Indigenous Approaches to Rivercane Restoration

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Report by Michael Fedoroff

U.S. Army Corps of Engineers

Tribal Nations Technical Center of Expertise

Prepared by Emily R. McKenzie and Annie Strange

US Army Corps of Engineers ®

USACE Tribal Nations Technical Center of Expertise (TNTCX)

Cover photo by National Park Service

IN THIS REPORT

Photo by Michael Fedoroff, USACE

OVERVIEW

Scope of Work

The U.S. Army Corps of Engineers is uniquely positioned through the management and operation of their project lands to have enormous potential for rivercane revitalization. The goal of this Sustainable Rivers Program (SRP) project is to acknowledge and adopt a collaborative research approach with our Tribal partners in order to incorporate Traditional Ecological Knowledge (TEK) into rivercane recovery range wide. Increasingly we are learning that conservation and restoration work performed under indigenous guidance is often more successful than traditional engineered solutions—especially given their intimate and historical ties to the land. Through the formation of a Rivercane Restoration Alliance, the project development team is working with our interagency and Tribal partners to utilize TEK and scientific ecological knowledge to recommend approaches to rivercane recovery. Specifically, funds were used to identify partners, facilitate workshops, develop a conceptual ecological model, identify existing data and knowledge gaps, and prepare recommendations for site specific USACE rivercane restoration studies and projects.

Traditional Ecological Knowledge

Traditional Ecological Knowledge, also called by other names including Indigenous Knowledge or Native Science, refers to the evolving knowledge acquired by indigenous and local peoples over hundreds or thousands of years through direct contact with the environment. This knowledge is often region-specific and includes the relationships between flora, fauna, natural processes, and landscapes that are significant to lifeways, cultural practices, food and resource acquisition.

Cultural Keystone Resource

A cultural keystone resource (CKR), or cultural keystone species, is a plant, animal, or other natural resource that has greatly shaped the cultural identity of a group of people. A CKR often has an important role in diet, materials, medicine, and/or spirituality. CKRs can be integral parts of ritual, ceremony, and language, have links to kinship and oral tradition, and may be protected by a people. Some CKRs might also be a taboo subject. Examples of CKRs include salmon in the American Northwest, Edwards Plateau Chert in Central Texas, and rivercane in the American Southeast.

Rivercane

Rivercane (*Arundinaria gigantea*) is a species crucial to the continuity and culture of many Native American communities in the Southeastern United States, and it ranges from Florida to eastern Texas in the south, parts of the Midwest, and north to New York. In addition to the many environmental benefits of this species, such as erosion control and water quality, the harvested material is utilized for both sacred and mundane cultural practices critical to the cultural continuity of Indigenous lifeways. Although dense stands of cane, known as canebrakes, were once abundant in the Southeastern United States, they are now critically endangered ecosystems due to agriculture, climate, grazing, fire suppression, water management, and urbanization throughout the entirety of their range. USACE projects directly and indirectly contribute to these threats and stressors.

Workshop Planning Committee

In order to fulfill its obligation to proactive collaboration across disciplines, cultures, and institutional backgrounds, the Tribal Nations Technical Center of Expertise (TNTCX) formed a Workshop Planning Committee that met weekly and consisted of experts possessing a wide breath and depth of expertise. Members of the committee included:

Michelle Baumflek ▪ U.S. Forest Service ▪ Research Biologist

Katherine Chiou ▪ University of Alabama ▪ Assistant Professor

Garet Couch ▪ National Tribal Geographic Information Support Center ▪ President, Board of Directors

Letisha Couch ▪ National Tribal Geographic Information Support Center ▪ Coordinator

Michael Fedoroff ▪ USACE TNTCX ▪ Deputy Director/Tribal Liaison

Mike Gremillion ▪ Global Water Security Center ▪ Director

Adam Griffith ▪ Revitalization of Traditional Cherokee Artisan Resources ▪ Director

Jennifer Grunewald ▪ U.S. Fish and Wildlife Service ▪ Fish and Wildlife Biologist

Kyle McKay ▪ USACE Environmental Lab ▪ Research Civil Engineer

Emily McKenzie ▪ USACE TNTCX ▪ Outreach Specialist

Asa Samuels ▪ South Central Climate Adaptation Science Center ▪ Student intern

Ryan Spring ▪ Choctaw Nation of Oklahoma ▪ Archaeological Technician / GIS Specialist

April Taylor ▪ South Central Climate Adaptation Science Center ▪ Tribal Liaison

Brian Zettle ▪ USACE TNTCX ▪ Senior Biologist/Tribal Liaison

Rivercane Restoration Alliance (RRA)

The partnership created by the committee prompted the creation of a Rivercane Restoration Alliance. The USACE TNTCX has facilitated the alliance, which is dedicated to combining TEK and Traditional Western Ecological Knowledge to achieve successful rivercane recovery. The alliance is a collaboration between the USACE, with support from the USACE Sustainable Rivers Program (SRP), and The Nature Conservancy (TNC). The goals of this alliance are to identify partners, create a shared vision, facilitate technical workshops, develop a conceptual ecological model, identify existing data and knowledge gaps, and prepare recommendations for site specific USACE rivercane restoration studies and projects.

Workshop Sponsors

US Army Corps of Engineers ®
Sustainable Rivers Program
The Nature Conservancy
Protecting nature. Preserving life.
RIVERCANE GATHERING
USACE Tribal Nations Technical Center of Expertise (TNTCX)
THE UNIVERSITY OF ALABAMA®
Alabama Water Institute

Participants

Over 180 individuals participated in the workshop, with broad representation from the Federal government, state governments, Tribal Nations, universities, research and development organizations, and other institutions. Federal organizations represented included the Bureau of Land Management, the National Park Service, the South Central Climate Adaptation Science Center, the U.S. Forest Service, the U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service. Tribes represented included the Catawba Indian Nation, the Cherokee Nation, the Choctaw Nation of Oklahoma, the Muscogee Nation, the Coushatta Tribe of Louisiana, the Eastern Band of Cherokee Indians, the Jena Band of Choctaw Indians, the Kiowa Tribe, the Chickasaw Nation, the Miami Tribe of Oklahoma, the Mississippi Band of Choctaw Indians, the MOWA Band of Choctaw Indians, the Poarch Band of Creek Indians, the Tunica-Biloxi Tribe of Louisiana, the United Keetoowah Band of Cherokee Indians, and the United South and Eastern Tribes (Appendix).

Conference Platform

Due to the COVID-19 pandemic, the workshop, which was originally to be held in person at the Bryant Conference Center on the University of Alabama campus, was made to be virtual. During the Fall of 2021, many Tribal Nations placed restrictions on travel for the safety of their people; the conference's virtual format allowed many to participate that would have otherwise been unable to do so. The workshop was hosted through RegFox, event management software that has voice, video, and content sharing capabilities, as well as the capacity to host files such as videos, documents, and recordings. Following the workshop, recordings of the workshop sessions were made available to participants using RegFox (Figure 1).

Figure 1. Virtual workshop landing page

MEETING STRUCTURE

Day 1 "Rivercane Relationships"

October 13, 2021

The first day of the workshop was an introduction to rivercane, TEK, and modelling with most of the day dedicated to letting participants share about their relationship with rivercane, what it means to them, and what they hope to get out of the workshop. At the being of the day, Mr. Michael Fedoroff and Mr. Garet Couch welcomed all participants, and Mr. Joseph Wolf gave a blessing. The first session included a panel discussion entitled "Indigenous Perspectives on Rivercane Relationships," which was moderated by Mr. Ryan Spring. Panelists included Ms. Mary Thompson, a basket weaver from the Eastern Band of Cherokee Indians (Photo 1), and Mr. Roger Cain, an ethnobotanist from the United Keetoowah Band of Cherokee Indians. The session ended with an interactive discussion with participants in which they shared stories and thoughts about their relationships with rivercane.

Photo 1. Image capture by Emily McKenzie, USACE

"This is my relationship with rivercane"

says Mary Thompson, a basket weaver from the Eastern Band of Cherokee Indians, as she manually splits cane during Session 1 of the workshop.

The second session of the day began with a continuation of the discussion regarding rivercane relationships, then ended with a panel discussion entitled "Indigenous and Western Approaches to Modeling," which was moderated by Mr. Mike Gremillion. Panelists included Mr. Ryan Spring, an archaeological technician and GIS specialist from the Choctaw Nation of Oklahoma, Mr. Tim Binzen, a Tribal Liaison from the U.S. Fish and Wildlife Service, Mr. DJ Monette, an Associate Native American Liaison Advisor also from the U.S. Fish and Wildlife Service, and Ms. April Taylor, a Sustainability Scientist at Chickasaw Nation Division of Commerce and USGS South Central Climate Adaptation Science Center

Day 2 "Modelling Rivercane Relationships"

October 14, 2021

The second day of the workshop was a deeper dive into conceptual ecological modelling. The first session began with a presentation by Dr. Kyle McKay, entitled *Conceptual Modelling as a Means to Storytelling*, which served as an introduction to conceptual models for all participants. Then, participants were split into breakout rooms to identify important variables, processes, and components of a rivercane model. Each breakout room was facilitated by a person familiar with conceptual models and leading development conversations; using the online tool, Miro, all group participants were able to type, draw, and interact with one another to build ideas for their model (Figure 2).

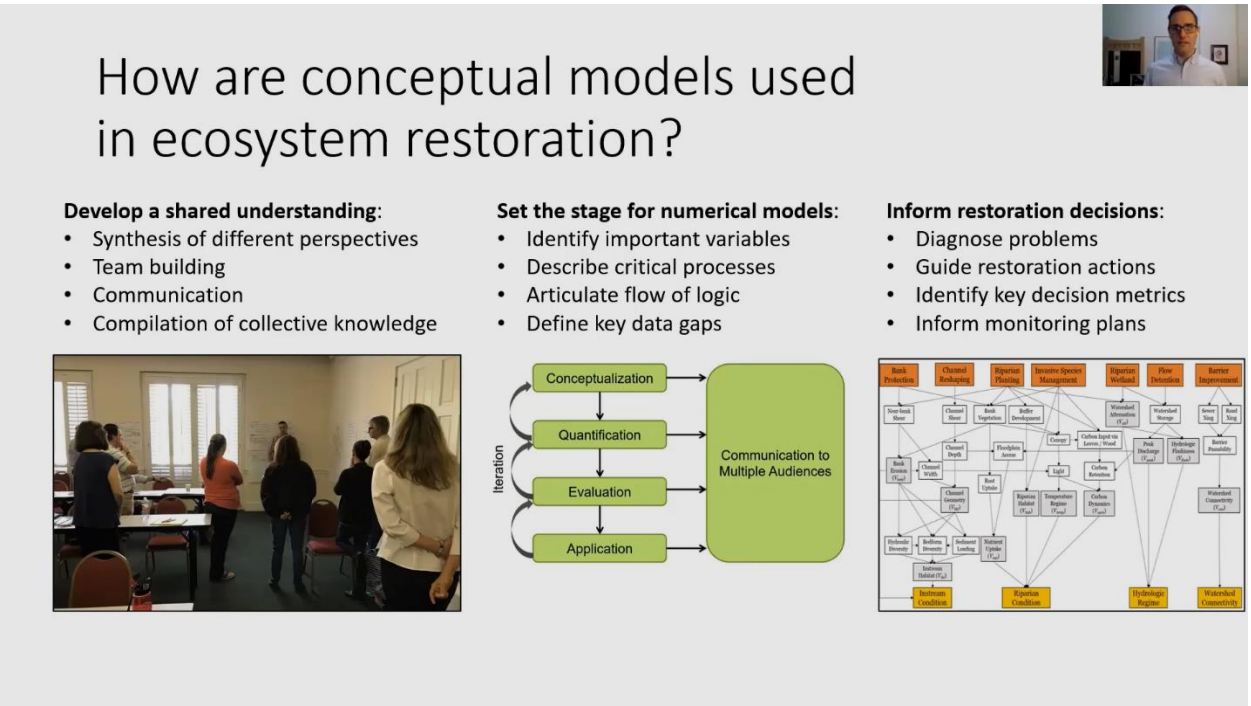

Figure 2. Dr. Kyle McKay presents an introduction to conceptual modelling

The second session of the day began with a continuation of the breakout room activity. Groups identified the relationships between the variables they listed from the first session and drafted a rivercane conceptual model. After the activity, the session closed with presentations from each group on their model and discussion regarding all the models. These models are included in the **Meeting Outcomes** section of this report.

Day 3 “Sustaining Healthy Rivercane Relationships”

October 15, 2021

The third and final day of the workshop focused on sustaining healthy rivercane relationships either through management techniques, education, policy, or other. Discussion covered many scales from the backyard cane patch to broad forest management. First session of the day began with a panel discussion entitled “Rivercane Restoration Lessons Learned,” which was moderated by Mrs. Jennifer Grunewald. Panelists included Mr. Adam Griffith. Program Director for the Revitalization of Traditional Cherokee Artisan Resources, Dr. Paul Gagnon, an ecologist with the U.S. Army Corps of Engineers Institute for Water Resources, and Jim Zaczek, a professor at Southern Illinois University. Following the panel, participants shared stories about rivercane restoration, reciprocity, and stewardship in a facilitated discussion.

The afternoon session began with a panel and interactive facilitated discussion about next steps for the Rivercane Restoration Alliance which was moderated by Mr. Brian Zettle. Panelists included Mr. Ryan Spring, Ms. Michelle Baumflek, an ethnobotanist with the U.S. Forest Service, and Mr. Michael Fedoroff, an anthropologist and Deputy Director of the USACE TNTCX. The discussion continued as participants shared their future vision for the Alliance, and finally the last session of the workshop was closed with a blessing by Mr. Asa Samuels.

Photo by Michael Fedoroff, USACE

Lightning Talks

In addition to hosting scheduled sessions, the workshop structure included a series of short videos or "lightning talks" that were available for viewing any time during or after the workshop. These lightening talks gave participants the opportunity to expand upon their individual experiences and knowledge regarding rivercane in a virtual setting. Lightning talks covering a broad range of topics were submitted (Figures 3 to 10).

Figure 3

"Oklahoma Choctaw Baskets," 3 min

Tiajuana Cochnauer

This video is a tour of Tiajuana Cochnauer's Choctaw basket collection, which includes a number of baskets and woven items by several artists that vary in style and function. The basket collection will be donated to the Choctaw Nation of Oklahoma.

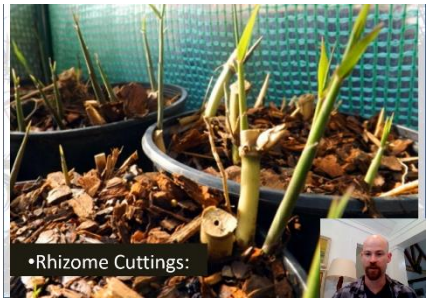

Figure 4

"No Pain, No Cane," 8 min

Thomas Peters

This lightning talk is a presentation by Thomas Peters on his field experience working with and growing rivercane. He details his hands-on experience with clump division, harvesting rhizomes, and growing cane from rhizome cuttings. He also explores his experience gathering rivercane seeds and working with seedling rhizome cuttings to successfully complete several restoration projects.

Figure 5

"Rivercane Fieldwork Update," 2 min

Marvin Bouknight, *Catawba Indian Nation*

This video is an update on a rivercane restoration project at the Charley Horse Location in the Catawba Indian Nation.

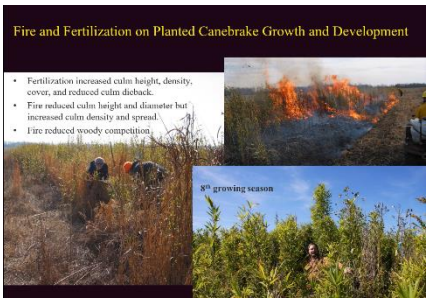

Figure 6

"Appraising and Raising Cane," 8 min

Jim Zaczek, Taryn Bieri, Matt Ganden, Jon Schoonover, Richard Nesslar, Margaret Anderson, John Hartleb, Will Brendeeke, David Dalzotto, Becca Sexton, *Southern Illinois University*

This presentation is a discussion of cane rehabilitation and restoration from a forestry perspective and on a field-scale. Dr. Zaczek explores the goals of cane rehabilitation, greenhouse propagation, the effect of fire and fertilization on planted canebrake growth and development, and his experiences establishing a cane nursery.

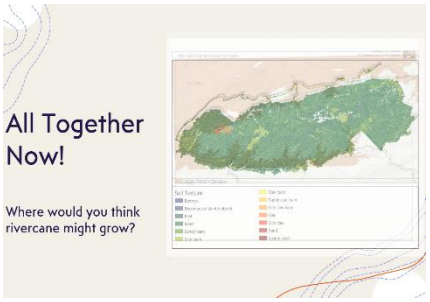

Figure 7

"Rivercane Mapping," 5 min

Beth Bramhall, *Great Smoky Mountains National Park*

In this lightning talk, Beth Brambell describes a curriculum developed by the National Park Service on rivercane that incorporates Eastern Band of Cherokee culture and resource management. The curriculum includes lessons about the importance of rivercane, its historic significance, its cultural importance, its use as a natural water filter, and as a wildlife habitat. The curriculum also includes a lesson on mapping, which will demonstrate how mapping and modelling can be used to find areas where rivercane might grow.

Figure 8

"Rivercane Renaissance"

Pam Meister, *Mountain Heritage Center*

"Rivercane Renaissance" is three-part video series by the Mountain Heritage Center that was created in concert with an exhibit, which was designed to be used as a tool to raise public awareness of the ecological and cultural importance of river cane and of the leadership role played by the Eastern Band of Cherokee Indians (EBCI) in river cane restoration in far western North Carolina. The video series discusses such topics as rivercane's essential role in Native worldview and daily life, the causes of rivercane eradication and its effect on wildlife habitat destruction, watershed health, and Native cultural preservation, and ongoing rivercane restoration and current research initiatives. Watch here.

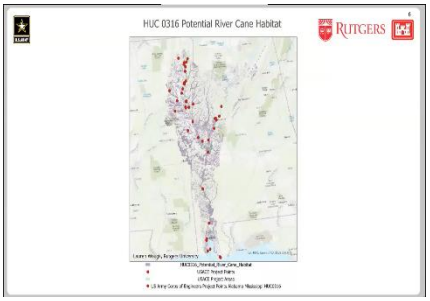

Figure 9

"Mapping of Potential Suitable Rivercane Habitat," 6 min

Lauren Wougk, *U.S. Army Corps of Engineers*

This lightning talk is a discussion by Lauren Wougk on her master's thesis, which involved developing a method to determine potential suitable river cane habitat, and applying that methodology to a geographic region, in this case, western Alabama and eastern Mississippi. The talk details her approach, research, and data collection. Watch here.

Figure 10

"Culturally Significant Plants and Climate Change," 8 min

Asa Samuels, *South Central Climate Adaptation Science Center*

This presentation details a research symposium that is to be held by the South Central Climate Adaptation Science Center in January 2022. The presenters relate the goals and logistical details of the symposium.

Figures 3 to 10 are screen captures taken from each of the lightning talks by Emily McKenzie, USACE.

MEETING OUTCOMES

This workshop brought about significant outcomes, both tangible and intangible that will help guide the work of Federal agencies, including USACE, as they incorporate TEK into ecosystem restoration projects. For some, this meeting was an introduction to TEK, and for others an introduction to storytelling via conceptual modelling. The knowledge shared about rivercane will serve as direction and guidance for the TNTCX and its partners create educational programs and materials, identify field study opportunities for rivercane restoration, and coordinate access to rivercane stands.

Traditional Cane Thinning

An important point regarding cane health and management was made and reiterated throughout the workshop: cane thinning created healthier, more sustainable stands. Traditional cane thinning, which occurs while Indigenous groups gather cane in moderation for traditional cultural uses, serves as a more effective management (or "tending," as one workshop participant suggested) strategy than controlled fires or other artificial thinning techniques. The facilitation of canebrake access to indigenous communities should not be thought of as a transactional, but rather characterized by mutual care and stewardship.

Conceptual Ecological Models

Another outcome was a series of conceptual ecological models developed by teams of participants during the second day of the workshop. The similarities, differences, and different relationships conveyed in these models represent a wide variety of perspectives on rivercane and have the capacity to resonate with a wide range of audiences. All conceptual models are included on the following pages (Figures 11 to 19).

GROUP 1

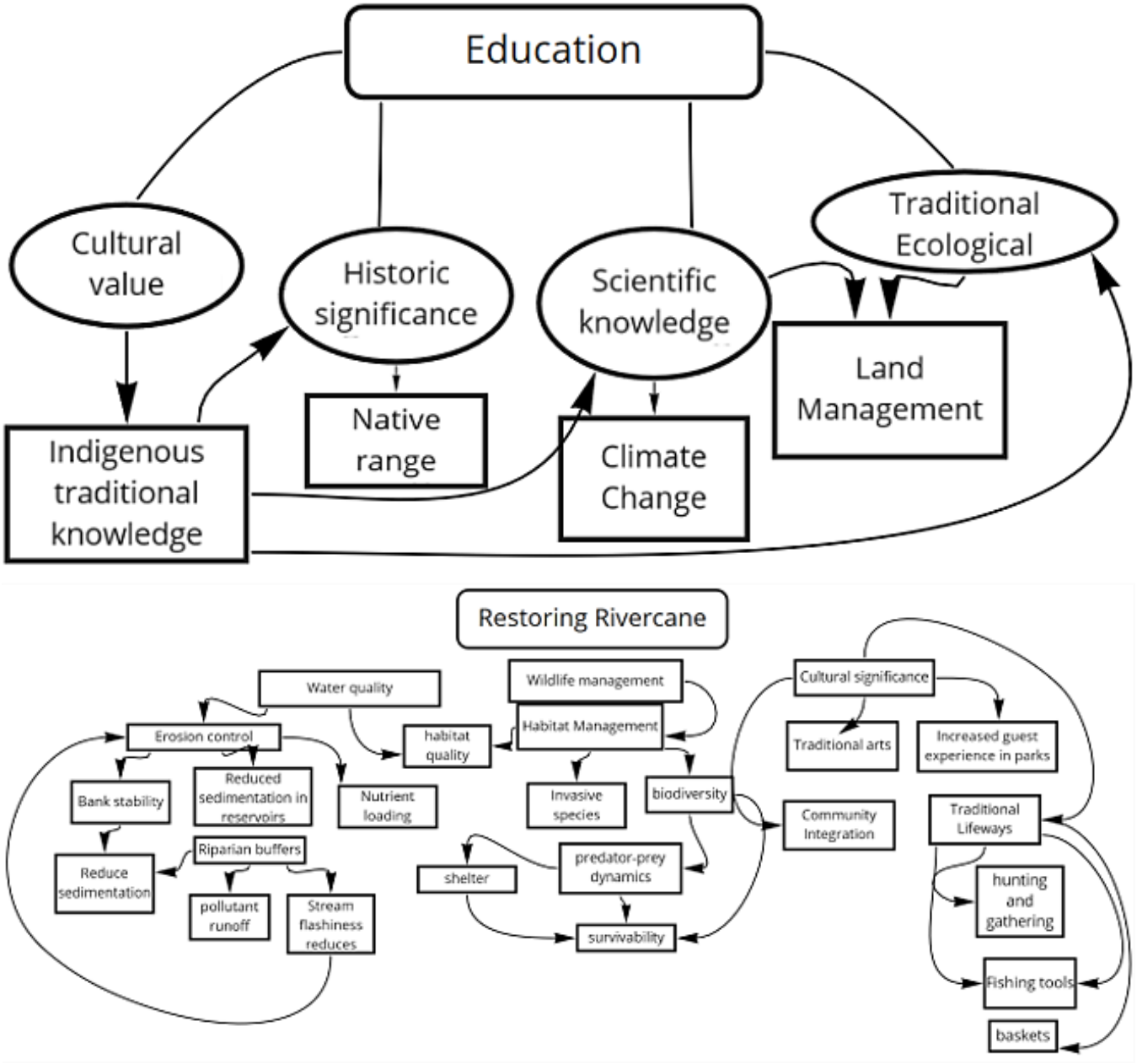

Figure 11

GROUP 2

What Rivercane Provides

Why Rivercane?

Ecological Services

-Erosion control
-Runoff filtration
-Critical habitat 60+ species
-Replace invasive non-native species
-Flood mitigation

Partnership Opportunities

-Creates opportunities for partnership and communication for multidisciplinary groups, organizations, and communities across cultures

Challenges

- Hard to source
-Labor intensive
-Timeline(long establishment time)
- Faster growing non-native species
-More research is needed

Cultural Values

-Preservation and revitalization of culture and language
-Basketry materials
-Materials for making traditional weapons
-Artisanal microeconomy
-Materials for ceremonial objects
-Community land and river access for ceremony

Intrinsic Values

-Restoring historical landscapes and native plants
- Three species of native rivercane once covered areas from New York and Texas, now reduced by 98%

Figure 12

GROUP 3

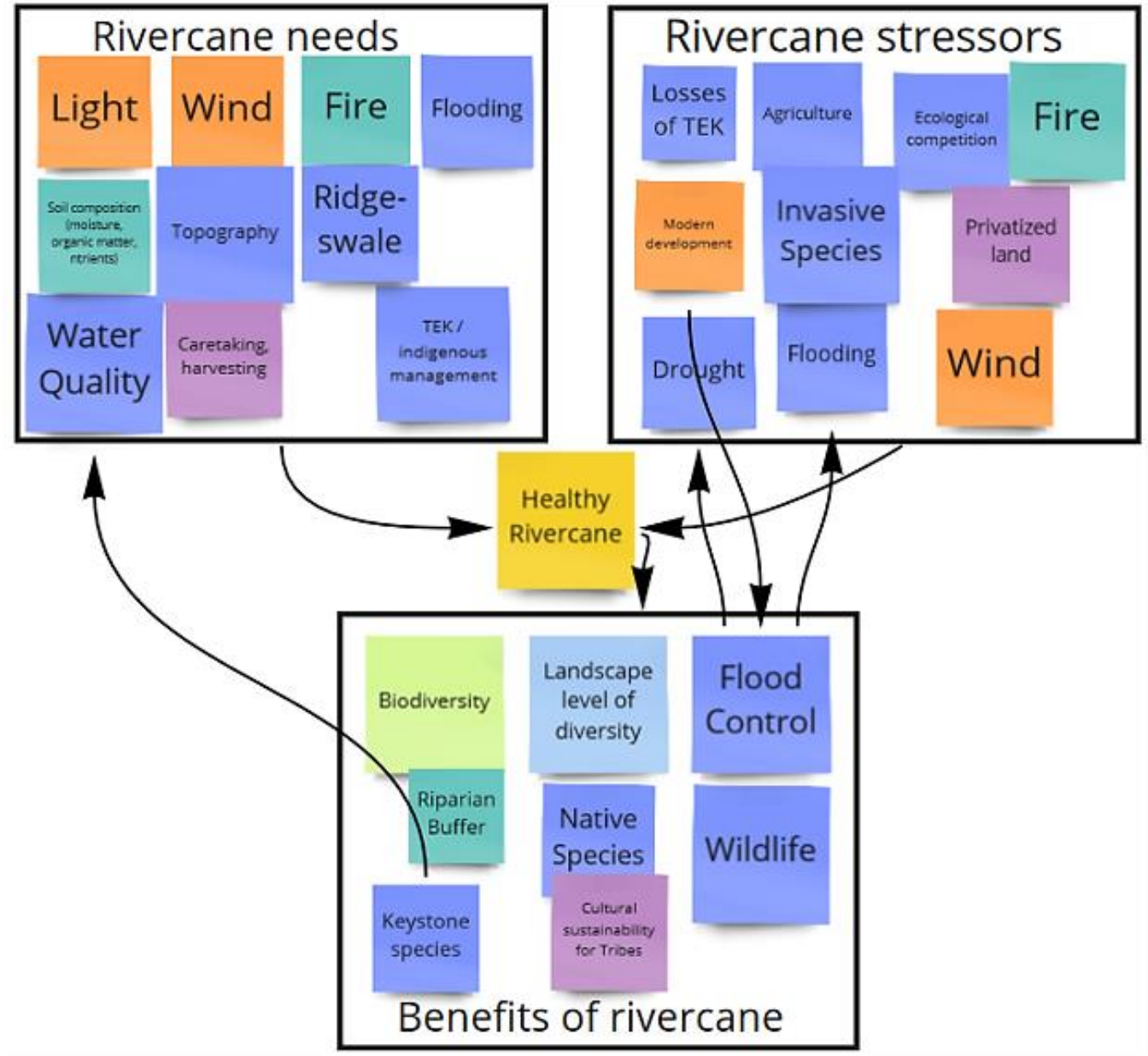

Figure 13

GROUP 4

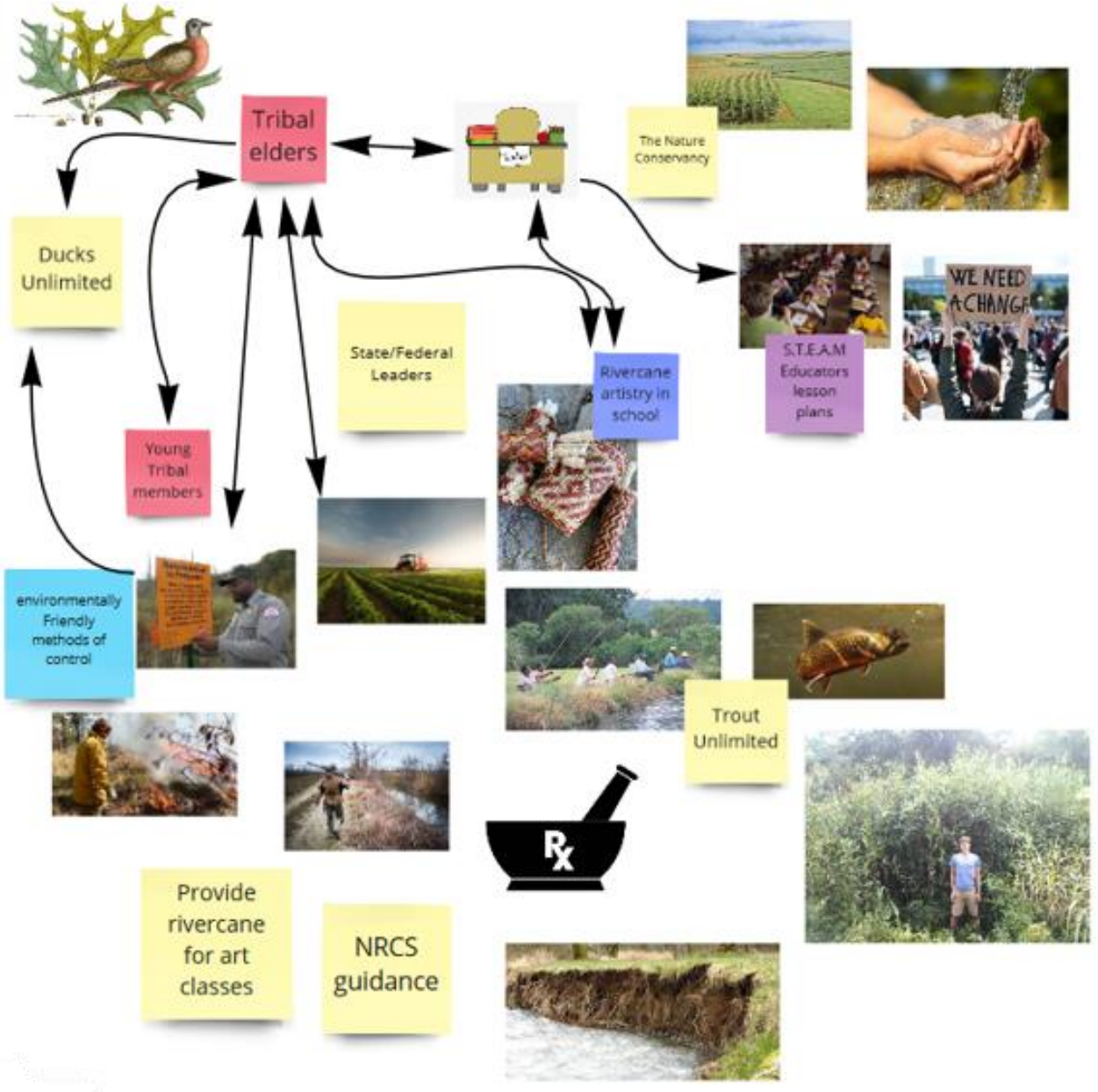

Figure 14

GROUP 5

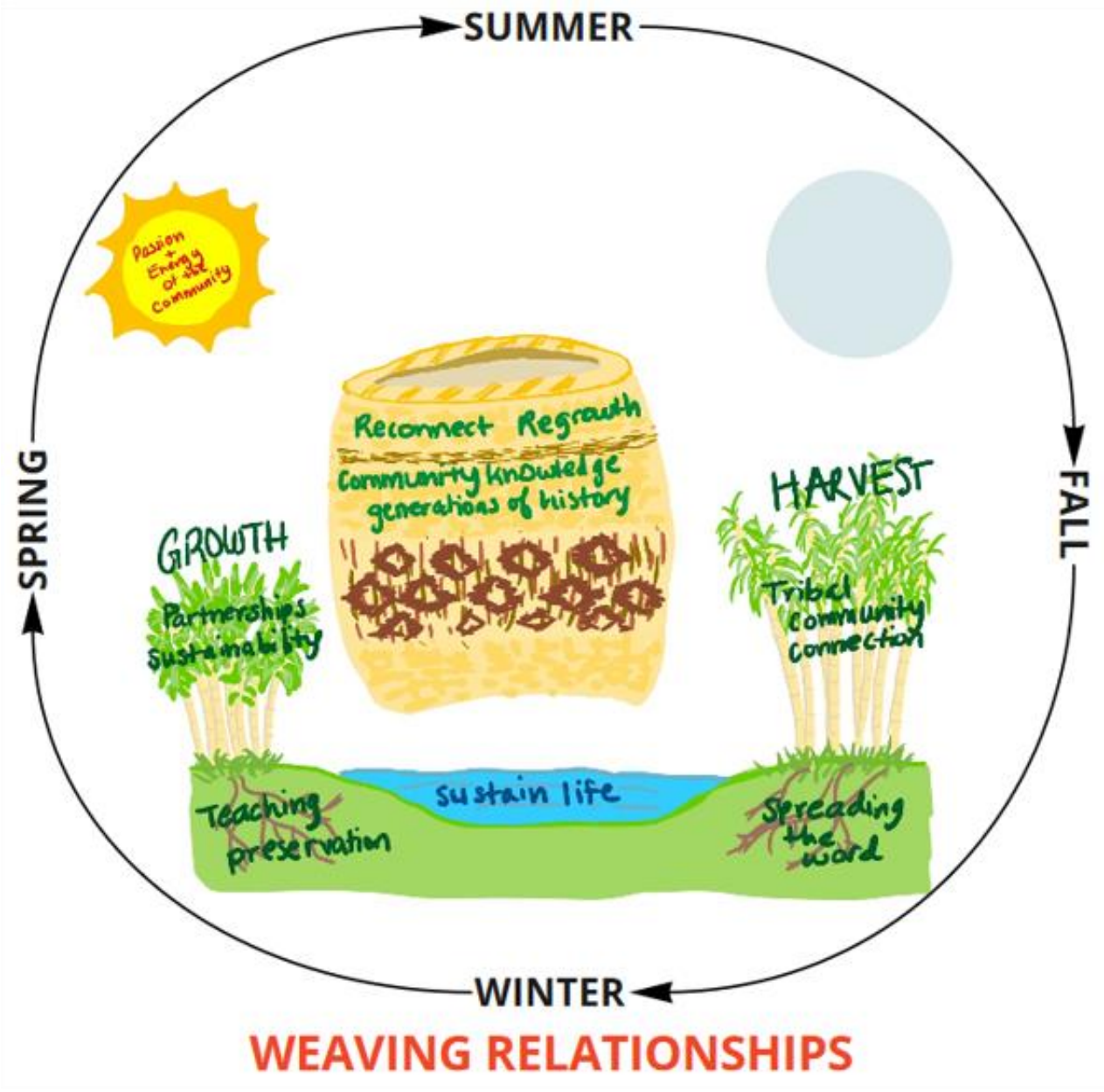

Figure 15

GROUP 6

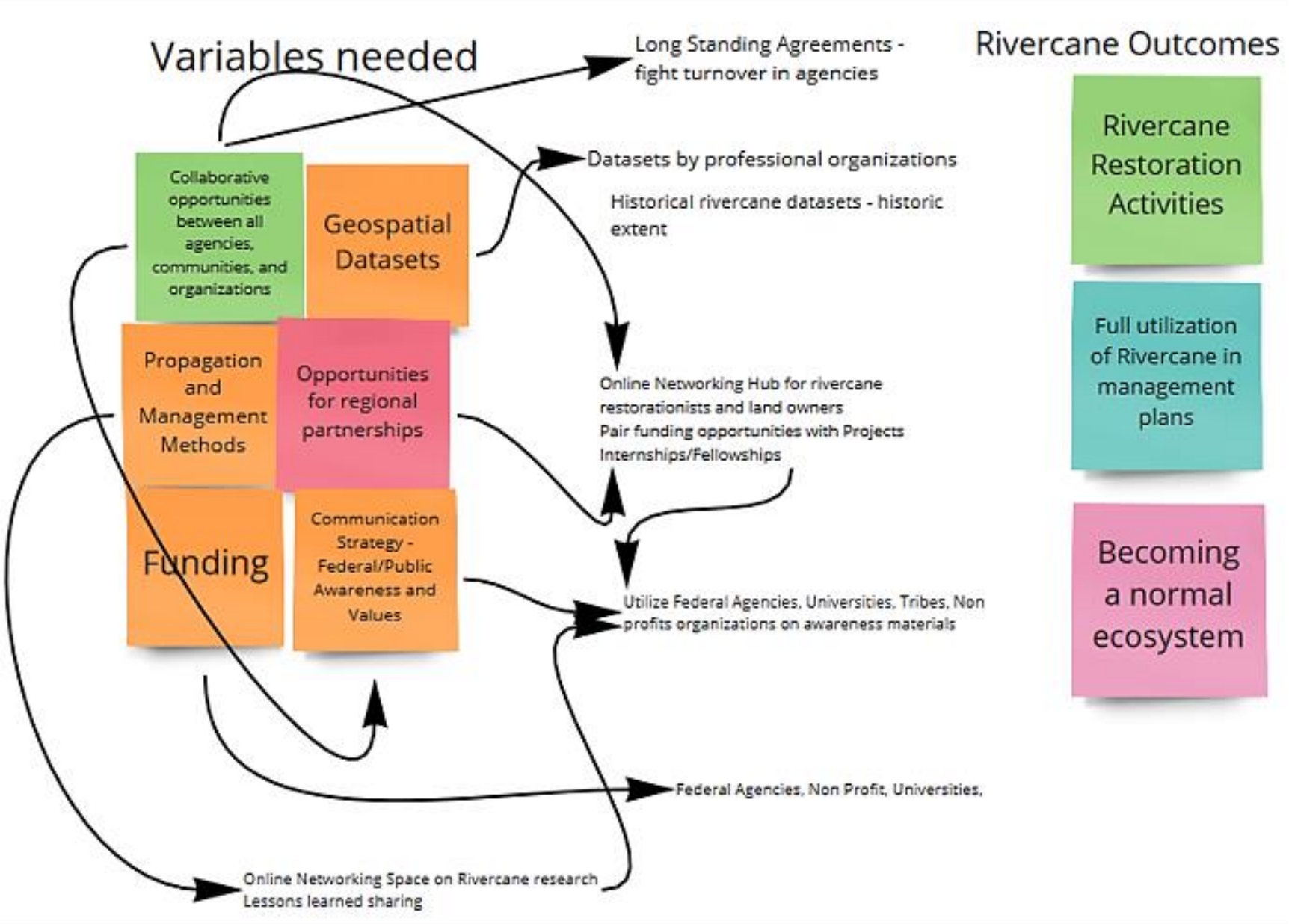

Figure 16

GROUP 7

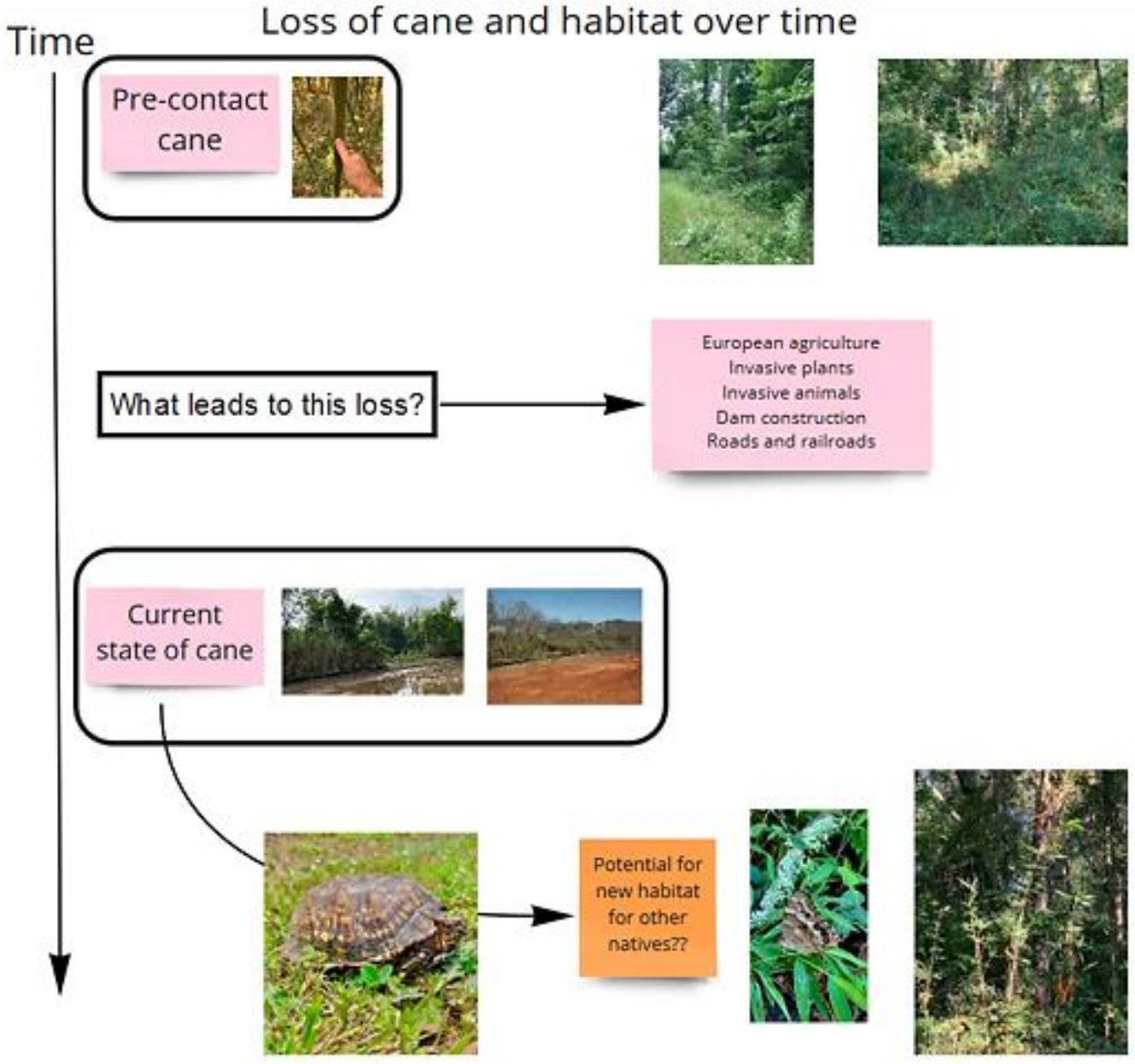

Figure 17

GROUP 8

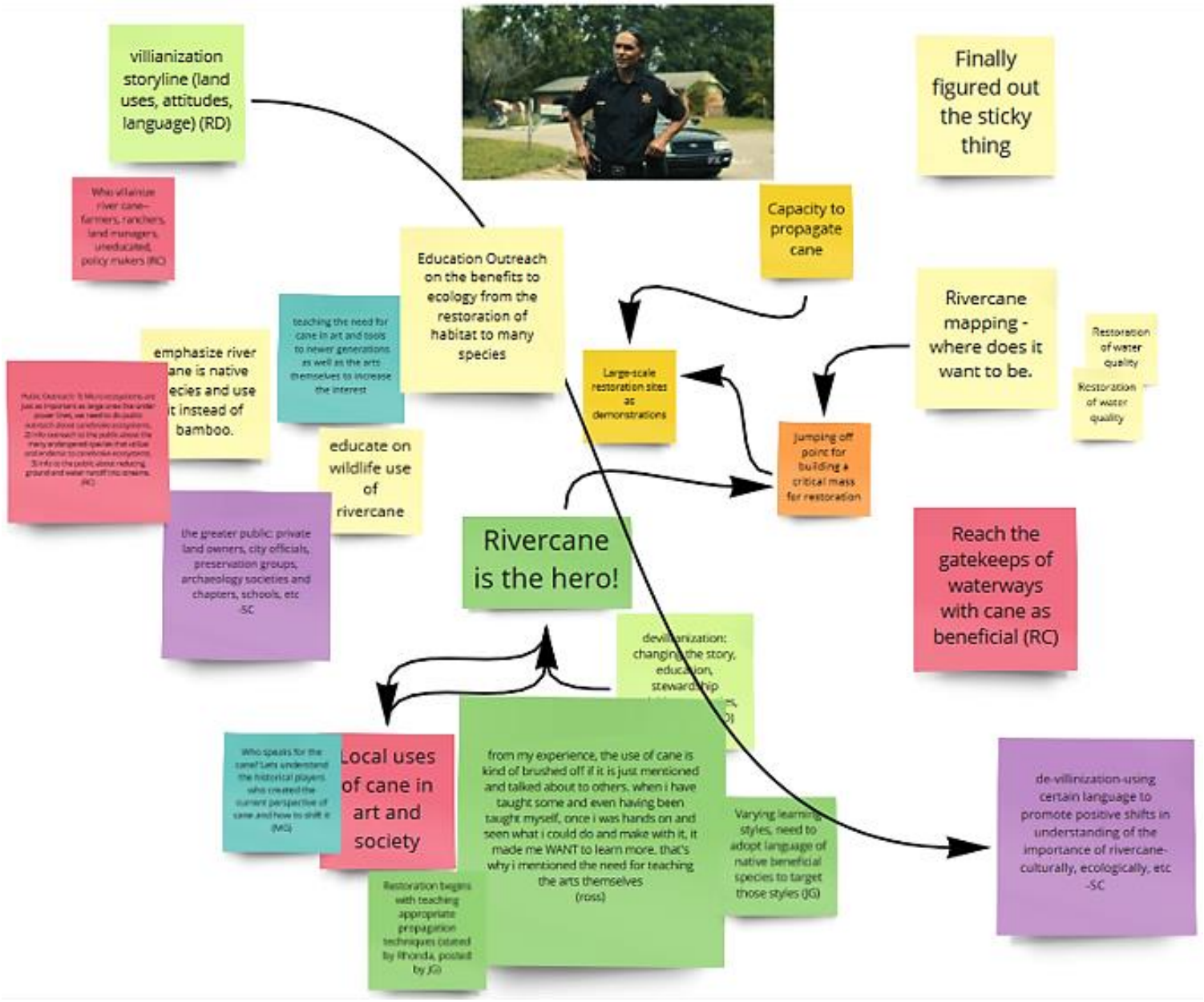

Figure 18

GROUP 9

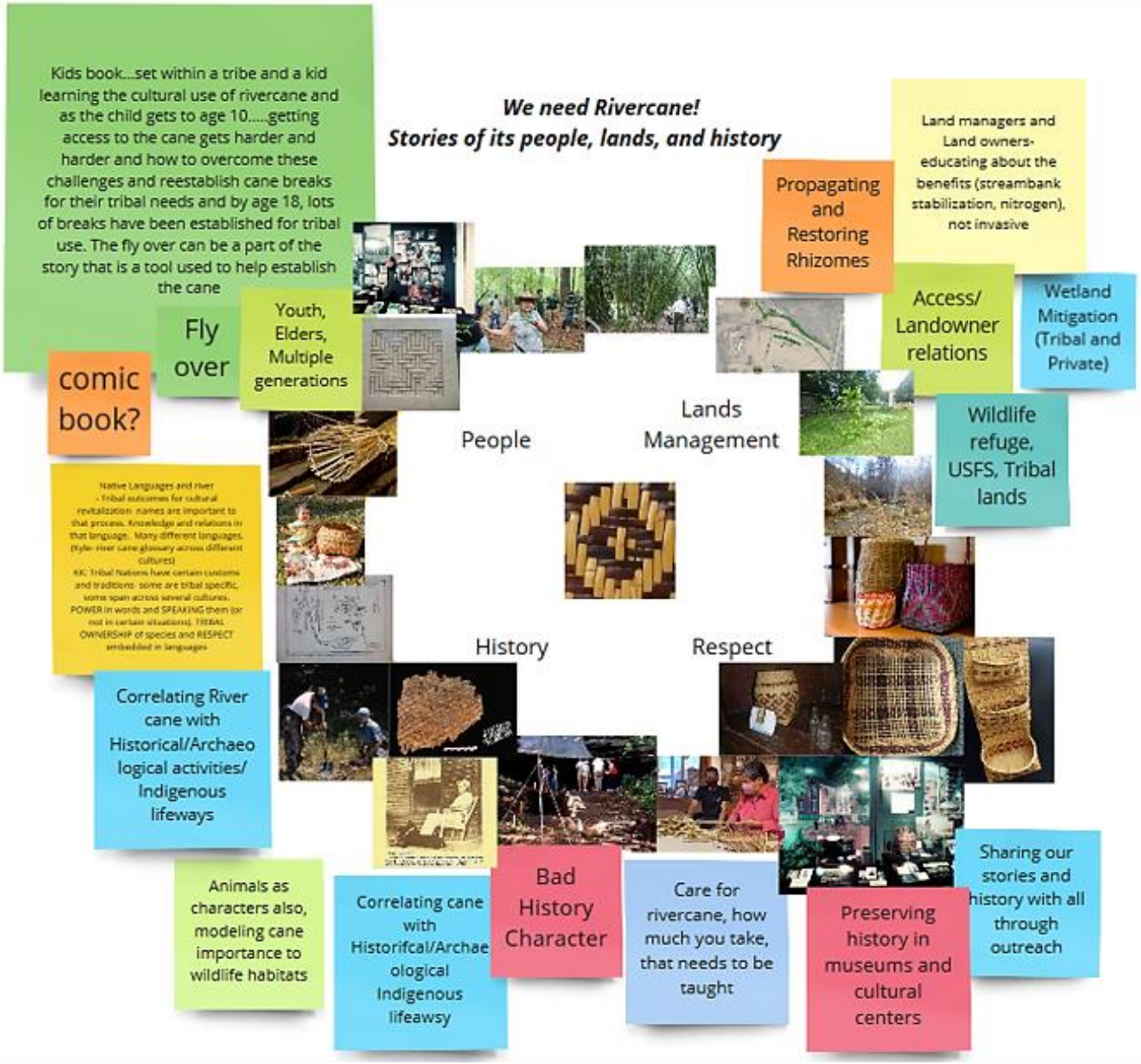

Figure 19

Main Ideas and Concerns

There were many common threads of discussion that were carried throughout the various sessions and activities. Some frequently mentioned ideas and concerns:

- Preservation and restoration are **intergenerational obligations**
- Cane restoration is **stewardship**, not management
- **Consistency** is needed in the process of providing access to cane stands
- TEK is **not a transactional resource** to be passed off from tribal member to scientist
- Relationship building must be **proactive**

Photo by Michael Fedoroff, USACE

FUTURE WORK

Through the workshop, it became evident that future efforts by the Rivercane Restoration Alliance should focus on four primary areas (Figure 20):

1) **Agency education** about rivercane as a cultural keystone species, the ecological benefits it provides, and management approaches for USACE land managers.

2) **Field studies** of rivercane restoration at multiple USACE locations

3) **Access** to rivercane stands for and **collaboration** with Tribal communities.

4) **Leveraging partnerships** between Federal Agencies, Tribes, Universities, and other non-profits to restore rivercane ecosystems

Future work for the Rivercane Restoration Alliance will include the development of education materials for USACE and other land managers, the design and implementation of rivercane restoration efforts at USACE project(s), and the continuation of education and outreach via participation in other rivercane or ecosystem restoration events. A proposal for additional Phase 2 funding through the Sustainable Rivers Program has been submitted to support these goals.

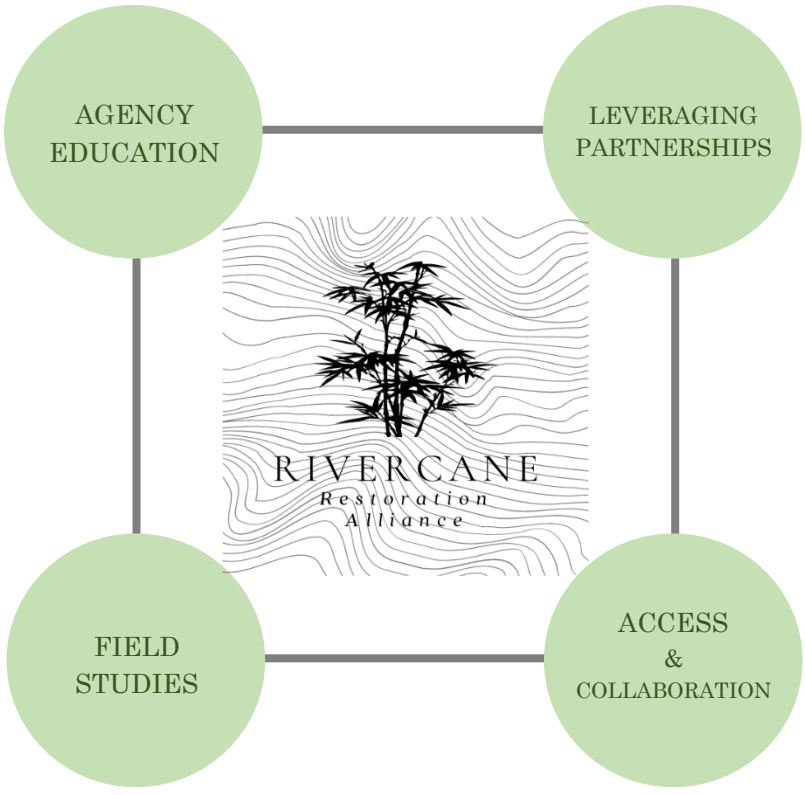

Figure 20. Primary focus areas of the Rivercane Restoration Alliance

Website

A website is currently in development for the Rivercane Restoration Alliance. It will serve as a landing page for information about rivercane, including news regarding successful restoration efforts, and a forum for sharing information and connecting individuals with resources. The website will also serve as a repository for resources, including lightning talks, conceptual models, and recordings of sessions from this workshop (Figure 21).

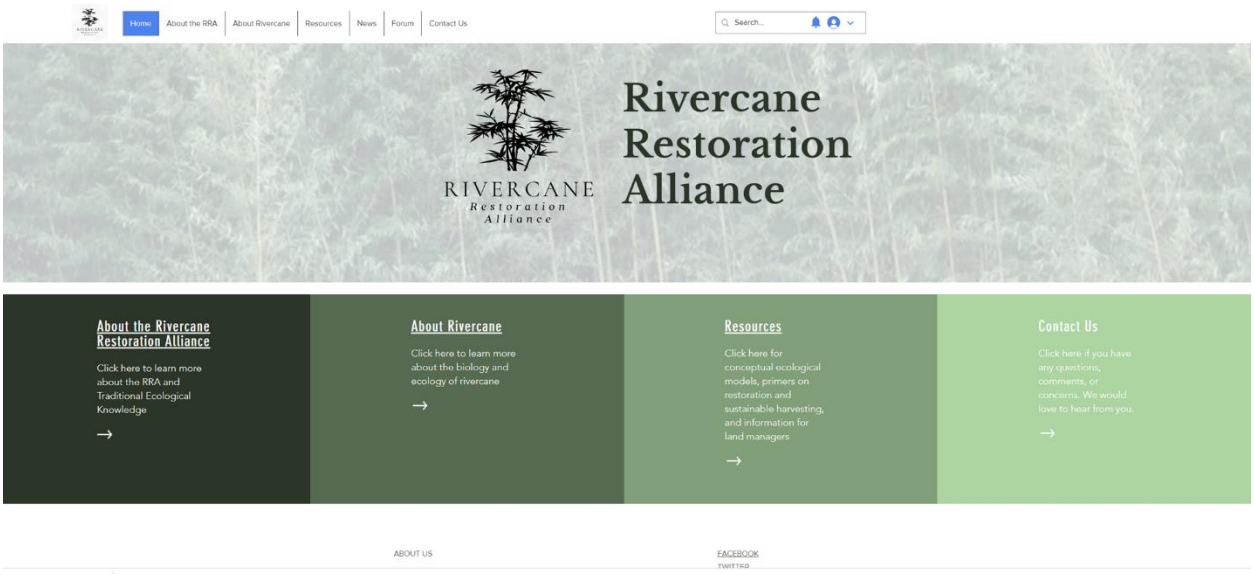

Figure 21. Website for the Rivercane Restoration Alliance

APPENDIX

Participant List

Tribal Participants

Adam Griffith ▪ Revitalization of Traditional Cherokee Artisan Resources ▪ Director

Brenner Billy ▪ Choctaw Nation of Oklahoma ▪ Programs Coordinator

Casey Thornbrugh ▪ United South and Eastern Tribes ▪ Tribal Climate Science Liaison

Christa Ogden ▪ Choctaw Nation ▪ Brownfields Program Coordinator

David Anderson ▪ Eastern Band of Cherokee Indians ▪ Horticulture Operations Supervisor

Dawn Standridge ▪ Choctaw Nation of Oklahoma ▪ Research Assistant

Deanna Byrd ▪ Choctaw Nation of Oklahoma ▪ NAGPRA Liaison

Donna Iti Tupa ▪ Chickasaw Nation ▪ Anthropologist Assistant

Emily Carter ▪ Cherokee Nation ▪ Research Tech

Ethan Schuth ▪ Choctaw Nation of Oklahoma ▪ Senior Water Resource Manager

Gabriel McCarty ▪ Choctaw Nation ▪ GIS/GPS Technician

Gary Granata ▪ Coushatta ▪ Granata Woods, LLC

J. Wade Hannon ▪ Cherokee Nation ▪ Artist

Jennifer Bryant ▪ Chickasaw Nation ▪ Director of Horticulture

Jennifer Byram ▪ Choctaw Nation of Oklahoma ▪ Research Associate/Graduate Student

Johnna Flynn ▪ Jena Band of Choctaw Indians ▪ Tribal Historic Preservation Officer/Cultural Director

Joshua Coon ▪ College of the Muscogee Nation ▪ Student

Justin Rolin ▪ Poarch Band of Creek Indians ▪ TYCC lead

Karen Downen ▪ Choctaw Nation of Oklahoma ▪ Section 106 Reviewer

Kent Sanmann ▪ Kiowa/Chickasaw ▪ GIS

Kielind Jim ▪ Choctaw Nation of Oklahoma ▪ Archeological Tech

LaDonna Brown ▪ Chickasaw Nation ▪ Director of Research and Cultural Interpretation

Lea Zeise ▪ United South and Eastern Tribes / Oneida Nation ▪ Agriculture Program Manager

Linda Langley ▪ Coushatta ▪ Tribal Historic Preservation Officer

Lori White Buffalo ▪ Chickasaw Nation ▪ Experiential Researcher

Marvin Bouknight ▪ Catawba Indian Nation ▪ Natural Resources and Environmental Programs Manager

Mary Thompson ▪ Eastern Band of Cherokee Indians ▪ Artist

Mary W Thompson ▪ Eastern Band of Cherokee Indians ▪ Artist

Megan Baker ▪ Choctaw Nation of Oklahoma ▪ Research Associate

Megan McBride ▪ Choctaw Nation of Oklahoma ▪ Environmental Coordinator

Megan McBride ▪ Choctaw Nation of Oklahoma ▪ Environmental Coordinator

Melanie Schneider ▪ Cherokee Nation ▪ Artist

Michael Hopper ▪ Choctaw Nation of Oklahoma ▪ Cultural Preservation

Michelle Evans-White ▪ Miami Tribe of Oklahoma/University of Arkansas ▪ Professor*

Mindy Mcghee ▪ Poarch Band of Creek Indians ▪ Cultural Director

Misty Madbull ▪ Choctaw Nation of Oklahoma ▪ Historic Preservation Director

Mitzi Reed ▪ Mississippi Band of Choctaw Indians ▪ Director/Biologist of Choctaw Wildlife and Parks

Noah Link ▪ Choctaw Nation of Oklahoma ▪ Growing Hope Associate

Rebecca Jim ▪ Cherokee Nation / LEAD Agency Inc. ▪ Executive Director / Tar Creekkeeper

Roger Cain ▪ United Keetoowah Band ▪ Ethnobotanist

Ross Green II ▪ Choctaw Nation of Oklahoma Cultural Services Dept ▪ Cultural Coordinator teacher

Ryan Lopez ▪ Tunica-Biloxi Tribe of Louisiana - Language and Culture Revitalization Program

Ryan Spring ▪ Choctaw Nation of Oklahoma ▪ Archaeological Technician / GIS Specialist

Sarah De Herrera ▪ Choctaw Nation ▪ Teacher

Scierra LeGarde ▪ Bayou Lacombe Band of Choctaw Indians ▪ Palmetto Basketweaver / Environmental Activist

Tanya Stewart ▪ Chickahominy Indian Tribe- Eastern Division ▪ Cultural Resources Director

Tiajuana Cochnauer ▪ Choctaw Nation of Oklahoma ▪ Retired Asst Manager, Public Affairs Officer, USDA Forest Service, Artist

Virginia Richard ▪ MOWA Band of Choctaw

William Selzer ▪ Poarch Band of Creek Indians ▪ Traditional Arts Coordinator

Federal Participants

Allegra Codamon ▪ U.S. Forest Service ▪ GIS Analyst

Allyson Read ▪ NPS ▪ Biologist

Ann Couch ▪ Chattahoochee River National Recreation Area ▪ Resource Management

Ann Strange ▪ USACE Tribal Nations Technical Center of Expertise ▪ Geographer

Anne Casey ▪ U.S. Forest Service ▪ District Ranger

April Taylor ▪ South Central Climate Adaptation Science Center ▪ Tribal Liaison

Aranzazu Lascurain ▪ NC State University/ SE Climate Adaptation Science Center ▪ Asst University Director*

Asa Samuels ▪ South Central Climate Adaptation Science Center ▪ Student intern

Beth Bramhall ▪ NPS - Great Smoky Mountains National Park ▪ Park Ranger - Citizen Science & Education

Brian Zettle ▪ USACE Tribal Nations Technical Center of Expertise ▪ Senior Biologist/Tribal Liaison

Bruce Henry ▪ USFWS ▪ Forest Ecologist

Bruce Prud'homme ▪ U.S. Forest Service ▪ Southern Region Hydrologist

Bryan Tate ▪ U.S. Forest Service ▪ Archaeologist

Chandra Roberts ▪ USDA ▪ Deputy District Ranger

Charlie Davis ▪ U.S. Forest Service ▪ Forest Ecologist - USDA Forest Service, Savannah River

Christina Smith ▪ NPS - Natchez Trace Parkway ▪ Chief of Resource Management

Christina Valdes ▪ NPS ▪ Biological Science Technician

CJ McLemore ▪ South Central Climate Adaptation Science Center ▪ Student Intern

Clarissa Dixon ▪ South Central Climate Adaptation Science Center ▪ Pathways Student Trainee

Daniel Westcot ▪ USDA - Natural Resources Conservation Service ▪ District Conservationist - State Tribal Liaison

Darixa Hernandez ▪ USACE-ERDC Environmental Lab ▪ Research Ecologist

Edward Jakaitis ▪ NPS - Mammoth Cave National Park ▪ Cultural Resources Program Manager

Eli Polzer ▪ USFWS ▪ Fish and Wildlife BIologist

Emily McKenzie ▪ USACE Tribal Nations Technical Center of Expertise ▪ Outreach Specialist

Forbes Boyle ▪ NPS ▪ Botanist

Gregory Luna Golya ▪ NPS - Ocmulgee Mounds NHP ▪ Integrated Resources Manager/Archeologist

Hannah Davis ▪ U.S. Forest Service ▪ Ecologist

Hugh Howe ▪ USACE ▪ Natural Resources Specialist

Jason Ross ▪ USFWS ▪ Fish and WL Biologist

Jeff Trulick ▪ Office of the Assistant Secretary of the Army for Civil Works ▪ Environmental Planner

Jennifer Grunewald ▪ USFWS ▪ Fish and Wildlife Biologist

Jennifer Ryan ▪ USACE ▪ Senior Archaeologist & Tribal Liaison

Jodi Morley ▪ USDA Natural Resources Conservation Service ▪ Archaeologist/Cultural Resource Specialist

John Hickey ▪ USACE - Hydrologic Engineering Center ▪ Hydrologic Engineering Center

John Sullivan ▪ BLM ▪ Archaeologist/Tribal Liaison

Jonathan Hallemeier ▪ USACE-ERDC ▪ Postdoctoral Fellow

Joshua Albritton ▪ NPS - Great Smoky Mountains National Park ▪ Technician

Karen Wilde ▪ USFS - Mark Twain National Forest ▪ Tribal Relations Specialist

Keith Coursey ▪ U.S. Forest Service ▪ Silviculturist

Krista Langley ▪ U.S. Forest Service ▪ Program Specialist

Kristine Johnson ▪ NPS ▪ Supervisory Forester

Kyle McKay ▪ USACE Environmental Lab ▪ Research Civil Engineer

Lanier Clegg ▪ USFWS ▪ Public Affairs Officer

Lauren Wougk ▪ USACE ▪ Mechanical Engineer/Design Manager

Lee Dietterich ▪ ORISE/USACE-ERDC-EL ▪ Postdoctoral Fellow

Lexie Rue-Harris ▪ U.S. Forest Service ▪ Tribal Relations

Louise Vaughn ▪ USFWS ▪ SECAS, Blueprint user support

Maria Schleidt ▪ U.S. Forest Service - Bienville NF ▪ Zone Archaeologist

Mark Ford ▪ NPS ▪ Wetland Ecologist

Mark Gilfillan ▪ USACE Tribal Nations Technical Center of Expertise ▪ Sr. Tribal Liaison/Project Manager

Marla Collins ▪ Ouachita and Ozark-St. Francis NFs ▪ Tribal Relations Specialist

Mary Shew ▪ NPS ▪ Resource Management Specialist

Matthew Grunewald ▪ USACE Tribal Nations Technical Center of Expertise ▪ Program Analyst

Matthew Helmer ▪ U.S. Forest Service ▪ Zone Archaeologist

Matthew Hodges ▪ USFWS ▪ Partners for Fish and Wildlife Biologist, USFWS

Michael Fedoroff ▪ USACE Tribal Nations Technical Center of Expertise ▪ Deputy Director/Tribal Liaison

Michelle Baumflek ▪ U.S. Forest Service ▪ Research Biologist

Mike Gremillion ▪ Global Water Security Center ▪ Director

Paul Gagnon ▪ USACE Institute for Water Resources ▪ Ecologist and Social Scientist

Pauline Adams ▪ U.S. Forest Service ▪ Hydrologist

Phillip Stephenson ▪ USFWS ▪ Wildlife Biologist

Rebecca Dobbs ▪ U.S. Forest Service - Southern Research Station ▪ Postdoctoral Fellow

Robert McDermott ▪ USACE MVM ▪ Regulatory Permit Manager

Rocco de Gregory ▪ USACE Tribal Nations Technical Center of Expertise ▪ Senior Project Manager

Ronald Kneebone ▪ USACE Tribal Nations Technical Center of Expertise ▪ Director

Rusty Simmons ▪ NPS ▪ Archeologist

Samantha Chovanec ▪ Fort Benning DPW ▪ Archaeologist

Shane Kinsey ▪ BLM ▪ Wildlife Biologist

Sierra Dawkins ▪ U.S. Forest Service ▪ Regional Botanist

Sylvia Harris ▪ U.S. Forest Service ▪ State Biologist

Tim Brooks ▪ USCEC-OP-CO ▪ Wildlife Biologist/Forester

Timothy Binzen ▪ USFWS ▪ Regional Tribal Liaison (Southeast & Northeast)

Tom Remaley ▪ NPS ▪ Ecologist

Velicia Bergstrom ▪ Kisatchie National Forest ▪ FHPM/Tribal Liaison

William MacNeill ▪ U.S. Forest Service ▪ Heritage Program Manager/Tribal Liaison

Yvette Wiley ▪ South Central Climate Adaptation Science Center ▪ Assistant Tribal Liaison

Zuzana Chovanec ▪ USACE MVM-Reg ▪ Archaeologist

State Government Participants

Braxton Barden ▪ Georgia Department of Natural Resources ▪ State Parks Southern Resource Manager

David Gomez ▪ New Echota & Chief Vann House State Historic Sites-GA ▪ State Historic Site Mgr.

Irina Garner ▪ Chief Vann House Historic Site, GA Dept. of Natural Resources ▪ Interpretive Ranger

Josh Burnette ▪ Tennessee Valley Authority ▪ Senior Specialist

Rachel Galan ▪ Texas Historical Commission ▪ Assistant Site Manager

Rebekah Dobrasko ▪ Texas DOT ▪ Environmental Program Manager

Siskaq Williams ▪ Georgia Department of Natural Resources ▪ Archaeologist

Virginia Seamster ▪ New Mexico Department of Game and Fish ▪ BISON-M/Share with Wildlife Coordinator

University Participants

Alyssa Quan ▪ University of Georgia ▪ Graduate Student

Aranzazu Lascurain ▪ NC State University/ SE Climate Adaptation Science Center ▪ Asst University Director*

Jesse Morrison ▪ Mississippi State University ▪ Assistant Research Professor

Jim Zaczek ▪ Southern Illinois University ▪ Professor of Forest Ecology

Katherine Chiou ▪ University of Alabama ▪ Assistant Professor

Kurtis Fisher ▪ Western Carolina University ▪ Remote Sensing Analyst

Loran Berg ▪ Mountain Heritage Center ▪ Collections Manager

Michelle Evans-White ▪ Miami Tribe of Oklahoma/University of Arkansas ▪ Professor*

Natalie Mueller ▪ Washington University in St. Louis ▪ Assistant Professor

Pamela Meister ▪ Mountain Heritage Center ▪ Director

Sami Chen ▪ Stanford University ▪ PhD Student

Sarah Melotte ▪ University of Colorado - Denver ▪ Lead Teaching Assistant

Stephen Luoni ▪ UA Community Design Center ▪ Director

Summer Wilkie ▪ University of Arkansas ▪ Youth Coordinator

Taryn Bieri ▪ Southern Illinois University ▪ Graduate Assistant

Research and Development Participants

Adam Warwick ▪ The Nature Conservancy ▪ Fire and Stewardship Manager

Eric Boatti ▪ Chattooga Conservancy, Inc. ▪ Program Associate

Jacqueline Echols ▪ South River Watershed Alliance ▪ Board President

JJ Lockhart ▪ Arkansas Archeological Survey ▪ Director of GIS and Remote Sensing Research

Jordan Forbis ▪ Watershed Conservation Resource Center ▪ Watershed Specialist

Kaila Christensen ▪ The Environmental Quality Institute ▪ Water Quality Monitoring Coordinator

Katie Kennedy ▪ The Nature Conservancy ▪ River Scientist

Peter Kleinhenz ▪ Tall Timbers ▪ Partnership Programs Coordinator

Sandi Formica ▪ Watershed Conservation Resource Center ▪ Executive Director

Scott Rayder ▪ Alabama Water Institute ▪ Executive Director

Tyler Wayland ▪ Texas Native Seeds ▪ Assistant Director

Other Participants

Alex McTavish ▪ Natural Resources Biotech Intern

Andrea Greco ▪ Pond Co. ▪ Landscape Architect

Andrea Solstad ▪ A1 SOL LLC ▪ Artist

Aubrey Sabba ▪ Pond Co. ▪ Landscape Architect

Brad Johnson ▪ Gifted Facilitator

Chloe Cuturic ▪ Asheville GreenWorks ▪ Community Forestry Coordinator (AmeriCorps member)

Christine Myers ▪ Tosholi Consulting, LLC ▪ Managing Director

David Lee ▪ Conserving Carolina ▪ Natural Resources Manager

Debra M Butler ▪ FCI Native American and Indigenous Studies ▪ Curriculum Development Fellow

Elizabeth Horton ▪ Cultural Heritage Partners PLLC ▪ Cultural Resources Reviewer

Jaime Van Leuven ▪ Graduate Research Assistant

Jessica Lefiles ▪ Camp Henry ▪ Director

Julie Coco ▪ New South Associates ▪ Associate Director of History

Karsten Griffo ▪ Conserving Carolina ▪ Habitat Restoration Associate

Marcus Williford ▪ Resource Ecological Solutions ▪ Project Manager & Registered Forester

Owen Carson ▪ Equinox Environmental Consultation & Design, Inc. ▪ Botanist/Senior Ecologist

Raynella Fontenot ▪ Director, Department of Cultural, Historical, & Natural Resources

Robin Whitfield ▪ Friends of Chakchiuma Swamp ▪ Director

Sarah Darro ▪ Center for Craft ▪ Gallery Manager

Seth Hunt ▪ Westervelt Ecological Services ▪ Forester/Biologist

Spencer Roten ▪ Asheville GreenWorks ▪ Water Quality Coordinator

Steve Patterson ▪ Bio x Design ▪ Restoration Ecologist

Thomas Peters ▪ Director of Landscape and Natural Resources

**Indicates representation in more than one category*

Participant Analysis

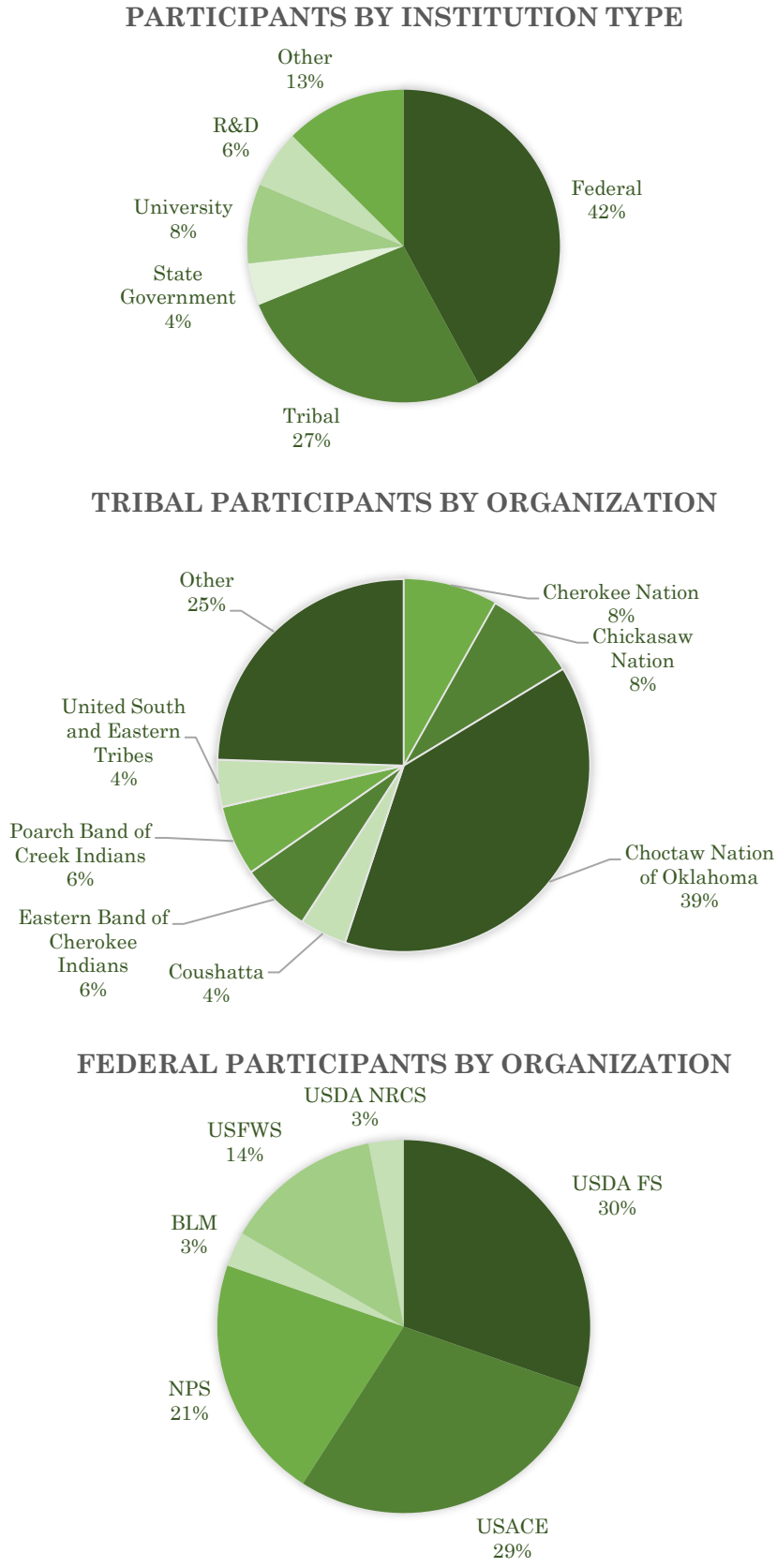

Figure 22. Participation analysis of the Rivercane Restoration Workshop

Detailed Agenda

INDIGENOUS APPROACHES TO RIVERCANE RESTORATION

VIRTUAL WORKSHOP 13-15 OCTOBER 2021

AGENDA ***All times CDT**

Day 1 "Rivercane Relationships"

The first day of the workshop will be an introduction to rivercane, TEK, and modelling with most of the day dedicated to letting participants share about their relationship with rivercane, what it means to them, and what they hope to get out of the workshop.

Logistically this will likely require active facilitation and monitoring of the participant chat/screens to identify people wishing to speak and call on them to do so in an orderly fashion. Each speaker will have a limited time to speak 3-5 minutes? Reminder to not share sensitive information.

13 October 2021 (Session 1)

1000 – Welcome and logistics

Mr. Michael Fedoroff and Mr. Garet Couch

1005 – Blessing-Joseph Wolf

1010 – Panel Discussion "Indigenous Perspectives on Rivercane Relationships"

Moderator-Mr. Ryan Spring

Ms. Mary Thompson, Basket Weaver, Eastern Band of Cherokee Indians

Mr. Roger Cain, Ethnobotanist, United Keetoowah Band of Cherokee Indians

1110 – Interactive Participants Share Stories About Rivercane Relationship

1155 – Participation Prize Giveaway
1200 – Adjourn First Session

13 October 2021 (Session 2)

1400 – Welcome back and logistics – Mr. Brian Zettle and Mr. Garet Couch

1405 – Interactive Participants Share Stories About Rivercane Relationship (Cont.)

1455 – Participation Prize Giveaway

1500 – Panel Discussion "Indigenous and Western Approaches to Modeling"

Moderator-Mike Gremillion

Mr. Ryan Spring-Choctaw Nation of Oklahoma Archaeological Tech/ GIS Specialist

Mr. Tim Binzen-USFWS Tribal Liaison (Northeast and Southeast Regions)

Mr. DJ Monette-USFWS Associate Native American Liaison Advisor

Ms. April Taylor- Sustainability Scientist at Chickasaw Nation Division of Commerce and USGS South Central Climate Adaptation Science Center

1555 – First Multi-media Submission Voting

1600 – Adjourn Second Session/First Day

INDIGENOUS APPROACHES TO RIVERCANE RESTORATION

VIRTUAL WORKSHOP 13-15 OCTOBER 2021

AGENDA ***All times CDT**

Day 2 "Modelling Rivercane Relationships"

The second day of the workshop will be a deeper dive into modeling and specifically conceptual modelling. Breakout rooms will allow for direct interaction with participants and facilitate better collaboration of the model. Number of breakout rooms will be dependent on total number of participants in the sessions, but each breakout room should be limited to 10-15 people max. Each breakout room will be facilitated by a person intimately familiar with conceptual models and leading development conversations. The first breakout will allow groups to identify relevant variables to rivercane propagation, management, and preservation. The second breakout will allow groups to identify the relationships between the variables and draft a rivercane conceptual model. Finally, representatives from each breakout room will share the conceptual model they developed to promote a conversation about the different assumptions between the groups. Overnight, the team will develop a conceptual model synthesizing the input from all the groups and it will be posted for review. Likely the model will be presented and discussed at the RGG workshop next spring. Reminder to not share sensitive information

14 October 2021 (Session 3)

1000 – Welcome and Logistics

Ms. Michelle Baumflek

1005 – Blessing-Joseph Wolf

1010 – Introduction to Conceptual Models

Dr. Kyle McKay

1040 - Participation Prize Giveaway

1045 – Breakout Groups to Identify Important Variables, Processes, and Components of a Rivercane Model

1200 – Adjourn third session (Tell folks to return to their breakout room after lunch)

14 October 2021 (Session 4)

1400 – Facilitators - Welcome Back and Logistics

1405 – Breakout Groups to Identify Relationships Between Model Variables, Gather Key Sources of Knowledge, and Render a Conceptual Rivercane Model

1500 – Send everyone back to main session - Participation Prize Giveaway

1505 – Breakout Groups Brief Out on Models (up to 5 minutes per breakout)

1555 – Second Multi-media Submission Voting

1600 – Adjourn Fourth Session/Second Day

INDIGENOUS APPROACHES TO RIVERCANE RESTORATION

VIRTUAL WORKSHOP 13-15 OCTOBER 2021

AGENDA ***All times CDT**

Day 3 "Sustaining Healthy Rivercane Relationships"

The third day of the workshop will be focused on sustaining healthy rivercane relationships either through management techniques, education, policy, or other. Discussion will cover many scales from the backyard cane patch to broad forest management. Need to promote the RGG workshop spring 2022 and any other rivercane opportunities. Reminder to not share sensitive information

15 October 2021 (Session 5)

1000 – Welcome and Logistics

Mr. Michael Fedoroff

1005 – Blessing-Joseph Wolf

1010 – Panel Discussion "Rivercane Restoration Lessons Learned"

Moderator-Mrs. Jennifer Grunewald

Mr. Adam Griffith, Program Director for the Revitalization of Traditional Cherokee Artisan Resources (RTCAR)

Dr. Paul Gagnon, Ecologist USACE-IWR

Jim Zaczek, Professor Southern Illinois University

1100 – Participation Prize Giveaway

1105 – Interactive Participants Share Stories About Rivercane Restoration, Reciprocity, and Stewardship

1200 – Adjourn Fifth Session

15 October 2021 (Session 6)

1400 – Welcome Back and Logistics

Mr. Brian Zettle

1405 – Panel/Interactive facilitated discussion about "Next Steps for the Alliance"

Moderator-Mr. Brian Zettle

Mr. Ryan Spring, Choctaw Nation of Oklahoma Archaeological Tech/ GIS Specialist

Ms. Michelle Baumflek, Ethnobotanist, U.S. Forest Service

Mr. Michael Fedoroff, Anthropologist, Deputy Director USACE TNTCX

1500 – Participation Prize Giveaway

1505 – Interactive Participants Share Vision for Future Steps

1550 – Third Multi-media Submission Voting

1555 – Blessing – Mr. Asa Samuels

1600 – Adjourn sixth session/third day

Panel Discussion Questions

"Indigenous Perspectives on Rivercane Relationships"

- What is your relationship with Rivercane? Is it a mutual relationship?
- How were you called to work with Rivercane?
- If rivercane was no longer available what would it mean for your community?
- How can we better foster Rivercane relationships?
- What has rivercane taught you?
- What would you like your grandchildren and generations to come to know about river cane?

"Indigenous and Western Approaches to Modeling"

- Science Translation: In Indian Country, language is really important, and many scientific terms mean something different to these communities. Also, some scientific terms could have consequences for the community or for the research relationship. Share some examples of your experience with these types of terms.
- Coproduction of Knowledge: How are tribes working with researchers/ scientist on projects? What does a good partnership look like?
- What role does modeling play in restoration and/or land management decisions?
- What elements might be present in an Indigenous-led model that may not typically be considered in Western modeling approaches?

"Rivercane Restoration Lessons Learned"

- We learn as much from our failures as successes. What are some common mistakes you have observed regarding rivercane maintenance, management, or restoration? What are some successes?
- How is this information shared with others?
- How important is it to have locally-adapted source materials for restoration efforts?
- Where are our knowledge gaps around restoration? What don't we know yet that would enhance river cane restoration success?

"Next Steps for the Alliance"

- How do we capitalize on the energy and interest in rivercane demonstrated by this workshop?
- What can alliance members do to promote rivercane education, restoration, and stewardship in their community and throughout the region?

Thank you

To thank our workshop partners and participants for all their work, dedication, and concern for rivercane restoration that made this effort possible, the TNTCX designed a thank you note that was delivered to all participants (Figure 23).

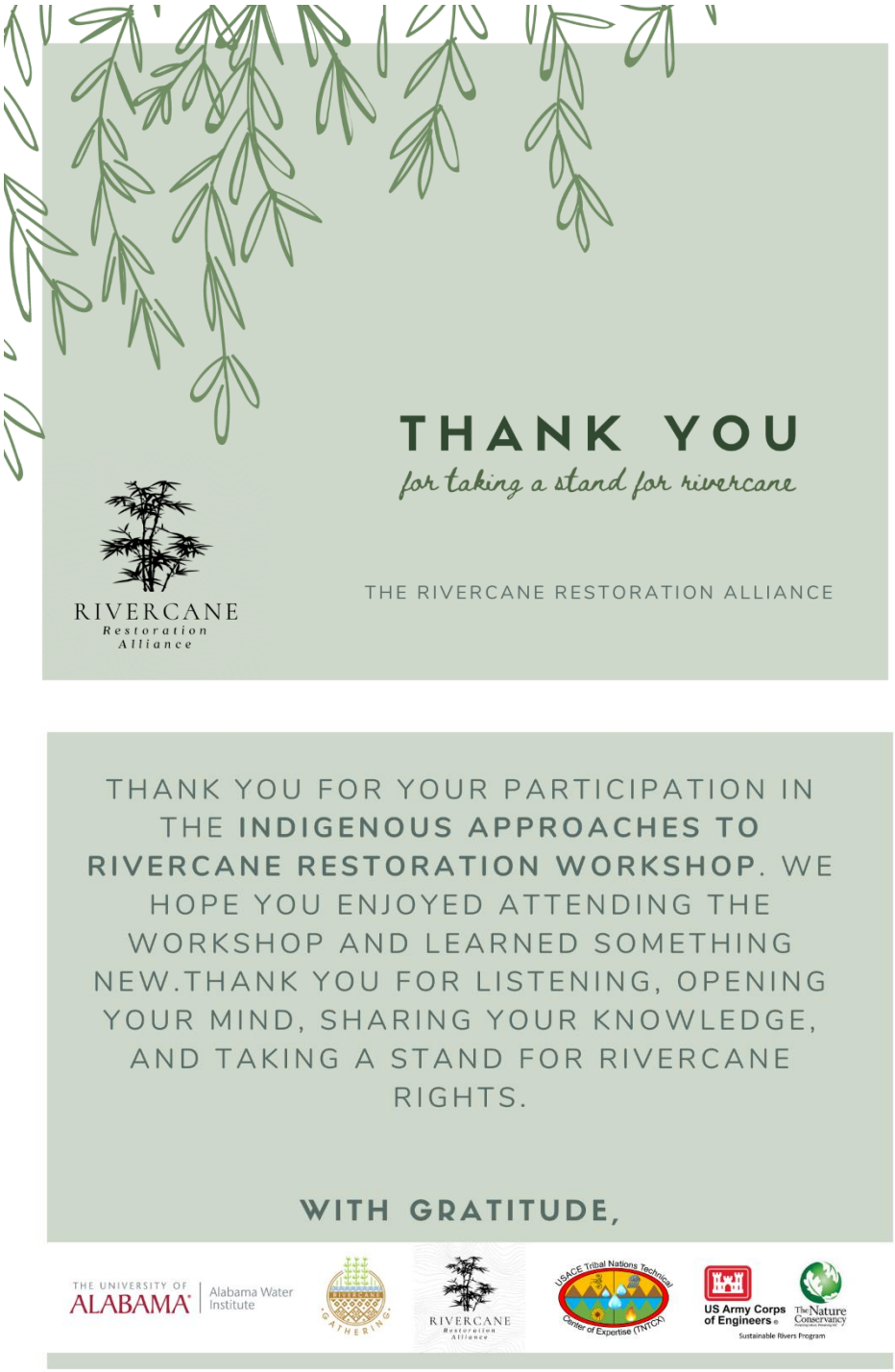

Figure 23. Note of appreciation for workshop partners and participants