



Southern Pine Health Research Cooperative (SPHRC) Meeting Notes 3rd October 2018

Attendees:

University of Georgia: Brittany Barnes, Elizabeth Benton, Kamal Gandhi, Larry Morris, Caterina Villari, Lea Clark

USDA Forest Service: Chris Asaro

Georgia Forestry Commission: Chip Bates, Scott Griffin

Forest Companies:

Wayne Bell	International Forest Company
Mike Clutter	Forest Investment Associates
Wilson Edwards	Weyerhaeuser
Chris Johnston	International Forest Company
Kier Klepzig	Joseph Jones Ecological Research Center
Ben Lancaster	International Forest Company
Chris Rosier	ArborGen Inc.
Ryan Sanders	Resource Management Service
David Wilkinson	Hancock Forest Management

Synopsis of the Meeting:

- Kamal provided a synopsis of the meeting on 6th March 2018. She first recapped the reasons for potential failure and corresponding mitigation steps for a new cooperative as discussed in that meeting. The overall perspective was that: 1) we're starting from scratch, which also means there's a fresh perspective that may serve as a model for future cooperatives; 2) a strong emphasis on research that is directly applicable to the members will keep SPHRC focused and sustainable; 3) success metrics for each project will be developed; 4) the directors will reach out to other cooperatives for collaborative work; and 5) leadership will be strengthened through external training.
- SPHRC has currently five members, and three more are considering joining. Kamal discussed the possibility of regular meetings (every two years) with PIs of other cooperatives, while maintaining full confidentiality. Attendees are often members of other cooperatives as well, hence they have a larger perspective on the kind of work being conducted and potential avenues for cooperation. We will share results of the research projects with our cooperative members first, so that they maximize benefits from these projects.
- Kamal recalled John Parker's presentation from 6th March 2018, about How Your Brain Works. In summary, those in academia and in industry think differently but can work within a common ground to build something cohesive and powerful.
- Kamal reviewed the Strategic Plan from 6th March 2018 and the new proposed one, and attendees discussed whether to do a comprehensive review of literature or directly move forward with research in Year 1. Major reviews of tip moth and southern pine beetle have already been done recently, and while a literature review would reveal gaps in research and help guide our choice of projects, it's best to move forward with research in Year 1. *The new Strategic Plan (dated 3rd October 2018) is attached to this file.*
- The role of SPHRC in being proactive, responsive, and preparing for future invasions by exotic species was discussed. It will be important for our cooperative to plan ahead of time for future

invasions, predicting which pests/pathogens may cause impact, and using preventive measures. Establishment of seed banks for loblolly pine, planting of sentinel species, and looking for genetic resistance were discussed.

- Presentations on six potential research projects were made for members' consideration: Elizabeth presented on Pine Tip Moth Project (PTM) #1, which aims to assess if plant genotype may influence infestation levels and damage by PTM. The sites will become long-term monitoring sites. The proposed cost of this project is ~\$35,000/yr. Elizabeth updated the group on her 2019-2020 Georgia Forestry Commission-funded study, which includes two objectives that will assess: 1) the efficacy and control duration of four systemic insecticides and 2) PTM generation timing and compare current timing to previously developed spray schedules. PTM Project #2 was proposed as a possible future project to follow-up on Elizabeth's GFC-funded project. This project involves timing for chemical control, i.e., the benefits of applying systemic insecticides in Years 1 and 2. Chris Rosier and Chris Asaro discussed how they're now seeing PTM into October, and even later when the previous winter was warm. With one spraying, the effects last until April or May, and the trees have been stunted. The PTM Project #2 is not ready to be performed yet, and will not be voted on.
- Caterina presented on Pitch Canker Project (PC) #1, which will deal with detecting the pathogen in the field and nursery before any signs/symptoms to assist with early detection and rapid response (working with the University of Florida). The loop mediated isothermal amplification (LAMP) assay to detect spore in the air and seedlings samples can be run on a field-portable device that gives immediate results and is easy to use by practitioners. The proposed cost of this project is approximately ~\$40,000/yr. Caterina also presented on PC Project #2, which proposes a new method to select for resistant plants to PC through the use of chemical markers detected by a Raman portable device. To this aim, she will coordinate with the cooperative at the University of Florida that has resistant lines. David suggested all plots be compiled into a database that is analyzed by Caterina and producing a shared map for all members to access. The cost of this project is ~\$50,000 for first year (which includes the buying of the instrument), with reduced costs in the following years.
- Kamal presented on Bark Beetle (BB) Project #1, which deals with increasing loblolly pine tree defense through Manganese (Mn) fertilization. Previous two independent studies have shown that lower levels of soil Mn was found in loblolly pine sites that had higher bark beetle damage, and so the central question is whether we can alleviate *Ips* beetle outbreaks through Mn fertilization. Kier asked if this could be integrated with the Raman device? Kamal and Caterina said it has not been done in the past because the Oconee sites did not test foliage, but it could be done, assuming soil and leaf MN correlations. The cost for this project is ~\$40,000/yr. Kamal also presented on BB Project #2, which would be in collaboration with the Plant Management Research Cooperative (PMRC) and aims to assess the effects of fertilization and thinning on tree health. Long-term monitoring plots established by PMRC will be used to determine populations of bark beetles and various defense metrics (resin flow, chemical composition, and effect on fungal symbionts). USDA Forest Service may have data to share or this may develop into a project with another cooperative. The cost of this project is ~\$35,000/yr. PMRC may be able to contribute to travel costs, since they regularly visit these sites.
- Other potential research projects were: 1) needle disease in the Southeast - most needle cast was found to be due to secondary pathogens flourishing during wet springs. However, both Caterina and Jason Smith at the University of Florida did unexpectedly find in one of the areas brown spot needle blight, which is more aggressive and needs further evaluation. 2) Effects of tree spacing on insects and diseases with the PMRC - Wilson has visited these sites and reported some pockets of devastation from bark beetles. David pointed out that investment is driven by stability in output so it's undesirable to introduce variables such as fertilization that

may make stands more susceptible to pests/diseases. Kamal has seen over-fertilization issues in pines in Florida and Georgia. 3) For better monitoring and rapid response, we need a forest health monitoring network that can preserve confidentiality of locations while facilitating information to the members. Chip said that the GFC has foresters around the state that collect information that is shared to find patterns. His GFC counterparts from Oklahoma to Virginia all produce such information, and is synthesized by the Southern Group of State Foresters; Kamal will pass this information to members. Elizabeth has a professional Facebook page not affiliated with UGA that is set up to be a clearinghouse and source of disseminating information. Wayne suggested that since everyone seems to be doing sampling on acreage, any patterns of pest/disease can be shared with cooperative members. Other topics of discussion were Texas leaf cutter ants and invasive plants.

- The cooperative will develop a website with links to different agencies, the latest invasive plants (species) on the horizon, and other emerging threats.
- There was discussion about building on the defunct 15 years of research Texas cooperative. David indicated that they have all the data, and is willing to pass it to UGA for archival, repository, and easy access for future work.
- Preliminary anonymous voting was conducted, but will need to be backed by confirmation from each representative’s organization. The results of the preliminary votes were:

<u>Project</u>	<u>Committed Members</u>	<u>Non-Committed Members</u>
Pine tip moth #1	4	2
Pitch canker #1	1	2
Pitch canker #2	3	1
Bark beetles #1	2	0
Bark beetles #2	0	0
Future invasives	0	1

Final votes by five members conducted through SurveyMonkey are attached at the end of the file.

- The Pine Tip Moth Project #1 had the highest number of votes, and preliminary sampling design was discussed, including the use of split-plot design to accommodate more treatments (e.g., management intensity level). Wayne suggested growing seedlings for this next spring. Chris Johnson pointed out that each company codes differently, so we’ll have to be transparent about coding the seedlings.
- Caterina requested attendees to send a letter of support to the USDA-AFRI-CARE program to help get funding for the Pitch Canker Project #1. She also will follow up with an email to members. Kamal said that she will try to get separate funding for the Bark Beetle Project #1 as well, and she may also request a similar letter of support.
- The dues and benefits structures for membership were discussed (from 6th March 2018 and those proposed in this meeting). In the March proposal, Year 1 dues were \$10,000 across all members because we were planning to do only literature review. The dues and number of members will ultimately determine how many projects we can do, although many of these projects will be leveraged by other funds. Since all attendees at today’s meeting are from companies over 1 million acres, they will all fall in the Gold member category (except for the USDA Forest Service and Jones Center). Wayne indicated that it’s hard to commit to paying into a cooperative in the beginning when there aren’t any tangible results, but once we will come up with results, that will encourage others to join and revisit these dues. Companies can always ask for specific research based on their needs. It was decided to keep dues at \$10,000

for Years 1-2, and then revisit the amount. *Revised Dues and benefits (dated 3rd October 2018) are attached to this email.*

- Some companies have paid dues from their 2018 budgets while others will use their 2019 budgets. UGA will continue to process agreements and initiate these research projects.
- The timing of the next meeting will be decided whether to be in the next 6, 8, or 12 (for sure) months. One option is a tele-meeting in-between the annual meeting. Kamal said we will want to have more conversations about projects to be funded once the agreements/survey/budgets are firmer.



Vision Statement:

To build healthier and more sustainable southeastern pine forests by reducing economic losses by current and major pests and pathogens by 50%.

Mission Statement:

To provide leadership in managing current and major pests and pathogens using rigorous and cutting-edge applied research with practical and innovative solutions in the southeastern pine forests.

Tactical Activities:

Year 1

1. Provide and vote on 1-2 research projects with inclusion of results from our current ongoing projects.
2. Recruit 1-2 students, and initiate first year of sampling and/or technology development.
3. Create fact-sheet(s) for chosen pine pests and/or pathogens for research projects.
4. Establish and process agreements and dues for first year. Recruit new cooperative members.
5. Build research and outreach liaisons with other scientists, forestry cooperatives in the country, and other agencies.
6. Build a website for the cooperative to advertise our efforts and facilitate scientific collaborations.

Year 2

1. Conduct full-scale research on well-identified and outlined projects from Year 1.
2. Present project objectives and methods at various technical and non-technical meetings.
3. Revisit and revise the original strategic plan every 18 months.

Year 3

1. Continuation of research from Years 1-2.
2. Initiate technology transfer to the companies.
3. Create 1-2 more fact-sheets from the current projects results and/or the other pine pests and pathogens not covered in the previous fact sheet.
4. Present results at various technical and non-technical meetings. Write technical reports from the results from the projects.

Year 4

1. Conduct technology transfer to the companies. Present results at technical and non-technical meetings. Write technical reports from the results from the projects.
2. Revisit and revise the original strategic plan every 18 months.
3. Initiate strategic planning for the next five years (2023-2028).
4. Provide and vote on the next set of 1-2 research projects with inclusion of results from our current ongoing projects

Year 5

1. Conduct technology transfer using multi-media to the companies. Create 1-2 fact-sheets from the final results of the projects and/or the other pine pests and pathogens not covered in the previous fact sheets.
2. Present final results at various technical and non-technical meetings.
3. Provide a new strategic plan for the next five years (2023-2028).
4. Initiate research on well identified and outlined projects from Year 4.



Membership Dues:

We request that dues be \$10,000 per year for Years 1-2 across all companies. If additional forest health work outside the scope of the cooperative research is needed, then we will initiate a separate agreement with each company.

Proposed Membership Benefits:

#	Services	Commitment
1	Membership on the Advisory committee	Yes
2	Membership on the Technical committee	Yes
3	Votes on budget and by-laws	Yes
4	Votes on field trials if the member provides in-kind support and/or does cost-share	Yes
5	Vote on field trials if the member does not provide in-kind support and/or does cost-share	No
6	Access to raw data	Yes
7	Access to summarized data	Negotiated
8	Publications including technical reports, fact-sheets, etc.	Yes
9	Semi and annual meeting attendance	Yes
10	Email and telephone consulting	Yes
11	Days of consulting/field trips/workshops/year <i>Travel to be paid by member</i>	Yes: 1
12	Extra days of consulting/field trips/workshops/year (paid consulting) <i>Travel to be paid by member</i>	Negotiated

Explanation of Membership Benefits:

#6-7 –

- The member agrees to use the data while only being a cooperative member.
- If the member leaves the cooperative and has field sites, then raw data could be provided in lieu of continued access to field sites.

#8 –

- Papers will be provided to the cooperative members a month before submission to various outlets.

- The cooperative will be fully acknowledged in the papers and presentations.

#10-12 –

- Further assistance with forest health issues will be negotiated on a case-by-case basis.
- Travel to assess forest health issues will be paid by the members (e.g., hotel, food, mileage, etc.).
- For extra days of consulting (#12), there may be additional charges as based on the consulting rate for each faculty member.

Survey for Projects by Cooperative Members (filled by 5 members)

Rank 1 – Highest importance, Rank 5 – Lowest importance

PROJECT	RANK 1	RANK 2	RANK 3	RANK 4	RANK 5	WEIGHTED AVERAGE
Pine tip moth project: Nantucket pine tip moth damage on various loblolly genetic lines	25% 1	50% 2	0% 0	25% 1	0% 0	2.00
Pitch canker project #1: Ahead of the threat: In-field early detection using LAMP	25% 1	0% 0	25% 1	0% 0	50% 2	3.20
Pitch canker project #2: Use of spectrometers for phenotyping of pine resistance to pitch canker	0% 0	50% 2	0% 0	25% 1	25% 1	3.20
Bark beetle project #1: Enhancing loblolly pine tree defense through manganese fertilization	50% 2	0% 0	25% 1	25% 1	0% 0	2.60
Bark beetle project #2: Effects of fertilization, understory release, and thinning on tree health	0% 0	0% 0	50% 2	25% 1	25% 1	4.00

From these results, it's clear that Pine Tip Moth and Bark Beetle #1 projects (highlighted in yellow) had the highest number of votes.