Center for Advanced Forestry Systems Lead Site Updates

Aaron Weiskittel
Director

Meeting Agenda

Center for Advanced Forestry Systems

Semi-Annual CAFS IAB Meeting
Virtual
2:00 – 5:30 PM EST, Nov 9, 2021

https://maine.zoom.us/j/3914609418

Hosted by the University of Maine,
Center for Research on Sustainable Forests

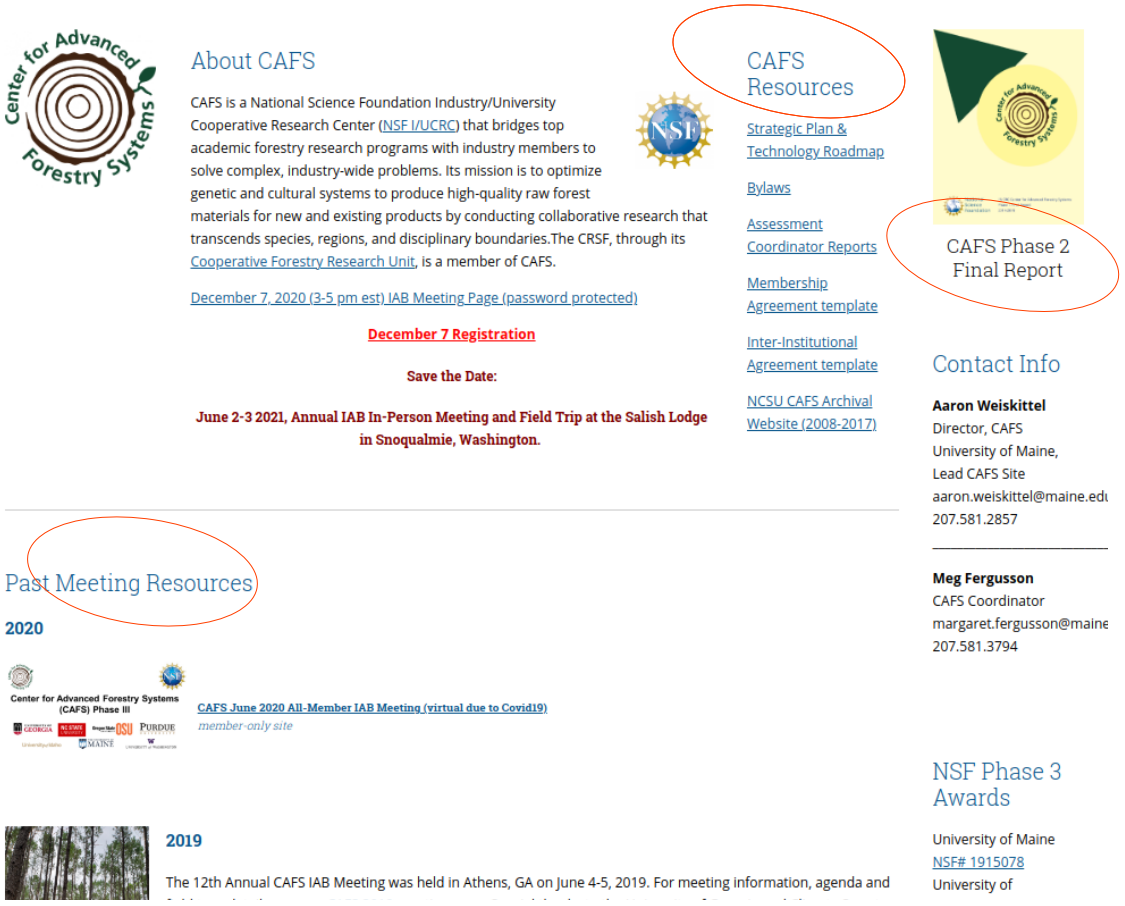
Agenda

November 9: 2:00-5:30 pm EST
(Times are Eastern Standard)

Time	Item	Presenter
2:00 PM	Welcome/Overview	Aaron Weiskittel, UM
2:05 PM	CAFS Lead Site & Phase III Updates, Funding Opportunities	Aaron Weiskittel, UM
2:15 PM	IAB Discussion & Vote	All
2:20 PM	PERSEUS Overview, Update, & Technology Needs Survey	Songling Fei, PU
	Continuing Project Updates	
2:35 PM	16.69 Stand and tree responses to late rotation fertilization	Kim Littke, UW
2:40 PM	19.75 Assessing and mapping regional variation in potential site productivity	Cristian Montes, UGA
2:45 PM	19.76 Assessing and mapping regional variation in site carrying capacity	Mark Kimsey, UI
2:50 PM	20.78 Intraspecific hydraulic responses of commercial tree seedlings to nursery drought conditioning	Andrew Nelson, UI
2:55 PM	Discussion on Continuing Projects	All
3:00 PM	20.79 Multi-regional evaluation of new machine learning algorithms for mapping tree species distribution and abundance	Kasey Legaard, UM
3:05 PM	20.80 Using hyperspectral imaging to evaluate forest health risk	Sylvia Park, PU
3:10 PM	20.81 Resilience of soil organic matter to harvesting: A global study of long-term soil productivity experiments	Jeff Hatten, OSU
3:15 PM	20.82 Stand response to thinning: Enhancing response prediction through modeling	Eric Turnblom, UW
3:20 PM	Discussion on Continuing Projects	All
3:30 PM	***Break***	
3:45 PM	20.83 Using predictive analytics to decompose site index	Jason Cross, UW
3:50 PM	20.84 Physiologic response to commercial fertilization programs in Pacific Northwest forest plantations	Kim Littke, UW
3:55 PM	21.85 Variation in productivity, wood quality and soil carbon of nine conifer species across a gradient in water deficit	Carlos Gonzalez, OSU
4:00 PM	21.86 Stem form of nitrogen fertilized Douglas-fir trees	Doug Mainwaring, OSU
4:05 PM	21.87 Linking leaf area index and remote sensing across different forest types	Andrew Trlica, NCSU
4:10 PM	Discussion on Continuing Projects	All
	Continuing Project Updates	
4:20 PM	21.88 Quantifying silvicultural treatment effect on lumber quantity and quality in loblolly pine	Joe Dahlen, UGA
4:25 PM	21.89 Quantifying carbon sequestration as a function of silvicultural treatment in loblolly pine	Joe Dahlen, UGA
4:30 PM	21.90 Improving forest sample estimation through UAS canopy structure stratification	Logan Wimme, UI
4:35 PM	21.91 NCSU START	Rachel Cook, NCSU
4:40 PM	21.92 UMaine START	Aaron Weiskittel, UM
4:45 PM	Discussion on Continuing Projects	All
	Business Meetings	
5:00 PM	IAB Closed Door Business Meeting	IAB Members
5:00 PM	Site Directors Business Meeting	CAFS Site Directors
5:30 PM	**Adjourn**	

CAFS Website

- Resources
  - Strategic Plan & Technology Roadmap
  - Bylaws
  - Assessment Coordinator Reports
- Past/Current meeting materials
  - PW = “CAFS3”



https://crsf.umaine.edu/forest-research/cafs/

Center for Advanced Forestry Systems Bylaws

Approved: Sept XX, 2021

ARTICLE I – Introduction

The following operating procedures will be used to govern the Center for Advanced Forestry Systems (CAFS), a National Science Foundation (NSF) Industry & University Cooperative Research Center (IUCRC). Currently, CAFS comprises the following affiliated universities/sites: (1) University of Maine (lead institution); (2) University of Georgia; (3) University of Idaho; (4) Oregon State University; (5) Purdue University; (6) University of Washington; and (7) North Carolina State University. Current industry members and their annual contributions by university site are provided in Appendix A – Current CAFS Membership List by Site. Additional universities and members may join CAFS as specified below. Note that IUCRC Membership Agreement has precedence over the Center Bylaws and Memorandum of Understanding (MOU). The terms of these Bylaws shall be subject to the terms set forth in solicitation NSF 17-516.

ARTICLE II – Purpose

The mission of CAFS is to optimize genetic and cultural systems to produce high-quality raw forest materials for new and existing products by conducting collaborative research that transcends species, regions, and disciplinary boundaries. CAFS is a multi-university center that works to solve problems through multi-faceted approaches and questions on multiple scales, including molecular, cellular, and individual tree-, stand-, and ecosystem-levels.

Research focal areas include, but are not limited to: biological sciences (biotechnology, genomics, ecology, physiology, and soils), management (silviculture, planning, and optimization), and data analysis/synthesis (bioinformatics, modeling, remote sensing, and spatial analysis). Specific objectives of CAFS are:

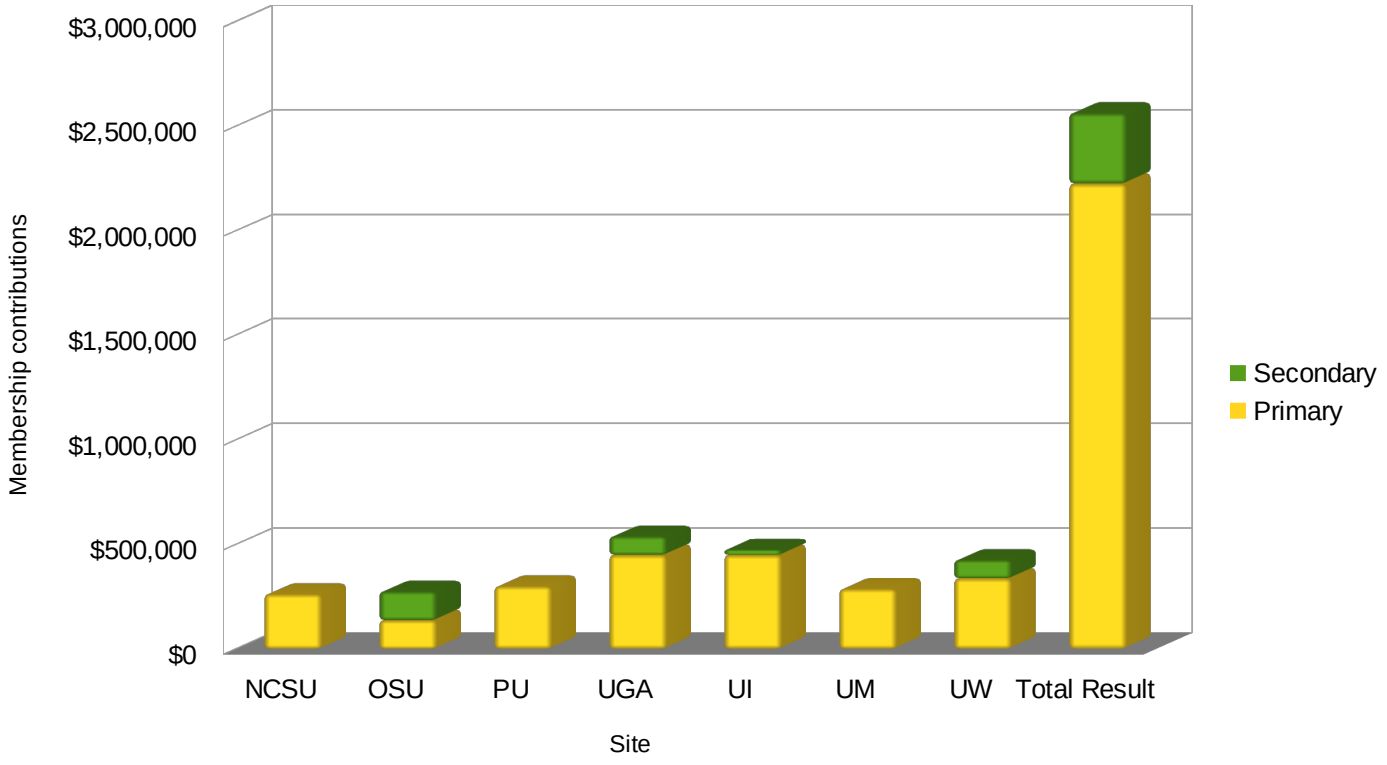
1. Serve as a national organization for R&D relevant to the forest industry;
2. Coordinate and perform national research activities across multiple sites that align with the prioritized needs of forest industry;
3. Document and communicate key research outcomes to relevant stakeholders;
4. Provide a long-term strategic vision for forest industry research needs;
5. Convene leading scientists from academia and industry who are prepared to address new/unforeseen challenges to the forest industry, such as changing markets; and
6. Create national networking opportunities for universities and forest industry.

ARTICLE III – Organization

CAFS consists of a Center Director, Site Directors, Project Scientists (individuals with a CAFS-approved research project), IUCRC Academic Leadership Team (CAFS Director and each Site Director), Industry Advisory Board (IAB; composed of

Membership Type	Membership Fee	Vote	IP Property Access
Full	$25,000/yr	10 votes per membership	Yes
Associate	$12,500/yr	5 votes per membership	Upon Approval
Observer	In-kind (<$10,000k)	0	No

Center Funding



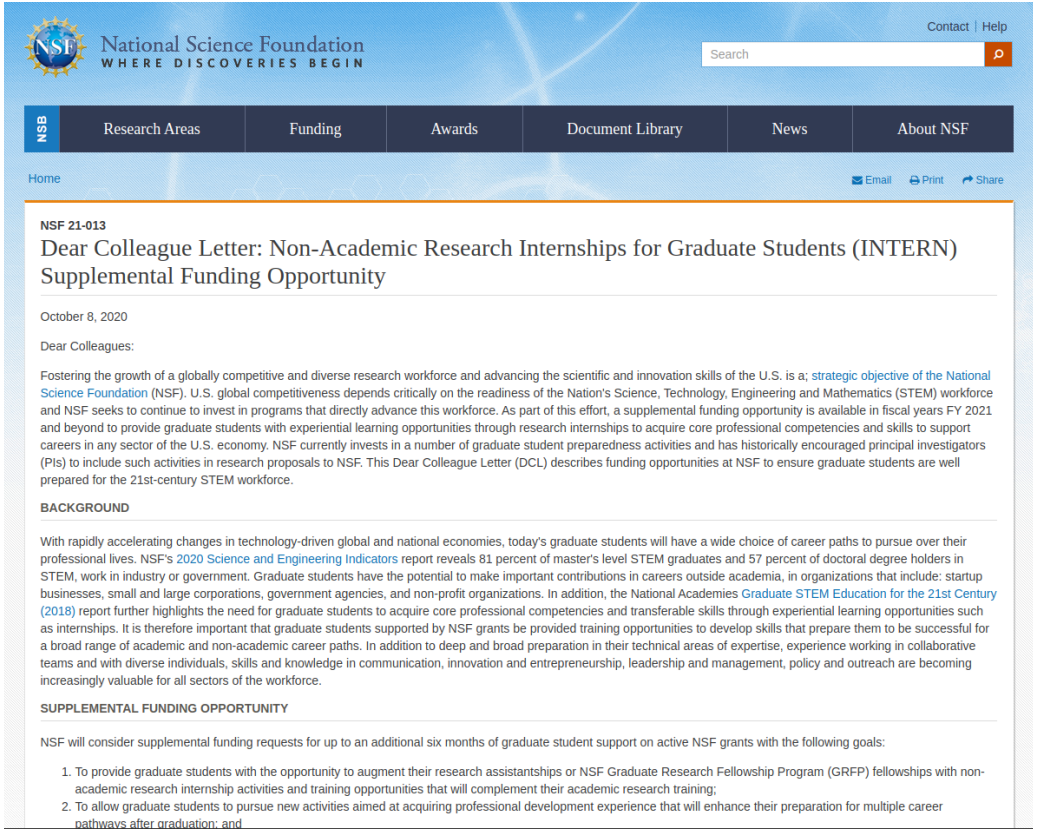
Funding and membership remains stable

IAB Meeting

- In-person
  - June 7-9, 2022
  - Indoor + field tour
  - Potential joint meeting with NCASI?
  - Salish Lodge, WA

- Future fall IAB meetings in mid-Nov
  - Align with Phase 3 awards

NSF Supplemental Opportunities



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NSF 21-013

Dear Colleague Letter: Non-Academic Research Internships for Graduate Students (INTERN) Supplemental Funding Opportunity

October 8, 2020

Dear Colleagues:

Fostering the growth of a globally competitive and diverse research workforce and advancing the scientific and innovation skills of the U.S. is a; strategic objective of the National Science Foundation (NSF). U.S. global competitiveness depends critically on the readiness of the Nation's Science, Technology, Engineering and Mathematics (STEM) workforce and NSF seeks to continue to invest in programs that directly advance this workforce. As part of this effort, a supplemental funding opportunity is available in fiscal years FY 2021 and beyond to provide graduate students with experiential learning opportunities through research internships to acquire core professional competencies and skills to support careers in any sector of the U.S. economy. NSF currently invests in a number of graduate student preparedness activities and has historically encouraged principal investigators (PIs) to include such activities in research proposals to NSF. This Dear Colleague Letter (DCL) describes funding opportunities at NSF to ensure graduate students are well prepared for the 21st-century STEM workforce.

BACKGROUND

With rapidly accelerating changes in technology-driven global and national economies, today's graduate students will have a wide choice of career paths to pursue over their professional lives. NSF's 2020 Science and Engineering Indicators report reveals 81 percent of master's level STEM graduates and 57 percent of doctoral degree holders in STEM, work in industry or government. Graduate students have the potential to make important contributions in careers outside academia, in organizations that include: startup businesses, small and large corporations, government agencies, and non-profit organizations. In addition, the National Academies Graduate STEM Education for the 21st Century (2018) report further highlights the need for graduate students to acquire core professional competencies and transferable skills through experiential learning opportunities such as internships. It is therefore important that graduate students supported by NSF grants be provided training opportunities to develop skills that prepare them to be successful for a broad range of academic and non-academic career paths. In addition to deep and broad preparation in their technical areas of expertise, experience working in collaborative teams and with diverse individuals, skills and knowledge in communication, innovation and entrepreneurship, leadership and management, policy and outreach are becoming increasingly valuable for all sectors of the workforce.

SUPPLEMENTAL FUNDING OPPORTUNITY

NSF will consider supplemental funding requests for up to an additional six months of graduate student support on active NSF grants with the following goals:

1. To provide graduate students with the opportunity to augment their research assistantships or NSF Graduate Research Fellowship Program (GRFP) fellowships with non-academic research internship activities and training opportunities that will complement their academic research training;
2. To allow graduate students to pursue new activities aimed at acquiring professional development experience that will enhance their preparation for multiple career pathways after graduation; and

INTERN DCL-NSF-21-013

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NSF 21-121

Dear Colleague Letter: Opportunity for Active EFRI, ERC and IUCRC Awardees to Apply for Supplemental Funding through the Research Experience and Mentoring (REM) Program

September 24, 2021

Dear Colleagues:

The National Science Foundation Directorate for Engineering (NSF/ENG) continually seeks to advance scientific progress in research and innovation while broadening participation of underrepresented groups in science, technology, engineering, and mathematics (STEM) fields. This Dear Colleague Letter (DCL) seeks to inform the community about an opportunity to pursue both goals through supplements from the Research Experience and Mentoring (REM) Program to active Emerging Frontiers in Research and Innovation (EFRI) research awards, active Engineering Research Center (ERC) awards, and active Industry-University Cooperative Research Center (IUCRC) awards.

Active EFRI, ERC, and IUCRC awardees may apply for supplemental funding from the REM program via FastLane. REM funding will support costs associated with bringing high school students, STEM teachers, undergraduate STEM students, faculty, and veterans to be engaged as Research Participants (RPs) in a research environment. RPs are expected to participate in mentoring and research activities aligned with the EFRI-, ERC-, and IUCRC-supported research goals over the summer. REM supplement recipients are encouraged to extend structured mentoring into the academic year.

INTRODUCTION

NSF encourages EFRI-, ERC-, and IUCRC-supported researchers to create carefully mentored research opportunities for high school students, STEM teachers, undergraduate STEM students, faculty, and veterans RPs who may not otherwise become engaged in a research project, and to utilize the contributions and talents of these participants to make further progress toward research goals. The experience should be mutually beneficial, as research experiences and mentorship have been positively correlated with STEM success. For example:

- Receiving effective mentorship in STEM has been shown to be impactful for all learners and can often strengthen persistence in STEM [1, 2, 3].
- Co-curricular activities which provide both authentic disciplinary experiences and mentoring support influence retention and engagement in STEM [4, 5, 6, 7].
- Mentoring and training reinforce and strengthen the persistence of underrepresented students in STEM courses and majors [5, 6, 8, 9].
- Offering mentoring and experiential opportunities is valuable for engaging K-12 students and teachers [6, 10, 11].

REM DCL-NSF-21-121

VentureWell Structural Reporting

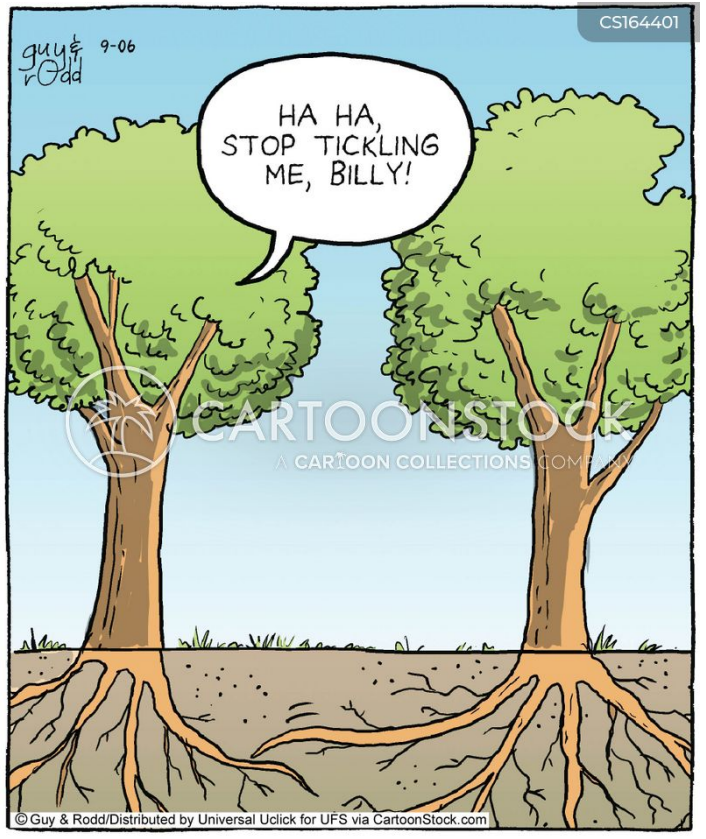
https://iucrcstructuraldata2021.my.stacker.app/home2

Current Projects

Project	Site	PI	Title	Status for 2021-22	Presenter
16.69	UW	Turnblom et al.	Stand and Tree Responses to Late Rotation Fertilization	Continuing	Littke
19.75	UI	Kimsey et al.	Assessing & mapping regional variation in site carrying capacity across the primary forest types in the US	Continuing	Cristian Montes
19.76	UGA	Montes et al.	Assessing & mapping regional variation in site productivity across the primary forest types in the US	Continuing	Mark Kimsey
20.78	UI	Nelson/Jacobs/Gonzalez	Intraspecific hydraulic responses of commercial tree seedlings to nursery drought conditioning	Continuing	Andrew Nelson
20.79	UM	Legaard/Weiskittel	Multi-regional evaluation of new machine learning algorithms for mapping tree species distribution and abundance	Continuing	Kasey Legaard
20.80	PU	Couture/Jacobs	Using hyperspectral imaging to evaluate forest health risk	Continuing	Sylvia Park
20.81	OSU	Hatten	Resilience of soil organic matter to harvesting: A global study of long-term soil productivity experiments	Continuing	Jeff Hatten
20.82	UW	Turnblom and Cross	Stand response to thinning: Enhancing response prediction through modeling	Continuing	Turnblom
20.83	UW	Cross and Turnblom	Using predictive analytics to decompose site index	Continuing	Cross
20.84	UW	Littke	Physiologic response to commercial fertilization programs in Pacific Northwest forest plantations	Continuing	Littke
21.85	OSU	Gonzalez	Variation in productivity, wood quality and soil carbon of nine conifer species across a gradient in water deficit	Continuing	Gonzalez
21.86	OSU	Mainwaring	Stem form of nitrogen fertilized Douglas-fir trees	Continuing	Mainwaring
21.87	NCSU	Trlica	Linking leaf area index and remote sensing across different forest types	Continuing	Andrew Trlica
21.88	UGA	Dahlen et al.	Quantifying silvicultural treatment effect on lumber quantity and quality in loblolly pine	Continuing	Joe Dahlen
21.89	UGA	Dahlen et al.	Quantifying carbon sequestration as a function of silvicultural treatment in loblolly pine	Continuing	Joe Dahlen
21.90	UI	Kimsey et al.	Improving forest sample estimation through UAS canopy structure stratification	Continuing	Logan Wimme
21.91	NCSU	Cook et al.	NCSU START	Continuing	Rachel Cook
21.92	UM	Weiskittel et al.	UMaine START	Continuing	Aaron Weiskittel

18 ongoing projects (15 regular, 3 supplemental)

Questions/Comments?



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