NSRC Awards Nearly $2 million to Support Northern Forest Research Essential to Indigenous Communities

Advancing Traditional Ecological Forest Knowledge

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Burlington, VT; Durham, NH; Orono, ME; Syracuse, NY — The [Northeastern States Research Cooperative (NSRC)](#) is pleased to announce the funding of six new Indigenous Forest Knowledge Fund (IFKF) projects, totaling nearly $2 million in NSRC funding. Under the direction of Tribal consultants, the IFKF supports applied forest research that advances Tribal priorities and traditional ecological forest knowledge.

In early 2024, NSRC announced its third year of funding for the IFKF, releasing a request for proposals seeking projects with high cultural significance to Indigenous communities and lifeways (e.g., the health of brown ash and Indigenous peoples' access to lands for hunting, fishing, gathering materials, and other purposes). The IFKF promotes education and training of Indigenous youth in Traditional Ecological Knowledge about forest systems and applied forest research that advances tribal priorities. IFKF projects are in addition to the NSRC research projects awarded earlier this year.

There was a very strong response to the 2024 IFKF RFP: 10 full proposals requesting $3.2 million were submitted for consideration. A Tribal External Review Committee considered each proposal for alignment with IFKF goals and requirements described in the RFP; clarity of project objectives; and quality of research approach and methods. The six funded projects are described briefly below.

"I'm honored to facilitate the IFKF and was thrilled to see such a strong response to the 2024 request for proposals," commented Anthea Lavallee, Hubbard Brook Research Foundation Executive Director and NSRC IFKF Director. "The impact of the IFKF is growing, year by year, and these innovative projects will undoubtedly reshape our relationships with the Northern Forest."

Federal funding for the NSRC comes from Congressional appropriations through a partnership with the research and development arm of the USDA Forest Service to support research on the Northern Forest and its 26 million acres in Maine, New Hampshire, New York, and Vermont.

"It is exciting to see the NRSC IFKF program flourishing, as these innovative projects will continue to advance Traditional Ecological Forest Knowledge while benefiting Indigenous communities for many years to come," said Dr. Cynthia West, Northern Research Station Director. "Facilitating this award process was a group effort, and I want to specifically thank Northern Research Station's Tribal Relations Specialist Jen Ballinger for providing valuable guidance and leadership throughout the process."

Awarded Projects

Ecosystem Responses to the Interacting Forces of Bridge Improvements and Beavers

Project personnel & partners: Benjamin Simpson, Penobscot Nation; Daniel McCaw, Fisheries Program Manager, Penobscot Nation; Cody Dillingham, Fish Biologist, Penobscot Nation; Joseph Zydlewski, Maine Cooperative Fish and Wildlife Research Unit and Professor, UMaine Department of Wildlife Fisheries and Conservation Biology; Christina Murphy, Maine Cooperative Fish and Wildlife Research Unit and Assistant Professor, UMaine Department of Wildlife Fisheries and Conservation Biology.

The Penobscot Indian Nation Department of Natural Resources (PIN DNR) plans to conduct two major bridge improvements on the Birch Stream Road. These bridges will be replaced with larger, structures to improve fish passage and capacity to handle high flow events in the face of climate change. Though such construction projects are frequent in the region, the aquatic community response to bridge improvements on beaver driven ecosystems has not been well studied. Understanding how beaver populations and densities are interacting and responding to changing infrastructure will help us to better manage beaver populations. This project will also document environmental, and population effects of changes to aquatic connectivity in a beaver dominated landscape.

Integrating Advanced Geospatial Analysis and Indigenous Forest Knowledge for Protecting Ash Species

Project personnel & partners: Parinaz Rahimzadeh-Bajgiran; Associate Professor of Remote Sensing of Natural Resources, UMaine School of Forest Resources; John Daigle, Professor of Forest Recreation Management, UMaine School of Forest Resources; Wilhelm Friess, Professor of Mechanical Engineering, UMaine Dept of Mechanical Engineering; Sandra De Urioste-Stone, Associate Professor of Nature-based Tourism, UMaine School of Forest Resources; Shannon Hill, Environmental Health Director, Mi'kmaq Nation; Jon Scott, Forester, Mi'kmaq Nation; Mike Parisio; Forest Entomologist, Maine Forest Service.

Forestlands provide a plethora of ecosystem services particularly for tribal communities, but they are susceptible to various natural disturbances, significantly affecting their health and productivity. Among natural disturbances, non-native pests like emerald ash borer (EAB) have posed a significant threat as the native forest species do not have natural resilience to them. All three species of ash (white, green/red, and black/brown) that grow in Maine are susceptible to EAB infestation. All are highly valuable both economically and culturally for the Penobscot, Passamaquoddy, Maliseet, and Mi'kmaq nations. This project aims to provide timely tools and products for effective planning for EAB management using geospatial techniques and Indigenous forest knowledge (IFK), while providing educational and mentorship opportunities for both Indigenous youth and communities at large.

Managing for Tomorrow's Panawahpskek Forests Today: An Integrative Approach to Submerchantable Competition Control

Project personnel & partners: Carolyn Ziegra, Appalachian Mountain Club, Charlie Loring Jr., Penobscot Indian Nation Department of Natural Resources; Ben Stevens, Forester, Penobscot Indian Nation Department of Natural Resources; Binke Wang, Penobscot Indian Nation GIS Program Manager; Laura Kenefic, Research Forester, U.S. Forest Service, Northern Research Station; Erin Simons-Legaard, Research Assistant Professor, University of Maine, Center for Research on Sustainable Forests; Keith Kanoti, University Forest Manager, University of Maine, School of Forest Resources; Ralph Nyland, Professor Emeritus, State University of New York, College of Environmental Science and Forestry; Steve Tatko, Vice President, Land, Research and Trails, Appalachian Mountain Club.

Success of forest management rests not only on shaping composition and vigor of existing overstories but stewarding the next generation of trees. In the Northern Forest region encompassing the ancestral homelands and Sovereign Nation of the Panawahpskek (Penobscot), sprouting hardwoods (e.g., American beech, red maple) compete strongly against other trees in the regenerating stratum, compromising

management aimed at diverse compositions including cultural resource species like paper birch and brown ash. To address this problem, we will co-develop, evaluate, and demonstrate approaches to submerchantable hardwood management that accomplish silvicultural objectives while adhering to cultural mores and incorporating Indigenous ways of knowing.

Partnership with Abenaki for Conservation and Restoration of the Threatened, Declining Butternut Ttree, an Ecologically and Culturally Important Hardwood

Project personnel & partners: Sean Hoban, Tree Conservation Biologist, The Morton Arboretum; Martin Kratt, local landowner at Isle La Motte; Dale Bergdahl, UVM Professor Emeritus of Forest Pathology; Joshua Halman, Forest Health Program Lead, Vermont Department of Forests, Parks and Recreation; Chief Brenda Gagne, Missisquoi Abenaki Tribe; Carolyn Pike, US Forest Service.

Butternut is a cold hardy, native tree used for food and medicine by indigenous peoples. The Abenaki consider butternut the archetype of nut trees; the nut is sweet, and nutritious, while other parts of the tree have many uses. Butternut was once common in Vermont, but has declined by 90-95% due to an introduced fungal disease, butternut canker. Project goals include: provide training, education, and mentoring to Indigenous youth in Indigenous and Western forest health assessment; work with Tribal leaders to identify suitable seed producing trees for sampling; promote species survival and traditional uses of butternut by engaging Tribes in dialogues about scientific and traditional ways of knowing butternut; and working together to plant butternut near communities for food and ecological restoration. Seed data will be used to understand suitable site conditions for restoration.

Restoring Tribal Relations and Forest Knowledge

Project personnel & partners: Les Benedict, Saint Regis Mohawk Tribe; Jessica Raspitha, Saint Regis Mohawk Tribe; John Daigle, UMaine Professor of Forest Recreation Management; Richard Silliboy, Vice-Chief Mi'kmaq Nation; tish carr, WaYS; Angello Johnson, Saint Regis Mohawk Tribe; Kylee Tarbell, Thompson Island Cultural Camp; Selena Neptune-Bear, Nibezun Program Coordinator; Anthony D'Amato, UVM Professor and Forestry Program Director; Marla Jacobs, Akwasasne Cultural Center Library & Museum; Lea Zeise, United South and Eastern Tribes.

The ability for Tribal Nations to manage resources and the ability to research forest systems meaningfully is dependent upon a framework containing relevant cultural values and perspectives as they are intertwined with language and cosmology. While forest research is the focal point of this project, facilitating the restoration of inter-tribal exchanges is key. Indigenous youth from the Akwasasne Cultural Community and Maine Indian Tribes will partake in forest pest management research by introducing them to ongoing projects being led by Tribal natural resources professionals, academia, and their Federal and State partners. Participants will be enriched with leadership, mentorship, and experiences in forest research, and will gain experience with forest research challenges affecting culturally significant natural resources and the application of culturally relevant solutions.

WaYS to Utilize Indigenous Knowledge and Technology

Project personnel & partners: tish carr, Executive Director, Wabanaki Youth in Science (WaYS); Alison Adams, Forest Ecosystem Monitoring Cooperative; Larissa Robinav, New Hampshire Division of Forest and Lands; Charles Loring, Director of Natural Resources, Penobscot Nation; Sue Young, Director of Natural Resources, Houlton Band of Maliseet Nations; Clayton Sockabasin, Forester, Passamaquoddy Tribes; Jeff Garnas, Associate Professor, UNH Natural Resources and the Environment; Tyler Everett, PhD candidate, UMaine School of Forest Resources.

The goal is to continue weaving Indigenous Knowledge and western science into multiple projects that WaYS currently has within our tribal communities in Maine. The project will assist the important work of graduate student Tyler Everett of Mi'Kmaq Nation who works with the Ash Protection Collaboration Across Wabanakik (APCAW) at UMaine. The tribal community recognizes urgency to manage and protect brown ash considering the pressures of the emerald ash borer (EAB). Given the expanse of land to be covered, challenging terrain and access to sites, and the rapid mortality of the ash from the EAB, remote sensing is a vital tool in assisting with this work. This project will develop and implement a drone program internal to the WaYS network to benefit tribal communities, using remote sensing data to complement work around brown ash and engaging Indigenous youth in STEM to support their academic journey.

About the Northeastern States Research Cooperative
NSRC (https://nsrcforest.org) is a competitive grant program for Northern Forest research, authorized by Federal legislation (Public Law 105-185), with allocations to the program directed by the USDA Forest Service. Since its inception, the NSRC has funded more than 345 projects, engaging 50 different institutions, agencies, and organizations across the northeast.

NSRC prioritizes problem-driven, engaged research with solid communications to stakeholders. Partnerships between researchers and practitioners are strongly encouraged, as are projects that aim to inform and align with the timeframes of management and policy decisions. To ensure alignment with on-the-ground issues and emerging priorities, Tribal consultants and an External Advisory Committee representing forest industry, natural resource management, conservation, wildlife, and economic development set the research agenda for the NSRC.

NSRC is jointly directed through the U.S. Department of Agriculture Forest Service's Northern Research Station and a designated institution in each of the four Northern Forest States (Rubenstein School of Environment and Natural Resources at the University of Vermont, the University of New Hampshire in cooperation with the Hubbard Brook Research Foundation in New Hampshire, the Center for Research on Sustainable Forests at the University of Maine, and the State University of New York College of Environmental Science and Forestry). These institutions are all equal opportunity providers.

Media Contacts

Maine
Meg Fergusson
margaret.fergusson@maine.edu

New Hampshire
Benjamin Fraser
Benjamin.fraser@unh.edu

New York
Mary Beth Malmsheimer
mmalmshe@esf.edu

Vermont
Anna Marchesault
anna.marchessault@uvm.edu