UNIT 1A. NATURE AWARENESS AND OBSERVATION: SKILLS, TECHNIQUES AND EXERCISES

TIME	LEVEL
60-90 minutes to review skills. Practice: on-going	All

BENCHMARKS	
Common Core-State Standards-ELA/Literacy	CCRA.R.1
Science & Engineering Practices	Planning and carrying out investigations. H.21.2

MATERIALS:

- STUDENT HANDOUT 1A-1: A Celebration of Wild Fish
- STUDENT HANDOUT 1A-2: The Importance of Wild Salmon
- STUDENT HANDOUT 1A-3: Student Responsibilities for Salmon Watch
- STUDENT HANDOUT 1A-4: Nature Awareness and Observation
- STUDENT HANDOUT 1A-5: Pathways to Nature

OBJECTIVES:

- To facilitate student understanding of the expectations and responsibilities of being involved in the Salmon Watch program.
- To facilitate an understanding of why wild salmon are magnificent and important fish.
- In preparation for nature observation and fieldwork, students will learn and practice skills and techniques that will:
  - re-invigorate senses.
  - increase awareness of surroundings.
  - hone observational skills for detecting wildlife.

PROCEDURE:

1. Read aloud the STUDENT HANDOUT 1A-1: *A Celebration of Wild Fish*. This legend will help to illustrate the historic legacy of wild salmon to this region. Assign STUDENT HANDOUT 1A-2: *The Importance of Wild Salmon.* This is an excellent essay, which begins to reveal to students the magnificence and importance of the fish they are about to study.

2. Following the legend, read the brief introduction in STUDENT HANDOUT 1A-3: T*he Freshwater Trust/Salmon Watch Mission and Vision*. This lays out the purpose, goals and objectives of the Freshwater Trust and the Salmon Watch program. Also, review with students their responsibilities as well as what the Freshwater Trust and the Salmon Watch staff will do for them in STUDENT HANDOUT A4: *Student Responsibilities for Salmon Watch*.

3. As a class, read aloud with students STUDENT HANDOUT 1A-5: *Nature Awareness and Observation*.

4. Using the PATHWAYS TO NATURE section as your guide, facilitate sensory skill building. It is best, if at all possible, to have students perform these skills in an outdoor, natural setting.

5. The culminating fun activities that requires students to use and hone their skills and techniques are THE RABBIT GAME and THE NATURE HUNT EXERCISE. Again, it is best, if at all possible to have students perform these skills in an outdoor, natural setting.

6. Hand out to students STUDENT HANDOUT 1A-6: *Pathways to Nature*. This handout reiterates, reminds and reinforces all that they have actively learned.

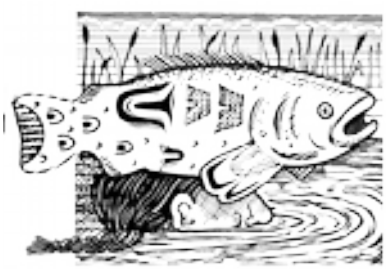
STUDENT HANDOUT 1A-1

Celebration of Wild Fish

A Legend

Long ago in the time before the time, when all beings were men and wore their skins as blankets, the earth became overly populated. It was then that the leaders gathered together and determined that in order to survive, they must divide themselves. Donning new blankets, they each in turn journeyed into new and different territories. So it was that man clothed himself in scales, feathers and fur and wandered into the sea, air and forest.

At this time the salmon mother gathered her five children to her and bid them journey far into the ocean. "Remember, once a year you must return to the home from whence you came," she cried, reminding them that in order to survive they must gather strength from the land along the rivers of their birth.



Now it is known that the five children established villages far out into the sea. Each year in the early spring, the salmon change from human form into salmon and those at the farthest edge of the ocean start their journey across the sea and up the rivers along the Pacific Northwest coast. Along the way they alert the Salmon People of the other villages who promise to follow at different times of the year. So it is that the Silver, Chinook, Chum, Sockeye and Coho journey to our rivers from early spring until late fall.

STUDENT HANDOUT 1A-2

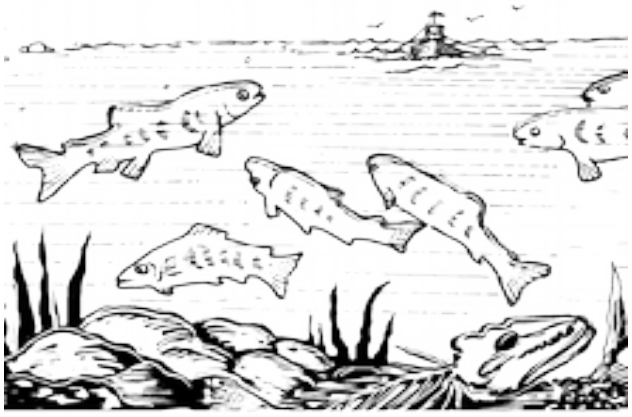
The Importance of Wild Salmon

Adapted from *Field Guide to the Pacific Salmon* by Robert Steelquist and an *Oregonian Special Report "River of Ghosts: Lessons of the Past"* by Brian T. Meehan

Our eyes follow the water downstream. Surely it is them.

Strange wakes appear on the river's lightly rippled surface - impulses of water that move against the flow of the current. The night's rain brought the river level up. This pulse signaled to the waiting salmon that it was time to enter from the sea. On the flood tide they entered and as tide slackened and the river current quickened, they began their ascent.

They reach our pool three hours later —about 200 salmon. Around us they loll to the surface, rolling sideways. In the green depths of the pool beneath the logjam, they form a single body –that of a great fish that wrestles in the current, its head upstream, its tapering body following. Beneath us they pass, spreading under the bank, on the edge of the current's thrust.



Along the North Pacific's shore, this scene is reenacted on many tides, on many rivers, each month between August and January, as various stocks of salmon conclude their tours of the ocean by returning to the streams of their origin. The return marks one of nature's grandest spectacles, an event in a sequence of events around which the lives of the salmon, the humans, the bears and eagles that await them, even the forests revolve. We humans repair our nets and tie our flies. Other predators time their migrations inshore to water's edge, they're gathering to feed, and even the bearing of their

offspring to this meter. For the forest, it means the return of nutrients that have drained off the land—nitrates and phosphates swept away in freshets, coming to rest on the continental shelf of the ocean, then stirred by currents and made alive again in plankton, small fish, and the salmon that carry them inland.

Salmon accomplish their magic with their bodies throughout their life cycle. They undergo massive physiological changes as they smolt and migrate from fresh water to salt water. It is akin to a tadpole turning into a frog and crawling up on land. The methods by which salmon use to navigate their way home are still one of nature's great mysteries. It may be the angle of the sunlight as it penetrates the seawater, or from water temperatures, tides or currents, magnetic fields or their keen sense of smell. The best guess seems to be their basic instincts are imprinted in their genes through millennia of evolution.

So unlikely is the survival of a single returning salmon that Nature compensates heavily. Of the other 3,000 to 7,000 eggs in a nest, only one spawning pair, on average, will make it back. little water at hatching can wipe out great swarms of young fish life. Bigger fish, bears, seals…all take their share of salmon. Nature allows for these natural events.

The death of salmon completes one of nature's most awesome cycles and circles. Homeward-bound salmon generally stop eating after they enter fresh water; a spring chinook will live nine months on oils stored in its body. Salmon burn themselves up in a deluge of sex hormones that wreck their immune systems, open them to fungal infections and harden their arteries. The magnificent struggle through countless obstacles and predators is truly magnificent and unparalleled.

Pacific Rim peoples share a long tradition of "salmon watching" the rivers for the great return. The First-Salmon Ceremony evolved among the cultures of salmon-eating people. At Celilo, the great falls on the Columbia River now submerged behind The Dalles Dam, native fishers awaited the first salmon with great anticipation.

When it had been caught, fishing stopped until a ceremony was organized. The fisherman would take the fish to the shaman, who would cut it lengthwise and remove the backbone and head. It would be baked in a hole in the ground lined with chokecherry leaves and covered with mats. Everyone would be invited to taste the fish; prayers would be said.

Following the ceremony, fishing would resume, its success or failure determined by the respect shown the salmon during the ceremony. Thus, homage was paid to the returning ones, those who brought with them their fat flesh and its promise of sustenance, and along with it a sense that the world was working, as it should.

Summer chinook once braided a silver chain between desert and sea. The fish mined the Pacific's bounty and carried it home 1,200 miles.

Their migration demonstrated nature's genius. From 100-pound "June Hogs" to 10-pound desert chinook, the Columbia produced more king salmon than any river in the world. Early gill-net fishermen couldn't tailor the mesh size of their nets to match the variety of Columbia Chinook. Some were as small as a 5-pound pink salmon; other as large as a man.

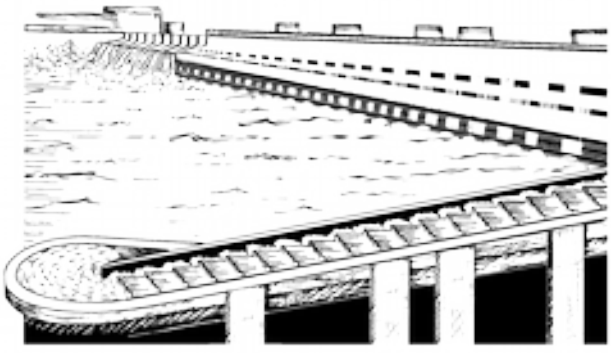
Studies have estimated the native harvest at 18 million pounds a year, about 40 percent at the peak commercial catch of Columbia chinook in 1883.

In one October day in 1805, Lewis and Clark passed 29 Indian villages on the Columbia. Salmon were drying in every one.

"The number of dead salmon on the shores and floating in the river is incredible to see," Capt. William Clark wrote in his journal. "The water of this river is clear, and a salmon may be seen at a depth of 15 or 20 feet."

In 1889, British writer Rudyard Kipling exclaimed: "I have lived!" "The American Continent may now sink under the sea, for I have taken the best that it yields, and the best was neither dollars, love nor real estate." For Kipling, America's best was a 12-pound steelhead he caught on a fly on Oregon's Clackamas River.

Salmon have roamed the Northwest since prehistory. Smilodonichthys (smilo-don-ICK-this), the "saber- toothed salmon," lived 10 million years ago and grew to 8 feet. Fossils of the prehistoric fish have been found near Madras, but its fearsome looks are deceiving: the fish ate plankton and saved its 11/2-inch fangs for spawning battles.



In the Pacific, steelhead trout, coho, chinook, chum, pink and sockeye emerged as the evolutionary clock ticked. The fish's famed spawn-and-die characteristic – a specialization that emerged with the coho—is the product of more evolution, not less. It frees salmon to make the long migration from sea to spawning ground, because they don't have to save anything for the return trip.

The evolution of the Pacific salmon shows us remarkable things about the fit between organisms and their environment. Salmon evolved in the cool waters of the temperate north and have distributed themselves for centuries in an environment of change. Salmon survived 1,000-foot-high floods that roared down the Columbia from prehistoric Lake Missoula in western Montana when ice dams cracked on the Clark Fork River. The floods washed more water in a single event than all the rivers of the world and dug the Columbia Gorge.

The fish survived the Ice Age in the Columbia, Yukon and Sacramento Rivers and recolonized western North America when the glaciers retreated. They sustained a native economy for thousands of years and coped with lava flows and floods.

Yet we humans have not only transformed the land, the rivers, and the estuaries that salmon evolved in; we have also transformed the fish themselves. Most serious, we have quickened the pace of change, brought up the tempo with which evolution itself must struggle to keep step.

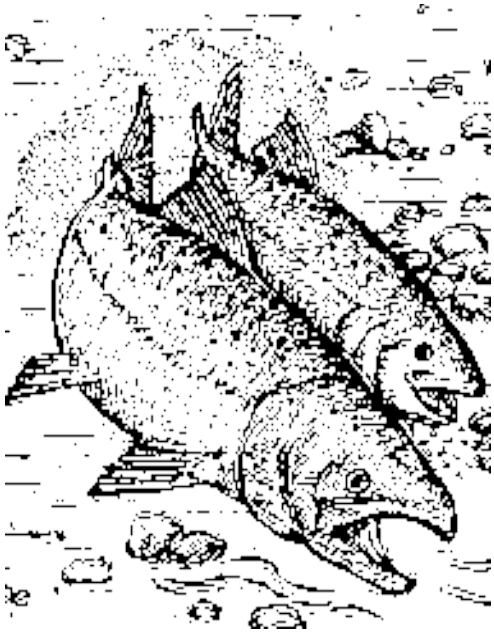
It seems almost inconceivable, that humans could lay on this fish a more rigorous habitat problem than occurred during the Ice Age, but we have done it.

We are at a crossroads with these amazing fish. The debts of the past have come due. In less than two centuries, we have shoved to the brink a creature that survived the Ice Age.

The mighty salmon has ruled the Columbia Basin and the Northwest for thousands of years, surviving the harshest whims of nature. It nurtured the bodies and souls of native people for centuries. Its range defined our boundaries; its image inspires our art. Its icon is our regional signature. But there is more at stake than fish. From bald eagles devouring salmon carcasses in Cascade headwaters to the slate gray chop of the Gulf of Alaska, Pacific salmon are the silver thread that weaves through every part of this grand tapestry of fir, sage and sky we call the Northwest.

STUDENT HANDOUT 1A-3

Student responsibilities for Salmon Watch



BEFORE THE TRIP

- Have all permission slips signed and turned in.
- Know objectives of field trip and basic concepts of watersheds and salmon.
- Have snacks, a lunch and something to drink.
- Have layered clothing and rain gear (see list in Unit 3).
- Bring equipment that will improve the trip (see list in Unit 3).

DURING THE TRIP

- Use techniques and skills for experiencing nature.
- Practice low impact walking and field work.
- Leave no trace of your visit.
- Bring sense of adventure and curiosity.
- Practice good data collection and field notes.

What you will likely experience on your field trip:

- Viewing spawning salmon
- In-stream aquatic organisms collection and study Water quality testing and data collection Surveying and inventorying plants and wildlife
- Assessment of the status and health of the watershed Examination of salmon biology and issues
- Interaction with fish, wildlife, forest, and angling experts

AFTER THE TRIP

- Use your data to analyze the health of the watershed you visited, create portfolio.
- Write and mail thank you letters to volunteers.
- Develop and execute an action plan for a community service- learning project.
- Present your community service- learning project to an audience.

STUDENT HANDOUT 1A-4

NATURE AWARENESS AND OBSERVATION

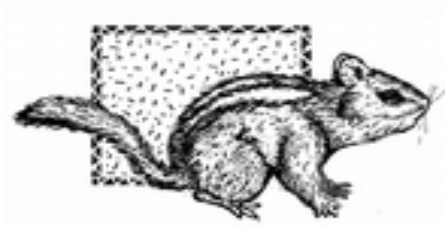
"For the 99 percent of the time we've been on Earth, we were hunter and gatherers, our lives dependent on knowing the fine, small details of our world. Deep inside, we still have a longing to be reconnected with the nature that shaped our imagination, our language, our song and dance, our sense of the divine." Janine M. Benyus

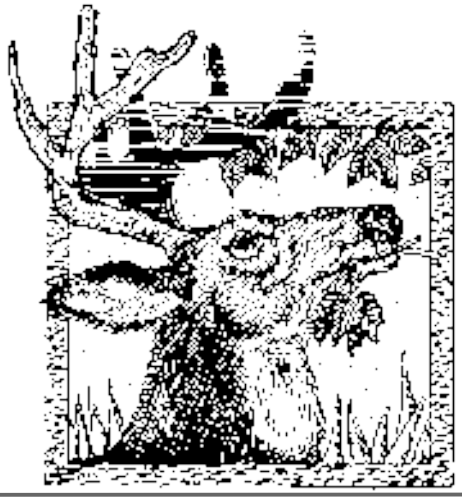
Since we are no longer hunter-gatherers, it is not as important for us to be so aware of and alert to nature. Our society does not place much value on nature awareness because modern conveniences have taken away its survival value. But we pay an unseen price for our comforts.

Living in a fast-paced, technology/industry-based society, we are more likely to spend much of our time in front of some type of screen, in a motor vehicle on asphalt byways or in a climate- controlled room than in the outdoors. In the course of a day, a barrage of unnatural sounds and sights bombards us, and regimentation, time and schedule drive our lives.

Given this disconnection from the wildness of the natural world, it is not easy for any of us to slow down long enough to truly appreciate the splendor of nature. These battered down and dulled senses need to be reinvigorated to explore the outdoor world. According to Tom Brown, "the connection [to nature] can be reestablished- in a large part simply by awaking and nourishing our innate awareness. With a few simple skills and some dedicated practice, any person can open his or her senses to the full richness of nature…."

You will be practicing some of these skills and techniques that will help exercise, and ultimately sharpen your senses. At first, you may feel a bit uncomfortable with these exercises, but quickly you find enjoyment, relaxation and fun. With sharpened senses you will be better able to appreciate nature and being outdoors and you will be a better monitor of the health of the watershed ecosystem in your community and at your Salmon Watch site.





These techniques and ideas have been adapted from Tom Brown's Field Guide to Nature and Survival for Children, by Tom Brown, Jr. with Judy Brown and The NatureMapping Observers Guide.

STUDENT HANDOUT 1A-5

PATHWAYS TO NATURE

TECHNIQUES FOR LEARNING RELAXATION, & PATIENCE

The first skill to acquire to experience nature is to learn the art of quieting, relaxation, or, as Tom Brown puts it, "the sacred silence." When the mind is tense, all functions are impaired, perceptions obscured, and the ability to keenly observe is hampered. But when the mind is at peace, we function better, learn better, and one's sensory awareness is more heightened and keen. It is not necessary to sit to relax. Relaxation can be dynamic and moving. It is best, if at all possible, to perform these skills in an outdoor, natural setting.

WHEN ENTERING NATURE, PRACTICE THE FOLLOWING:

Clear your mind of all the clutter that has accumulated during the process of daily living. This mental purification actually occurs quite naturally during an extended stay in the wilderness.

Slow Down and escape the "time trap" of modern life. Walk and move at a snail's pace. A slower pace makes it easier for your eyes to pick up the swoosh of a salmon's fin, the flick of a deer's tail or the claw marks of a bobcat.

Sit Down and stop altogether. Don't let speed and time rob you of the wonder and discovery. Nature will begin to unfold its secrets.

Be Quiet. It should be obvious that you will experience more in nature if you are silent. In nature, silence is the rule and noise is the exception. Most animals communicate more by gesture and touch than by sound. Since humans are the most lethal predator, the human voice almost always a danger signal that causes wildlife to run or hide.

TECHNIQUES FOR LEARNING TOTAL SENSORY AWARENESS

Get outside! When in nature try to reach out with your senses. Watch the landscape carefully, paying attention to colors, textures, shapes, shadows, and movement. Pay attention to scents and where those smells come from. Listen carefully to the various songs of nature, and touch and feel everything you can. Exercising your senses, you sharpen those senses, make them more vivid and inexorably effect a reversal of the dulling routines of society.

SENSORY EXERCISES

SIGHT

- Pick out color, texture, shape, shadow and movement on the landscape.
- Search the landscape for the less subtle colors and textures.
- Study details carefully.
- Look deeply at flowers, leaf shapes, grains of sand, and feathers.
- Observe closely the pattern of insects, spider webs, and other intricate things.
- Push your sight from near to far, and scan the landscape in ever-widening semicircles, from their feet to the horizon.
- If possible, use a magnifying glass to scan the ground looking intently at pebbles, plants, insects, etc.

HEARING

- Listen to the purity of sounds.
- Listen near and far, and pinpoint as best you can the exact position of what you hear.
- Listen to the wind in the trees, the shrubs, and the grasses, and pick out the variations in the tone of each.
- Listen to the music of insect wings, the gurgling of water, and the trembling of sounds.
- Listen to the symphony of nature as a whole, and then separate each part, until you know the origin and instrument of each sound.
- Focus hearing by cupping you hands around your ears, making a shape like a deer's ear. By doing this, you can hear in one direction and pick up sounds that would normally escape.

BIRDING and HEARING

- Listen closely to what the birds are saying.
- Are they making long and musical sounds? If so, they are singing and all is well with them.
- Are they making a short, choppy, and hard to locate sound? This is called a call or alarm call. Birds use alarm calls to warn other birds and animals of approaching danger.

TOUCH

- Lie on the ground. Use your sense of touch to feel the earth, the atmosphere, the cool and warm places, and the damp and dry places.
- Touch everything through exploration, the rough bark on trees, the flowers, feathers, tracks, water, insects, and plants of all types.

SMELL

- Smell the ground at various locations and see if you can tell the difference in each area.
- Smell animal dens, runs, and trails to see if you can detect the smell of that animal in the landscape.
- Smell what is ordinarily not smelled, like leaves, the bark of trees, oncoming storms, or rocks.

SPLATTER VISION

This technique was used by Native Americans to spot game, and is also used by most animals to spot danger. Simply looking toward the horizon and allowing your vision to "spread out" does it. In other words, instead of focusing on a single object, allow the eyes to soften and take in everything in a wide half-sphere. The effect is a little like putting a wide-angle lens on a camera. Suddenly your field of vision is greatly increased.

The secret of making splatter vision work is to slip in and out of it at frequent intervals. Soon this shifting of focus will become habitual. You'll start out with splatter vision, detect movement, focus on it, and then move back into splatter vision all in a second or two. In time you will be able to process a great many things without even coming out of splatter vision.

<u>The technique</u>

- Put your arms straight out to the sides at shoulder level.
- Point you fingers forward and wiggle them.
- By looking straight ahead – get so that you can see both hands
- Think of seeing out of the corners of your eyes.
- Try to pick up the things that are passing on the outermost fringes—trees, bushes, logs, etc. Then notice that, without moving your head or your eyes, you can be aware of almost anything in your field of vision just by choosing to see it. If a bird blinks, a blade of grass moves, a flying bug --- you now can see it!

When in nature

- Look at more than just the trail ahead.
- Look beyond the prominent features of the landscape and pick out what is normally unseen.
- Move your eyes so that they can draw their attention to things that they would otherwise miss.
- Keep your senses active, keep them moving, and keep showing them exciting things so that they will want to keep their eyes moving.

MOVING IN NATURE

Learning how to move in nature is very important in order to fully observe your surroundings. There are proper techniques of moving much like learning dance or an oriental art form such as t'ai chi. With the technologization of walking surfaces, heavy footwear with big heels, and the fast pace of modern life, humankind's walk has become sloppy, damaging, and weak.

THE FOX WALK

Learning from our sly four-legged friends, we can learn to effectively move through nature using the following techniques:

- Stop talking.
- Ease down your pace into slow motion.
- Shorten your stride.
- Lightly touch your foot on the ground before the weight of your body is committed.
- Place only the outside edge of your foot on the ground.
- Gently roll your foot down (inwardly) flat.
- Slowly move your weight forward in a flowing motion.
- Center your gravity at the center of your hips.
- Do not look at the ground.

Walkers should be able to feel exactly what they are stepping on. If you feel a twig that might snap, you now have the ability to pick your foot and place it in a new spot without looking down.

When you feel confident as a fox walker, take off your shoes and socks. Notice that when fox walking barefoot, even on sharp stones, you will not hit the heel, but will walk, quite naturally. Also, notice your ability, with the fox walk, to freeze easily.

THE RABBIT GAME
Form a circle with one person in the center pretending to be a **rabbit**. When the rabbit looks at you **freeze!** When the rabbit is not looking at you, **Fox Walk** toward it. See who can reach the rabbit first. Try two rabbits. This is the same way to sneak up on a real animal.

Practice the fox walk at home. See if you can sneak up on a cat or dog without scaring them.
Practice the fox walk outside. See if you can approach beetles, bugs, birds, frogs, chipmunks, squirrels, deer or anything else. In time your fox walking skills will allow you to observe more and more wildlife.

THE NATURE HUNT EXERCISE
To hone total sensory awareness, splatter vision, and the fox walk engage students in a non-competitive exercise similar to a traditional Easter egg hunt. Hide several small things that have some sort of an odor, and are out of character for the landscape, like hot dogs, or candies or perfumed stuffed animals. Explain to students that this is an exercise that requires use of all the skills that have been learned. The more items that one is able to find, shows that the person has the necessary skills to be an excellent nature observer. You may also give students style credit for the best fox walk, use of “deer ears,” etc. Make sure to relate and enforce the following two rules.

- Silence. We are learning techniques to view wildlife. If any noise is detected, especially talking, you are disqualified (you’ve scared the animals and they’ve run off!)

- Low impact. If any impact is detected like a broken branch, a moved rock, or a deep footprint, you are also disqualified.

OTHER CONSIDERATIONS FOR NATURE OBSERVATION

- Think camouflage. It is important not to wear a solid color. Dress in a check or a plaid and darker-patterned clothing, to help break up the outline of the body.

- Wash before hand with a natural, non-perfumed soap and/or shampoo.

- Do not wear perfumes, colognes or scented deodorants.

- Be aware of which way the wind is blowing and try to be upwind from where you think wildlife may be observed.