

CENTER LINE

A Publication of Waukesha County's Retzer Nature Center

Fall 2010

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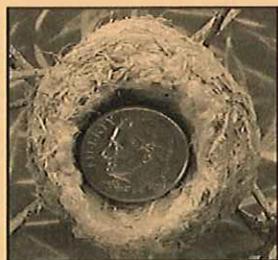
WITH FLYING COLORS

With the fall season winding down, New World migrants that have been breeding in Wisconsin get ready for their flight back to Mexico and Central America. The neotropical fliers have spent spring and summer visiting our outdoor hanging baskets of petunias. The tiny birds are attracted to the red, purple, and blue blooms that hang down from shepherd's hooks. Enjoying their antics among the flowers is a pleasurable habit that will soon be at an end. Before returning to winter habitats however, birds must double-up on body mass. And this is accomplished by gorging on nectar and small arthropods. Luckily for the birds, no charges for extra carry-on baggage. Luckily for me, a few extra days for bird watching.

You probably have already guessed which bird I have enjoyed spinning around in my flower baskets, but in the case you haven't...it is the tiny Ruby-throated Hummingbird (*Archilochus colubris*). The one and only hummingbird found in most of eastern North America, and the smallest bird ever! From tail tip to end of bill, the critter will reach a grand total of 3 ½ inches. If the Ruby-throated Hummingbird is lacking in size, he is unaware of any defect. This bird will excel with a great style in performance, and take a look at that chassis! Male upperparts are green and he sports an iridescent red throat patch. Shiny throat feathers of the adult male, called a gorget, will glisten like the film on soap bubbles. At other times the gorget will simply appear black. Breast and central belly are white. Both male and female have black patches from bill to below the eyes. Female ruby-throats have green upperparts and underparts are whitish and unmarked. The female has a blunter tail with white spots along the edges. Beautiful in her own form, she lacks the ruby throat. Male hummers have notched tails that are black along the sides with little or no white spots.



The penny-weight breeders arrived on our scene sometime in March. The male returns earlier than the female, and establishes his territory. The birds are highly territorial during their breeding season. When the female appears onto the scene, the male will display his flying abilities in a series of U-shaped looping dives above her. Acrobatics will surely impress during courtship. Courtship will finish with multiple, swift, side-to-side horizontal arcs. Male and female remain together only long enough for mating. After the exciting courtship, the female hummingbird is left to her own devices. She becomes the single mom, and off she goes to find her home site, usually near the tip of a sloping branch that has leaf canopy above, openness below, and the site must be near water. Her nest is usually constructed at least 15 feet above ground level. The nest takes 6 to 10 days to build and will measure 1 ½ inches across and be 1-2 inches high.



Lichens and soft plant materials are wadded down and bound together with spider webbing. The tiny cup nest becomes a cozy nursery. Her clutch of two eggs is delivered. Incubation lasts for 16 days. During this time, the female sits on the nest about 60-80% of the day. Male hummingbirds play no role in caring for the offspring. On an interesting note, outside of mating, Ruby-throated Hummingbirds are not social. However, they do interact with song at times. Communications are made with various chips and twitterings.

Each species of hummingbird is equipped with a bill that has evolved into the shape needed to extract the nectar from particular flowers found in its habitat. The ruby-throated hummer's bill is long, straight, and looks like a slender darning needle. Flower nectar is

the sustaining food of their diets, and their darning needles certainly sipped the nectar out of our petunias. At times sap from sapsucker drilled holes becomes their treat. Small insects and spiders are also included in their meals. *Archilochus colubris* must take in around 7,000 calories per day because of very high metabolism. An average day spent in food sampling is 17 hours. Hummer maintenance is rather time consuming.

The perfect model of a flying phenomenon is found in the flawless performance of the Mini-Hummer. Aerodynamics are accomplished with ease and grace. High tech difficulties are overcome. All Mini-Hummers tested passed with flying colors, and bird watchers will be pleased when given license to watch their exhibitions. Hummingbirds can fly backward and upside down. They are the only birds that can stay in the same spot by flapping their wings. This amazing ability is achieved by special movements of their wings. They flap them horizontally in the shape of a figure 8, varying the angle with each flap. The bird power-strokes, on both the down beat, and the up beat, of the wing flap. The hummers also expand and contract their tail feathers to aid in this unique method called hovering. Average wing speed of the ruby-throat is 50-70 beats per second. The bird has been clocked at an average flying speed of 30 MPH. Courtship wing speeds, however, can reach 200 beats per second, and the flying speed will reach speeds of 45 MPH. You can actually hear how this bird got its name.

There is an old Mayan legend that claims the first two hummingbirds were created from small scraps left over after making all the other birds. Amongst other Mayan lore, there is a story told that the hummingbird was the sun in disguise, and he is trying to court a beautiful woman, who happens to be the moon. Nearer to home, a Navajo legend speaks of the hummingbird that was sent up to see what was above the blue sky. Turned out to be nothing. The Black-chinned Hummingbird might have been the messenger in this tale. The Black-chinned Hummingbird is one of only four hummers that breed in the United States, and they prefer our southwestern states. If a hummer was sent up today to spin off a modern folk tale, there's no telling what would be seen up yonder!

Nudged by length of days, and biochemical changes in their bodies, the Ruby-throated Hummingbirds get an urge to beat their wings in flight. Its time for them to head for Mexico and – or Central America. When winter hits our airways, hopefully, the tiny hummers will be basking in the tropics.

Will drop them a postcard and write...

"Along the way
May the weather be fair
God, how I wish
I could be there."

See you on the trail,

Shirley Blanchard

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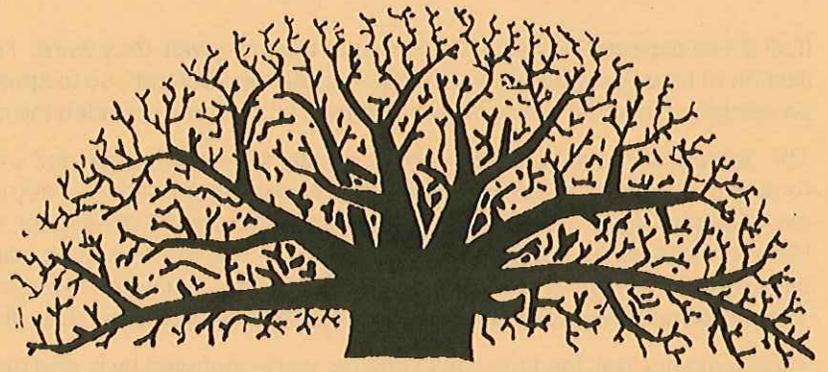
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HEARTWOOD



DELIGHTS AND DILEMMAS!

Spring is easing into summer as I write this, and the warblers are passing through (headed north), and the wildflowers are dropping petals and going to seed. On the trees the bright green new leaves are gaining size and strength, and darkening to a summer shade. I have had the sense of momentous happenings this spring—certainly out on the land, but (I admit) within my own mind and heart as well. I had somehow expected to feel a sense of accomplishment, of conclusion, of triumph, of relief—but instead I feel the sense of being on a journey that is not finished.

I suppose that's real life...but I get ahead of myself.

This past March and April, I gave the first presentations of my new first-person program on Aldo Leopold, titled "Aldo Leopold—A Visit". In this program, I use the persona of Leopold as a way to express some important ideas drawn from his work—the variety of attitudes toward land, the idea of a value for land, the philosophical concept known as 'The Land Ethic', and the importance of direct experiences of discovery in communicating knowledge and love of land. For many years, these ideas have provided the foundation for our teaching at Retzer Nature Center; it was a thrilling prospect, to express these ideas in the persona of the man who thought of them!

The program was given first as part of our observance of Aldo Leopold Weekend, the first Saturday in March. It was given again a week later, at the Muskego Library's annual Leopold observance. Finally, it was given as a keynote address to the regional conference of the National Association For Interpretation in early April. I had naively assumed that each presentation would build gradually on the preceding one, with a progressive increase in polish and confidence. I hadn't prepared for the twists and turns of the journey I had embarked on.

The program was the result of about a year of preparation, although I have been reading and teaching Leopold for almost my entire teaching career (of 32 years!). I should admit honestly that I had a pretty good level of confidence, going into this project. I am comfortable with Leopold's ideas, while continuing to be inspired by them. I have a lot of experience explaining them to people, in plain language. I have worked to build them into our programs here at Retzer. I looked at this new program as mostly an organizational challenge—taking Leopold-related ideas that I know well, and organizing them into a coherent presentation. Concerning the first person viewpoint—well, I'm about the right age, and though I don't look like Leopold, I don't look distractingly un-like him either. With the right haircut, clothes and glasses, I thought I could pull it off.

As the program developed, I mixed readings from Leopold's essays and articles with plain-spoken commentary about his ideas. Though I tried to use Leopold's own words in this commentary where I could, I did not feel a slavish need to do so; I thought my understanding of his ideas (and my experience at explaining them) entitled me to sort of 'say things my own way', as I thought Leopold himself might do in an informal occasion—especially since the interspersed readings would be directly from his essays and articles. I would provide a good-looking handout (printed in suitably retro-looking type-face) of the essays and articles I would read. I came up with a time-travel device that I thought would be perfect: with Leopold on his way to a gathering of students and friends in 1945, suddenly transported 65 years into the future, to our time; the presentation he had prepared for them would therefore be given to us instead. I could not help but congratulate myself on such a brilliant concept, which I was sure could not fail! I decided I would illustrate my talk with nature slides, to give just the right visual background (especially since Kodachrome slides were a brand new technology in the 1940s!). I then determined I would add a background of recorded music to set the proper mood, using an exquisite selection of contemporary classical pieces (contemporary, of course, to the 1940s!). Finally, I decided to include antique tools as a 'hands-on' component, along with one of Retzer's excellent taxidermy displays (for additional dramatic emphasis!). As I practiced the presentation (with all its splendid bells and whistles), striving to commit as much of the commentary to memory as possible, I was prepared to deliver a tour-de-force—a complete experience of something truly extraordinary.



If all these expectations sound a little over the top—well, they were. I'm afraid I had completely bought into my own exhilarating illusion of how this program would go—"drunk the kool-aid", so to speak—without having tried it out on anyone. Well, the first presentation to a real live audience changed all that, and provided the opportunity for much-needed perspective.

The audience was about 30 in number, mostly folks well acquainted with Leopold, and including several professional naturalists (one of them a representative of the Aldo Leopold Foundation!). They were a friendly, encouraging group, but with high expectations. I was nervous—an emotion I somehow did not expect, and one I definitely did not associate with Leopold. Nervousness aside, the program went OK, for a first try—though it was certainly not the tour-de-force I had imagined. It was a starting point—a fact which somehow surprised me, but which my learned audience had instinctively (though kindly) realized. They took me at my word that I wanted feedback, however, and boy did they give it—including the following...

- ♦ Many did not 'get' the time-travel device, were confused by it, and did not understand how they were supposed to relate to the Leopold speaking to them.
- ♦ The many slide pictures, too-loud recorded music, and extensive handouts were felt by some to be distractingly overwhelming—making it hard to know just what to pay attention to, and hard to focus attention on Leopold.
- ♦ The hour-long program was too long—with some audience members perceiving my visceral determination to 'pack it all in' (what they did not know was that I actually left out about twenty minutes of the carefully-prepared readings and commentary!).
- ♦ A number said that the commentary sounded more like Larry teaching children than Leopold teaching graduate students—especially the parts that tried to demonstrate a discovery-based method of field-teaching.
- ♦ A number said that the commentary was too derivative, too much my own words...and that I was obligated to use more of Leopold's own language when communicating Leopold's ideas.

Without exception, these and other comments were given with the utmost good will and encouragement. Everyone seemed to feel I was equal to the challenge of doing this program, but changes were needed. I had somehow thought my preparation was finished; actually, it was only begun. Though I professed my thanks for the honest responses, I felt disappointed, and crestfallen. I let it sink in, and thought it over at length. I also had a long, helpful talk with my wife. The more I thought about it, the more I realized what I needed to do.

I went back to work. Over the next five weeks, I skim-read all the available collections of Aldo Leopold's published works (a daunting task!). By the time I was finished, I had come up with 56 pages of quoted passages, each one tagged to a specific point in my commentary. It was with unbridled joy that I discovered that all thirty-two points of my commentary were in fact supported by numerous quoted passages—and that it would be possible after all to give the commentary largely in the words of Leopold! With fresh inspiration, I revised other parts of the program—I cut back the slides, changed (and quieted) the music, and refined the use of props and displays. I trimmed the number of readings, and got permission to put together a handout of portions of Leopold's manuscripts. I tossed out the lame time-travel scenario, replacing it with a simple written statement to the audience of their role in the program—that of returning students, attending a seminar by Professor Leopold. This simple change made Leopold's persona much more clear and direct—a professor, giving a seminar, using notes and slides.

Some of these changes were worked into the presentation at the Muskego Library, and all of them were used for the keynote address to 150 colleagues at the NAI conference. The presentations were given this time with appropriate humility, and they were well-received—with appreciation and good will, and still with some friendly suggestions for improvement. Thicker-skinned and more realistic now, I accepted the comments in a most positive spirit.

So...portraying Aldo Leopold is a humbling journey, not an accomplishment. I have put in some real work on it; that work will continue. I am thankful to all who have given kind and constructive responses; the program is better because of it. This is a journey I want to continue—I think the program is a unique and constructive vehicle for teaching about the land and our shared experience of it.

Accordingly, it is my plan for Aldo Leopold to make a repeat visit to Retzer Nature Center for the next Leopold Weekend, the first Saturday in March, 2011.

Larry



A MEMBER OF OUR FAMILY...

An organization trying to do something good attracts like-minded people. At a Nature Center, that like-mindedness has to do with a love for land. A Nature Center attracts people who know from experience that the land is a good influence in one's life, a source of interest and meaning, of beauty, of health and well-being. Such people want the land in their lives. They want to experience it, take care of it, share it, and teach about it. They want to preserve it, and they know that one of the best ways to preserve the land they love is to make it possible for other people, especially children, to fall in love with the land too. Then it will be a source of good in their own lives, and they too will want to preserve it.

Something happens when like-minded people at a Nature Center work together for a long time. What they have in common binds them together. They tend to stick around together for a long time. They bring their talents along, as well as their individual personalities. Although they sometimes disagree, they try their best to harmonize their efforts, in pursuit of a common value.

They become a family.

In April, our Retzer Nature Center family lost one of its most beloved members, Carole Canada. If you have visited Retzer with any frequency during the past ten years, you have had the chance to know Carole. She was an unfailingly kind and patient presence, helping our visitors with pretty much anything—from program information to field trip registration, to gift shop sales, to flower identification, to trail directions, to snowshoe rental, to lost mittens, to lost kids at AppleFest. Carole was the wonderful voice on the phone (which you can still hear on the mp3 players for the Adventure Trail); though she may have answered your phone call on any given day, she was also the person to whom we routed the difficult calls—because it was impossible to talk with Carole and not be soothed. Carole was our adaptable-person-who-could-do-anything—over the years she organized our mailing lists, maintained our first aid kits, assembled our newsletter, called our volunteers, maintained our contacts with the media, crunched our AppleFest income numbers, took our bird seed orders, fed our teaching animals, and provided our staff with delicious desserts (and her famous and incomparable corn casserole!). Our teaching Bullfrog, Eric, would only sing on days that Carole was working.

Carole was a child of the 60s and 70s, something that she and I had in common. She was the picture of an outdoorsy country woman, and the personification of someone living in harmony with the land—from her delight in flowers and bird songs to her advocacy of organic foods (and work with the food co-op), to her fondness for frogs, to her love of horses. She had strong convictions and an admirable inner strength, as well as a generous and sympathetic heart and a special love for children. She thrived on the busy-ness of our Nature Center during peak field trip season, with the happy commotion of a hundred school kids filling the building.

Carole was completely devoted to her husband Bob, her daughters Amy and Rebekah, and her son David. We have come to consider them part of our Retzer Nature Center family too.

We all love you, Carole. We miss you.

Larry



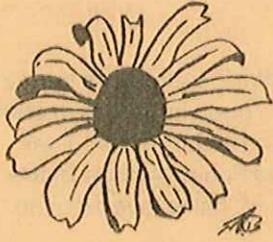
A Sincere Thanks to All...

Cash donation from Candace Lesak in Memory of Herb Thoke.

Cash donation from Bruce Ailey.

Cash donation from Elmbrook Garden Club, Inc.

Donation of 20 pair of gardening gloves from Ann Rudolph.



THE LAST PRAIRIE

REGOLITH

The above title, quite literally, means 'rock blanket'. The Greeks combined two words that best described all the loose (and I use the term loosely) material on top of impermeable bedrock. It also accurately describes the same material on other heavenly bodies, such as moons and asteroids. Here on Earth, the only known planet to support life, we also have soil. For our purposes, soil is geologic material altered by its inhabitants (Hole 1976). Life is what makes 'soil'. All of the tiny (and not so tiny) organisms, roots and fungi help create the multiple horizons and colors we see on our shovels. Subterranean residents (and their decaying selves, when they cease to reside due to loss of life) make soil much more interesting, even exciting, than simply broken-down geologic material. There is a lot more to cover than bedrock, so let's get started.

Welcome to soils, part one. This issue's installment covers soil basics (well, actually the basics of soil basics, as our time together is measured in paragraphs, not chapters), while the next will likely deal with the soils found here at Retzer Nature Center (or there may be 3 articles; we'll see how far we get). We will begin at the bedrock. This is the **parent material**, or initial material, which provides the matrix for the flora and fauna to alter. It is the regolith present when soil formation begins (Hole 1976). Not all of this is fragmented rock or quartz sand. In very wet soils, where the lack of oxygen slows or prevents decomposition, the parent material is accumulated plant matter. I leave the mind-wrenching question of 'chicken-or-egg' regarding that last sentence to you. Whatever it is, the base material sets the stage. For example, here in southeast Wisconsin, our bedrock is predominately **dolomitic limestone**; limestone that is partially replaced by a mineral called dolomite (no surprises there). It adds calcium carbonate to the water and soil, which buffers acidity and often raises the pH above 7. To the north and west lie foundations of granite and **non-calcareous** (little or no calcium carbonate) glacial till (Curtis 1971). Here you get more acidic soils. Like everything else, you can only build with the blocks you have at hand. The term 'till' brings up an important point. I beg you to note that much of the state (all of the state, if you look back in time far enough) was glaciated. Glaciers move stuff around. They grind and scrape rock, only to drop the 'till' elsewhere. This

means that the beginnings of soil are sometimes the existing bedrock, plus what was deposited on top, which may be completely different in the Full Monty Python fashion. Yellow Labradors alive! Already this is much more complicated than intended. It is past time to get back to basics.

The origin of soil is marked by the first inclusion/incorporation of organic matter into the aforementioned loose material. This could be leftover, partially decomposed stuff from underneath the glaciers, windblown material, or even gutsy, pioneer plants that live and die quickly. Rain and moisture are the primary culprits to drive the organics into ground. Fungi and bacteria (which, let's face it, are everywhere, grow everywhere, are in everything) are early invaders (Stefferdud 1957). Those two, combined with acids from the organic matter itself, dissolve out usable (by flora) minerals and compounds into the hostile, raw substrate (Curtis 1971). Some of these nutrients find foothold and remain near the surface, the tiny creatures multiply, and soon we have a fragile community working like mad to survive. Now, pioneer plants find the 'new and enriched' subterranean environment more hospitable. They live longer, produce more biomass, and are generally happier plants. As more **humus** (much decomposed organic matter; so much so, you cannot tell the origin by simple observation) accumulates and holds, layers in the soil begin to cement together. The layers are the starting point for mature soil **horizons**.

Horizons mostly follow an alphabetical order as you work your sampling probe deeper underground. Here are the three main layers of a mature soil:

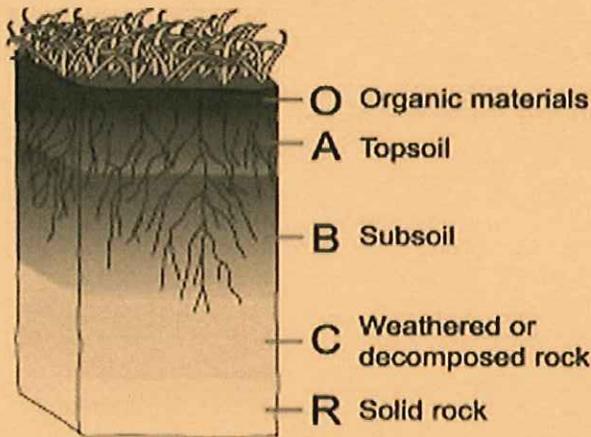
A Horizon: Relatively dark surface soil, rich in moist organic matter and mineral particles. This is the bread and butter layer of soil. The organic matter, which provides homes for fibrous roots, fungi, and fauna of various sizes, is highest here. Humus comprises 12 percent by volume (5 percent oven-dry weight) on average for a Wisconsin mineral soil. This layer has relatively excellent nutrient, water-holding, and buffering capacities. Usually 1 to 12 inches thick, this is often referred to as topsoil.

B Horizon: Usually lighter in color than the A horizon. A layer that contains **leached** (removal of material by percolating water, often pushed or dissolved down from upper soil horizons and incorporated by the B horizon, and even deeper at times) nutrients and clay from above. This can also happen when deep-rooted prairie flora literally 'drive' particles down with their roots. There are less organisms, nutrients, and oxygen than the A horizon. This horizon may be absent in very well-drained (sandy/gravelly) soils. Usually well over a foot thick, this layer is referred to as the **subsoil**.

C Horizon: This section seems almost boring in description. Technically, it is the 'underlying material that from which the A and B horizons formed'. It goes all the way to the impermeable, unforgiving, bedrock.

Some of the above is from college memory, but the majority came from Hole (1976). Please remember that this is definitely simplified (we are not simple-tons, soils are just that complex).

There are many recognized transitional horizons and even additional ones (many soils begin with an 'O' horizon if they have much organic matter on top of the A horizon), but you now have the ABC's of soil formation under your belt.



If you put these layers together, you have a soil profile. Soil scientists use profiles to classify soils into Order, Suborder, Great Soil Group, Family, Series, and finally Type. For now, we are going to deal with Order only (to the relief of all who write and read this article). There are six (out of ten in the world) soil Orders recognized in Wisconsin. They are as follows:

Entisols: Early, primitive soils, often with weak horizons (often no development other than the A horizon), and little or no development of **ped** (soil aggregates of various shapes; if you lightly break soil apart in your hands, you will be able to see the peds). These may be sand soils, **alluvial** (deposited by flowing water), or soils with steep slopes.

Inceptisols: Soils with weakly-developed horizons only with little or no clay accumulation, and a uniform texture. Older than Entisols.

Mollisols: The classic prairie or grassland soil. Dark, rich A horizons and relatively fertile (as in 'the best agricultural soil you could possibly beg for').

Spodosols: The typical soil for coniferous forests. Mostly occurring in boreal regions, they can exist in mixed woods. Very little clay, but a rich (if thin) A horizon.

Alfisols: Found under mixed and hardwood forests, clay accumulation in the subsoil is distinct and evident.

Histosols: The above soils are mineral soils. A Histosol is an organic soil. It is so wet, very little oxygen exists to decompose accumulating organic matter. These plant parts build up to form **peat** (partially decomposed organic matter) or muck (much decomposed organic matter). Either way, the result is a soil composed of mostly organic matter. The above is (you guessed it) from memory, but mostly from Hole (1976).

Well, that is quite enough for now. There is more to get into, and we will get into it, but let this sink in for awhile. Some of you are already aware of what we just covered. For those who are just beginning to train your subsurface mind, step by step is best. Next time: catenas, texture, more classification, our state soil (complete with state soil song), local soils, digressions, and anecdotal humor. Until then, remember: soil (an intact, in-place, layered body) is not **dirt** (displaced, dug-up loose particles) and dirt is not soil. Therefore, those of us who work with soil already know that dirty jobs have nothing to do with geologic material altered by its inhabitants. Have a great autumn.

Mike

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Friends of Retzer Nature Center

The Friends of Retzer Nature Center is a registered, 501 (c)3, organization dedicated to encouraging, perpetuating, and promoting the work of conservation and natural resource education.

The organization seeks the involvement of the community in the form of financial and volunteer support to work toward the continued growth and improvement of Retzer Nature Center. If you would like to become a member or view some of our projects and activities, please visit our updated web site at <http://FriendsOfRetzer.org>



FRIENDS OF RETZER PHOTO CONTEST SUNDAY, NOVEMBER 7, 2010

Get out your camera! Now is the time to take those great Retzer Nature Center photos for entry in the "Friends of Retzer" annual photo contest. See insert for more information.



RETZER NATURE CENTER

WAUKESHA COUNTY PARKS & LAND USE

S14 W28167 MADISON STREET

WAUKESHA, WI 53188

Return Service Requested

Upcoming Retzer Adult Program!

FOREST ECOLOGY WORKSHOPS

This two-session mini-course will cover identification, basic biology and ecology of SE Wisconsin trees. Forest succession and other topics in forest ecology will also be covered. An introduction to scientific methods and techniques used to study forests will be included. Maximum number of registrants 25, minimum 5.

DATES/TIMES: Thursday, October 21
7:00-8:30 p.m. Slide Program at
Retzer Nature Center.
Saturday, October 23
9:00-1:00 p.m. Field Session at
Muskego Park - Picnic Area 3.

FEE: \$10.00 plus park entrance fee

REGISTER BY: Monday, October 18