# Kemp's Point

Volume 11, Number 2, October 2010

News from the University of Wisconsin-Madison's Kemp Natural Resources Station

## A Celebration to Remember!

Over 140 friends, neighbors and "alums" gathered earlier this summer to celebrate Kemp Station's 50th Anniversary. It was a grand day and the mood was festive as we commemorated a half-century of natural resources research, teaching and public education. Folks toured station buildings – new and historical – learning about the station's rich history. They went on interpretive nature walks, took pontoon boat rides, and participated in entertaining programs about loons and timber doodles.

A highlight of the day was having donors Susan Small and Sally Greenleaf join the celebration. It was their generous gift of land and buildings in 1960 that created Kemp Station. Everyone thoroughly enjoyed hearing their childhood reminiscences about what it was like to grow up on Kemp's Point in the 1920s.

The day had the friendly feel of a family reunion and, in many ways, that's exactly what it was – a reunion of people who share a deep connection to this special place called "Kemp." It was terrific fun to look around and see old friends reconnecting and new acquaintances being made. For some, this was their first visit in more than 30 years. For all, it was an opportunity to return to a place that was, and continues to be, a part of their life.

Numerous people helped make the day a great success and I thank you one and all. Special thanks go to the Kemp crew of Gary Kellner, Karla Ortman and Tina Youngquist, not only for their hard work with the anniversary but every day of the year. And I want to recognize the outstanding efforts of Al Krug. Al first came to Kemp as a forestry student in the 1970s. He returned as cook extraordinaire, preparing a delicious anniversary lunch for everyone. Thank you Al!

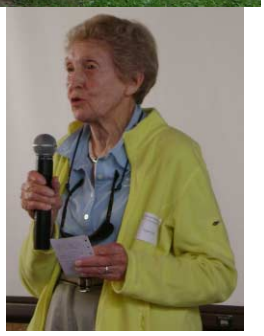
*-Tom Steele*

# More 50th Anniversary Memories.....
















# Summer Crazy Quilt

*By Karla Ortman*

My gramma liked to make quilts. The ones I like most are known as "crazy quilts," made from odd scraps of fabric, sewn together without any rhyme or reason. When I was little, my mom made us clothing and all the scraps went to Gramma. Today I have quilts that feature bits of fabric from clothing I once wore. It's fun to look at the quilt, point to a scrap of fabric and exclaim, "I remember that shirt!"

If only we could make a crazy quilt of our summer memories. It seems each summer goes by more quickly than the last. And as I think back over the summer of 2010, I have just scraps of memories. So let me share a crazy quilt made up of some of my summer scraps.

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The black-throated green warbler was in the early phase of nest construction when Amber Roth, a PhD candidate at Michigan Tech University, who has studied birds for years, spotted the action: "I saw the male looking for nest material on the gravel driveway which I thought odd since you rarely see this species near the ground, much less on the ground, so I followed him until he went to the nest. This species of warbler is unusual in that both the male and female contribute to nest building whereas in many other warbler species, the female does all of the nest building."

The discovery of this little nest caused a bit of excitement at Kemp because of the nest's location. The black-throated green (BTG) warbler, shown on its nest in this photo taken by Laurie Johnson, chose to build on a hemlock branch over the trail intersection next to the Kemp Office/Lab building. Laurie Johnson, who published "Silent

Conversations with Eastern Wood Warblers," a collection of her photographs (2004), just happened to be making field visits with Amber Roth at the time. Laurie hoped to take photos of the adult BTG warblers feeding their young, but this didn't happen. The nest failed; a disappointment for many, but not an uncommon occurrence, which surprised me. According to Amber, nest failures can be caused by

1) predators (mammals, birds, reptiles),
2) weather (e.g. wind, extreme cold, flooding, etc.)
3) death/injury to adult female causing her to abandon the nest
4) human disturbance
5) cowbird parasitism causing nest failure or abandonment

In the case of our BTG, Amber suspects predation as the cause for nest failure. It is mind-boggling to consider all the challenges a little migratory bird faces, not only to simply survive, but to reproduce successfully.

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There was a nest in our yard at home that did not fail. I must have walked past it many times as it was growing in size, but it wasn't until my head was swarmed by annoyed, buzzing insects did I actually see the nest! Suspended from one of the corners of the gazebo on the deck was a nest, larger than a football, and very impressive. I did not get stung, but was intrigued to learn more about the creatures that built it.

After some cautious observation, I determined the nest was that of bald-faced hornets, also known as white-faced hornets, *Dolichovespula maculata*. And in doing some reading, I found a fascinating story lies behind a hornet's nest.

It all begins in spring, once it's warm enough, when the queen, who mated last fall, comes out of her hibernation spot (underground, under logs or bark), shivers to bring her body temperature up to 95-degrees F and goes in search of food in the form of sap. Then she begins nest construction.

Like other insects that build paper nests, the queen scrapes wood fibers from weathered dry wood (trees, fences, etc.), and mixes the

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## Crazy Quilt... *(Cont'd from Page 3)*

fibers with her saliva to make liquid paper pulp. Selecting a location on a tree branch, or structure overhang, like our gazebo, the queen begins nest construction with the deposit of paper pulp. The process of chewing up wood fibers, mixing it with saliva to make pulp and adding to the nest continues until a small comb of cells is built. In each cell, the queen releases stored sperm from last fall and deposits an egg. In this spot, the egg will cycle through several larval stages, cocoon up, become a pupa and then molt into an adult before going to work for the queen.

The offspring work to enlarge and maintain the nest, defend it if necessary, gather food and care for the young while the queen simply produces more eggs. Several times this summer I observed the workers crawling about on the nest's outer surface, as though they were checking for leaks! Sometimes I saw an individual adding more pulp to an area of the nest. By watching the nest regularly, I could see it slowly grow in length, as the nest area below the entrance hole was elongated.

Hornets are very beneficial in that they feed on many different insects, including yellow-jackets, which are the critters that like to visit you at picnics and crawl into your soda cans! It is also good to know that this hornet is not aggressive in nature and will not sting unless the nest is threatened (so stay at least 3 feet away) or an individual is provoked. A hornet's stinger is not barbed, so an individual can sting multiple times.

Near the end of summer, the queen lays a batch of eggs that become males. Then she finishes the season with a final egg deposit which she fertilizes with last fall's stored sperm to produce females. These females mate with the last batch of males and become the queens that hibernate over winter and start the process again in the spring. The old queen dies, as do all the other workers and males, either of old age or due to cold temperatures.

Left behind is a nest that tells the story of the queen's legacy….how many eggs she laid and what each egg became can be determined by dissecting the nest and examining the tiers of combs and counting the various sized cells – the smallest cells were workers, the next largest were drones and the largest cells in the lowest tier were queens. Information on preserving and displaying a nest is available at http://www.muenster.org/hornissenschutz/preserving.htm.

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I enjoy hanging freshly washed laundry outside to dry. But it seems I'm in competition with some spiders for the use of the clothes lines. One morning when I went out to hang a load of wash, I discovered the results of a busy spider. In addition to a fancy orb web built in the "corner" between one of the lines and the pole, there were numerous single strand webs between, and extending from, the clotheslines. I was most impressed by one web strand that must have stretched nearly five feet down to a stump near the ground. I felt bad for removing these webs, but I needed to hang the laundry! I felt inspired to do some research into spider webs. And after doing so, I must say we might consider being a bit more respectful of webs.

Silk is produced by the spider and is released through spinnerets. According to the Astrographics website spider spinnerets:

"…are organs located on the abdomens of spiders from which spider web silk is extruded. The individual spinnerets move independently yet in a highly coordinated manner to build cocoons or webs. Each spinneret is dotted with many tiny spigots, through which various types and thicknesses of silk are extruded. The strong muscles that move the spinnerets also force liquid silk through the narrow spigots. This pressure, as well as external pulling by the spider, rearranges the liquid silk molecules into a solid but flexible thread. Although spider web silk is only about one millionth of an inch thick, it is considered a natural high-performance polymer. The

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# Learning to Live with Wolves

Wolf biologists with the Wisconsin DNR live-trap wolves and fit them with radio-collars. This assists biologists in monitoring the population by providing information about the wolves' location. This information can also be useful to researchers when conducting studies. This wolf was collared during the summer of 2010. (Photo at left.)

The locations of radio-collared wolves are determined through aerial telemetry. An antenna attached to the wing of the aircraft receives a signal from the collar. Note the antenna in the upper left corner of the photo, above.

UW-Madison graduate student, Christine Anhalt (at left), monitors equipment being used in a research project. The project involves testing a "simulated pack" as a potential depredation management tool. Researchers create a "simulated pack" through foreign howl playbacks and scent-marking. The equipment pictured here has the ability to both send out playbacks and monitor the wolves' responses.

As part of Kemp Station's 2010 Outreach Program, Christine Anhalt gave a presentation about her research at Kemp Station this summer. A question was posed about the impact of wolves on deer compared to other predators. Christine referred attendees to a Wisconsin DNR publication available at http://dnr.wi.gov/org/land/er/mammals/wolf/pdfs/wolvesdeer2009.pdf. Included in this publication is a chart listing the various causes of deer mortality in Wisconsin's Northern and Central Forests. Here is some of that information:

Hunter Harvest (gun and bow): 122,000
Estimated bear kill: 33,000
Estimated coyote kill: 16,000
Estimated wolf kill: 13,000
Vehicle kills: 13,000
Estimated bobcat kill: 6,000

# Kemp Profile: Ksenia Onufrieva

**Hometown:**
Moscow, Russia

**Educational background and current area of study:**
I received an MS in Biology from Lomonosov Moscow State University in 1999 and PhD in Entomology from Virginia Tech in 2003. Currently, I am a research Scientist at Virginia Tech (Blacksburg, VA) conducting research on mating success and mating disruption in low-density gypsy moth populations in support of the national Slow the Spread of the Gypsy Moth Program (STS)

**Your 2010 field crew:**
In Wisconsin, Andrea Hickman and April Mikul; in Virginia, Andrea Hickman and Samuel Newcomer.

**What question does your field research answer?:**
In 2010, we evaluated four gypsy moth pheromone formulations in Virginia and Wisconsin to see if the climatic differences between the two locations affect the effectiveness of the pheromones. The artificial pheromone is the same compound that females produce and emit to attract males. The experimental plots were aerially treated with pheromone. These treatments create the background level. If there is enough "background" pheromone in the air, it is virtually impossible for males to locate calling females, thus preventing moth mating and reproduction. Pheromone-baited traps simulate calling females. For a pheromone treatment to be considered successful, it needs to reduce trap catches by at least 95% compared to control plots, where no artificial pheromone was used. Preliminary results have shown no differences in the degree of mating disruption as measured by male moth catches in pheromone-baited traps between the two states.

**How is your research funded?**
The majority of our funding comes from USDA Forest Service Forest Health Protection.

**Describe a typical day of field work:**
Our day starts in the lab, where we count the male moths that have emerged from the pupae we received from the USDA's Animal and Plant Heath Inspection Service's Plant Protection and Quarantine (APHIS PPQ) program and estimate how many we can release. We use mark-release-recapture method to monitor our plots, because gypsy moth populations are so patchy, it is hard to find enough plots with similar population densities. The pupae from APHIS PPQ are infused with a red dye, so that when adults emerge, we can see red dye in their bodies.

Once we get to the experimental plots, we release males and check pheromone-baited traps. We collect the trap catches and freeze them so that at the end of the season we can go through the collections and separate native males from the ones that we have released.

Mating disruption is mainly used in low-density gypsy moth populations, so in treated plots we usually catch just a few males per season. Also, a lot of the times even if a male is able to find a calling female and mate with her, the egg mass is not properly fertilized. There is speculation that pheromone treatments affect males' behavior so that sometimes males are only able to fertilize less than 5% of eggs in the egg mass.

**Could the male moths that you are releasing in Wisconsin contribute to an increase in the state's gypsy moth population?**
In treated plots it is very unlikely that the males that were not trapped will find females. In control plots, yes, males will find calling females and mate with them. However, the studies are conducted in the generally infested areas and the number of males we release for the studies is not enough to augment the population.

**What is the biggest challenge you've faced working on this project?**
The biggest challenge was traveling between Virginia and Wisconsin; every week we had to collect

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## Kemp Profile... *(Cont'd from Page 6)*

data in both states. As a result, we are very familiar with Chicago O'Hare International Airport!!

**What has been your favorite part of working on this project?**

Being in the woods is always nice; being in Wisconsin woods was a special treat for me. Since I am from Russia, I am used to seeing lots of birch trees and I miss that in Virginia.

**What will be next for you after this project is completed?**

Our next goal is to evaluate the "second-year effect" of the formulations that we have tested this year. We will come back to the same plots next year and will monitor them again using the same mark-release-recapture technique. Because the temperatures are lower in Wisconsin compared to Virginia, the formulation might release the pheromone slower and the effect that they produce one year after the application might be stronger here than in Virginia.

## Crazy Quilt... *(Cont'd from Page 4)*

strength of some silk exceeds that of steel, and its toughness exceeds that of Kevlar."

How does anyone read that and not exclaim by saying, "Wow!"? (Visit www.astrographics.com/GalleryPrintsIndex/GP2017.html to see a neat microscopic photo of spinnerets.)

As you've certainly observed, there are many kinds of spider webs, including funnels, your classic and very ornate "orb web," and the messy cob web, which doesn't look like much to us, but is very good at catching prey. And that's the primary function of all spider webs--to capture food. A spider locates prey caught its web from the vibrations made by the struggling insect.

But the silk is used for more things than web construction. It is used to create egg sacs and for the spider to attach itself to an object before shedding its exoskeleton as it grows. When you see a spider suddenly dropping down in front of your face from the ceiling, it is putting down a dragline. This dragline allows the spider to find its way back, if necessary. Or it may use a dragline to "balloon" to a new territory. Young spiders, or spiderlings, will extrude a dragline into the wind which will carry the spider to a new location where it will set up shop.

I read that webs don't always capture enough prey to give back to the spider the amount of energy it used to construct the web. As a result, some spiders eat their webs to recoup some of that energy, in the form of silk proteins. I have a feeling that next time there's a web on the clothesline, I just might work around it!

## How many ways to skin a mouse?

UW-Stevens Point professor, Chris Yahnke, spent two weeks at Kemp Station with his Mammalogy students in July. One technique they learned was how to prepare museum voucher specimens. "Museum voucher specimens are a record of a species in place and time. Each student prepared at least one of these, so we put up about 15 study skins..." from The process includes carefully separating the animal's skin from the body, which is what the students in these photos are working on. Shown, above, are Jeff Hamilton (UWSP) and Serenity Mutchler (UW-Whitewater), and, at right, Liz Westberg (UWSP).

# Indian Pipe (*Monotropa uniflora*)

This summer I discovered some Indian Pipe in our yard. It grew on the north side of the garage in sort of a mossy patch of grass and other miscellaneous ground cover. Also known as Corpse or Ghost Plant, it is white because it contains no chlorophyl, the pigment that makes plants green and enables the production of food through photosynthesis. Indian Pipe gets its nutrients through its roots, which tap into the mycelia (root-like threads) of a fungus. And the fungus gets its nutrients from another organism, like a tree, thus forming a complex relationship between multiple organisms. Because Indian Pipe doesn't rely on sunlight to grow, it is found in dark, shady areas, and often by old tree stumps. The plant is waxy to the touch, and some plants have pink or even red hues, but all turn black when it gets old or if it is picked. The single small bell-like flower is attractive to small bees for its nectar and who, in exchange, pollinate the plant. You are most likely to find Indian Pipe between June and September.

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