



Cumberland HCP

NEWSLETTER VOLUME 2, ISSUE 4 FALL 2009

SPECIAL POINTS OF INTEREST:

- Monitoring and adaptive management plans are under development for the TWRA Region III portion of the FRHCP. Completion of TWRA Region III HCP elements is anticipated by the end of 2009.
- New staff on the HCP team is enhancing stakeholder participation and accelerating progress on the WRHCP.

INSIDE THIS ISSUE:

WRHCP Update	2
FRHCP Update	3
HCP Spotlight	3
SAC News	4
Featured Species	4
WNS Research Grants	5
Habitat Protection Incentive Programs	5
Past & Upcoming Events	6

FOR MORE INFORMATION ABOUT THE CUMBERLAND HCP PROJECT:
 JENNIFER GIHRING
 JGIHRING@UTK.EDU
 (865) 974-1955

Notes from Alex Wyss, Cumberland HCP Project Director

With early frosts and the peak of fall leaf color upon us, a new season has arrived in Tennessee. So too has a new season begun for the two Habitat Conservation Plans that are being developed in the Cumberlands.

For the Water Resources HCP (WRHCP), the new season brings three fresh faces to the project. Jennifer Gihring joined the team as the Outreach Coordinator. With over 10 years experience in helping communities conduct watershed planning, Jennifer brings a wealth of knowledge and experience to the project. Malissa Davis and Dr. Joe Daraio joined the team to focus on the WRHCP. Malissa's background includes a Master's degree from Tennessee Tech. University and experience with a consulting firm in Georgia. Joe comes to us from the University of Iowa where he received

a Ph. D. in Civil and Environmental Engineering, prior to which he worked as a Hydraulic Engineer for the U.S. Bureau of Reclamation. Malissa and Joe's strong skills will ensure that the WRHCP is built on a solid scientific foundation.

Turning to the Forest Resources HCP, the new season brings to conclusion

the majority of the biological components for the Catoosa and nearby Wildlife Management Areas and

initiation of planning for the North Cumberland WMA. At this pace, TWRA's draft HCP should be ready for submission to the U.S. Fish and Wildlife Service by mid-2010. I am excited to see that TWRA is nearing completion

of planning the first public land HCP in Tennessee history.

The complexity of developing two HCPs simultaneously calls for effective cooperation among all HCP teams and committees. To this end, in mid-October the HCP project management team held a planning session in the upper Cumberlands. Surrounded by



splendid fall forest colors, we refined strategies to move these HCPs forward with efficiency, scientific rigor, and stakeholder participation. As I looked around the table at our strengthened team, I

reflected that, more than ever, our team is prepared to support HCP applicants in development of plans that meet the challenges associated with balancing endangered species protection and economic vitality.

Clearing the Waters - Crossville Wastewater Treatment

The average person in the U.S. uses about 90 gallons of water per day – most of which leaves the house through a toilet flush or down the shower drain. Have you ever wondered where all of this water goes? Clark Annis knows. As the Manager of the Crossville Wastewater Treatment Plant, Clark supervises the treatment of around 2,000,000 gallons of wastewater **every day**. Since an average bathtub holds 40 gallons of water, this means the Crossville treatment plant treats about 50,000 bathtubs of water every day – that's 34 bathtubs a minute!

Most of us do not think about wastewater treatment in our daily lives. However, it's closer than you

may think. During low flow conditions, the majority of the flow in the Obed River is water discharged from the Crossville Wastewater Plant. Water quality in the Obed is clearly dependent upon the quality of the effluent from the plant. By keeping 142 miles of collection lines in good repair and treating wastewater from over 10,000 residents, septic and port-o-toilet trucks, and landfill leachate, operation and maintenance of the Crossville wastewater collection system and treatment plant is a critical part of the Water Resources HCP.

In September, Clark Annis provided a tour of the Crossville Wastewater Treatment Plant for HCP staff to learn more about operations at the plant.

Here we will share some of the information we gained and help you become more knowledgeable about the wastewater facilities at Crossville.

So, how does the treatment plant turn sewage into water that is clean enough to release into the Obed River, one of Tennessee's "Outstanding Natural Resource Waters"? There are three basic stages in the treatment of wastewater: primary treatment, secondary treatment, and disinfection. In primary treatment, the wastewater is screened to remove large solids, then is funneled into large holding tanks. Slowing the flow of the wastewater allows heavy

Water Resources HCP Update

Our new staff have kick-started progress on the WRHCP. Malissa Davis, the Water Resources Core Team coordinator, is responsible for developing technical materials and guiding the Core Team's work. Dr. Daraio is developing a model to predict take associated with covered activities.

Recent accomplishments on the WRHCP include completion of draft activity accounts for residential and commercial development, utility and road stream crossings, and



wastewater management. These documents describe activities on the ground that will be covered in the HCP. Work continues on draft conceptual models that relate these activities to threats to the covered species. The Core Team is revising this information in preparation for consideration by the Steering Committee. The WRHCP Core Team is meeting on November 19th to review the activity accounts, create

the draft covered species list, and discuss details of the take model. The next Steering Committee meeting has not yet been scheduled.

The next three months of work on the Water Resources HCP will include firming up the list of covered species, reviewing the draft activity accounts, and developing final drafts of the conceptual models. Our current timeline aims for completion of all technical work on the WRHCP (identification of covered species through final model simulations) by December 2010. We want your input! Contact the HCP project team if you are interested in becoming more involved in development of the WRHCP.

Crossville Wastewater Treatment (continued from page 1)

particles to sink and grease and oil to rise to the surface. These materials are removed from the top and bottom of the clarifier, after which the water proceeds on to secondary treatment.

While primary treatment is mostly a physical process, secondary treatment combines physical and biological processes to further clean the wastewater. The basic function of secondary treatment is to speed up the natural processes by which water is purified. During this stage, wastewater is mixed with microorganisms in an aeration basin where the microorganisms begin

consuming the small particles of organic matter that remain in the water. Oxygen is pumped into the wastewater in aeration basins. This speeds up the natural microbial treatment processes by allowing the microbes to feed continuously. As the microorganisms grow and multiply, thickened sludge is returned to the head of the aeration basin in order to maintain the right concentration of microorganisms for effective treatment. After time in the

aeration basin, the mixture flows into the secondary clarifiers. As the mixture settles, the remaining solids (now heavier due to the activity of the microorganisms) once again sink to the bottom and cleaner water exits the top.

We've followed wastewater through the treatment plant, but what about the "stuff" left behind at the various stages in the process? The leftover material – called "biosolids" – is dewatered and disinfected on site, then given

to local farmers for use as fertilizer. As Crossville grows, more people means more wastewater that needs treatment. Clark and others at the Treatment Plant are thinking ahead by working with TDEC and the HCP process now to prepare for the future needs of the community. Crossville is currently planning to upgrade the wastewater

WASTEWATER TREATMENT – HOW CAN YOU HELP?

There is a lot you can do to support cost-effective wastewater treatment:

- Pour used cooking oil and grease in a can and throw it away – not down the drain.
- Be careful what you send down the drain. Bug killer, paint thinner and other chemicals are difficult for the treatment plant to remove. Dispose of unused household chemicals during your local hazardous waste collection event.
- Only use as much water as you need – take shorter showers and turn off the water while you're brushing your teeth or washing dishes.
- Make sure to turn the tap off completely. One tap dripping twice a second will send over 50 gallons of clean water to the treatment plant each week.

The combination of primary and secondary treatment typically removes over 90% of the impurities that were in the water as it entered the plant.

While the wastewater is substantially cleaner after secondary treatment, there are still many types of bacteria present in the water. Some of these bacteria may be harmful to humans and wildlife. At the Crossville plant, the treated water is disinfected with chlorine and bisulfates before it is released into the Obed.

treatment infrastructure to increase peak pumping capacity, add other improved technologies to increase the quality of our effluent, and conserve energy and water usage. Over \$6,300,000 is budgeted in 2009-2010 for sewer system improvements and plant upgrades. The HCP offers a timely opportunity to develop cost-effective solutions to meet the challenges of future wastewater treatment needs while supporting viability of vulnerable species in the Obed River.

FRHCP ITEMS OF NOTE

The USFWS Journal of Fish and Wildlife is available free online. Visit this site to subscribe: www.fws.gov/science/jfwm.html

The U.T. Extension fact sheet, "The Hemlock Woolly Adelgid: A Threat to Hemlock in Tennessee" is available here: www.utextension.utk.edu/publications/spfiles/SP503-G.pdf

Northern Cumberlands Forest Resources HCP Update

The Northern Cumberlands Forest Resources HCP team and partners have made significant progress over the last three months. The Forest Resources HCP includes lands managed by two regions of TWRA: Region III (Catoosa, Mt. Roosevelt, and Luper Mountain WMAs) and Region IV (North Cumberland WMA). The Region III team is identifying and evaluating the impacts of changed and unforeseen circumstances, developing a monitoring program, and developing an adaptive management strategy. Region III HCP components should be complete by the end of the year. HCP and Region IV staff met in October to begin the development of biological goals, objectives, and conservation measures for TWRA land in Region IV. HCP components specific to the North Cumberlands should be complete by this summer. HCP staff would like to express our appreciation for TWRA's participation, and we look forward to a continuing our

close working relationship with both Region III and IV.

Invasive species such as the Hemlock Woolly Adelgid (HWA) are one of the "changed circumstances" being discussed among HCP staff and our partners because of the potential for HWA infestation to alter the effectiveness of riparian buffers. An invasive from Asia, the HWA is a serious threat to the health of hemlocks in the eastern U.S. Currently, estimates range between 60-80% of Tennessee hemlocks that may be lost within the next 20 years if a cost-effective control method is not found. Loss of hemlocks in riparian zones could open the canopy and change conditions for understory riparian species which are shade-dependent.

Because effectiveness of HWA control is uncertain, the HCP needs to provide the flexibility to incorporate new information into future decision-making. An adaptive management framework is

outlined in "Forest management in response to hemlock woolly adelgid (*Adelges tsugae*) invasion on the Cumberland Plateau in Tennessee," a paper developed by the Forest Resources Core Team. This paper is nearing completion and will be submitted shortly to the Journal of Fish and Wildlife for publication (see inset for subscription details). In addition to the adaptive management paper, HCP staff are actively working with the State of Tennessee Interagency HWA Task Force to develop control solutions. Publication of HCP information like the adaptive management plan in peer-reviewed journals and direct cooperation with other scientists strengthens the scientific basis on which the HCP is built. This is especially important for issues like the HWA that could have a significant effect on the future composition of forests in the Cumberlands. Look for more HCP-related journal publications in the future.

Forest Resources HCP Spotlight – Kirk Miles

Kirk Miles, Wildlife Diversity Coordinator for Region III of the Tennessee Wildlife Resources Agency, has been a key partner in development of the FRHCP. Kirk serves on both the FRHCP Core Team and Science Advisory Committee. Kirk used his intimate knowledge of the HCP planning area to inform the selection of covered species and develop biological goals and

objectives. His participation has been critical to the construction of a robust scientific foundation for the FRHCP.

In addition to his work on the HCP and day-to-day responsibilities as the Wildlife Diversity Coordinator with TWRA, Kirk was a key player in the development of the State Wildlife Action Plan and is active with the Tennessee Bat Working

Group. He is a tireless wildlife advocate and educator, using his intimate understanding of the Plateau, knowledge of world-class science, and a love for wildlife to build appreciation for the value of biodiversity among the public.

From the HCP Project Team – "Thanks, Kirk!"

For more information on TWRA, visit www.tennessee.gov/twra.

Science Advisory Committee News

The Science Advisory Committee (SAC) met September 15th at Cumberland Mountain State Park. With 40 attendees present, the Committee received updates on the following research projects: habitat mapping in the Obed River, monitoring of spotfin chub and tuxedo darter, dusky salamander habitat distribution, status of Golden-winged warblers, response of Cerulean warblers to forest management activities, and the use of radiotelemetry and isotopes to track Indiana bat migration. The SAC also completed an activity to aid in the development of the NCFRHCP monitoring program. The HCP team would like to thank all attendees, including the following presenters: Mark Thurman (TWRA) speaking for Eric Britzke; Katrina Smith and Johnathan Davis (Tennessee Technological University); Paul Ayers, J. R. Candlish, Dave Buehler, Than Boves, and Katie Percy (University of Tennessee); and Jeff Hawkins and Mark Gumbert (Copperhead Consulting, Inc.).

In addition to the SAC meeting this fall, SAC staff shared the results of other HCP-related research projects at the annual meeting of the Tennessee Herpetological Society and the national meeting of the American Fisheries Society. These presentations covered research and information developed as part of the HCP project in a way that is relevant to the broader scientific community. Through a recent presentation entitled “A community-

based approach to setting conservation goals and objectives for multiple species on the Cumberland Plateau: an example of how salamanders are being used to protect forest and aquatic biodiversity,” HCP scientists shared their expertise with other projects that also seek to identify species critical to achieving broader ecological goals.

Although much of the SAC’s work to-date has been focused on animals and their

habitats, a number of threatened, endangered, and rare plants may be impacted by activities covered in the HCP. The Plants Working Group will meet on November 20th. Primary goals of the meeting include detailed review of covered plants for the Forest Resources HCP and discussion of the preliminary covered plant list for the Water Resources HCP.

Featured Species: Virginia Spiraea

In the past, we have highlighted a variety of animals including a fish, a salamander, a mussel and a bat. This time we are going to focus on a species that comes from a place a little different from the others: the plant kingdom. Virginia Spiraea (*Spiraea virginiana*) is a federally listed threatened shrub native to the southern Appalachians.

What is Virginia spiraea?

Virginia Spiraea is a shrub of medium height with upright branches reaching heights from two to ten feet. It is a member of the rose family and produces creamy-white four-to-eight-inch flower clusters visible in June and July. The flowers attract a number of insects with the most numerous being beetles. The leaves are alternate, but vary in size,

shape and degree of serration. The species is sporadic, but forms in dense clumps where it is found. Seed production is very low, and this species mostly reproduces vegetatively through underground runners or by portions of the plant breaking off and re-rooting downstream.

Where is it found?

This shrub inhabits specific, isolated riparian areas in eight states, most of which are in the Southeast. In Tennessee, Virginia Spiraea is found primarily in the South Fork Cumberland River and Emory River watersheds, with limited occurrences on the rest of the Plateau.

Virginia Spiraea is usually found on banks of rocky mountain streams where high waters reach occasionally to deposit silt and sand. It can also be found on the banks of meandering waterways, point bars, sand and boulder bars, in between large rocks and in areas with mild erosion, deposition and slumping.

Why is it threatened?

The biggest threats are related to direct physical impacts and habitat loss: reservoir construction, severe flooding or inundation, highway and railroad maintenance and construction, dumping, and extensive clearing. These activities can cause significant erosion and high water flows that wash away existing plants and prevent establishment of offspring. In addition to habitat loss, many of the areas where Virginia Spiraea is found contain Multiflora Rose and Japanese Spiraea which are invasive and reproduce at a much faster rate, providing unwanted competition for Virginia Spiraea. These invasives, mixed with a low reproduction rate and increased flooding of disconnected communities, increase the importance of protecting this rare plant before it is completely eliminated from the ecosystem.



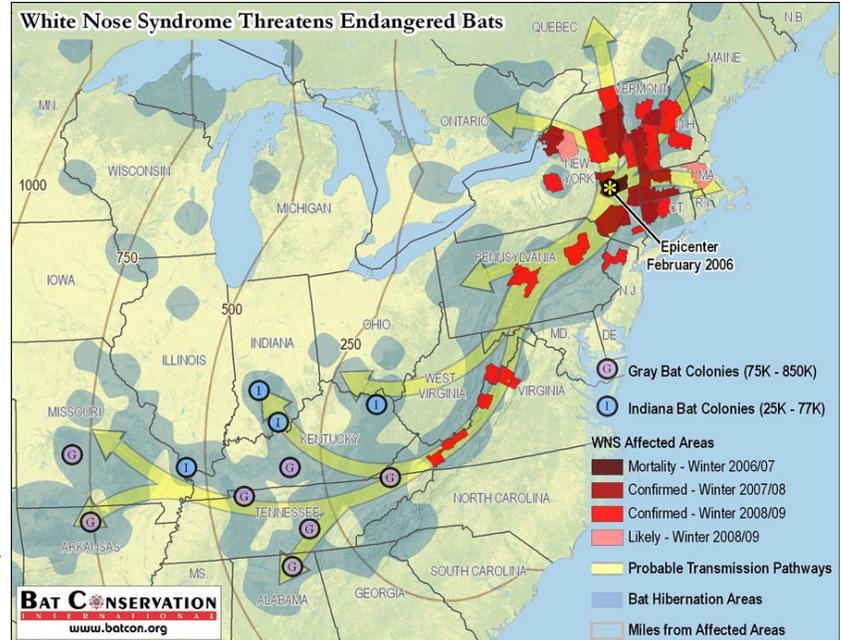
White-Nose Syndrome: *New USFWS Grants*

On October 26, the U.S. Fish and Wildlife Service announced grant awards totaling \$800,000 for research efforts to explore the cause and control of white-nose syndrome (WNS) in bats (see summer 2009 HCP newsletter or www.fws.gov/northeast/white_nose.html for more information on white-nose syndrome).

“These grants will provide critical funding to help the Service and our partners find the cause, find a cure and stop the spread of this deadly disease,” said Interior’s Deputy Assistant Secretary Jane Lyder. “Bats are an incredibly important component of our nation’s ecosystem, and the loss of even one species could be disastrous for wildlife, agriculture and people.”

The Indiana bat — a covered species in the Forest Resources HCP — is one of the species currently affected by white-nose syndrome.

One project sponsored by the new WNS grants is an assessment of the impact of WNS on the genetic viability of Indiana bats. This research is a joint effort of the USDA Forest Service, Northern Research, University of Idaho, U.S. Geological Survey, and University of Missouri. Keep an eye out in future HCP newsletters for updates about this research project and other WNS developments.



Habitat Protection Incentive Programs: *Protecting and Restoring Wildlife Habitat*

A wide variety of habitat protection incentive programs are available to help private landowners improve wildlife habitat on their property. Some provide full funding for projects, others require cost-share. The following four programs provide funding for activities that are consistent with the goals of the HCPs:

- The **Tennessee Landowner Incentive Program (TNLIP)** is designed to protect, enhance, or restore rare species habitats on Tennessee’s private lands by providing cost-share assistance, technical assistance, and cash incentives for landowners to implement best management practices (BMPs). TNLIP is a flexible program designed to benefit many habitats in Tennessee through a variety of techniques including streambank stabilization, exclusion fencing, riparian buffer creation and protection, stream habitat improvement, and cave gates.
- The **Tennessee Stream Mitigation Program (TSMP)** was created to improve water quality and riparian habitat in and along Tennessee’s degraded aquatic resources. Stream restoration, bank stabilization, riparian restoration and livestock exclusion are a few examples of the types of mitigation opportunities eligible for funding through the TSMP.
- The **Tennessee Forest Stewardship Program** provides assistance to private forest landowners to develop stewardship plans that can contain recommendations for improvement of wildlife habitat, development of recreational opportunities, timber establishment, stand improvement and harvesting. Guidelines for prevention of soil erosion, protection of water quality, and preservation of visual values are included in all stewardship plans.
- The USFWS **Partners for Fish and Wildlife Program** seeks to restore, improve, and protect fish and wildlife habitat on private lands through alliances between the USFWS, other organizations and individuals, while leaving the land in private ownership. Eligible projects benefit wetlands and their adjacent uplands, state or federal threatened and endangered species, forested riparian habitat, and other important migratory bird habitat, such as native grassland restoration.

Details about these and similar programs are available online: tennessee.gov/twra/habitatconserv.html.

Eligibility requirements apply. Questions about eligibility and funding availability should be directed to the sponsoring agency.

What is an HCP?

A Habitat Conservation Plan (HCP) is a means to protect natural resources and enable sustainable economic growth through a collaborative process of planning for growth.

The Federal Endangered Species Act prohibits the harm (also called "take") of threatened and endangered species and their habitat. An HCP is designed to offset any harmful effects the proposed activity (like building a subdivision or installing a utility pipe) might have on species that are protected under the Endangered Species Act. With an approved HCP, an "Incidental Take Permit" is issued by the U.S. Fish & Wildlife Service that allows resources to be used and take to occur as long as harm to the species is avoided, minimized and mitigated by applying the practices outlined in the HCP.

More information about the HCP program is available here: www.fws.gov/endangered/hcp/index.html

Two HCPs are under development in the Cumberlands: one for Forest Resources and one for Water Resources. The Forest Resources HCP focuses primarily on forestry activities conducted by the Tennessee Wildlife Resources Agency. The Water Resources HCP addresses land development and related activities of local governments and utility companies. Both HCPs are designed to protect the long-term viability of endangered, threatened, and rare species in a way that supports a sustainable economy on the Plateau.

Photo credits:

Page 1: Byron Jorjorian

Page 2: Obed Watershed Community Association

Page 4: Tennessee Native Plant Society

Page 5: Zac Wilson, Bat Conservation International

Past and Upcoming Events

HCP Workshop: A workshop was held Monday November 2nd with the Crossville and Cumberland County Planning Commissions. The purpose of this workshop was to share information about the HCP with the Planning Commissions and for the project team to hear feedback from stakeholders regarding their questions and concerns. Starting this dialogue early in the HCP development process paves the way for stakeholders to guide development of the WRHCP to meet the needs of the community *and* the species it is designed to protect. Similar workshops will be held in the future for other stakeholder groups.

Pogue Creek Hike: Want to see more of the Cumberlands? The Nature Conservancy regularly leads hikes to the area's hidden gems. One such hike is this Saturday, November 7th, to visit the rock formations and beautiful vistas in the Pogue Creek watershed (see picture on page 1). Contact Andrew Schmidt at The Nature Conservancy in Knoxville (865-544-7200 or aschmidt@tnc.org) for details about this hike and future events. Space is limited.

National Family Volunteer Day: National Family Volunteer Day is Saturday, November 23, 2009. This event encourages families to participate in community service activities. Family volunteering can impart the value of service and create life-long volunteers out of younger generations.

Volunteer opportunities are available through many local service and non-profit groups. Volunteer Match (www.volunteermatch.org), also lists local volunteer opportunities, including construction and maintenance of the Cumberland Trail and trash pickup/native tree planting events in Cookeville. Or get together with other families and create your own event! This is an excellent opportunity to experience something new together.

Are you part of a local service club or community group? Consider scheduling an event on November 23 to support National Family Volunteer Day.

Did you know ...

...that the eastern slender glass lizard has no legs?

...Crossville has had its name since the 1830s?

...that more tree species occur on the Cumberland Plateau than in all of Europe?

...Fall Creek Falls is the highest single plunge east of the Mississippi?

...there may be as many as 325 head of elk on the Plateau?

The Cumberland HCP Project is a coalition of state and local governments, organizations, landowners, and other private citizens who are working together to address issues of growth and conservation of the forests and waters of the Cumberlands of Tennessee.

Check us out on the web: www.cumberlandhcp.org

We'd like to hear from you!

For more information about the Cumberland HCP project:

**Jennifer Gihring
jgihring@utk.edu
 (865) 974-1955**

