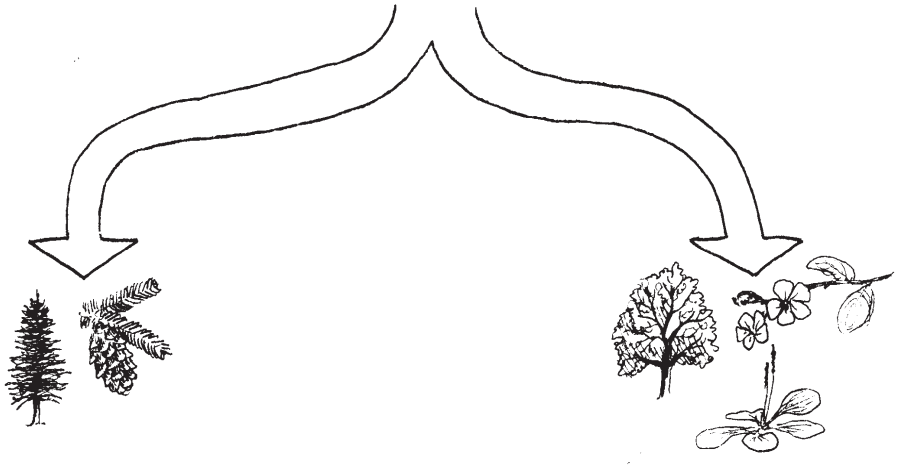
All of this means there are two different types of plant studies: the herbs (Chapter Four), and the woody plants. The types of woody plants that you will study here are the trees and the shrubs. Through what you have done already, you should have a solid grip on what defines an herb versus a woody plant. What you need to know about now is the difference between a tree and a shrub.

The "tree" is defined as something that grows larger than a certain size by height and width (diameter), and that possesses a certain type of canopy. Although the specifics of height, width, and "stem" are different, the shrubs are also similarly defined. Usually, shrubs do not grow as tall as trees and they have multiple stems with a fairly small diameter as opposed to the trees, which usually have a single, stout "trunk." When you boil it down to the essence, that's the difference. The introductory pages to the Audubon Guide to Trees goes into greater depth about the specific measurements and qualities. It's a good idea to become familiar with what these are before you begin your journals.

In *Kamana One*, you read about the difference between conifers and broad-leafs. As with everything else here in this second level of study, we are now going to go deeper.

Essentially, conifers and broad-leaves are different in two ways: their reproductive methods and their leaves. As far as classification is concerned, the most important manner in which they are different is their reproductive features, as these are the least subject to major change. Think back to the general relationships between herbs, shrubs, and trees, and you'll remember that they are classified together more than anything else on the basis of the structure of their flowers.

There are two basic methods of reproduction amongst trees: the gymnosperms and the angiosperms. What distinguishes the angiosperms from the more ancient (so-called "primitive") gymnosperms is the presence of flowering structures and seeds that have a coating that is impervious to drying out. This allows them



to colonize a greater variety of habitats—and, by the way, is what originally caused a virtual explosion of diversity around the world that also included other angiosperms such as grasses and herbaceous plants.

The seeds of gymnosperms all grow in cone-like structures. These "flowers" are often separated into male and female cones, but these are usually rather indistinct, especially to the beginning observer. If you take a look at a cone, you'll find that it may contain several dozen or even hundreds of individual seeds in it, growing singly or in pairs underneath each of the scales of the cone. Each of these individual seeds lacks the moisture-sealing coating that is present in the seeds of the angiosperms. As a result, these "naked seeds" are prone to drying out if they are not in the right conditions. Examples of this can be found with certain types of pine cones, whose scales open up wide when they are dried.

In turn, think now of an acorn, which has a tough leathery shell that allows it to weather extremes in the environment such as the cold of winter, the heat of summer and the teeth of squirrels—only to sprout and grow when conditions are good. Even more curious is the coconut. Believe it or not, the coconut is a type of grass seed that is adapted to floating around on the sea until it washes up on a likely beach. Consider, too, the seeds of burdock, which stick to our shoelaces and travel the world over waiting to be planted by our feet unknowingly.

There are also the clever "turd-riders" which hide inside delectable fruits such as rose hips or cherries and pass undigested through the digestive tracts of birds and mammals to be planted in neat rows where fence wires ride over pastures. Many years later the fence has long since disappeared but the evidence remains in the trail of cherries, roses and sassafras trees tracing the old fenceline.

The acorn, the coconut, and the cherry are all representatives of our second type of tree: the angiosperms, the great land colonizers and the source of important wildlife food resources of endless variety. The diversity of dispersion methods for seeds is astounding, and they are all possible because of the presence of that moisture-saving coating that all of these seeds have in common.

Simple Recognition of Gymnosperms (Confiers)

The difference between the seeds of gymnosperms and angiosperms is fascinating—and a good thing for you to be aware of as you study, for certain. However, it is not the easiest way for you to learn tree and shrub identification. If you live here in western Washington, unless you were able to find some that had fallen onto the ground, during certain times of year, you'd be hard-pressed to study the cones of certain conifers. Some of the trees here are well over two hundred feet tall, and those that grow that tall often don't have any branches on them for the lower hundred feet or so! Can you imagine needing to climb all the way up a tree like that to look at the cones to find out what type of tree it is? Luckily, there's an easier way.

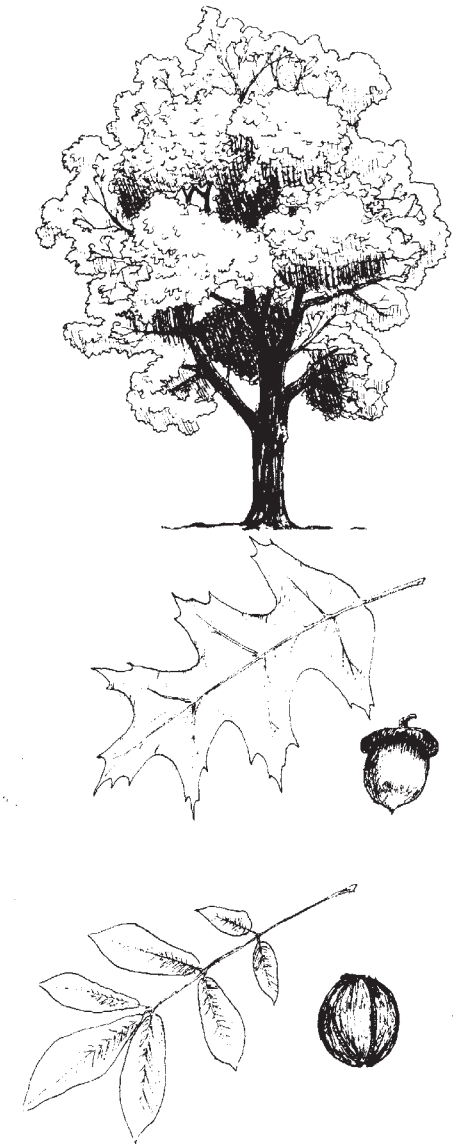
Generally speaking, it is easiest just to ask yourself, "Does this look like a 'pine-like tree' to me?" (usually deduced by studying the leaves or needles). If it does, it is probably a gymnosperm or "conifer," a term that I will use from now on in reference to these trees. Conversely, if it does *not* look like a pine tree, then it is probably an angiosperm, which I'll refer to from now as a "broad-leaf."

The conifers tend to be the only trees that you will find that have adapted their leaves into long, thin "needles." While these needles can take on many forms—including some that look more like scales than leaves—their presence is a good indication that you are looking at a conifer. The conifers all have needles, scales or needle-like leaves and bear some sort of cone or cone-like fruit that contains seeds.

Furthermore, all of the conifers have a basic similarity of form and quality that goes beyond their leaves and cones. Conifers are often resinous. They are often aromatic with a "piney" scent. And, they often have a "Christmas tree like" form that is even visible in the species which loose their leaves in Autumn. Conifers include pines, spruces, firs, "cedars," yews, junipers, redwoods, and tamaracks.

Basic Recognition of the Angiosperms (Broad-Leafed Trees)

If the tree you are looking at does not remind you of a pine, then it is probably a broad-leaf. Clues to this are: 1) the tree has *relatively* wide leaves, and *not* needles, 2) it is not resinous, 3) it does not bear cones, 4) it is not pine-scented, 5) it is not shaped like a Christmas tree. Different types of broad-leaves include the maples, ashes, dogwoods, viburnums, elderberries, honeysuckles, cherries, apples, grapes, roses, sumacs, poison ivy, oaks, birches, aspens, alders, madrones, hickories, hollies, laurels, heaths and locusts (to name a few). There is also a great variety of underbrush species and vines. Remember that the greatest variety exists in the world of angiosperms!



Almost instinctively, it seems, we all seem to know the difference between conifers and broad-leaf trees. There is, however, a *huge* variety of woody angiosperms ranging from the tiny-leafed sandbar willow, to the enormous-leafed ailanthus, to the musclewood, to the shagbark hickory. The leaves, bark, growth form, flowers, and seeds can be widely variable from one type to the next. If you can remember what a conifer is—to the point where you can see it in your mind's eye and smell the scent of the sticky pitch—you will have a good footing from which you may classify the trees that you encounter.

Do you understand the difference between a pine and an oak? Do you have the basics down? I hope so, because I'm about to add another ring to your growing layers of knowledge about the world of trees: deciduous and evergreen.

Do you know why I shy away from the word "evergreen" as a classification distinction term? To summarize my reasoning in a quick sentence or two, the conifers are what most people think of as pines, and many of them are evergreen, but some are not. Similarly, the broad-leafed trees are often deciduous, but many are evergreen.

Evergreens, by their very definition, are green the year round, but that can be misleading (rules are only made to give us some structure; they are not the final word). Let's look at the term "evergreen" and outline some common usage of this word.

> Evergreen: 1) A plant which remains green all year round, retaining its leaves or needles throughout the year. 2) A member of a group of plants that bear needles, scales or some other form of waxy, aromatic "leaf" resembling needles and usually bearing seeds in fruits defined as "cones" in one form or another. 3) Pine trees (often stated by beginning students).

We'll use the first definition above, because some "pine trees" are deciduous (meaning they lose their leaves or needles in the fall), and some broad-leafed trees (which look like deciduous trees) are evergreen!

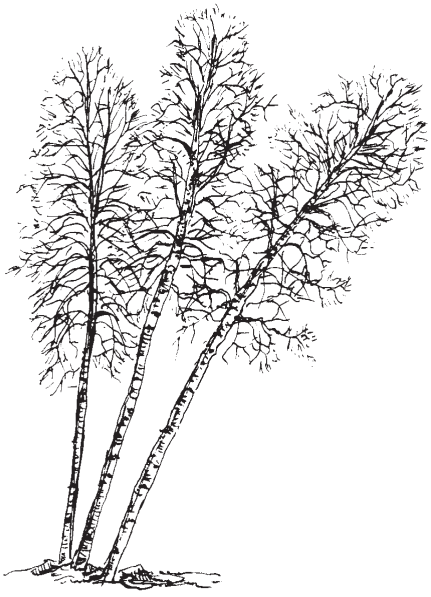
Deciduous more or less means that when the autumn arrives and the weather begins to cool, the plant loses its leaves. It looks like a dead tree, essentially, because all that remains throughout the winter is the naked skeleton of the trunk, limbs, branches, and twigs. The tree is not dead, however—not by a long shot! If you remember back to Chapter Four and the discussion of what makes woody plants unique from herbs, when you look closely at the ends of the branches and twigs on the broad-leaf, you'll find that there are leaf buds growing there preparing for the coming year to open and mature into great new leaves.

There are many thoughts on why it is that deciduous trees lose their leaves, but now is not the time to get into that discussion. For now what you need to know is that evergreens keep their leaves, while deciduous trees do not.

The Exceptions to the Rules

Let's look at two examples from the tree world which do the opposite of what is expected of trees by the names "evergreen" and "deciduous." Consider the Larch and the Tamarack. These are

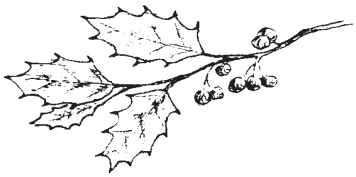
conifers (cone-bearing) with needles for leaves and in summer look like a spruce, fir, or pine with short needles. In winter, however, these same trees have no leaves at all and at first glance look as though they are dead. In the spring their leaves grow back again. These trees are deciduous conifers.



There are *plenty* of examples from the broad-leafed tree world (the ones we think of when we picture your average maple or oak leaf—the angiosperms) that are evergreen. There are hollies, laurels, rhododendrons, magnolias, madrones, Oregon grapes and many, many more examples of "evergreen" broad-leafs. There are even some oaks that are evergreen, too, so make no assumptions! The leaves are generally thick and leathery—made tough so that they can endure cold weather or simply a long life subject to the wear-and-tear of the forest.

PREPARING TO JOURNAL

It seems to me that you're ready to study the world of the woody plants! We've discussed here the importance of trees to your nature studies, the role of trees in the lifestyle of the native scouts, and also the basics of tree identification and classification: herb vs. woody perennial, tree vs. shrub, gymnosperm vs. angiosperm, evergreen vs. deciduous. The rest is up to you, so let's get down to it!



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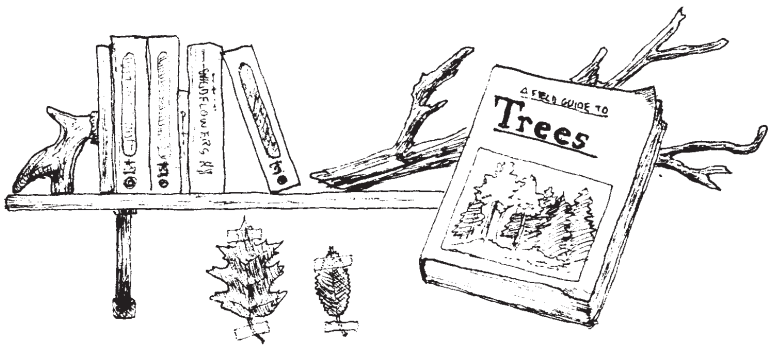


Journaling Trees

Required Resources:

Audubon's Field Guide to Trees
(Eastern or Western Regions)

Reader's Digest: North American Wildlife

This study of trees and woody plants is a step-by-step process which involves looking through resources from several points of view. Much of it can be done at home at your desk with the field guides you have for this course, but some of it will require a trip to the library or a local museum for research on native and survival uses of woody plants. You will want to anticipate the information that you will need to keep your trips to the library to a minimum. Photocopying pages out of resources while you are there is something that I would recommend. Keep careful track of where you derived information, including the page number.

Part of the goals in this section of your studies is to provide you with solid background knowledge about the identification, ecological significance, and "survival" uses of trees. As in all journaling sections of this course, you are learning to make the best use of available resources while striving to build background information. Completing your research on trees is an essential foundation to prepare you for field identification. Remember to review the mind's eye methods that you've been practicing in all other sections of the Resource Trail, as they are described in the second half of Chapter One.

Setting Up the Journal Pages

As usual, there is a way to approach the set up of journal pages that will enhance your observation skills, increase your knowledge of the important vocabulary of the subject

at hand, and otherwise keep you organized. The basic guidelines for doing your journals are the same as they have been for all of the other journals that you have completed for the Resource Trail: creating separate sections for the text and for the sketches, and being sure to use your mind's eye throughout the entire process.

Text materials include all the written information that you gather from various resources. This will include information for identification and field study, and information on the practical uses of the plant from the past, in the present and for the future.

The first part of the text involves the identification information, habitat references, growth rate, common associations in an ecological setting, succession information, light preferences, exposure preferences, elevation preferences, moisture levels preferred, similar species, reproduction information, descriptions of fruits, seeds, and other referential material from field guides.

The second part of the text, titled as the "Practical Text," also includes any information gathered about native uses, poisonous aspects, edibility, medicinal qualities, survival, seasonal products, landscaping, lore and any other information of interest to you. Other important information would be its usefulness in restoration of local habitats to native "ideals."

It is a good idea to keep field guide information on one page, and usage information on a separate page. This helps not only in organization, but as you go through your life as a naturalist you will find that you are always expanding on information. This will give you the opportunity to keep things together, and separate at the same time!

Text

Field naturalists have spent many years studying and coming to conclusions about important field and identification information about woody perennials. As in all sections of this course, we do not believe in re-inventing the wheel when good information is already available. Therefore, simply paraphrase and list information straight from your Audubon guide and RDG, and any other sources you are using. Remember to credit these sources properly on the bottom of the page. You cannot use this in a published fashion without special permissions, but for your own use this is fine.

General Description: General Description is information on size, (height and diameter), leaves, bark, twigs, flowers, fruit and other characteristics of the species. Copy this information using a similar format.

Habitat*:* Habitat discusses soil characteristics, moisture, light preferences, location preference, elevation and associations. You can take this from the Audubon guide to trees, but definitely refer to the other guides (RDG and Peterson's) for additional information. This is an important part of the study. You need to know where to expect to find this tree.

Range*:* Range can be copied as it is in Audubon.

Important Notes: Important Notes can be derived from the bottom of the information on the species by the range map in Audubon, and supplemented with information from RDG and Peterson's. Use any other sources as well. This begins to build a profile on the species. Some of the information there can be moved to the "Uses" section of the text as listed below.

Ecological Information: Ecological Information can be taken from the paragraph in the Audubon guide described just above, as well as from the RDG and Peterson guides, as well as many other sources. Try to include its importance in an ecosystem and what it contributes in the way of food, cover, nesting materials and other things important to wildlife. Mention the wildlife benefited whenever you can find that information. This information would also include the position of the species in succession, other plant and wildlife species usually associated with the species, as well as growth rate.

Relative Abundance: The relative abundance of an individual species is important to restate. This will help you realize how much or whether to harvest a species from the land. Very common and fast growing species can be harvested with general sensitivity. Rare species or very slow growing species should be thoughtfully harvested if at all. It is often possible to learn from natives or experts ways to prune, or harvest without killing or damaging the individual. Sometimes pruning can actually help.

"Practical Text"

The information contained in this part of the study will help you get to know each species from a very hands-on and practical

perspective. We will combine knowledge about the relative abundance of the species with native uses, potential dangers from the species from poisonous aspects, useful edible qualities, medicinal uses, and other information about use in survival, hazards from shedding branches, topping, lightning attraction, lore, and finally use as a "landmark" species for later identification purposes.

This is the stuff that can keep filling pages as you go through the course, and through your life beyond the certification scope of this course. Allow yourself to grow in this way and prepare your pages accordingly. The ID stuff can be confined to one side of a journal page. Allow this to expand as much as it needs to.

Environmental Condition Indicator: Another aspect of a tree or other woody perennial is what the species *indicates* about the environment. When driving down the road in the east you can spot the streams by the sycamores and the wetlands by the red maple flowers in spring. Chestnut oaks indicate great drainage and exposure for shelter in the winter. What does the tree indicate? Think like a native scout (remember how important the trees are to the scout?). It may take some thinking but it will be well worth it.

Native Uses: Native Uses includes the uses of the species for various crafts, medicines and survival uses. There are often one or two good books that will provide much information for your region. Some of the information may be repeated in specific sections later, *but* keep it all together in this section because of source considerations.

- Note: List the name of the Native tribes you have gained information from and, as usual, use your proper referencing technique. Cross reference different tribes from the same ecosystem, or different ecosystems containing the same species. You can do as little or as much of this as you wish. This can be time-consuming research, but it is also some of the most useful information you can find.

Poisonous Aspects: This can be gathered from the *Peterson Guide to Venomous Animals & Poisonous Plants* (p. 152-192) as well as the *Peterson Guide to Edible Wild Plants* (p. 163-225). The information provided may completely overlap from these two guides. Combine and paraphrase where necessary. You can use other sources as well. List the information given, especially paying attention to the **part** of the plant that is poisonous and any of the warning information given. If the plant has no poisonous parts, state that. There may be a seasonal aspect to its poisonous expression. Note the season as well.

Edible Qualities: There are several good books and resources out there. Include seasonal reference, habitat reference and practical information about edible qualities as well as poisonous look-alikes. Poisonous Look-Alikes should always be noted when doing this sort of work. List the part of the plant that is edible, how and when it is gathered, and how it is prepared and served (usually with butter and salt!).

You can always supplement this information from other sources. There are many great teachers out there, great workshops, whole societies dedicated to this sort of thing. Contact our office for more information—we may know someone in your area leading walks. There are many good books on the subject of wild edible plants. One thing to be careful of is a new-kid-on-the-block resource or teacher. Always cross-reference when working with little known or new resources. You can always check with us.

Medicinal Uses: Again, there are several good resources out there on this subject. One that I highly recommend is *Peterson's Field Guide to Medicinal Plants*. This is an excellent book put together by the two of the country's most respected experts on the medicinal uses of plants. James Duke is the author of one of the world's most comprehensive and largest collection of pharmaceutical uses and actions of wild plants and their constituents. It is the size of those huge library encyclopedia/dictionaries that need their own stands. It really is! The guide he and Steven Foster have prepared is an excellent digestion of critical information from a worldwide perspective and experience.

The information contained in this book is useful knowledge and may come in handy one day. Write the same sorts of things for medicinal trees as you did for edible ones. There are some terms involved with the constituents and active ingredients of the plants and the effect that they have. Later in this course you will have to refer to this information; for now just write down what you see. You can figure it out later, or look up the terms in the glossary as you go.

Other resources can be consulted. Remember that you can always expand on this information later simply by adding on to the pages you have, or adding new pages when the others are full. That is why I recommend using one sheet for identification information and another for the lore concerning its various uses. There are many resources, books, and even courses just on how to work with herbal medicine. We can make recommendations.

Survival Uses: Survival uses can be gleaned from a number of sources. If you are a Tracker School student you can look at your notes from your classes. Tom has given you many good lists of how trees are used for what. You can consult any number of great books on the subject of survival and native crafts, including *Tom Brown's Guide to Wilderness Survival.* A good general book with lots of information in a few pages is by Edith Van Allen Murphey and it's called *Indian Uses of Native Plants*, ($6.95; ISBN 0-916638-15-4; Meyerbooks Publisher/Box 427/Glenwood, Illinois 60425).

In this section of the journal page you want to list the use of the species in crafts, the quality firewood it provides, survival tools you can make from it such as shelter, hand-tools, weapons, traps, cordage, baskets, fire-making tools and miscellaneous materials. Be sure to include your sources. You can look at the appendix at the end for more ideas of where to get this information.

Landmark Value: Landmark Value is a reference to its use as a comparison species. Is it really obvious or outstanding in some way? If so write down here what distinguishing aspects can be easily learned and recognized such as its bark (shredded, or real smooth for example), the leaf (extra large, extra small, strangely colored or textured for examples), shape or branching characteristics. Give a short description of these aspects.

Landscape Value: Landscape Value describes the woody perennial's potential to add to the productivity of an environment by providing special or abundant food or cover needs for wildlife. Berry shrubs, nut trees, thick evergreens and fruit bearing vines with edible stems and leaves are examples of things that can become an important resource for wildlife.

These are especially important where one considers restoring the native environment in a second growth situation such as in an old field, or even along the edges of lawns. It is much better to restore native vegetation, especially trees, shrubs and vines, than to buy exotics at the local nursery. The wildlife will thank you personally! Write down how they are planted, where they like to be planted and what value they have.

Miscellaneous: This is a special category to catch any extra stuff that just needs to be emphasized again (such as in the Audubon Guide to Trees), or interesting or important information that just doesn't fit elsewhere. Information on its status as an endangered or threatened species may be of interest enough to place here.

Sketches

Field dendrologists and other people who are experts at studying trees in the field often focus right in on two major characteristics. The first characteristic to notice is the branching pattern. Does the tree have an opposite or alternate branching pattern?

The other characteristic that they focus on is the relative twig and bud size. If the twigs are small it indicates that the leaves are small and the buds are usually small also. If the twigs are large, the leaves tend to be either large or compound and the buds also tend to be large. A good example is the ailanthus tree, which has very large twigs and also has very large compound leaves. These are the things you must train your eyes to do: recognize opposite branching, alternate branching, and then relative twig size.

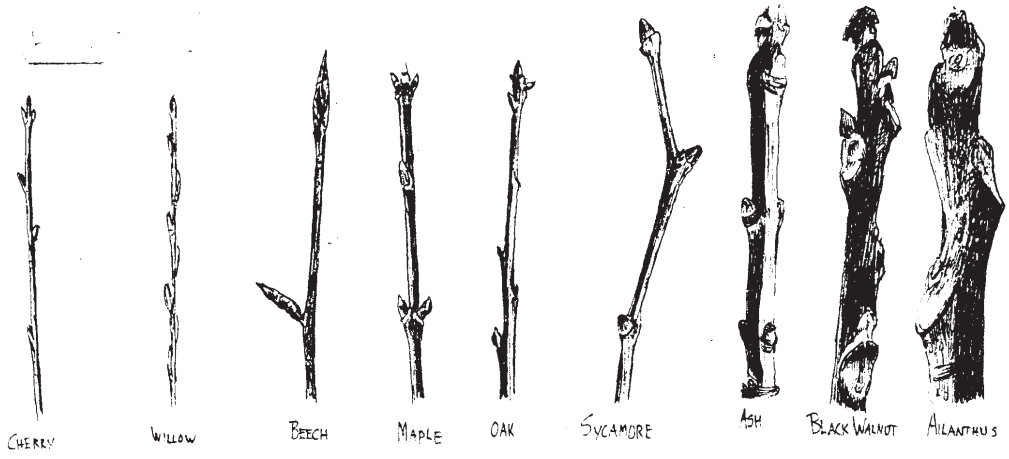
Begin with the illustrations in the guides you have used already and supplement this with as much or as little as you choose. Start with the branches and the twigs, and then do the flowers, the fruit, the buds, the leaves, the habit (or silhouette) and then, if you have the nerve, the bark.

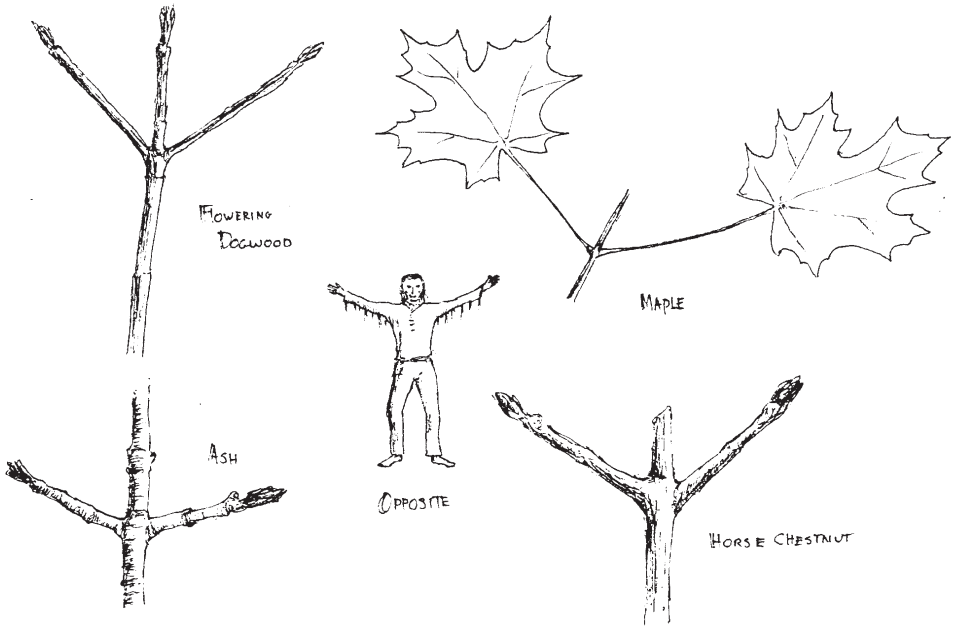
Twigs: Twigs reflect the size and type of leaf and possess important characteristics of their own. "Eyespots" at the branch nodes (such as with birches), lenticels (bump-like projections on the bark), shredding characteristics, glossiness, striping, spots and other subtle and sometimes not so subtle (thorns) features should be noted. Twigs can often be used as the sole means of identification of a species. Look carefully as you sketch these.

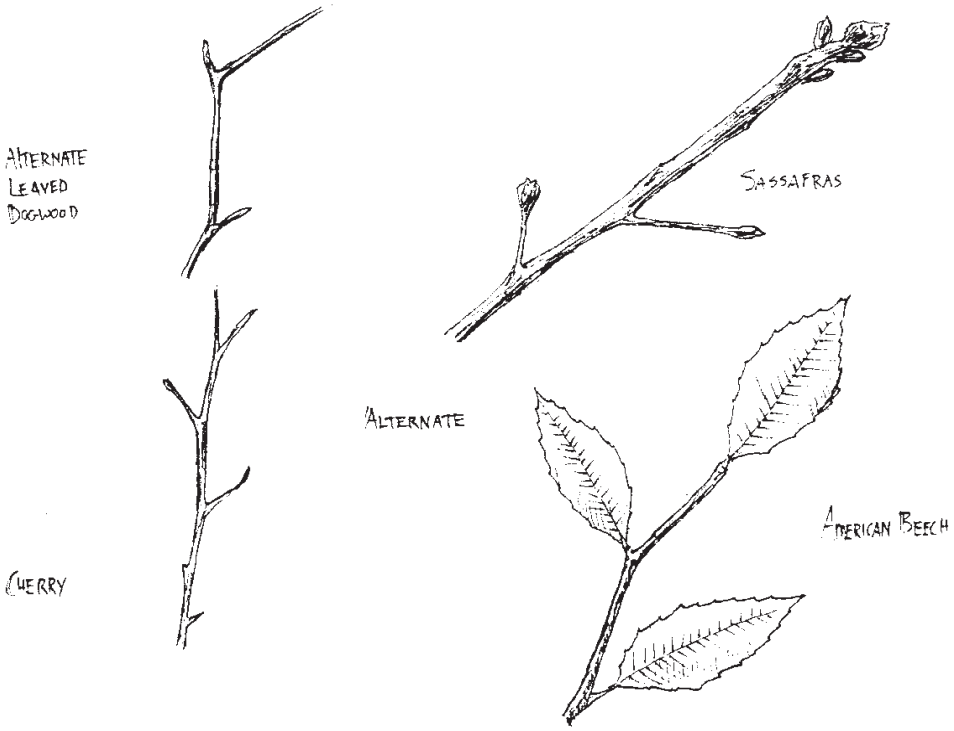
Branching Pattern: As with herbs, the branching pattern is an indicator of how trees are related to one another. Pay attention to the arrangement of leaves and twigs when sketching as to whether they are opposite or alternate in their branching pattern.

Bare Bones

When sketching deciduous trees, sketch them the way they look without their leaves. This may seem like a funny thing to do, but you've already drawn what the leaves look like separately. Since the tree loses its leaves, though, it is important that you know what it looks like. If there is no picture of what the tree looks like without its leaves, picture it in your mind's eye. What is the overall shape of the tree? Does the trunk split into many smaller trunks and limbs, or many small branches? Are those branches opposite or are they alternate? Consider details such as these, but remember to keep your sketch simple.

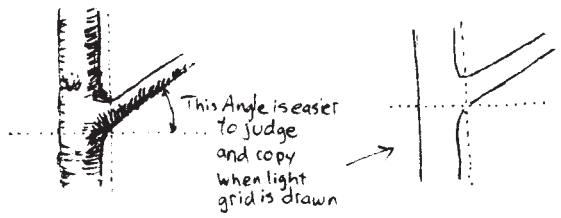



Flowering Dogwood
Maple
Ash
Opposite
Horse Chestnut


Alternate Leaved Dogwood
Sassafras
Alternate
American Beech
Cherry

- Opposite branched trees have two branches emerging at each node (like a person with two arms extended, or like a three pronged fork, the main twig in the center with two branches rising at angles away). Maples, ashes and most dogwoods show this branching characteristic.
- Alternate branches come out of the main branch first on one side, then a little higher (closer to the tip) on the other, and so on. They alternate up the twig, up the branch and up the tree. Note that leaves also respect this pattern. In fact, leaves do it first, twigs follow leaves, branches follow twigs, and so on.

Flowers: Flowers are key to understanding family and generic relationships. This is one of the characteristics used to classify plants and is therefore important to study. Pay attention to the type of flower, the number of petals and its overall look or strategy for pollination (wind, bees, other insects or wildlife).



Fruit: Inside the fruit is the seed. That is important to know, because to the tree, it's all about this one simple question: How can I make sure that my seeds get spread around so that they may grow? Think of the strategy of the fruit and what it might feed when you sketch it in.

Fruit is not always the same as what you might think of as a fruit. For instance, burdock burrs are a fruit! Fruit has as its purpose the spreading of seeds. Edible fruit is designed for you to swallow and pass the seeds undigested in your scat. Many a rose thicket, cherry tree and sassafras hedge has been planted in this way by otherwise unwitting birds and mammals. An acorn is also a fruit—the cap and husk surround the fruit, designed for burial and rot prevention for later growth if the squirrel forgets!

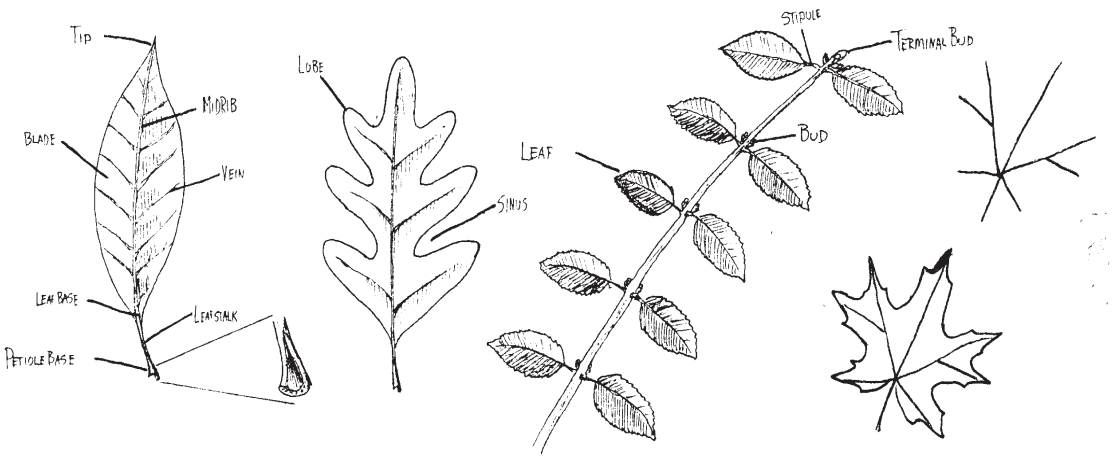
Cones: Cones are the seed holders for conifers. These should be sketched as well. There are also male and female cones in many species of conifers and broadleafs as well. Check these out and draw them both.

Seeds: Seeds are different from cones and fruit. If this information is available, sketch it!

Buds: Buds will usually unfold in spring to reveal the leaves or the flowering structures of a plant. The buds are indicators of leaf size and type. Pay attention to buds for characteristics of size, texture, shape, angle and number. Sketch a bud or two. The buds at the end of the twigs (terminal buds) are usually larger than the ones down the twig (axillary buds). Draw one of each if available.

Leaves: Leaves grow from the buds and take many forms. There are complex large leaves known as compound leaves, and there are small simple ones. Look carefully at the veins on the leaf, the luster, the texture top and bottom and the edges or margins of the leaves. These should be considered while sketching.

Silhouette or Habit of Tree: Trees growing in an open situation, or with good light, will often take on a very characteristic shape unique to that species. This is called its "habit" and is usually represented by a silhouette. This is the characteristic that allows a skilled observer to identify a tree from a car traveling at 60 mph! Really! Pay attention to the habit as you sketch. This is tough to pull off though, especially with no field experience to compare to. Just do your best.



Bark: Bark is one of the toughest things to represent in words or in sketches. It is easier to say it has bark like a shaggy Doug-fir, or a bumpy beech! (Hence our interest in the Landmark Method of tree identification). Just try to capture the patterns in the bark if you can.

Range Map: Range maps can be traced, or drawn freehand on the page as you did with the mammals. The resource used for this purpose is the *Audubon Guide to Trees.* When using other resources for vines and shrubs, use the range map from those sources. If you cannot find a range map, leave a blank country for later filling in if and when you come upon that information.

Adding the Final Ring

Impressions: This will be the final section for each of your individual tree journals. As with all of your other studies along the Resource Trail, the final section of your various types of journals is your chance to be creative.

Take a brief moment to reflect on the varied aspects of identification, life history, ecological significance, survival uses, and Native lore that you have included in your journal. What are these things telling you about this tree? Whether or not you have ever actually seen one of these trees live and in person, how does it make you feel when you think of this tree? Combine any personal experiences that you may have had with your new knowledge, and write just one or two *brief* sentences, poetic lines, or quick illustrations that capture the heart of what this tree means to you.

Recommended Resources and Books on Survival Knowledge, Native Lore, and Native Ways

Researching Native lore and the Native ways of a particular region can be a very valuable resource. This is approached by reviewing ethnographic literature, accessing information from museums, and from Native American peoples themselves if they are willing to share. Again, if they are willing to share, also look to people who have been living in an area for a long time and have become knowledgeable about the land, whatever their ethnic roots.

An example of what you are aiming for in your studies through combining your studies of trees with Native knowledge might read as follows:

"In the former abundance of this land, the Lenape people of the New Jersey area would carefully choose and fell the big tuliptrees and Atlantic white cedars in a sacred manner. They would burn and hollow out these giants for use as dug-out canoes. They made mats from cattails and used them to cover the walls of their homes. Their main resource for covering shelters apparently was elm bark. They fashioned bows from ash and hickory, and arrows from viburnum stems."

This information is distilled from several sources from a local library. Much can be learned from an interesting evening or afternoon in the library or local museum.

The Smithsonian: There are a lot of good books on the subject of ethnography. Ethnography is the study of cultural origins and the factors that influence cultural development. The Smithsonian Institution is one of the very best sources of information. They publish all kinds of booklets: How Native Americans made canoes, how they made bows and arrows, even recipes about how they went about making pemmican.

The Library: A lot of useful resources are available in good libraries, especially university libraries. In this course occasional trips to the library are a very good idea. There are all kinds of anthropological books that can help you find useful information on the peoples and natural history of your area.

The *Foxfire* series tells you all about practical and fun skills and crafts. It covers what you can use groundhog hides for, how to make bootlaces, banjo heads and even how to build fiddles.

Hidden between the lines of the series is a keen knowledge of stewardship in relation to the landscape. You can learn when to harvest plants and trees as well as how to steam-bend wood. The *Foxfire* series is an excellent resource for many purposes.

Ishi, Last Of His Tribe, by Theodora Kroeber, is a helpful book. It is the non-fiction account of the last surviving member of the Yahi tribe of the west coast. This book gives clear insight into the simplicity and strength of living in harmony with the natural world.

Wildlife in America, by Peter Matthiessen, is an incredibly detailed historical survey of the original abundance of wildlife in North America, and our dramatic effect on it over the past three and a half centuries. This outstanding book belongs on every naturalist's bookshelf.

Other excellent references include Bradford Angier's book *How To Stay Alive In The Woods*, *Tom Brown's Field Guide To Wilderness Survival*, and Larry Dean Olsen's book, *Bush Craft*. These are all books that teach you about survival skills. Some of the topics covered are how to actually use grasses, bark, trees and other plant life for survival purposes.

Tom Brown's Tracking, Nature and Wilderness Survival School: This school offers intensives in survival and tracking skills, awareness training and Tom's Earth Philosophy. These classes are intensive and attract a regular following of people who, if interested by the material from the introductory course (The Standard), tend to take many, many more classes with Tom. Tom is an excellent storyteller and has built an engaging oral tradition around the skills of tracking, survival and awareness. He is credited with bringing tens of thousands to a greater awareness of the Sacredness of life. His classes are often booked well in advance and attended by people literally from all over the world. www.TrackerSchool.com

Boulder Outdoor Survival School (B.O.S.S.): The Society of Primitive Technology is a valuable resource of primitive technology information. Attend programs with their knowledgeable staff, or subscribe to their Bulletin Of Primitive Technology. www.boss-inc.com or try www.abotech.com

Here is information directly from a B.O.S.S. flyer:

> The purpose of the society's publication, The Bulletin Of Primitive Technology, is to foster and disseminate a wide variety of investigations into primitive technologies and aboriginal lifestyles. Articles range from basic, detailed

'How to' instructions to scientific research; from cultural and historic studies to ways in which these technologies express our humanity and serve as pathways to explore our origins. Members are encouraged to submit material for publication. The Bulletin is issued in the spring and fall with back issues available from spring 1991. Bear in mind that this society is for you and can only survive with your support. We hope to serve technicians including, but not limited to the following fields:

Environmental Concerns
Cordmaking
Atlatls & Projectiles
Primitive Life-Styles
Shelter Construction
Rabbitsticks & Boomerangs
Archaeology
Hafting Technologies
Tracking & Trapping
Flintknapping
Open Hearth Cookery
Navigation
Primitive Archery
Stone Ax Making
Birchbark & Dugout Canoes
Hide Tanning
Edible & Useful Wild Plants
String Games
Fire Making
Bone, Antler, Horn, & Tooth
Musical Instruments
Pottery & Basketry
Shell Technologies
Wooden Tools
Cultural Ecology
Adhesives & Finishes
Clothing & Adornments
Weaving & Textiles
Copper Working
Cultural Survival, etc.

Rabbitstick Rendezvous: This annual gathering of nearly one hundred of the best instructors or practitioners of primitive skills draws several hundred students per year. It is held in the Eastern Rocky Mountains. This is an experience that should happen at least once in your life if the subject of primitive skills even remotely interests you. The price is quite reasonable, the food is great and the people are really fun. Information can be obtained from B.O.S.S., who sponsors this gathering.

Earthwalk Northwest: Frank and Karen Sherwood, former head instructors at the Tracker School, offer incredibly unique programs from herbal studies, sea-vegetables, hide tanning, primitive fishing, bow making, survival treks, flint knapping, and more. Classes in Canada and Germany as well. PO Box 461, Issaquah, WA 98027, (425) 746-7267, www.earthwalknorthwest.com

Check the web for resources! From **www.WildernessAwareness.org** you can find links to LOADS of other sites and schools!

Have fun!

Trees

If you refer to the list of trees that follows, you will see that all of the trees I am asking you to create journals for are generalized. This is because, unlike the raccoon, which will be the same species no matter where you go in the country, there are many different species for each member of this list below. Which one lives in your area is something that you will need to research using the guides that are required for this chapter. To find which ones live in your area, simply consult the range maps in your Audubon guide and then look up the text for each one that lives near you to see how common it is. Through doing this the list of trees that you will journal will be tailor-made for the area in which you live, as each will be the one that is the most common in your area.

As with the other sections that you are journaling, I will ask that you re-create the journal that you made in *Kamana One* for your two local trees (one was a broad-leaf, while the other was a local conifer). The reasons for this are the same as they are for the other sections, namely that you now have at your disposal a greater variety of resources and things to examine and study about these trees. So, for whichever one you have already journaled, please—do it again.

Choose the proper region around which to conduct your study of trees from the choices below. The ten types of trees that are listed for your choice will be the ones that you will need to complete for this section of the program.

Eastern Trees	**Western Trees**
1) A Local Pine	1) A Local Pine
2) Eastern Hemlock	2) A Local Fir
3) A Local Maple	3) A Local "Cedar"
4) Sycamore	4) A Local Maple
5) Beech	5) A Local Ash
6) A Local Hickory	6) A Local Alder
7) A Local Oak	7) Western Hemlock
8) A Local Elm	8) A Local Willow
9) A Local Cottonwood	9) A Local Oak
10) A Local Ash	10) A Local Cottonwood

FINAL REFLECTION (SEND WITH FIELD PACK 2.4)

In a short paragraph, think back on how your knowledge and understanding of trees has changed through your Kamana studies. How has your knowledge of trees and your Secret Spot grown using these tools?

Name: _____ Student #: _____

Date: _____

REVIEW SHEET

Keep this page dog-eared in this booklet for easy reference as you go through Chapter Six.

1) Create Your 10 Tree Journals

Eastern Trees	**Western Trees**
1) A Local Pine	1) A Local Pine
2) Eastern Hemlock	2) A Local Fir
3) A Local Maple	3) A Local "Cedar"
4) Sycamore	4) A Local Maple
5) Beech	5) A Local Ash
6) A Local Hickory	6) A Local Alder
7) A Local Oak	7) Western Hemlock
8) A Local Elm	8) A Local Willow
9) A Local Cottonwood	9) A Local Oak
10) A Local Ash	10) A Local Cottonwood

Create the following for each journal:

Text	**"Practical Text"**	**Sketches**
General Description	Environmental Condition Indicator	Branching Pattern
Habitat	Native Uses	Twigs
Range	Poisonous Aspects	Flowers
Important Notes	Poisonous Look-Alikes	Fruit
Ecological Information	Edible Qualities	Cones
Relative Abundance	Medicinal Uses	Seeds
	Survival Uses	Buds
	Landmark Value	Leaves
	Landscape Value	Silhouette or Habit of Tree
	Miscellaneous	Bark
		Range Map

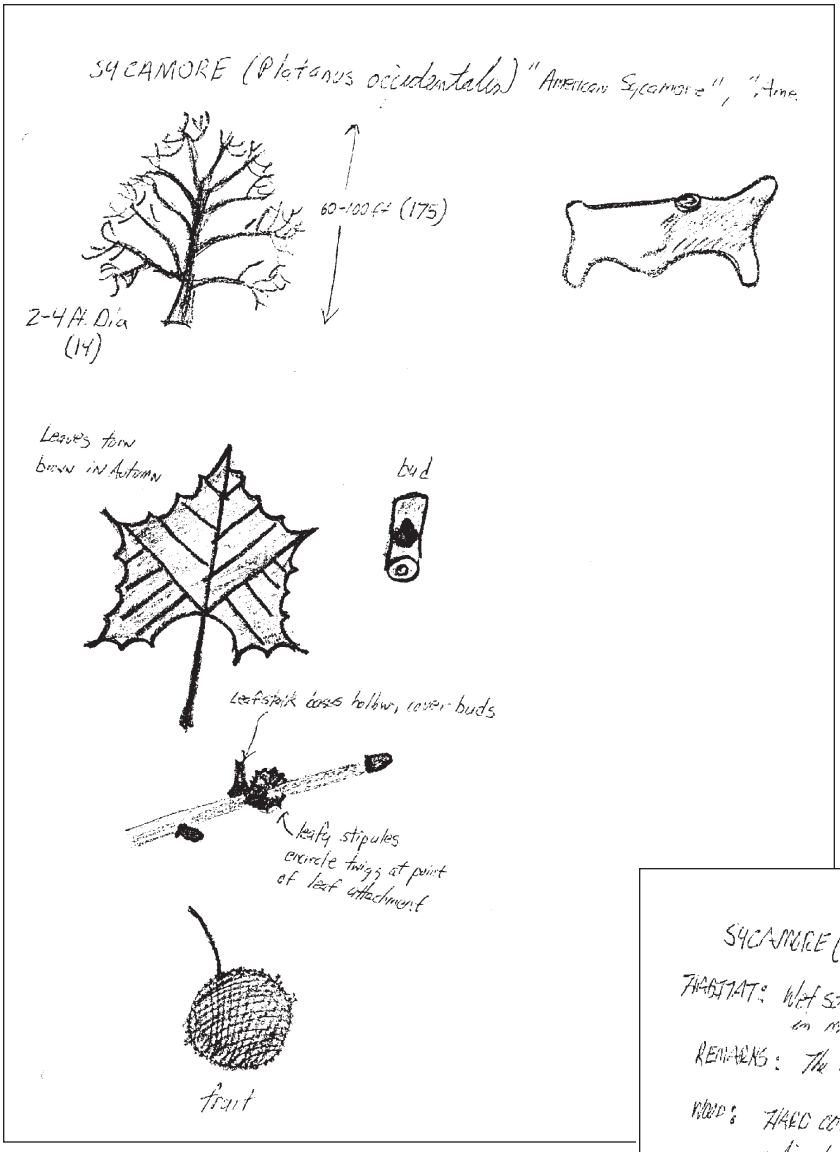
The Final Ring

Impressions

Remember to use your mind's eye through all of this!

2) When you have completed your 10 tree journals, write the Final Reflection for trees for Field Pack 2.4.

Is your binder out of Resource Trail Journal pages? Download templates at www.kamana.org.



Journal by Todd Hoffman

SYCAMORE (Platanus occidentalis)

HABITAT: Wet soils of stream banks, flood plains, edges of lakes and swamps, on moist fresh.

REMARKS: The most massive tree in eastern U.S.

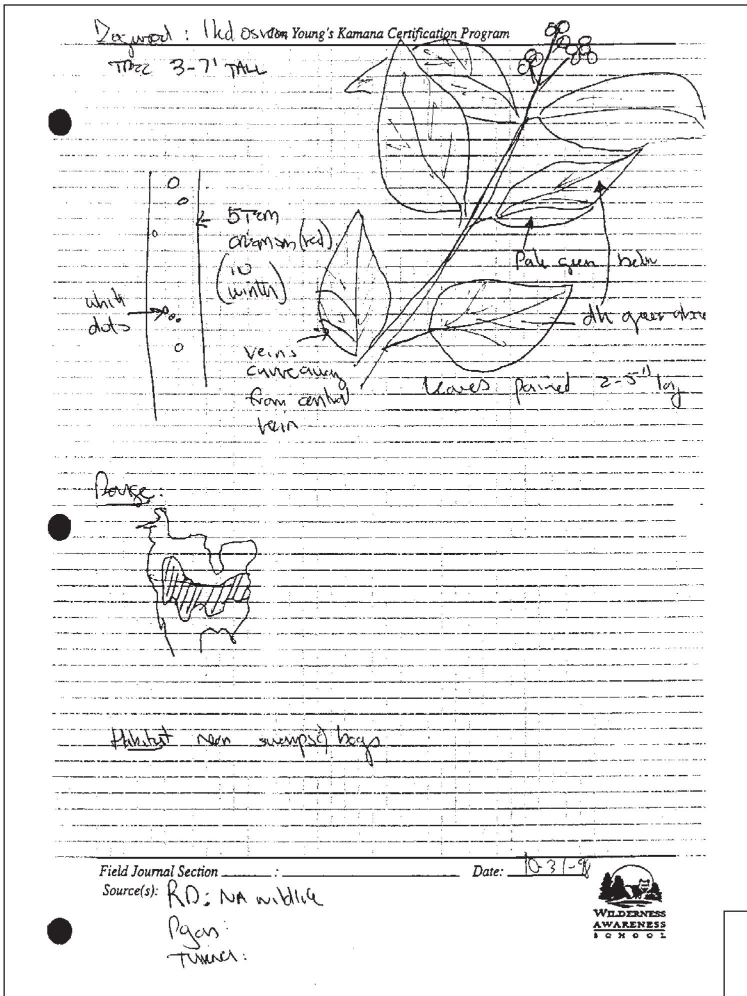
WOOD: HARD coarse grained, used for boxes, barrels, butchers blocks, cabinetwork and furniture. Indians used trunks for dugout canoes.

BARK: Mottled brown bark, flakes off like jigsaw-puzzle pieces

ECOLOGY: Twigs eaten by deer and muskrat, Cavities sought for nests, and shade by wood ducks, opposum and raccoon. Sycamore pioneers on exposed alter such as old fields, strip mines. A shade tree. Leaves perforated by scale insects. Common on mature riverine forest.

MEDICINAL: American Indians used inner bark tea for dysentery, colds, lung ailments, also a "blood tea purifier" and emetic "induce vomiting, laxative.

USES: Water - top tree any time of year



Journal by Tom Seal

Dogwood Family

Red Osier Dogwood (Cornus stolonifera) (sericea) (Red willow)

10'. Spreading thicket forming shrub.

Leaves 5" opposite, elliptical w/ curved veins, turn purple to russet. STEMS Red to Purply

Flowers tiny white. in dense flat clusters bloom May-July

Berries Tiny pale blue-green in clusters

Habitat lowland to mt. streamsides, swampy forests.

Medicinal ①leaves ②bark ③roots ④stem — Aspirin-like effect to ① inflammation ② pain; No stomach irritability; for fevers

Uses Same as bunchberry

Native: A the bark is the bark of "Red Willow" used in native smoking ceremonies.

B Berries eaten but bitter. Pure white berries less bitter than bluish. Ate w/ chokecherries & saskatoon berries

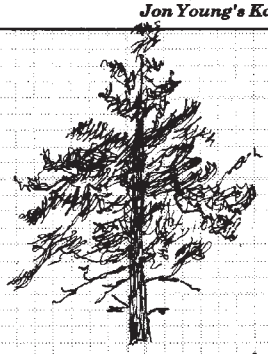
C stones - inside berries were stored & eaten later like peanuts

Uses

unequaled for making shuttles for weaving.

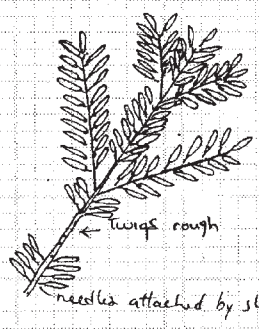
Jon Young's Kamana Certification Program

EASTERN HEMLOCK
Tsuga canadensis



Loose, irregular, feathery; short flat needles.

Range



← twigs rough

needles attached by slender stalks

fruit

Field Journal Section 5 : Trees ***Date:*** 2/17/95

Petersons - Trees and shrubs
Trees

WILDERNESS AWARENESS SCHOOL

Journals by Jonathan Talbott

EASTERN HEMLOCK

Tsuga canadensis
(Canada Hemlock, Hemlock Spr

-TEXT-

- Evergreen tree with conical crown of long, slender, horizontal branches often drooping down to the ground, and a slender, curved, and drooping leader.
height: 60-70' diameter: 2-3'
needles: evergreen; ⅜ - ⅝" long. Flat, flexible, rounded at tip; spreading in 2 rows from very short leaf stalks. Shiny dark green above, with 2 narrow whitish bands beneath and green edges often minutely toothed.
bark: cinnamon brown; thick, deeply furrowed into broad scaly ridges.
Twigs: yellow-brown; very slender, finely haired, rough with peg-like bases.
cones ⅝ - ¾" long; elliptical; hanging down at ends of twigs; numerous round cone-scales; paired, long winged seeds.

Habitat: Acid soils; often in pure stands. Characteristic of moist cool valleys and ravines; also rock outcrops, especially north facing bluffs.

- Hemlocks are shade loving trees. In mature stands, they create such dense shade that only their own seedlings can survive. The underside of every Hemlock needle is marked with two white lines, composed of hundreds of tiny openings into the leaf. These openings, called stomata, close and open as they regulate the flow of air and water vapor in and out of the leaf. All leaves have stomata, but in Hemlock they are grouped in such a way as to be visible.

Field Journal Section 5 : Trees ***Date:*** 2/17/95
Peterson - Trees
Stokes - Nature in Winter
Audubon - NA. Trees TB Edible and Medicinal

WILDERNESS AWARENESS SCHOOL

- Grouse and rabbits eat buds and needles. Deer depend on it as a winter staple.
Deermice and Red squirrels eat cone seeds. Squirrels scatter scales as they eat while deer mice leave them in a neat pile on the snow. Many winter birds depend on seeds.
- Porcupine may eat bark of one tree for weeks.

The tannin (bark) was stripped in girdles which killed trees, to use for leather tanning, in the 1800s.

- Leaves can be steeped in hot water ½ hr to produce healthy tea rich in vitamin C. The inner bark can be removed, dried, and pounded into flour for soup thickener, bread, ash cakes.

- tea from inner bark from twigs simmered ten minutes makes good mouth wash for swollen gums. ½ cup over course of day clears up diarrhea and settle stomachs.
- Good skin wash for skin ailments.
- Powdered bark sprinkled in shoes cuts down on foot odor, and around groin and under arms.

Field Journal Section ____: _____ ***Date:*** _____

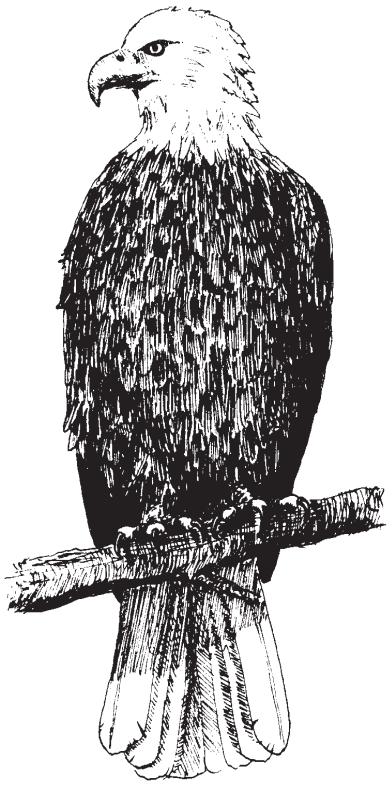
WILDERNESS AWARENESS SCHOOL

Chapter Seven

Birds

Part I

Birds



Birds and the Human Family

Do you ever wonder why we can co-exist with animals like cougars, bears, and coyotes and yet rarely lay eyes on them? Do bears, cougars, and coyotes know something we don't know? From my experience as a trained tracker, naturalist, and a practitioner of some "older" skills known to the native scouts and hunters, I have found that the answer to this question is that yes, these animals *do* know something that modern humans have forgotten. Through my nearly thirty years of study in this field, however, I have learned some important lessons which I can share. What you will need to do is the work, because I can tell you all of the secrets, but by no stretch of the imagination does that mean that these secrets will be accessible to you in any real way. It will only be through the combination of your dirt-time at your Secret Spot, the background studies that you are conducting here, and the perspectives that I am going to share with you here (as well as on tape six of the *Seeing Through Native Eyes* series) that you will be able to increase your success in awareness, stealth, and invisibility in the forest.

Now, there are plenty of birdwatchers out there, many of whom are quite good at identifying birds by their songs and identifying birds by sight. After thirty years of study-

ing birds, however, I am astounded at how little most birdwatchers know about the behavior of birds with respect to what scout awareness teaches. This has to do with the fact that little attention is paid to this perspective in the popular literature. You may have trouble convincing your bird watching friends that some of this is possible. It is simply unknown to our mass culture—even in environmental specialties!

There are very few people who will actually sit and watch one particular species for hours on end until they can understand the nuances of its behavior. This may also be due to the emphasis in modern field guides on the life list (which makes bird watching somewhat like a scavenger hunt—try to identify in your lifetime as many of the birds in the book as you can by sign recognition). While this has its benefits in appreciation of the beauty and diversity of the bird world, it also creates a pitfall: cover lots of ground quickly, and as soon as you see a bird and identify it, move on.

Bird language can only be learned from the process of studying slowly and patiently, observing *one* species at a time in *one* location. In fact, this process is maximized when you study *one* particular individual of *one* species. When you do this, you are not just studying a robin, but you are studying Bob or Nancy, the local robins who live northeast of the Anchor Point at your Secret Spot! In my opinion and the opinions of the instructors, this is the way to focus yourself. It puts the Secret Spot into a whole new light, too, doesn't it? You can see why the Secret Spot is so important to our program.

Though this takes some time in the field and some background study at home, the great thing about the study of bird language is that it takes very little effort. The same information that you learned from watching one species will usually apply to all in a general sense as well. In time, you will notice also that the study of the language of the birds is also a study in body language and understanding the dynamics of how birds interact with their surroundings in times of peace and danger alike.

I've given you some tips now on how to go about studying the birds to learn the "secrets" that they keep. As I said, however, in my thirty years of experience as a student of the birds (and nearly twenty additional years successfully mentoring others who seek to learn about the birds), there are some perspectives on this art that I know will help you greatly as you begin.

THE LANGUAGE OF THE BIRDS

The Akamba, the Apache, and the other native hunters know of a language that I, too, have learned. Through working with my own two teachers from these cultures who share much in common, and from studying the native hunter-gatherers around the world, I have distilled "success" in invisibility down into two realms. The first is that there is a language being spoken by many wild creatures, and that there are many in the forest who listen to it attentively and use it to their advantage as an early warning system to alert them to coming danger. If the warning is detected early enough, the animals are provided with ample time to position themselves in a good hiding spot in the brush or thicket. A handy skill, wouldn't you say?

For the second aspect of bird language study, think back now on the cougar, the bear, and the coyote, whose tracks we see alongside the roads next to our homes, but whom we never actually see. I'd include the wolf in this group as well. Its keen senses of sight, smell, and hearing make it perhaps the most shadowy and elusive ghost that there is. In fact, it is said that the wolf is the one that taught the skills of invisibility to the Apache people, who were in turn perhaps the most shadowy and elusive people that have ever been.

All of these animals that I've just listed—the cougar, the bear, the coyote, and the wolf (There are others, too, but I don't want to take up too much space here. It will become obvious to you with time and experience who these other characters are.)—are residents of the forest. As such, knowledge of bird language is important to them, for it allows them to hide when danger approaches. Simultaneously, however, each of these animals are *themselves* danger, for they are all hunters. Now, that creates an interesting situation for them if they are ever to catch any food. These animals all have a trick up their sleeve. What these animals have in common is that they are each skilled at manipulating the alarm systems of the birds. Through careful observation and learned movements, these animals actually avoid disturbing the birds, in effect allowing the animals to move invisibly through the forest. This is the second aspect of learning bird language, and it is the art known to the native scout and hunter as well. Without it, neither the cougar, the bear, the coyote, the wolf, the hunter, or the scout would ever catch any food! If you wish to have the ability to see the many animals of the forest and your Secret Spot, this second art is one that you will, in time, need to learn as well.

How do we go about learning these arts? A good example to turn to for this is one that is often just a legend of the local forests: The rumored "ancient" bucks, the old mossy-backed great-gray ghosts who have so much wisdom that they elude even the most patient and dedicated hunter and actually choose their own means of death. I've found that the trend with bucks is that if they manage to survive the guns of hunters and the teeth of these predators past their first two years, then they will live to become very old. They become those rumored ghosts.

Without getting too far into it, I—as well as many of my instructors—feel that these experienced deer actually learn the same tricks of invisibility described above. There is so much pressure on them from the various predators of the forest that they *need* to learn these things if they are to survive. It is as if they gain the knowledge that the cougar possesses.

Among native people it is said that the deer can gain "medicine" or knowledge from the cougar's ways. This is a good way to start thinking about the subject. You, too, can gain "cougar medicine."

If you ever watch a wild cat move through its environment you will quickly notice that it moves as if it has honey in its veins. The slow, deliberate, and powerful movements are based on strong muscles, sure-footed accuracy, a lot of practice, and careful planning. They look ahead, head held still…then they look left, head again held still…they look right…then up…and often, they look behind them. At this point, they move again, ever so slowly and carefully, being sure to stay in the shadows. They always move along the edges, too, or in the thicket or under the cover of darkness.

What is this saying to us about how we should move in the forest? Of all the animals in the forest, the big cats are most like us in their dominant sense patterns. They use their eyes to the greatest effect, their ears a little less so, and their nose even less. Sound familiar? It should, because this is a lot like our own natural sensory patterns. The movements of the cats are slow, steady, and deliberate so that they are able to utilize their senses of sight and hearing to their fullest. Think of owls, too. Their most dominant senses are also sight and hearing, and they are famous for their habit of sitting still for hours on end, patiently watching and listening.

Looking to these examples that I've just given, it appears that slow and steady wins the race for sight-dominant creatures. Is that the way that we tend to move, though? Not really. While these are

our natural patterns, we as modern humans tend to mimic more the movement of the dog family. We move quickly and continuously, often looking at the ground as if we could "smell" its many hidden secrets like a dog who moves quickly across the ground with its nose to the ground. This seems most likely due to deadlines and a life lived according to schedules and the dictations of the clock. I've found that when we don't have these pressures or destinations to push us along like this, people actually tend to fall back into a slower, more relaxed, and deliberate gait. Think of a tourist, who is simply out to see the sites. They have no place to be, and they're always looking around at everything. It's a natural way to be.

Through work on the Nature Awareness Trail in *Kamana Three*, we will go into greater depth with routines and ways of moving that will help you to reclaim your natural ways of movement. For now, though, use this pattern of moving like a cat while going to and from your Secret Spot. As we add new routines at higher levels, think of it simply as striving to be a "better cat." After all, if you think about it, there are young inexperienced cats, and there are older, wiser, and more experienced cats who might just as well be spirits, for they go for many years completely unseen by human eyes. We only know of their existence when they leave tracks in the snow or when a pack of hounds manages to get one into the open to give us a fleeting glance.

I hope you understand now how moving like a cat will aid your ability to use your senses to the greatest potential. What does this have to do with learning the language of the birds, though? What does this have to do with invisibility? For one thing, cats are the masters of stealth, and for another, they know the secret to the "alarm system" of the forest. So, too, do the bear, coyote, the wolf, and the "old mossy-back." It is simply because we are naturally most like cats ourselves that we study them now in this way.

There are certain birds—especially those of the thicket—that watch our approach and signal our arrival with their body language, flight patterns, and mostly, their voices. When we move like cats, we see these birds before we alarm *them—if we stand still longer than they do,* that is. Once the bird feels comfortable that you are not "pushing" its way, but that you are instead pausing, the bird will go back to its business. It is only at this point that you should proceed. Keep in mind, though, that as you proceed, *you must go around the bird*, or it will "complain" as it again becomes uncomfortable as you begin to move in on its "personal space." If you don't heed the birds wishes for you to keep a good

distance, it will fly off and send signals to the forest all around that you are there and up to no good. How much space each of these birds needs is something that you can only learn from experience. Similarly, the approach that you need to use to "honor" and not upset them can only be learned from experience as well. Learning these things is worth the time investment, however, because once a bird announces your arrival to the forest, there is no turning back. At that point, the coyote has already lifted her head, and the deer has paused his feeding. The cougar has climbed to a point of advantage to see far, and the bear is statue-still and testing the breeze for more information. It is too late.

For now, learn from the cougar, the bear, and the coyote. Stop and listen to the birds. Stop and watch for them. See what they tell you. Here is a little native lore that will help to get you on your way, too: "Never disturb a singing bird, for it is performing its Thanksgiving Song." I will take it one step further: Learn to honor any bird that you see. Observe what it is doing, and avoid disturbing its routine if at all possible. That is the lesson from the cougar and the old buck. This perspective will bring real power to your studies.

Preparation for Study of the Birds

How do we tackle the subject of birds? Trees are easy because they tend not to go anywhere. Herbs are the same except we have seasonal concerns with herbs, and we have to get certain things done at certain times of the year before the herbs dry up and disappear. Mammals present their own challenges, but the tracks and signs that they leave behind give us a grounding point for our study of the ways of their lives.

How do we handle birds? There are the same seasonal challenges with birds as there are with plants. Unlike plants, however, there is an added challenge arising from the fact that birds don't sit still. Since birds don't sit still, how do we observe them? Do we need expensive binoculars? Do we need expensive spotting scopes and all these kinds of things to tackle the bird situation? No, we don't. We simply need to practice moving like cats at our Secret Spots.

Something else to acknowledge as you undertake the study of birds is that depending on where you live there may be as many as three hundred species of birds in your area. The nice thing about our approach to birds in this program is that we are only going to look at a relatively few species because of certain characteristics that they share. Our goal within the study of birds in this course is simply to give you an appreciation of how birds can help you interpret things that are going on in the environment by understanding their voices and behavior patterns. As with learning about mammals and tracking, trees and survival, or any other studies that you've done along the Resource Trail, learning how to use resources effectively for learning about the birds is key to this process of becoming self-sufficient.

A Bird's Eye View: Seeing Through the Eyes of a Bird

When preparing to study a bird, the first thing that you will want to consider is what bothers them from their point of view. Knowing that humans represent a potential disturbance to wildlife—especially birds—is one of the first things that we need to pay attention to. Look at the species of birds that are most affected by our approach. That would be any bird that spends a considerable amount of its time on the ground, in the thickets, or in the low brush where we might disturb them.

Besides humans as a source of alarm or annoyance, all birds of the ground are also disturbed by cats, foxes, coyotes, cougars, bears, and other ground predators such as weasels and snakes. Many of the same species that are alarmed by humans are also disturbed by these predators. Pay attention, though, because some birds only keep quiet as we pass by, but in turn make great complaints at the arrival of a ground predator. An example of such a bird is the carolina wren, which may not really react much to our presence other than to ditch it into the thicket and remain quiet. When a cat or a fox moves through the thicket, however, that carolina wren becomes a great ally to your scout awareness as it begins scolding loudly.

Just as the birds of the ground are concerned with the many dangers that are present to them, you will notice that certain treetop species pay no attention to the approach of human beings and the ground predators. Ground animals represent no real threat to them. In fact, as a cat moves by far beneath them, they may even continue to sing! Birds like vireos and certain warblers, tanagers, and grosbeaks, which live way up high in the trees and rarely, if

"A Bird's Eye View"

Non-native-trained human beings represent a great distraction and disturbance in the natural world. You will begin to see this as you develop your awareness at your Secret Spot and begin to study your fellow humans—especially in places such as parks and local forests where people and animals mix. Notice that wildlife will react to the approach of people by fleeing. Cases that break this rule often do so because they are either sick or they have something to gain. Such is the case with the pigeons and house sparrows in the park that come to you just in case you have food for them. Those ducks that follow you around at the local pond have been similarly trained to eat bread out of children's hands. These are the rare cases where you'll see wildlife coming to people instead of fleeing.

Most of the time, the alien energy of modern people, their behavior patterns, and their body language are repulsive to wildlife. Unless we have trained ourselves otherwise, we see and grow accustomed to seeing the backs of birds

ever, come down below the canopy, would be included in this group. Generally speaking, except in certain cases that I will indicate, we need not pay too much attention to the treetop species.

So, we've covered disturbances to birds caused by ground predators and people. Another disturbance that birds may encounter is nest robbers: ravens, crows, jays, and even squirrels, to name a few. Their reactions are quite different from those reactions that we cause, and different again from those caused by the passing ground predators. If you can imagine the feeling that you would have if there were an immediate danger to you children, you can imagine that the nest robbers elicit quite an emotional and furious response. Every type of predator is different, however, and with experience using the knowledge that I am sharing with you here, you'll find out that each predator actually triggers its own signature response.

Alarms due to predatory birds such as soaring hawks sound yet different from all the others previously mentioned. Soaring hawks and eagles disturb any bird of open fields and meadows. Fast-flying predators that catch birds on the wing such as the falcons in open country and the accipiters in the forest will cause severe alarm amongst every bird around. Keep all of this in the back of your mind as you read and do the work in your journal pages on each bird.

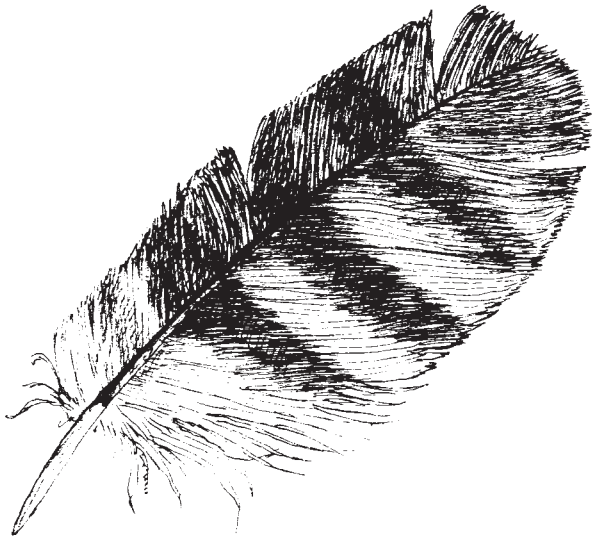
The Ones to Watch

Like the birds of the thicket and the forest canopy that have their own unique concerns and view, there are some birds that we call the "sentinel species," which often perch out in the open or high and above everything. These include birds like the mockingbird and certain blackbirds. These birds like to keep a perch that is high up and affords them a good view of what is happening around them. When danger approaches, they will "sound the alarm." It is as though they have taken it upon themselves to watch out for everything as if they were sentinels. Like the ground birds, these sentinels are worth our attention. With time and regular experience you will learn to figure out who is who. Just be aware that there are certain "job descriptions" in the natural world of birds. This will cause you to ask the right questions as you go.

This is the basic information that will help you as you begin the process of studying the world of birds at both your Secret Spot and your desk. Ask yourself if this bird is going to respond to the approach of a human or ground predator. Because all birds do

respond similarly to the approach of predatory birds specializing in killing smaller birds, we can ignore those alarms for now. What we want to focus on are the birds of the thickets and the sentinel species. With this perspective in mind, it's now time for you to do your background studies.

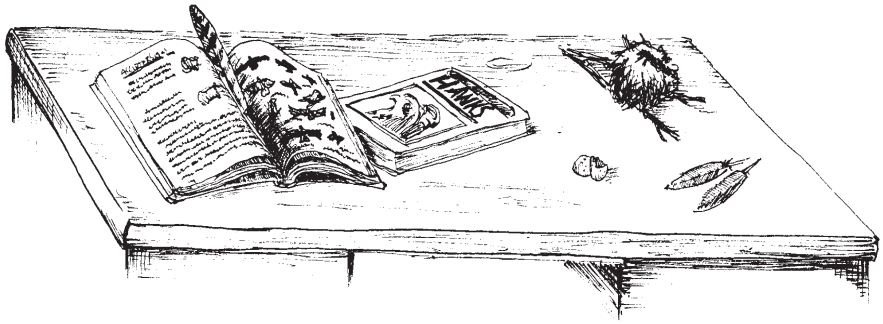
Enjoy!



flying away in the distance and the tails of deer as they disappear over the hill or into the thicket. We know the tails of rabbit as they scoot under the brush, and that's the view many people have on wildlife. Sad to say, what I've just described is a common experience and even expectation of what wildlife is amongst most of the human population these days.

Well, if you decide to stick it out through the end, all of those things are going to change for you by the time you complete the Kamana program. They will change, though, only provided that you have practiced the fieldwork and routines faithfully at your Secret Spot along with these background studies from the Resource Trail. You're going to begin to see life in the natural world with a whole new eye. In fact, you'll see species that you didn't even know existed in your area once you've really practiced the Secret Spot and all the techniques that we teach along with it, so stick to!

Part Two



Journaling Birds

Required Resources:

The Birder's Handbook

Peterson's Field Guide to Birds
(Eastern, Western, Texas, British Isles)

Reader's Digest: North American Wildlife

This study of birds is a preparation for basic understanding of animal language and how this can aid your awareness. Much of this work can be done at home at your desk with the field guides and other resources required, but some of it will require a trip to the local nature center or natural history museum. Keep careful track of where you derived information, and write down the page numbers of the books you are using there.

This is the part that builds momentum and should move along quickly. You will be working with the same basic three books throughout this section: your *Peterson's Field Guide to Birds*, your *Birder's Handbook*, and your RDG. There are not a lot of things that you will have to write or draw. The important part is asking the right questions as you go. Remember to "fly" your way quickly through each of your journals and you will feel quite satisfied when you have finished.

Do not spend a lot of time drawing detail. You want to get the approximate shape correct and note the field marks. Attention to detail of feathers is not for this program. Feel free to add pages later and to tape in feathers and photographs at later times. For now, move quickly through this exercise.

There are three major aspects to this independent study work. As usual, the first is the text, and the second is the sketches that you will create. The text comes first because

it talks to your mind in such a way that it causes you to see more of the important features while you are sketching later! That is important. Also important is using your mind's eye while doing both of these, so don't forget! Try to picture things in your mind as you pause in your work, especially before and as you sketch. Don't look at the picture *while* you sketch; instead, look at the picture in the book then turn away from the book, *picture* it in your mind's eye and draw quickly from memory.

The third major aspect to your bird journals is the range map. Since many birds are migratory, it is important that this be well represented in your journals. Study the range maps in the back of your *Peterson's Field Guide to Birds* closely and use the mind's eye methods as you create your own range map and description.

Right from the start of your first journals here, try to finish each bird in about thirty minutes in total including text, map and sketches. After you build momentum, you will find yourself cooking along at a good pace and you could comfortably finish a bird every fifteen to twenty minutes. Try and build speed! Including your journals from the hazards, mammals, plants, indicators, and trees sections, you have sixty journals to complete here in *Kamana Two* and only a limited amount of time to do it, so don't waste that time. This is not art class!

Text

General Description: This should be written as a sentence, or a series of short fragments with simple bits of information describing the bird from the following categories. Remember while you are doing this to pause occasionally and picture in your mind what you are reading about. Let the list below act as a sort of quick checklist to review while you work on each bird.

- Field Marks: Important for all birds. In your text for this, you may actually want to write out "Field Marks:" and then follow with a quick, short list of them as is done in your Peterson's Field Guide to Birds.
- Weight: A concise bit of information is all that is needed here. Most important in large birds, not so much in songbirds.
- Length: A simple measurement in inches and fragments will do.
- Wingspan: Important for the larger birds.
- Size: Size is a function of height, weight and wingspan, but is most easily translated in relative terms using common

birds you know the size and weight of as in, "pigeon-sized bird with the build of a mockingbird."

• Identification Tips: These are sometimes included in the text of guides and they are often particularly helpful. It may include a description from any of these categories that are outstanding such as "a robin-sized bird with a crest that sits on prominent perches frequently wagging its tail."

• Breeding vs. Winter Plumage: Birds tend to be duller in the winter, except with starlings. Make a rough note of the difference between the two plumages. The spring plumage is usually striking in the male especially.

• Male, Female and Juvenile: Often among birds the sexes are very different from one another. The juvenile birds often resemble the female more than the male. Sometimes the sexes and the juveniles are all quite similar. Just note that simply and concisely.

• Similar Species: This is a handy piece that is included in your *Peterson's Field Guide to Birds*. Generally speaking, you do not have to go into as much detail as they do, but if there are some *really* similar species, then I want you to list them in a way similar to the guide. Pay close attention to when you deal with females of similar-looking birds! This can become very difficult.

• Posture: This is one point that is *very* important for you to take careful notice of. Posture can communicate body language, so you need to be familiar with the bird's average or "baseline" posture. Your *Peterson's Field Guide to Birds* will be your best friend for this information. The nice thing about the illustrations of the entire Peterson's Field Guide series is that the series' creator, Roger Tory Peterson, always puts the subjects in their favorite and most natural posture. In your study of birds here, I want you to briefly describe in words what this baseline posture looks like. This is most important. You will also notice that the family information at the start of the section that your bird is covered under is usually where postural information can be found written.

• Song: As described in your *Peterson's Field Guide to Birds*. Words are usually used to describe a song, such as "witchity-witchity-witchity-witchity" for the common yellowthroat. Don't try to make up new words for this stuff. Use what they have already got!

• Call: Though calls have different purposes than the song, describe the quality as done in your P*eterson's Field Guide to Birds*.

Behavior and Habits: This is a key to identification. When I see a bird, there are many times that all I get is a shadowy silhouette to look at and I can see no details of color or markings. Using my knowledge of bird behavior and habits in combination with flight pattern and choice of cover, however, that is all I need. Learn to study birds based on *what* they are doing and *how* they are doing it. Fast, jerky motions or slow, deliberate progress through the branches? Quick darting flights off a perch and back or constant soaring, with little wing-flapping? Note the behavior descriptions from your books here.

Flight Pattern: This is also a key identification feature. Woodpeckers are very easy to identify by their flight, as are goldfinches, mourning doves, merlins, turkey vultures, and ospreys among many, many others! This is important information if you can find it. Look in the family information text for the bird you are studying. Also, there are times when the books will show you little "flight plans" for the bird. If you have access to a book with these in it, use it!

Habitat: This is another key identification feature and is very important to know for many reasons. Pay special attention to what height layer the bird prefers. Compare it to their coloration and their adaptations of behavior and beaks. This, of course, lists places like "meadows," "grasslands," or "pine forests" among others. Pay *close attention* to this. Remember to always be using your mind's eye and picture the bird you are studying in those places that are described.

Cover Preference: Another key bit of information, but sometimes you have to guess from coloration and inferences about diet, habitat and behavior. An example might be as follows: "a bird which prefers to stay in or near heavy cover and in the thicket along the edges."

Diet: Good information on this is in your *Birder's Handbook*, and sometimes in your field guide text on the species and the family that it belongs to. In these resources, make a quick list of what the birds eat. You will be happy you have exposed yourself to this information!

Seasonal Differences in Behavior: Robins in winter and robins in summer act like two completely different species! Note seasonal differences in behavior and be ready to realize that the bird you saw all summer and assumed had left for the winter may only have climbed into the treetops to feed differently. That is not

uncommon. By the reverse, kinglets are tree-toppers in summer and low feeders in the winter. Sometimes this information is written, sometimes it is not. Don't worry if you cannot find it. More than anything, I just want you to be aware that this possibility exists.

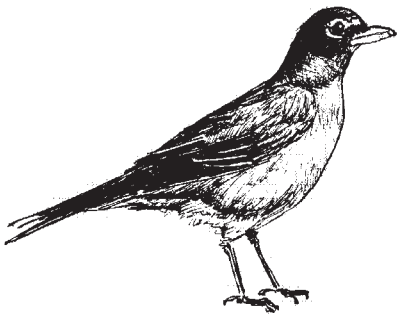
Nesting Behavior: Available from the information in your *Birder's Handbook*. Just note when, where, how big, what it's made of and how many eggs it lays. You don't have to get too detailed, unless *you* are really interested in the spots on the eggs or the shape of the egg (which you will rarely get to see anyway!). Knowing general placement, shape, size, and materials of the nest is what is more important. If you are coming and going from your Secret Spot many different ways as I have suggested to you, you will find many nests over time.

Migration Patterns: This is the written description of the range map that you studied with your mind's eye and will draw in the sketches section. The migration habits of the birds are shown in the blue and pink areas on the range maps. Describe those in words here.

The Sketches

Wrapper Sketch: This will be your overall sketch of the bird. Include in it the following:

- Shape of Silhouette: To help speed the sketching process, look at overall shape first and try to capture that quickly. Is the bird short and stocky with no neck? Is it long and lanky? What is the posture, the angle of the bird on its perch? Check out the front few pages of your *Peterson's Field Guide to Birds* for some good material.
- Length of Tail: An important thing to note and to include in the sketch. Train your eyes to see that. Think in terms of comparisons—short like a starling, or long like a mockingbird, or flipped up over its back like a wren, or hanging straight down.
- Shape and Size of Bill: This is also a key identification feature. The size and shape of bill is a key bit of information that relates much about a bird's diet and habits.



• Posture: Once again, birds have baseline postures and you should sketch them accordingly. Do not sketch them in feeding positions or other types of postures as the primary sketch. Make sure that the first sketch is of a baseline posture, *just* as in your Pe*terson's Field Guide to Birds*.

• General Coloration: Color pencils make this really effective. You can do basic line drawings to capture all the key features listed above in the sketch portion of this chapter. Then do basic color patterns. No need to get really detailed.

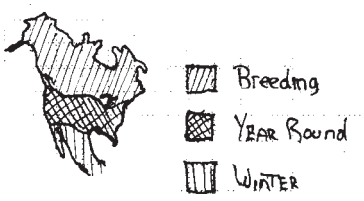
Behavior: If there are any behaviors, such as those of the robin, which runs along the ground, stops, and cocks its ear to the ground before pulling up invertebrates, draw these separately. You won't usually find behaviors like these drawn up for you in your guides, so you'll have to really picture them in your mind's eye and draw them from that; but you're doing that anyway, right? If you don't find any information like this, however, don't worry about it. Just move on to the next sketch.

Flight Pattern: If you find this illustrated, use it.

Nest: This can be fun to sketch if you have an opportunity to see such a nest, or use a book that has good pictures of the nest. There are entire field guides from the Peterson's Field Guide series dedicated solely to bird nests. Use this if you'd like and if it is available to you, but your Birder's Handbook has simplified nest patterns that will do just fine.

Range Map

The range maps for birds are the most complex of any subject due to their migratory habits. I want you to draw a large version of the range map for each bird that you journal. Include this on the sketch page. The reason that I have separated it here is simply to emphasize its importance. I recommend you use colored pencils for this if you have some available to you. Stick to the conventions already started by using blue and red. Be sure your maps are accurate, too—especially for your area. Do not spend too much time on the details of the coastlines or lakes, but instead just generalize the continent when drawing. Be sure details around your area are accurate, that is all. Move quickly.



Final Synthesis

Write a sentence or two that brings together all of what you have learned about the bird's anatomy, camouflage, and lifestyle with your insights into its potential enemies, strategies for survival, importance to "scout awareness" (as alarm birds or sentinels), and what other species will associate with them. As with other journals that you have created for mammals, indicators, and so on, this is your place to be creative and have fun. Include a short poem or sketch that captures these elements, too, if you are so drawn to do.

Birds

Listed below are the ten species of birds for your background studies for *Kamana Two*. You will see why these birds were chosen for you to learn first as you progress through the course.

1) Canada Goose

2) Red-Tail Hawk

3) A Local Jay

4) American Crow

5) American Robin

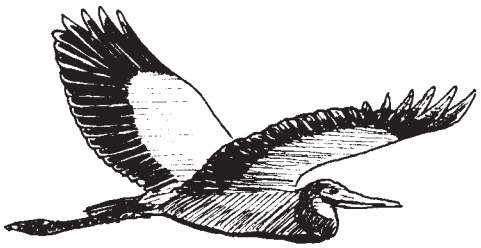
6) Common Yellowthroat

7) Redwing Blackbird

8) Rufous-Sided Towhee

9) Song Sparrow

10) Junco



FINAL REFLECTION (SEND WITH FIELD PACK 2.4)

Once you have finished all of your bird journals, take a moment and reflect here with a short paragraph to consider the following:

How has your knowledge and understanding of birds changed through your Kamana studies? How has this study influenced your experience, routines, and awareness of your Secret Spot?

Name: _____ Student #: _____

Date: _____

REVIEW SHEET

Keep this page dog-eared in this booklet for easy reference as you go through Chapter Seven.

1) Create Your 10 Bird Journals

Canada Goose

Red-Tail Hawk

A Local Jay

American Crow

American Robin

Common Yellowthroat

Redwing Blackbird

Rufous-Sided Towhee

Song Sparrow

Junco

Create the following for each journal:

Text

General Description:

- Field Marks
- Weight
- Length
- Wingspan
- Size
- Identification Tips
- Breeding vs. Winter Plumage
- Male, Female, and Juvenile
- Similar Species
- Posture
- Song
- Call

Behavior and Habits

- Flight Pattern
- Habitat
- Cover Preference
- Diet
- Seasonal Differences
- Nesting Behavior
- Migration Patterns

Sketches

Wrapper Sketch:

- Shape of Silhouette
- Length of Tail
- Shape and Size of Bill
- Posture
- General Coloration

Behavior

Flight Pattern

Nest

Range Map

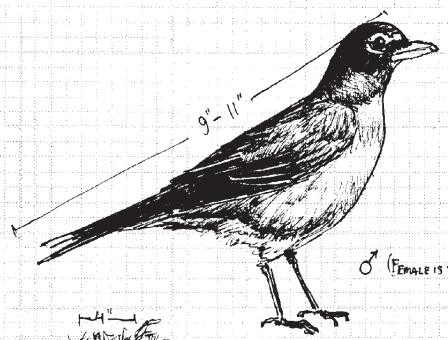
Final Synthesis

Remember to use your mind's eye through all of this!

2) When you have completed your 10 bird journals, write the Final Reflection for birds for Field Pack 2.4.

Is your binder out of Resource Trail Journal pages? Download templates at www.kamana.org.

Jon Young's Kamana Certification Program



Breeding
Year Round
Winter

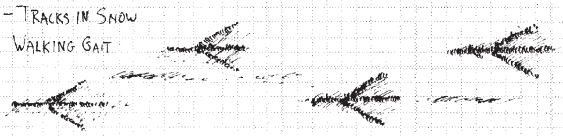
♂ (Female is similar, w/ duller coloring)

American Robin

Turdus migratorius

- Tracks in Snow

Walking Gait



Typical Gait

Field Journal Section 6 : Birds ***Date:*** 1/14/95

Sources: See Text

Journal by Walker Korby

Jon Young's Kamana Certification Program

American Robin

Turdus migratorius

- 8½ - 10½
- Black, Brownish Grey Back w/ Brick Red Breast
  - Female is duller
  - Young have speckled breasts
- Broken White Eye Ring
- White tipped tail
- Yellow Beak

Habitat

- Can be found in urban, suburban and rural areas
- Wooded areas, parks and gardens
- Seen hopping on lawns searching for worms
- Nests found in crotches of branches, on buildings.

Habits

- Fairly communal bird. Will make nest near others.
- Can be seen in large flocks when not in breeding season.

Diet

- Worms
- Insects

Breeding

- 3-4 Eggs
- Incubation 12-14 days
- 2-3 Broods

Range

- Breeds from limits of trees in Canada to W. South Carolina, N. Georgia, N. Mississippi, N. Louisiana.
- Winters in S. U.S. to Ohio Valley and New England Coast.

Voices

Song - Clear whistling carolling thrush-like
Calls - soft "Tut...Tut...Tut" and loud "Wink"

Predators

- Foxes
- Hawks (Sharp shinned)

Field Journal Section 6 : Birds ***Date:*** 1/14/95

Peterson's Field Guides - Birds Nests - Birds
Readers Digest - Guide to N. American Wildlife
Audubon Society - Eastern Birds - Birds of N. America

Wilderness Awareness School

Pileated Woodpecker Dryocopus pileatus

16-19½ CROW SIZE SWBU 45° 4 WHT/1.3"

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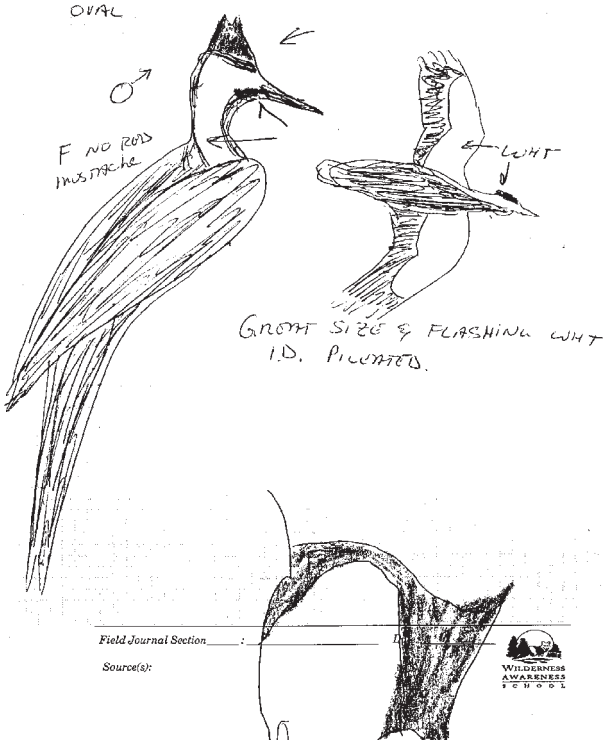
HOLES - LARGE OVAL

♂

F NO RED MUSTACHE

← WHT

GROSS SIZE & FLASHING WHT I.D. PILEATED.



Field Journal Section____: _____ Date: _____

Source(s):

WILDERNESS AWARENESS SCHOOL

Journal by William Wittmann

HABITAT: DECID-CONIF FOREST, OPEN WOODLAND PARKS, WOODED SUBURBS.

Jon Young's Kamana Certification Program

DIET: INSECTS, PECK FRUIT, ACORNS NUTS SAP. WINTER & SNOW DORMANT ANTS.

NOTE: Req large territories. YEAR ROUND TERRITORY & PAIR BOND.
NATIVES USED CREST FEATHERS IN CALUMETS. ALSO ASSO & ANCESTORS.

VOICE: Resembles flicker but louder & irregular kik-kik-kikkikk-kik-kik A more ringing hammered call that may rise or fall slightly in pitch & volume.
CALL ALWAYS SOLICS.
DRUMMING LOUD S/O SOFTER AT END DISTINCTIVE.

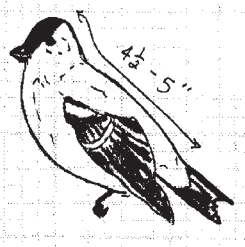
Field Journal Section____: _____ Date: _____

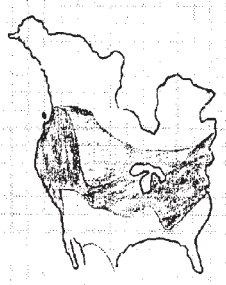
Source(s): BH 360, P222, G 180

WILDERNESS AWARENESS SCHOOL

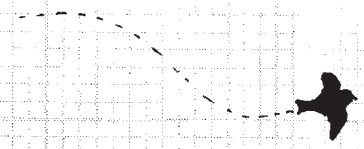
Jon Young's Kamana Certification Program

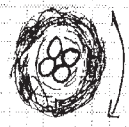
AMERICAN GOLDFINCH, Carduelis tristis
Spinus tristis *





diet: weed seeds, fruit, plant lice.





Eggs: 4-6 Oval - short oval
Shell smooth. Pale (bluish) with unmarked
Incubation by female alone; 12-14 days.
Male feed incubating mate.

Nesting time correlated with maturing thistles.
- placed in upright branches or tree fork.
fine vegetable fibers lined with thistle and cattail down.

Field Journal Section ____: Birds *Date:* 4/5/15

Source(s): Birds of NA
Peterson - Nests

WILDERNESS AWARENESS SCHOOL

Journal by Jonathan Talbott

Jon Young's Kamana Certification Program

- 4½ - 5" Smaller than a sparrow. Breeding male bright yellow with a white rump, black forehead, white edges on black wings and tail, and yellow at bend of wing. Female + winter male duller and grayer; Travels in Flocks; undulating flight.

Voice: Bright per-chick-o-ree, also rendered as potato-chips, delivered in flight and coinciding with each undulation.

habitat: Brushy thickets, weedy grasslands, and nearby trees.

- commonly changes mate between years.
- winter flocks up to 300 common.

diet: Includes seeds of deciduous trees, grass, buds, berries.
Their main food is seeds, so nesting does not begin until late summer.
They remain in flock way past when other species are nesting.
Only single brood is raised each season.

Chapter Eight

Wrapping The Bundle

Final Chapter

Wrapping The Bundle

WILDERNESS AWARENESS SCHOOL

The routines that you have been practicing here in *Kamana Two* form the backbone of what we teach here at Wilderness Awareness School. You have gained solid background knowledge and daily experience in the basics of awareness and nature observation. You have:

1) Found and visited one place in nature regularly.

2) Experienced expanding your sensory awareness.

3) Practiced giving thanks.

4) Started to SEE with your Mind's Eye through journaling and reflecting.

5) Practiced mapping.

6) Inventoried your observations on a regular basis.

7) Conducted background research and inquiries into the beings of your area.

All together, these things create a solid foundation for you to now begin to build upon. These things are just that—a foundation. As you are probably well aware of, the Kamana course has a total of four levels of study to it. You have now just completed the second level of study. Congratulations! Think back on the studies that you did here for a moment. While you learned a great deal about how to stretch your awareness and how to learn about the naturalist history or your local area, you were not entirely on your own. Think of it like this: what would you have done if I hadn't given to you a list of certain mammals or trees or birds to study? Which ones would you have chosen? I'll tell you now that my goal for students of the Kamana course is for each and every one of you to have

an intimate knowledge of not just ten but fifty hazards, mammals, plants, indicators, trees, and birds by the time that you have graduated. With those fifty, I also want you to have solid confidence in the knowledge of many more.

Please take some time to answer the following questions and reflect on your learning experience in *Kamana Two*. For each question, please consider how it has impacted both your life as a naturalist as well as all other aspects of your life.

1) Mind's Eye – How has SEEING with your Mind's Eye affected you?

2) Mapping – Mapping is an important part of Kamana. How has practicing mapping impacted you?

3) Giving Thanks – What effects has the routine of giving thanks had on you and the people in your life?

4) Secret Spot – How has spending time regularly at one place effected your sense of yourself and your community?

5) Expression – Have you shared you Kamana and your enthusiasm for nature with anyone else? Is anyone else who is close to you participating in Kamana?

6) Expanded Senses – What have you noticed in your life as a result of your increased connection with your senses?

7) Regular Inventories – How has recording your observations expanded your awareness and memory?

8) Research – How does consulting resources and compiling information influence your understanding of what you are observing?

In *Kamana Three* and *Kamana Four*, through specialized routines and new ways of looking, students will learn the keys to focusing in to choose the most important species from the broad diversity in their area to conduct these studies—an important skill for self-sufficiency! Through additional time at their Secret Spot with more advanced awareness routines, my Kamana students will know greater and longer-lasting quietness of mind. They will begin to develop the awareness skills of the scout through the knowledge of the language of the birds, the arts of wandering, and the arts of tracking to a confidently proficient level. Even after all of Kamana is finished, the levels of the Kamana course are just the beginning, too.

So, by completing *Kamana Two*, you are now entering a much larger world. To me, this is exciting, and I envision people from all over the world participating in these studies. I am pleased and proud that you have walked with us this far, and I hope that you will run with us into the future on one of these higher levels of training.

Thanks for all of your hard work.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