

Montana Natural History Center

120 Hickory Street
Missoula, MT 59801
www.MontanaNaturalist.org

Instructions for *Field Notes* Contributors:

Thank you for your interest in *Field Notes*, the weekly radio program sponsored by the Montana Natural History Center. *Field Notes* is broadcast twice weekly on KUFM public radio, 89.1 FM, at the following times: Thursday evenings at 9:25 pm and repeated Sundays at approximately 11:53 a.m.

The information on the other side of this page describes how best to approach writing a *Field Note*, the format and some cautions. Also included are tips on recording *Field Notes*, the header and footer material to begin and end your *Field Note*, and some sample *Field Notes* for inspiration.

Please contact me if you'd like to discuss some ideas or to submit a *Field Note*. Thank you for your time and effort. Have fun in the field!

Sincerely,

Caroline Kurtz

Field Notes Coordinator

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Writing Field Notes

Background

A trip outdoors, whether it be a walk to the grocery store or a hike up a mountain, brings up questions for keen observers. Where do magpies nest? Why doesn't a spider stick to its own web? How do water striders keep from sinking? These questions and more are answered weekly on *Field Notes*.

Field Notes are natural history essays produced by the Montana Natural History Center (MNHC) that air on KUFM public radio, 89.1 FM, two times a week: Thursdays at 9:25 p.m. and Sundays at approximately 11:53 a.m. The pieces highlight observations of the natural world, ranging from concealment postures of owls to the short, hungry life of a water shrew. The program has been on the air since 1991.

Format

The restricted length of a *Field Note* doesn't leave a lot of room for text, so you should get to the point right away. The usual format is to introduce the reader to an observation you made in the field during the time of year when the *Field Note* is to be aired. After relating the observation (usually focused on the natural history of Montana), the bulk of the *Field Note* should involve an interpretation of the observation. *Field Notes* should be typewritten and not exceed two double-spaced typed pages, or about 600 words. When read aloud, they should run between 3 and 4 minutes.

Research

Once you've made your observation in the field and narrowed down the question you want to focus on, head to the library. First, you will need to identify the species you observed, if you don't already know its name. Second, search for the explanation for the behavior or characteristic you observed. Current professional literature or popular science/nature magazines are good sources of the latest "gee whiz" stories and the most reliable information. You can use the Internet, but be sure your source is credible. Talking with an "expert," such as another teacher or professional, also is a good way to learn more about what you observed.

Writing the Field Note

When you sit down to put your observation and research on paper, remember that you are trying to interpret for an audience that may not have a sophisticated understanding of the way natural systems work. Be sure to define scientific terms and avoid errors of generalization, (the osprey *always* carries fish head first to reduce wind resistance"), anthropomorphism ("despite her fear, the mother wren fed the nestlings"), and group selection ("this behavior promotes the long-term survival of the species"). Also remember that you want to include your listeners in appreciating the natural events happening around them. Talking down to listeners by preaching from the soapbox turns people off. Conservation messages are important, but let the wonders you are describing speak for themselves.

Taking the Final Step

When you are finished with your *Field Note*, send it to MNHC, 120 Hickory Street, Missoula, MT 59801, attn. Caroline Kurtz. You can also fax it to MNHC at 327-0421 or e-mail it to caroline@TheNatureCenter.org. Be sure to include your name, address and phone number with your *Field Note* so we can contact you about any editing and set up a recording date. We can't run all the *Field Notes* we receive because occasionally pieces don't fit the *Field Note* format, or they cover topics similar to those of recently-aired *Field Notes*. But a high percentage does make it on the radio, and if you want to give us a call at 327-0405, we'd be happy to discuss topics or answer any questions you might have. Happy *Field Note* writing!

It is fortunate, perhaps, that no matter how intently one studies the hundred little dramas of the woods and meadows, one can never learn all of the salient facts about any one of them. – Aldo Leopold

Field Notes Tapings: Tips for New Readers

1. Print your essay on only one side of each page, so you can line them up on a table without having to flip them as you read. Mark any expendable paragraphs. Often, it takes longer to read your piece than you predicted (remember, there's some intro and outro stuff, and (:20) of music), and you may want to be able to shorten it in a hurry.
2. Make sure your scribbled additions/deletions are LEGIBLE. (This might include the MNHC intro and outro portions.) *Read the whole piece, aloud, until you're comfortable with it. Try timing it, too.*
3. If you're getting out of breath when you practice, you might need to shorten your sentences. Experiment with highlighting the words or phrases that trip you up; it might help you anticipate them. (For some people, this makes it worse. Try it.)
4. Don't rush. Incorporate pauses into your piece. *Don't forget to breathe.* Consider your typical amount of conversational modulation (variation up and down in tone) and, if you catch yourself mumbling in a monotone, imitate yourself in a conversation.
5. As you read, emphasize (pronounce clearly) those words whose meanings are crucial to the piece.
6. Stumbles: everybody makes them. There are two approaches to correcting them, and you might consider which you prefer before recording:

Option #1: You listen for your own stumbles as you go and you correct them as you go. This involves pausing and resuming after the last logical stopping point, whether it was the start of a clause, phrase or sentence.

Option #2: You just read the piece from start to finish and don't worry about small mistakes... then, we go back and have you repeat the sentences containing any goofs you might have made.

If you felt breathless or hesitant all the way through your first take, we can do a second one.

7. Each *Field Note* starts and ends with theme music, which Beth Anne is mixing under your voice as you begin and end. Try to physically FREEZE for one second after you say your last words; it gives her time to lower your voice and bring up the music cleanly.
8. Weekly broadcast times: Thursday evenings, 9:25 p.m. and Sundays at approximately 11:53 a.m.

Remember to bring a copy of the opening and closing bits about the MNHC. Thanks... and don't let all this scare you! It's actually fun...

Beth Anne Austein, 243-4160.

Header and Footer for Field Notes

It's time for Field Notes, brought to you by the Montana Natural History Center.

This is/I'm _____ for Field Notes, brought to you by the Montana Natural History Center, providing natural history education for schools and the public throughout Montana. You can find out about upcoming events and programs at the Center by calling 327-0405. Or visit us online at www.MontanaNaturalist.org.

Field Note

Sound and the Furry

For whom the bat trolls

One summer I had a fantastic experience that revealed just how limited our hearing abilities are compared with other animals. I was out on a warm, calm evening. A few moths were flying, and now and then the larger shape of a bat would flit overhead. To me, the evening seemed peaceful and quiet. This illusion was shattered as soon as I switched on a special microphone that transposes high frequency sound down into our hearing range: the microphone shrieked with loud clicks, crackles, hisses and explosions.

In reality, a noisy war progressed just a few feet over my head, complete with stealth bombers, dog fights, sonar evasion, sonar jamming and anti-enemy flak! Without the help of the special ultrasonic microphone, I couldn't hear any of this.

Most people know that bats perceive their surroundings using ultrahigh frequency sonar. But exactly how do they do it? Insectivorous bats produce ultrasonic "clicks" with their mouths, and then listen for the return echoes. Bats can process the return echoes in extremely sophisticated ways, and extract an impressive amount of information from them. When hunting, bats tend to produce two types of sounds: a constant frequency click, and a frequency modulated, or FM, sweep.

When bats are just patrolling and looking around- or should I say, "hearing around"-for prey, they produce the constant frequency clicks. When these constant frequency clicks bounce off an object, the bats can tell roughly where the object is in the air. But more importantly, bats can measure the Doppler shift of the echoes to tell whether the object is coming or going. Once bats "lock on" to a target, they speed up the number of clicks, and switch over to the frequency modulated sweeps. These FM sweeps tend to

either go up or down in pitch, depending upon the species of bat. From the return echoes of FM sweeps, bats determine the object's size, shape, texture, and even the shape of the insect's wings.

Pretty fantastic. Considering this sophisticated sonic arsenal, you might wonder why there are any flying insects left at all. Well, as you might have guessed, many nocturnal insects have escalated this arms race with ajew tricks of their own.

First of all, many insects, such as moths, beetles, crickets, lacewings and mantises, can hear bat sonar, so they know where their predators are. These insects have interesting behavioral responses to ultrasonic calls. If the bat is far away and not closing in fast, a moth, for example, simply turns around and flies away. However, if the bat is closer and approaching rapidly, the moth will execute a dizzying array of evasive flight maneuvers, including power dives, erratic spirals, and abrupt loops and rolls.

If these maneuvers have not shaken the pursuing bat, some insects can produce their own ultrasounds that jam the sonar of the bats! These sounds are not only extremely loud, so that they tend to deafen the sensitive ears of the bats, but they also apparently sound to the bat like so many different objects moving in different directions. Sonic shrapnel!

Clearly, our perceptions of the world are often shaped by our limited sensory capabilities. In the case of the noisy arms race between bats and their prey, we are just tuned to the wrong channel.

-Erick Greene, professor of ecology at the University of Montana.

Field Note

A Matter of Color

Yellow flowers tend to bloom first in Spring

For three years I lived each spring on Finley Point, a peninsula on the southeast side of Flathead Lake. During April and May I went for walks along the road through the open ponderosa pine- Douglas-fir forests at least every day, recording when I first saw wildflowers blooming. Keeping these records, I noticed an interesting pattern. In April nearly half of the species that came into bloom had yellow flowers, while in May, fewer than ten percent of the species had yellow flowers. Buttercups, yellow-bells, Oregon grape, biscuitroot and balsamroot all bloomed in April, but western groundsel and prairie arnica were the only yellow-flowered species that began flowering in May. Why are yellow-flowered species so much more common in early spring than later?

We know that flowers generally serve the function of attracting pollinators. In Montana, these pollinators are insects or sometimes hummingbirds. During much of the year and in most habitats, bees are the most common and efficient pollinators.

Workers of colonial species, such as bumble- bees, tirelessly visit flower after flower in order to gather nectar and pollen

to feed their young. But during very cold and cloudy weather, flies may be more active than bees. More importantly, native bees start their colonies anew each year; thus, in the early spring, only the queens are present, and they are busy selecting a site for their colony or building a nest.. Flies, on the other hand, are often abundant early in the season, and they may be just as important as bees for pollination in early spring.

But how does this help explain the abundance of yellow-flowered species? Researchers who study insect behavior have shown that, in general, flies are attracted to yellow more than other colors, while bees are most attracted to blue and white. Have you noticed that fly-catching strips are usually yellow? Although we can't know for certain, these observations suggest that the abundance of yellow-flowered plants in early spring may be due to the relatively greater availability of flies acting as pollinators. Once warmer weather arrives and bees are more abundant, we see fewer yellow-flowered species relative to those with blue or white flowers.

“Why are yellow-flowered species so much more common in the early spring than later?”