

Kemp's Point

A newsletter of the Kemp Natural Resources Station
Volume 2, Number 1 - Spring 2001

A KEMP SPRING

Ahhh... spring in the Northwoods. There is nothing like it – birds fill the air with cheery song, wildflowers carpet the forest floor, and a new season brims with freshness and promise. Growing up, I never paid much attention to spring. It was just a desperate few months when it was too warm to play hockey and too cold for baseball. But as the years have gone by, I have developed a particular fondness for spring.

As each spring returns anew, I am struck by the parallels between nature's activities and our own here at Kemp Station. Perhaps this should be no surprise given the fact that Kemp is a natural resources station, that our mission is to study and teach about our natural world. But even so, the similarities between Kemp's happenings and nature's extend beyond the coincidental. We have researchers of every feather returning after a long winter's absence. Some are loud and colorful, and you have no difficulty spotting them. Others are quiet and subdued; we catch an occasional glimpse of them here and there as they flit about their work. Regardless of call or plumage, each is racing the clock. Their challenge is to put in that research plot, to find that critter, to collect enough raw data to nourish their

(Continued on Next Page)

Studying the Sink Kemp Research Report

Each issue of Kemp's Point includes a story on an interesting research project being conducted at Kemp Station. This issue features the work of Bruce Cook, a researcher from Penn State University.

Pick up a newspaper, turn on the TV, or open a magazine and it is quite likely that you will come across a story about global warming. Indeed, some scientists have cited climate change as *the* most pressing environmental problem faced by our planet today. If the predicted changes in climate come true, it could dramatically affect the social, economic, and ecological systems of Wisconsin and the world.

At the heart of the issue is carbon dioxide (CO₂). There are natural sources of CO₂, such as wildfires and forest decay, and those that are human-made. Every time we burn fossil fuels, whether it is in our homes, at work, or in our cars, we emit carbon dioxide that collects in the atmosphere. In addition to CO₂ sources, there are CO₂ sinks—places on Earth where CO₂ absorption exceeds emissions. Of the CO₂ that is released by human activities, about 1/3 is absorbed by the terrestrial biosphere (e.g., during photosynthesis by growing trees) and 1/3 is absorbed by the oceans. But what happens if emissions are

greater than absorption? Although the sun's rays pass through CO₂, heat given off by



Bruce Cook climbs a research tower, high above the forest canopy.

the earth at night does not. In this way, CO₂ resembles the glass in a greenhouse, hence the name, "greenhouse gas." The more CO₂ emitted, the stronger the greenhouse effect and the warmer our planet.

Because CO₂ plays such an important role in climate change, there is a large national and interna-

(Continued on Next Page)

A Kemp Spring (Continued from Page 1)

minds through a long winter of analysis and contemplation.

Students bloom in spring. They come to Kemp Station for field courses, to see ecological theory become ecological practice. An amazing transformation occurs when you take students out of the classroom and put them in the field. The environment is stimulating. They sniff leaves, taste soil, and feel fish squirm between their hands. They eat and sleep their studies, immersing themselves, sometimes literally, in their subject matter. There is no clock watching or waiting for the bell to ring. Each answer begs a new question and class runs long into the night around the campfire. Even the shiest, most quiet student finds their voice in spring.

Spring is a time of optimism at the Station. It's when we chip away at a long list of maintenance projects. It's when roofs get repaired, buildings get painted, and things get fixed. And when your buildings are over 80 years old, something always needs fixing. We shut down several buildings for the winter and it is in spring when we roust them

from their hibernation. In this way, they remind me of an old sow bear that has just emerged from a long sleep. They creak and groan at first, and sometimes even roar, but after some careful prodding they gain their feet to support the Station for yet another season. Spring is also the time when special projects take shape. What were ideas and sketches just a few months ago become reality in spring.

Amid all this activity – the science, the teaching, the outreach and maintenance – is a quiet sense of urgency. Not an ominous panic, but the subtle realization that the time is now. There is a definite buzz in the forests and laboratories, in the classroom, and along the nature trail. Although researchers, students and Station friends may be engaged in completely different activities, all are aware that this is the time to make hay.

Yes, I would say there are strong parallels between nature's spring and our own here at Kemp Station. Coincidence? I hope not. I look forward to seeing you at Kemp sometime this spring. 🐾

-Tom Steele

CONGRATULATIONS!

We are pleased to announce that Gary Kellner, Kemp's craftsworker, has received a 2001 Classified Employee Recognition Award from the College of Agricultural and Life Sciences. The award recognizes outstanding performance and service to the College.

The nomination process was open to all classified employees in the College. Each nomination required documentation of the nominee's superior performance and letters of recommendation from two additional supporters. A selection committee then reviewed all nominations and selected this year's recipients.

Well done, Gary! 🐾

Kemp's Point - Volume 2, Number 1

Published semi-annually by the University of Wisconsin-Madison's Kemp Natural Resources Station. To receive this free newsletter, update your address, or receive a back issue contact:

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tional effort to monitor its concentration in the atmosphere and to measure its uptake and release from various ecosystems. At Kemp Station, this work is being done by Bruce Cook and his supervisor Dr. Ken Davis of the Department of Meteorology at Pennsylvania State University.

Data collected since the late 1950's suggest that the northern forests of our hemisphere, such as those in northern Wisconsin, may play a large role in removing CO₂ from the atmosphere. However, there are questions about how much CO₂ is absorbed and why large variability occurs in uptake from year-to-year. To better understand the interactions among CO₂ emissions, the atmosphere, and the forests of northern Wisconsin, the Chequamegon Ecosystem Atmospheric Study (ChEAS) was initiated.

ChEAS is a multi-agency research effort that includes scientists from the University of Wisconsin-Madison, University of Minnesota, the National Oceanic Atmospheric Administration, and the U.S. Forest Service. Northern Wisconsin was chosen as the ideal study site for three reasons. First, nearby Park Falls is home to a 1300-foot TV tower that allows the researchers to take measurements of the atmosphere high above the surrounding forests and wetlands. Second, the tower is located within a large tract of undeveloped land, namely the Chequamegon National Forest. This allows for accurate atmo-

spheric CO₂ measurement with minimal influence from human activities. And lastly, the rapidly growing forests of this region may be an import sink for CO₂ on a global scale.

Bruce's research involves monitoring CO₂ uptake and release by several different plant communities. The field sites he monitors



Bruce & field assistant Kiku head to the field.

lie west and north of Kemp Station, between Park Falls, Woodruff, and Manitowish Waters. The site I visited, known as Willow Creek, was established in 1998. It consists of a 100-foot tower and sophisticated monitoring equipment.

The tower was erected among a stand of hardwood trees that is about 70 years old. During tower construction, efforts were made to minimize tree removal and vegetation disturbance so that measurements would reflect an undisturbed site.

The other tower site Bruce works at is in a wetland on the Northern Highland-American Legion State Forest. Not needing to be as tall

to rise above the surrounding vegetation, the Lost Creek tower is only 30-feet tall. In addition to these two towers, Bruce maintains and collects data at four micro-meteorological stations, each set in a different vegetation type.

Data collection at the two tower sites occurs via a series of sensors located along the towers' length. Readings are transferred automatically to a computer located in a small, 5' x 7' equipment shed. I found the shed akin to a china shop—don't touch anything! Gas cylinders line one wall and are used to periodically calibrate the CO₂ profiling system. The other wall holds the profiling system, a complex mass of wires, tubing, switches and plugs and the tiniest laptop computer I'd ever seen!

Bruce's site visits involve a wide range of tasks, such as ensuring that all the equipment is working properly. Full tanks of gas must be transported to the site and swapped for empties in the equipment shed and data are downloaded from the computer. And then there's the part that doesn't allow for a fear of heights: climbing the tower to clean sensors or replace equipment filters. Bruce uses a harness and is hooked to the tower when he climbs, but for those of us who prefer to keep their feet on the ground, the idea of climbing 100 feet skywards is somewhat unnerving.

I asked Bruce if anything out of the ordinary ever goes on at his field sites. He said that during hunting season people often stop

(Continued on Page 5)



Discover Wildflowers!

April showers bring May flowers and what better way to celebrate spring than to visit a nearby natural area where you can see some wildflowers close up. There are different categories of wildflowers; some you find in a woodland, while others are seen in wetlands or open fields. Flower production requires a good deal of energy, so woodland plants have only a small window of time to use sunlight and store energy before the taller trees leaf out and shade them. Woodland wildflowers are sometimes referred to as ephemerals because they flower early and for only a short period of time. Wildflowers that grow where sun is available throughout the growing season tend to bloom later and last longer.

An often seen woodland plant here in the Northwoods is bunchberry. About 3-8 inches in height, bunchberry displays a flower of 4 white petals above a whorl of leaves. Following pollination, a tight cluster of red berry-like fruit appears.




A visit to a northwoods bog may find you peering into the ewer-like leaves of the northern pitcher plant. Insects are attracted to the colored lip of the leaf and have difficulty escaping due to the leaf's stiff, downward-pointed hairs. The insect eventually falls and drowns in the water that collects at the base of the leaf. The plant digests the insect after it breaks down with the aid of secreted enzymes and bacterial activity.



Blue Flag, a member of the iris family, may be spotted in swampy or marshy areas. A very pretty violet-blue flower with yellow base highlights stands upon a sturdy stalk among tall sword-like leaves.



A later blooming wildflower that can be seen along Hwy 47 near Kemp Station is the common tansy. A member of the sunflower family, this tall (2-3 foot) plant totes flat-topped clusters of bright yellow, button-like flower heads. The fresh, young leaves and flower can serve as a sage substitute in cooking.  -K.O.



Some Internet links are provided below to help with your exploration of wildflowers. Enjoy!

Wisconsin State Herbarium: University of Wisconsin - Madison:

<http://wiscinfo.doit.wisc.edu/herbarium/>

USDA Forest Service: <http://www.fs.fed.us/outdoors/naturewatch/wildflowers/flower.html>

USDA Plant Database: <http://plants.usda.gov/plants/>

Plant Conservation Alliance, Bureau of Land Management: <http://www.nps.gov/plants/cw/>

Texas Agricultural Extension Service: <http://aggie-horticulture.tamu.edu/wildseed/wildflowers.html>

Specifically wetland plants:

USGS Northern Prairie Wildlife Research Center:

Wetland Plants and Plant Communities of Minnesota and Wisconsin

<http://www.npwrc.usgs.gov/resource/1998/mnplant/mnplant.htm>

Midwestern Wetland Flora

<http://www.npwrc.usgs.gov/resource/othrdata/plntguid/plntguid.htm>



A PIECE OF KEMP HISTORY: The Boathouse, Then and Now

The Kemp boathouse was built in 1924 as a simple two-story structure, with two boat slips below and a large playroom above. It was a bustling recreational center when the Kemp family owned the



Circa 1930

Station. The Kemp granddaughters spent many a summer afternoon swimming off the dock and diving off a small diving board that was once mounted there. The family owned two motor launches – the smaller was used for muskie and northern pike fishing and the larger, a beautiful wooden craft with brass fittings, was used for cruising the Minocqua chain of lakes. The family also had canoes, rowboats, and even a Cape Cod Knockabout sailboat. A third and fourth boat slip were added later to accommodate the growing fleet. On rainy days, the Kemp granddaughters fished inside the boathouse, trying to catch some of the many panfish that swam among its pilings.

The upstairs room was used for recreation and study. It was outfitted with day beds, workbenches for crafts, and a ping-pong table – a novelty in the Northwoods at the time. The Kemp family often hosted dances in this room for girls from Clearwater Camp which was located a short paddle across the lake.

Today, the Kemp boathouse still serves as a center of activity; but this time it is research and teaching. Scientists use the boathouse to access the Tomahawk Lake to study everything from algae to loons. The playroom above has been converted into a classroom and meeting room. It is the only classroom we know where the teacher can be at the front of the room talking about bald eagles and the students can look outside and see one! 🐼



2000

Research Report (Continued from Page 3)

to ask what he's doing. Bruce said that he's always happy to explain the research to folks. Sometimes wildlife interferes with site equipment: bears tip over solar panels, deer rub up against equipment and red squirrels chew through cables. And is it lonely at the top? Of the tower, that is? Not for Bruce—he has a committed field assistant named Kiku, a sweet 11-year old golden retriever. Kiku doesn't do any tower climbing but she does wait patiently for Bruce's return to terra firma.

So the next time you hear about the greenhouse effect or climate change, think about Bruce climbing a tower high above the forest canopy. His efforts should lead to a better understanding of the role Wisconsin's Northwoods play in this important global issue. 🐼

After completing his undergraduate degree in Biology and Natural Resources at Huntington College in Indiana, Bruce was employed by the U.S. Department of Energy in the Chicago area. His work first dealt with restoration of tall grass prairie and later he conducted environmental assessments at DOE facilities, such as nuclear weapon factories. Bruce completed his graduate degree in Soil Science at the University of Minnesota in 1990 after which he began doing private environmental consulting. He spent eight years writing his own grants to support his research before joining Dr. Ken Davis at the University of Minnesota as a Research Fellow. Bruce and Dr. Davis have since relocated their home base to Penn State University.

If you would like to learn more about ChEAS and Bruce's work, visit <http://cheas.psu.edu/fieldsites.html>.



WILD WONDERS

From my desk at Kemp, peripheral vision allows me to keep an eye on the world outside my window. One day I caught sight of a grey squirrel as it made its way up a tree beside the parking lot. It's mouth was packed full of dry leaves. I knew immediately that it was



headed toward a nest location, so I watched as the squirrel scampered up and up and traversed the narrowest of branches over the parking lot. I couldn't figure out where this critter was headed and it seemed to me that it would have been much easier to simply run across the parking lot rather than risk life and limb in the tree tops! But I suppose if I were built like a squirrel, I wouldn't feel that way.

Squirrels are incredibly agile and can reverse a hind foot 180 degrees to permit a controlled headfirst decent. They have powerful rear legs and use their tail for balance.

This squirrel wove its way through four trees until it finally slipped into a large hole in a dead tree. I could envision the squirrel spitting out the dry leaves in the bottom of the cavity and carefully arranging them for optimal comfort and warmth.

Squirrels typically have two types of homes: a tree den and a drey, or leaf home. Dens are made in a tree cavity. A drey is a nest of twigs and leaves located high in a

tree crotch. It is lined with soft material such as moss, fur, feathers and bark. If no cavity is available for a den, the drey will serve as the animals' sole lodging. Squirrels may construct winter and summer dreys, the summer drey being more like a platform.

So while the squirrel was arranging the leaves in the cavity, I was determined to keep watch to see the squirrel emerge, but it was just taking too long—what could he (or she!) be doing in there? Perhaps settling in for an afternoon nap? I had work to do so my squirrel watching moment had to end.

I often see black squirrels around Kemp Station. These are actually grey squirrels but have a black coat, referred to as a color phase. The black phase squirrels are more common in the north for good reason. Studies show that in temperatures below 10 degrees Fahrenheit, black-phase squirrels lose less heat and have a lower metabolic rate than grey-coated squirrels. There are rare instances of a reddish color phase and sometimes even a combination is seen, like one Kemp squirrel who has a grey body and a reddish tail.



The squirrel's cavity was originally made by the diligent work of two pileated woodpeckers. The pileateds had used the cavity as a nest site for several years running. The squirrel activity may foil my chances of seeing a pileated use the hole again, but the giant

woodpecker gave me a different treat instead. Several weeks back I saw some movement out of the corner of my eye while again working at my desk. Turning my head, I saw a pileated woodpecker hammering away on a tree whose top was snapped off during the



Pileated woodpeckers will work near to ground level when a good food source exists.

August storm. I mentioned to Tom about the activity and he asked if I was going to try for a photo. I didn't think it could happen because: a) taking the photo through the office window just wouldn't turn out, and b) approaching the bird surely would scare him off. So, I returned to my work.

After a few minutes I noticed that the pileated was still there and still hammering away. Clearly he had found a good food source in that snag! That's when I decided to try for a photo.





The hunt for insects continues in this huge cavity!

I snuck out the building and walked slowly toward the tree, taking photos as I approached. Being completely ignored, I ventured closer. I wound up as close as I could without stumbling about the tree's base, which would have guaranteed his flight. I watched as the bird made wood chips fly—the hammering sound echoed in the woods and I like to think his occasional “churps” meant he was enjoying himself! I knew it was a male because of the red “moustache” located just below his eyes. After a few more photos and moments of watching him work, he flew off.

Pileated woodpeckers prefer habitats containing old, large trees making Kemp an ideal locale. They prefer to use hollowed trees as roost and nest sites since they can conserve energy when only an entrance hole needs to be excavated. Roost trees usually have multiple holes in the trunk, providing escape routes if a predator should enter the roost.

Pileated woodpeckers are easily identified during flight, as they look somewhat prehistoric, almost like a pterodactyl! And their call, a loud, “*ki ki ki ki*,” makes them hard to ignore.

One day as I was about to hop into my car for the drive home, I heard a pileated nearby and quickly searched for the source of the call. I finally spotted the bird hanging on the side of a tree, just below a cavity. The bird bobbed back and forth and then slipped into the hole, out of sight. I nearly ran off the road as I drove



by that tree in an attempt to catch another glimpse of our forest friend. Finally, an early spring tale of nest building. Once again, it was movement out my office window that caught my eye. A crow was sitting up high in a tree and it seemed to be working at something. At first I thought an afternoon snack was being consumed, but gradually the crow's beak was filling up with material. I realized he or she was tearing strips of wood from a spot where a branch had broken off. The crow flew off toward the lake, and, most likely, to a potential nest site.

I really like crows and I found a

wonderful website devoted to the American Crow, www.corvus.org/. Here I read that during nest building season (early March to mid May), crows become quiet and secretive. Now that I think



about it, I've heard fewer calls from the neighborhood crows as of late. Another interesting fact about crow nest construction is

that they often build a number of partial nests before choosing the actual nesting site. This is likely done to confuse potential predators.

Crows are precise nest builders even though from the ground the nest may look less than well made. The outer layer is built of twigs, sticks and bark and may be as large as two feet across and four inches deep. This layer is then lined with grasses, wool, hair, fur, shredded bark and scrap cloth and yarn, resulting in an inside diameter of only seven inches. 🐿️
-K.O.

To learn more about squirrels:

[http://animaldiversity.ummz.umich.edu/accounts/sciurus/s._carolinensis\\$narrative.html](http://animaldiversity.ummz.umich.edu/accounts/sciurus/s._carolinensis$narrative.html)

<http://www.cws-scf.ec.gc.ca/hww-fap/squirrel/squirrel.html>

http://spot.colorado.edu/~halloran/sq_grey.html

And pileated woodpeckers:

<http://www.birdsofna.org/excerpts/pileated.html>



Kemp Outreach In Review: Snowshoe Hike 2001

January 20 was a beautiful winter day with blue skies and bright sunshine making the winter landscape sparkle. The morning hours brought crisp, single-digit temperatures. These chilly conditions did not deter the 17 intrepid folks who joined us for an interpretive nature snowshoe hike at Kemp Station.



Led by Tom Steele, the group first gathered around the fire ring for a greeting and brief introduction to the hike. Unfortunately we could only pretend that the pile of snow in the center of the ring was a toe- and finger-warming fire! Once all had strapped on their snowshoes, we were off to discover winter ecology.

With the cold and snow, it is easy to think that there is little going on in the outdoors during the winter. But we learned that if you are observant, you will see signs of activity. In a hemlock grove, we saw several deer beds. Deer stay warm at night by hunkering down in the snow and using the hollow hair of their coats for insulation. Another sign

of deer activity observed was browse places, where the deer nibbled on choice cedar branches.

As the group paused along the lakeshore, the discussion turned to how beavers make it through the winter. Prior to their home water freezing over, beaver will cache (store) food to eat throughout the winter months. A beaver will fall a lakeshore tree, submerging the top, which contains the more nutritious parts. This submerged top becomes part of the beaver's cache. We were able to observe some holes in the snow covering the lake—it was theorized that these may be spots where the beavers or muskrats have kept the ice open for air.

Our journey then led us behind and along the large blowdown area, the result of this past August's storm, and over to Jyme (pronounced jimmy) Lake. Winter is a great time to explore this area of Kemp because it is very wet other times of the year. Jyme is a very small bog lake surrounded by wetlands and is a good place to explore the pukak. Pukak is an Inuit word for the type of snow that forms where the

snow meets the ground. Heat from the earth vaporizes and recrystallizes snow. It is warm in this layer below the snow and small creatures, like voles and mice, develop their own system of paths and tunnels here as their winter home. As we gathered around, Tom dug into the snow, exposing an area of the pukak that contained a small animal tunnel formed from bent grasses. A few brave folks stuck their fingers into this tunnel, feeling it's sturdy construction. Before leaving Jyme Lake, we learned how birds deal with winter. Those that stay here for the winter feed primarily on seeds and spend their non-foraging time tucked away in a cavity to stay warm out of the wind.

After two hours of exploration, the group tromped back to the Lab & Office, stopping to examine some pileated woodpecker work on a dead tree before enjoying hot chocolate, cookies and conversation indoors. For these winter explorers, the crisp, morning temperature had become a pleasant memory. 🧤 -K.O.



A Farewell to Snow

As I write this, we are only days away from the Vernal Equinox, commonly known as the first day of spring. But you'd never know it if you looked outside. Here in the Northwoods, we're experiencing a late winter storm, bringing us over five inches of fresh snow. I'm confident that many folks are groaning as the flakes fall and they think about how much longer it will be before they see green again! I admit that the occasional spring-like days we've had have been nice and awakened in me a desire for change, but when I see the snow fall like I see today, I must declare: I really like snow!

To me, little compares with a snowfall that leaves the trees dusted in white. It's one of the most beautiful things I've seen. I like to enjoy such a setting while scooting along on cross-country skis, and I've been fortunate to do so on a few occasions this winter. I tend to be one of those skiers who watch the scenery as I make my way along the trail and stop periodically to enjoy the peacefulness of a forest blanketed in white.

One thing that strikes me as amazing is how snow manages to cling to some of the smallest and most delicate twigs and crevasses. It's nature's way of decorating a dark or even dead-looking forest. I guess you could say it's one of many wonders in the great outdoors and something that led me to investigate what snow is all about.

"snow" used either as a verb, "Look at it snow!" or as a noun, "The snow is good for skiing." But what IS snow? The air contains water vapor and that is the source of all precipitation, from rain to snow and all the messy variations in between. Snow forms when water vapor condenses at temperatures below the freezing point and forms ice crystals around dust or other small, atmospheric particles.

Snow researchers have determined that these ice crystals are always six-sided and are basically symmetrical in shape. What we see as snowflakes depends on what happens to the crystals during their travel to Earth. If some partially melt and bump into each other, they will cling together, making a larger snowflake.

Although rare, snowflakes can grow as large as 3-4 inches in diameter! And why is it said that no two snowflakes are alike? The formation of ice crystals depends upon exact atmospheric conditions. Given the variability of the weather, the result is an infinite number of configurations and the unverifiable theory that no two snowflakes are alike.

We have all seen that snow comes in many different forms both while it's falling and while it's on the ground. Skiers prefer dry, powdery snow and snow fort builders like the sticky, packing stuff. Sometimes snow falls as light, fluffy flakes and other times as wet, sloppy globs. Snow consistency is dependent on flake shapes and flake density, or how much air

is between them.

While we refer to snow simply as "snow," the Inuit Eskimo's have a word for each type of snow. Here are some:

anniu— falling snow
api— ground snow
siqoq— smoky, drifting snow
kimoaqtruk— snow drift
qali – snow on tree boughs
quinzhee – snow shelter

So while spring takes over where winter's left off, I say "see you later" to my friend, snow. I know that when the temperature and humidity is soaring during mid-summer, I will be thinking about the sound of anniu on a still day; skiing atop the api while enjoying the intricate world of the qali; and wishing I could sit inside a quinzhee to cool off. HAPPY SPRING! 🍷 -K.O.

FUN SNOW SURVIVAL FACT:
If you are thirsty and think that eating snow will help, think again. More energy is used eating snow than you gain by hydrating (adding fluid to) your body. If you are faced with an emergency and you must consume, first, make sure it's clean (!) and then allow it to slowly melt in your mouth.

We most often hear the word



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In This Issue.....

Kemp Research Report	Page 1
Wildflowers	Page 4
Kemp History	Page 5
Wild Wonders	Page 6
Kemp Outreach Review	Page 8
Farewell to Snow	Page 9

