



Friends of Congaree Swamp News

www.friendsofcongarree.org

Spring 2021

Save the date

National Trails Day

As part of National Trails Day on **June 5**, Friends of Congaree Swamp members will meet at 9 a.m. at the Bates Bridge landing on U.S. 601 to collect trash at the Congaree River boat ramp, parking lot and access road.

Depending on attendance, some of us may drive to Congaree National Park's Bates Ferry trailhead, Fork Swamp trailhead and Congaree ferries pullout to clean those sites as well.

Keep the Midlands Beautiful will provide trash pickers, trash bags, gloves, etc. to assist with the cleanup and we will use the dumpster on site to dispose of non-recyclables.

Light hiking boots, plenty of water, sun protection and a snack are recommended.

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A good cartographer doesn't need GPS

By Prof. Raymond
Torres

John Cely's map of the Congaree River floodplain features can be appreciated as a multifaceted gem.

In one case, the map itself with the curves, shapes, artistic script and hand-drawn images can be framed and valued as a work of art. From a scientific perspective, the map is a groundbreaking artifact depicting insight on the nuanced landscape texture, or the subtle third dimension that is necessary for understanding past, present and future changes within the floodplain.



A portion of John Cely's map, detailing direction of flow and the smallest of waterways in the park. The map proved invaluable to Prof. Torres' research.

The level of detail presented in the Cely map and the accurate placement of that information is altogether astounding, especially given that much of the map was made prior to the availability of affordable GPS devices. It is a remarkable achievement.

Hiking along the park trails with map-in-hand helps reveal associations of the underlying structures and organization of the landscape features apparent as, for example, oxbows, relic channels, modern active channels and local high elevations.

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President's Corner

Dr. John Grego

Database manager

Herb Lord will be stepping down as our database manager and we are looking for someone with database experience to replace him.

We currently use Microsoft Access as our database management system, but if you are comfortable with other databases, we can certainly transfer to another system. We do have an Access donor if you do not already have Access available at home.

The database manager duties include:

- Produce and send out quarterly or annual membership renewal request letters.
- Update the membership table and the dues table in the database when a member renews their membership.
- Add new members to the membership table and the dues table in the database.
- Produce newsletter mailing labels when newsletters are ready to be mailed.

Please contact me at friendsofcongareeswamp@gmail.com or (803) 331-3366 if you are interested.

Trail maintenance

We don't often write about trail maintenance, though we have been clearing trails at Congaree National Park on a quarterly basis since 2004.

Typically, we took care of anything that could be removed with loppers, handsaws, shears or strong backs, and left bridge repair

and large limbs and fallen trees to park staff or work crews. In recent years, that dynamic has shifted for a couple different reasons.

A nucleus of Friends members has been consistently interested in trail maintenance the past few years, and we approached Charles Aznive, the park's chief of Facilities, about additional training. Last fall, we had some instruction in marking and re-routing trails; a useful start we are anxious to build upon.

This same group of members has been concerned about the failure to remove large obstructions or re-open bridges in a timely fashion. Often, re-routing trails around large fallen trees creates a confusing network of social trails and at least two of the trails have had major bridges closed for months now.

These issues were brought on by a series of natural events over the past several years, with the ice storm of February 2014 and Hurricane Matthew in October 2016 by far the largest contributors.

With almost all back country at the park designated as wilderness, the park's emphasis on non-mechanized vehicles, equipment and tools creates repair bottlenecks—supplies have to be carried in, and crosscut saws are favored over chainsaws. Everyone involved sees the virtue in this ethic, but it has proven impractical to handle large natural disturbances, particularly given the park's small staff.

The delayed bridgework has been a topic of particular concern. Replacing large bridges is an expensive and technically demanding task, but the longer such work is put off, the greater the impact on inaccessible portions of the trails, and the greater the concern that trail routes could become permanently affected.

The park has recently taken aggressive steps to tackle bridge maintenance. Park staff secured two National Park Foundation grants for work crews to repair park trails, with a focus on the large bridges and fallen trees on the Kingsnake Trail and the Oakridge Trail bridge (Bridge I) over Cedar Creek. In addition, an American Conservation Experience crew will be here this summer to work on surface trails.

There remains concern that the work plan

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Friends of Congaree Swamp advocates for Congaree National Park and its unique environment.

Dr. John Grego, President

Sharon H. Kelly, Editor

Kososki receives Order of the Palmetto

Editor's note: Carol Kososki, a founding board member and officer of Friends of the Congaree Swamp who retired from the board last fall, has received yet another honor.

The following is excerpted from a press release issued by the Richland County Conservation Commission.

Carol Kososki, a longtime chair of the Richland County Conservation Commission (RCCC), has been awarded the Order of the Palmetto, the state's highest civilian honor.

Kososki received the honor for her 48 years of dedicated service to South Carolina, which includes her time as a state employee and as a volunteer post-retirement, including 14 years with the RCCC. S.C. Rep. Beth Bernstein presented Kososki with the award March 11 outside the State House.

"I was blessed with a lot of energy in my life," Kososki said. "I grew up in a family where I was expected to use a lot of energy and exert myself. I just feel very honored. This is an extremely important occasion in my life."

Appointed to the RCCC in 2006, Kososki led the commission from 2009 to 2020, dedicating her retired life to conservation efforts.

The RCCC has a two-pronged focus: land and water conservation, which includes the protection of undeveloped lands, K-12 conservation education and water quality improvement; and historic

preservation, which provides grants to preserve history through historical publications and markers and historic building renovations.

In her time as commission chair, Kososki was instrumental in various efforts, including:

- Building renovations for 701 Whaley Street, the Curtiss-Wright Hangar at Owens Field, numerous African-American churches, and facades for buildings on Columbia's Main Street
- Protecting 5,000 acres of land, much of it in Lower Richland, to promote heritage and eco-tourism
- The Richland County Development Roundtable, which developed consensus on stream protection and open space development ordinances
- The Blue Ribbon Committee for Flood Recovery, which coordinated the county's response to the October 2015 flood
- The Richland County Greenway Advisory Committee, which created the criteria for prioritizing local greenways

Kososki's commitment to conservation extended to her work with the Gills Creek Watershed Association



Photo by Sam Holland

Rep. Beth Bernstein, right, presents Carol Kososki with the Order of the Palmetto on March 11.

(GCWA), both as an active member and as a two-time board member and chair from 2008 to 2017.

During that time, she helped secure recurring funding from Richland County's Stormwater Management Division to hire an executive director for the GCWA, which collaborates with Stormwater and the county's Conservation Division.

"I have always had a concern for the world around me," Kososki said. "It's my worldview that people need to be doing what they can do to help. If you're not part of the answer, you're part of the problem."

Kososki's history of service to the state also includes stints working in the Governor's Office (1972-1978) and then with the Employment Security Commission (1978-2005), as the first executive director

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Some coal tar removal concerns remain

Friends submitted comments in January on the updated plan to remove tar-like material from the Congaree River near the Senate Street landing and points downstream.

Dominion Energy's Modified Removal Action Plan involves constructing coffer dams and removing an estimated 73 percent of the coal tar sediment.

We reviewed online documents, which covered a wide range of topics, including design of the coffer dams, disposal of sediments, water quality treatment, hydrological and hydraulics analysis, riverbank restoration, rare/threatened/endangered species protection, the project schedule, and removal of Civil War armaments.

Friends' comments will serve as part of the extensive public record as the U.S. Army Corps of Engineers prepares the release of a nationwide permit for the project.

Some of our concerns are:

Migration of remaining sediments. The plan would leave 27 percent of contaminated sediments in place, either because they are too far from shore or have low concentrations of contaminants.

Since restored areas of the river bottom will be scoured clean of sediments, we asked whether there had been studies on the migration of the remaining contaminated

plumes upon removal of adjacent sediments—will they migrate toward the shore, especially at Site 2 (see map).

Much of the justification for not removing these sediments relies upon their distance from shore; if they were to migrate closer to shore, the sediments could have an impact on recreational users, in addition to posing a continuing hazard to water quality and aquatic life.

Analysis of removal of remaining sediments. The hydraulics analysis included summary information about the impacts of cofferdams at Site 1 and Site 2, measured by change in floodplain width and river level for various flows.

Similar analysis for removal of additional portions of the contaminant plume was missing from the report, but indicated that river level rise would be much greater for harder-to-reach portions of the plume. This could create the potential for erosion on the West Columbia/Cayce side of the Congaree River, which is already subject to erosion.

We requested analysis of the impact of coffer dams that would remove additional parts of the plume, mostly for completeness of the public record.

Rare, threatened and endangered species analysis. We consistently find permit application analysis of

sensitive species to be woefully incomplete. In this case, the Project Description claimed that the presence of shortnose sturgeon in the project area was "anecdotal."

In reality, a substantial body of research literature on shortnose sturgeon indicates that sturgeon spend a significant portion of the year in the project area, and spawn downstream. We shared readily available references. In its favor, the plan included suspension of activity during spawning of sturgeon and other fish species.

In some of our very first comments about the project in 2013, we asked that special care be taken to remove freshwater mussels in the project area. To our surprise, the modified removal action has paid considerable attention to this issue. Mussel species will be removed from the project footprint and relocated to suitable habitat.

Currently, there are no plans to replace sediments that have been removed, and hence mussels will not be immediately restored to the project area. We requested that a more targeted and timely effort be undertaken to reintroduce freshwater mussels to the project area.

Updated analysis of sediment plume. The analysis of the sediment plume has not been updated since a

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Coal tar

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2016 study and was likely outdated, particularly in light of the substantive February 2020 flood. We requested that a new study be conducted to confirm that removal efforts reflected the current state of sediment deposition.

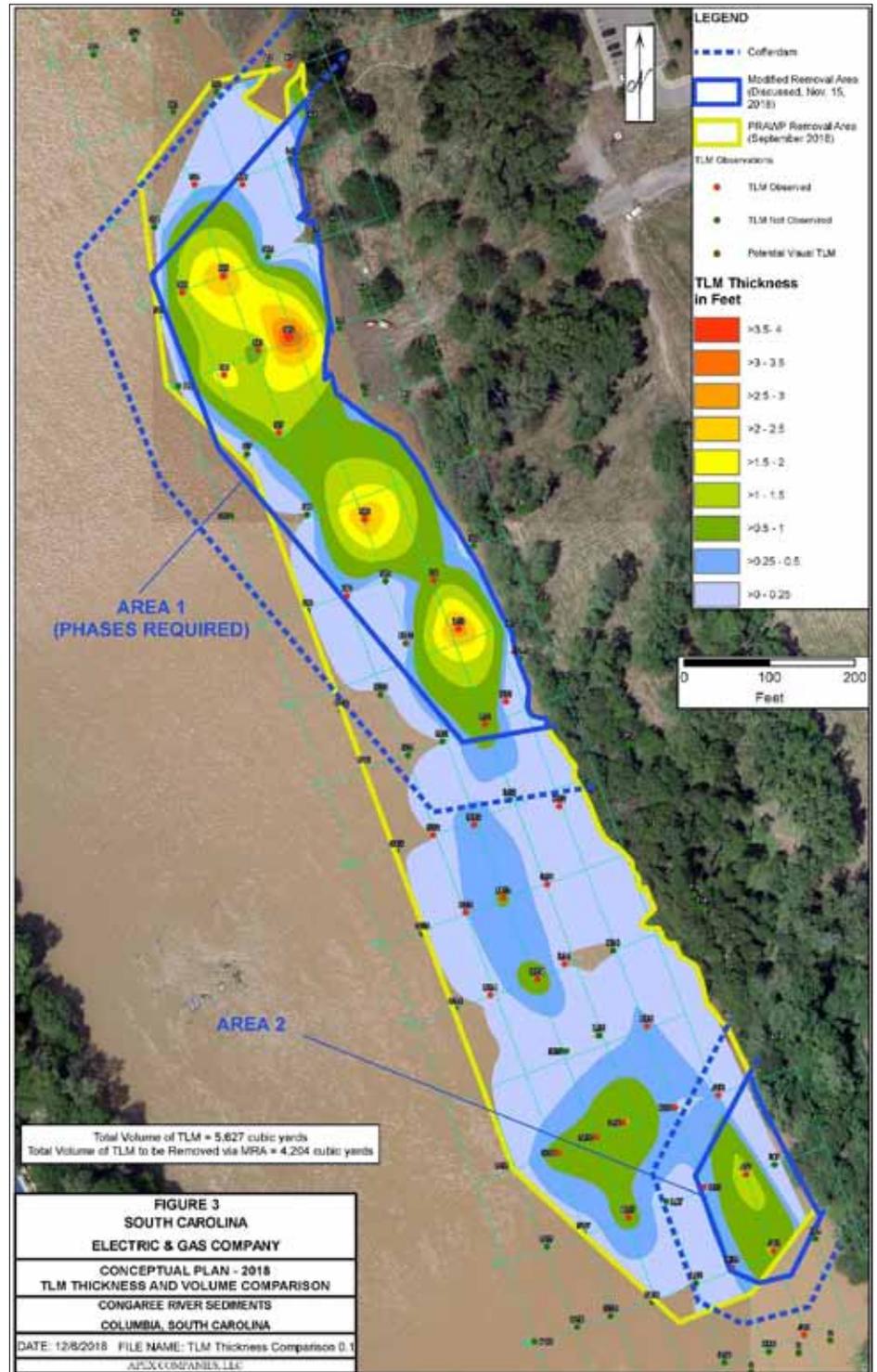
Riverbank restoration.

Along with Congaree Riverkeeper, S.C. Department of Natural Resources, and others, we had long expressed concern about project's effects on the Congaree riverbank. Of course, the riverbank will be affected at the anchor points for the cofferdams, but there is potential for the entire riverbank to be affected if sediments need to be removed near the riverbank edge.

Fortunately, the project has incorporated progressive suggestions for riverbank restoration, but there remains concern that riprap may be used to harden too much of the riverbank, particularly along the upstream portion of the project area.

One only needs to be familiar with the generous use of armoring along the EdVenture Pavilion embankment to appreciate our concerns. The project indicates that riprap would not significantly extend above the normal waterline, though past history and diagrams and figures in the public record suggest it would.

The public comment period



was extended through late February 2021 in response to stakeholders' requests, primarily adjacent property owners. The S.C. Department of Health and Environmental Control will soon release responses to public comments, share them with the

Corps of Engineers, which will then will make its joint federal and state permit application.

At that point, resource agencies, advocacy groups and other stakeholders will have an opportunity for additional action.

Middle Cedar Creek Trail Guide ready

Look for our second paddling guide to be posted soon on the Friends of Congaree Swamp website under the Visit tab.

As part of a S.C. Honors College service course project in last fall, Ragan Huffman and Wayne McAlister chose to start work on a paddling guide for the middle section of Cedar Creek, running from South Cedar Creek paddling access at Bridge L over Cedar Creek, and continuing to Elder Lake. Ragan continued work on the guide as part of her senior thesis this spring.

Ragan used her standup paddleboard for almost all her trips, though kneeling was the more practical option for paddling the tight confines of Cedar Creek. There was at least one bankside hike.

Water conditions were high for almost the entire study period, which made navigation of some of the lower sections

of the creek a little uncertain.

The guide notes natural landmarks like the beautiful beech bluffs along the north bank and the beautiful white blooms of green hawthorn in the spring. It also highlights traditional uses of the waterway as it passes by an old channel cut and at least three historical landings used variously by legendary waterman Irvin Portee, St. Mark Baptist Church as a baptismal site, the Garrick and Shivar families, and the Gray family.

Elder Lake and Dawson's Lake—"dilations" of the creek that are well-known fishing and recreational destinations—highlight the contribution of park founder Jim Elder and the connection of Army Ranger Colonel Frank Dawson to the park.

The park regularly sponsors out-and-back paddles to

Dawson's Lake or the mouth of Tupelo Gut. The paddle back from Elder Lake is a moderately strenuous trip back upstream (unless continuing downstream), but well worth it for the additional sites.

Ragan wrote of her experience: "Comparing what I found significant to what others noted as important was enlightening confirmation that each person's unique interaction with the natural world around them is subjective yet significant."

Kososki

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of the S.C. Occupational Information System, a statewide computer network for career development.

Her work in vocational education and career development earned her the Spirit Award, the highest honor from the American Vocational Association and the Air Force Recruiting Service, in 1996 and the Outstanding Service Award from the Association for Career and Technical Education in 1998.

In addition to her time with the RCCC and the GCWA, Kososki's volunteer work post-retirement has included helping to enact a tree protection ordinance for the City of Forest Acres, hosting fundraising events for the S.C. District of the Metropolitan Opera, and serving on various community boards and commissions.

Grego

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is narrowly focused on the Kingsnake Trail but with so much help arriving, major obstacles on the Oakridge Trail and River Trail could be removed as well.

We have offered to assist with any projects that would allow the work crews to concentrate on larger obstacles and extend the scope of their work.

We have also offered to organize transport of lumber and supplies to bridge sites,

either by paddling details, or using University of South Carolina student service groups with whom we have developed a reliable working relationship the past couple years.

There are numerous other ideas and concerns being shared, including projects at the east end of the park. If this article has piqued your interest and you would like to participate in either our traditional trail-clearing activities or special projects—or help advocate for the park's trail system—please be in touch.

Cely map

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In particular, the relationship between types of tree stands and landscape structure becomes apparent—tupelo and cypress groves in the lower depressions, and pines in the higher areas.

Where the trail intersects a terrain feature that extends beyond the line of sight, one can envisage the extent and limits of terrain features and vegetation without visual confirmation, thanks to the Cely map.

Hiking off-trail is an entirely different undertaking. It is truly astounding that within a short drive of a medium-sized city one can be lost in a wilderness—for days.

Part of the problem with hiking off-trail is that the dense canopy and the apparent absence of a view of the horizon creates conditions that cause you to lose your orientation; in other words, it is easy to get “turned around.”

With other landscapes, one can follow a river that can lead to safety or at least help establish your bearings. In the Congaree, following a creek will likely get you deeper into the forested floodplain interior. Thus, navigating through the floodplain is not a trivial exercise.

Although I have been working in the floodplain for a few years now and have several study sites that are far from the well-marked trails, I never leave the trail or a boat on the Congaree River without two fully functional GPS

devices, spare batteries, and a compass, the old-fashioned kind with the red/white needle pointing north/south.

Within this context, consider now the undertaking of mapping floodplain geomorphic features without the aid of GPS. This is what Cely accomplished over the past 30 years. And now, with the increasing availability of laser ranging data from an airborne platform (lidar) we can confirm that the depiction of features in the Cely map are largely accurate to within 8 meters.

We determined this level of error by using the Cely map as “ground truth” to compare the automatically extracted terrain features from a lidar digital elevation model. We published those results in a leading geomorphology journal (Xu et al., 2020, 2021).

The Cely map provided a unique opportunity because researchers who extract features from remotely sensed data use a set of individual features as ground truth, but in our case the Cely map gave us the luxury of 93 km² of ground truth!

We extracted terrain features using the “bottom hat” technique, an approach that essentially filters out topographic “noise” from a lidar digital elevation model by extracting features of interest through a morphological “closing operation” (feature identification) and then subtracting the residual from the original, within a predetermined distance set by the largest features.

Our research papers are the

first to apply this technique to a floodplain, feasible because we had the Cely map to constrain our results. Therefore, my student could not have completed his chosen Ph.D. research without that map. On the other hand, this was not entirely a one-way exchange.

During a visit by Cely to our lab we were showing him some of our mapping products and to his astonishment we extracted some features that he was unaware of. He later confirmed these findings with his own field reconnaissance.

In this case the modern meets the traditional, and together we moved the science of floodplain geomorphology forward.

Torres is a professor in the School of Earth, Ocean and Environment at the University of South Carolina, Columbia.

The map is available at the Harry Hampton Visitor Center and a portion of the proceeds go to Friends of Congaree Swamp.

Save the date

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We will work in smaller groups than usual and wear masks when social distancing is not possible.

The service activity will end about 11 a.m. for those who would like to paddle Bates Old River or spend some time on Congaree National Park’s trails along U.S. 601.

Please contact John Grego at friendsofcongareeswamp@gmail.com or 803-331-3366 if interested.



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Please keep your information current to receive special notices about field trips, events, scheduling changes and acknowledgements in addition to a quarterly newsletter.

*For a contribution of \$35 or more, you may choose one:

- Baseball cap maroon _____ tan _____
- Tan visor _____
- Bandana with map of Congaree National Park gold _____ blue _____ red _____

**For a contribution of \$100 or more you will receive a copy of "The Natural History of Congaree Swamp."

In addition, I would like to donate \$ _____ as a gift.

Thank you for supporting Friends of Congaree Swamp!

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