

ANNUAL REPORT

FY 2012

(October 1, 2011 - September 30, 2012)

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MEMBERSHIP LIST

November 2012

Full Members:

Federal/State

United States Forest Service

Forest Industry

Hancock Forest Management

Plum Creek Timber Company

Rayonier

Resource Management Service

Westervelt

Weyerhaeuser

Associate Members:

Forest Industry

Delaney Development

Molpus Timber Management

Scotch Lumber Company

Non-Industrial – Private

ArborGen, LLC

Maintaining Members:

Consulting Foresters

F & W Forestry

Sustaining Members:

State

Alabama Forestry Commission

Non-Industrial – Private

Alabama Farmers Federation

Burgin Land

International Paper

Individual Foresters

Beth Richardson

Glenn Leuenberger

AUBURN UNIVERSITY - FOREST HEALTH COOPERATIVE

Advisory Board Chairman

Service Rotation[‡]

November 2012

<u>FISCAL YEAR</u> [‡]	<u>Chairman</u> *
2011	Westervelt
2012	Weyerhaeuser
2013	US Forest Service
2014	Hancock Forestry
2015	Plum Creek
2016	Rayonier
2017	Resource Management Service
2018	Westervelt
2019	Weyerhaeuser
2020	US Forest Service
2021	Hancock Forestry
2022	Plum Creek
2023	Rayonier
2024	Resource Management Service

[‡]Member will conduct the Coop business meeting held in that fiscal year.

*First Chairman randomly chosen for FY2011, subsequent Chairman will be alphabetical by company name.

AUBURN UNIVERSITY - FOREST HEALTH COOPERATIVE

Due to the nature of the members and the appearance of possible impropriety these rules are in place.

THE EIGHT FUNDAMENTAL RULES OF ANTI-TRUST COMPLIANCE

1. Competitors may not agree on prices they charge for goods they sell.
2. Competitors may not agree on the prices they charge for services.
3. Competitors may not agree on terms of sale.
4. Companies may not use dominant market position to monopolize a market, control prices, or exclude competitors.
5. Competitors may not agree not to compete by allocating customers, territories, or markets.
6. Competitors may not agree not to compete on bids – i.e. bid-rigging.
7. Competitors may not agree on prices for products or services they buy.
8. Competitors may not join in a boycott of suppliers or customers to accomplish anti-competitive ends.

Rules and Policies for the Auburn University Forest Health Cooperative

Approved May 16, 2008

Revised June 22, 2011

MEMBERSHIP

1. Membership in the Forest Health Cooperative (FHC) is open to anyone in the southeastern region of the United States.
2. Members are required to pay annual dues which are as follows:

Full Member	\$8500
Associate Member	\$4250
Maintaining Member	\$2125
Sustaining Member	\$ 500
3. Sustaining and Maintaining Members receive access to FHC Webpage, annual Newsletter, Research and Technical Reports, Priority Email and Telephone Consulting, and participation in Members Only Workshops. Associate Members receive the benefits of the Sustaining and Maintaining Members, Field Consulting and Laboratory Diagnostics, and may participate at the Annual Advisory Meeting, but cannot serve on the Advisory Council. Full members receive all the benefits of Associate and Sustaining Members and serve on the Advisory Council and have full voting powers with respect to research program and budgetary decisions.
4. Membership is for one year beginning October 1. Membership may be terminated by either the member organization or by Auburn University by giving 60 days written notice before October 1.
5. Membership will be contingent on signing a memorandum of agreement with Auburn University.
6. After September 30, 2009, all new members at all levels will be required to contribute 1-3 x their annual membership dues in addition to their annual membership dues. The number of annual contributions will depend upon the year of membership beyond 2008.

Year of Joining	Contributions to Forest Health Cooperative
2008	1 Annual Membership
2009	1 Annual Membership + 1 Annual Membership
2010	1 Annual Membership + 2 Annual Membership
2011 and beyond	1 Annual Membership + 3 Annual Membership

ORGANIZATION

1. The Dean, School of Forestry and Wildlife Sciences, Associate Director Agricultural Experiment Station of Auburn University in consultation with the Forest Health Cooperative Executive Committee, will appoint the Forest Health Cooperative's Director.

The Director will be responsible for:

- A. Directing the activities of the Forest Health Cooperative;
 - B. Employing a competent staff;
 - C. Developing the Forest Health Cooperative's direction in conjunction with the Advisory Council;
 - D. Ensuring each member participates to a threshold level; and
 - E. Reporting research accomplishments to the Advisory Council
2. The Advisory Council will have an annual meeting in the first quarter of each fiscal year.
 3. An Advisory Council consisting of one representative from each full member shall be established to:
 - A. Act as a liaison between the organization and the Director;
 - B. Develop Forest Health Cooperative policies;
 - C. Advise the Director on the Forest Health Cooperative's direction;
 - D. Approve the annual budget and membership fee.
 4. An Executive Committee consisting of three Advisory Council members and the Director shall have the authority to meet and conduct routine business in the name of the Advisory Council. One Executive Committee member will be appointed annually according to a rotating schedule and will serve for 3 years. The Advisory Council chairman will be the senior member of the Executive Committee and will preside at the Executive Committee and Advisory meetings.
 5. Contact representatives will be designated by each cooperating member/organization. This individual may or may not be the same person serving on the Advisory Council. Contact Representatives will be directly involved in research established with each member organization.
 6. All information will be available to all members in the Forest Health Cooperative.

7. All members agree to keep confidential the data and information given to them for future publications and limit the spread of information to non-members that would benefit without paying annual FHC dues.

DUES and BUDGET

1. Membership dues will be set by the Advisory Council at its annual meeting. Recommended fees will be computed annually by the Advisory Board.
2. The Cooperative will operate on the fiscal year October 1 to September 30. Invoices for membership fees will be sent to all member organizations on October 1 of each year, or by special arrangement with the individual organization.

RULES CHANGES

1. Changes in, deletions from, and additions to the membership rules may be adopted by a two-thirds vote of advisory members in attendance at regularly scheduled or special sessions of the Advisory Council.

DIVISION OF RESPONSIBILITIES BETWEEN AUBURN UNIVERSITY AND MEMBER ORGANIZATIONS IN THE AUBURN UNIVERSITY FOREST HEALTH DYNAMICS LABORATORY COOPERATIVE

1. Study plans will be developed by Auburn University in conjunction with the Cooperative's Advisory Council. Responsibilities for cooperative research will be delineated in individual study plans.
2. Auburn will do data analysis and processing, as well as manuscript preparation, and will insure timely distribution of results to cooperators.
3. Auburn University graduate students will be utilized to work on specific forest health problems.
4. All cooperators will be responsible for adhering to the study plans.
5. Information will be disseminated at annual Advisory meeting and in an annual Newsletter and Research Reports to members. A website dedicated to Forest Health with the Cooperatives' research will be maintained by School of Forestry & Wildlife Sciences.
6. Results will also be disseminated at local, regional and national forest related meetings.

7. Site visits for risk assessment and diagnostic evaluations will be conducted by Auburn University staff. Full members get 2 days/yr, Associate Members get 1 day/ yr. Additional days are \$1000 per day for all membership classes.
8. Laboratory diagnostic evaluations will be conducted by Auburn University staff. Full members get 10 sent in samples per year, Associate Members get 5 sent in samples per year. Additional samples are \$100 per sample for all membership classes.

FY13 ADVISORY MEETING AGENDA

Wednesday – June 20, 2012

<u>TIME</u>	<u>EVENT</u>	<u>SPEAKER</u>
11:00 – 1:00	Registration	Elizabeth Bowersock
1:00 – 1:05	Introduction – Welcome	Dr. Graeme Lockaby – SFWS Associate Dean
1:05 – 1:10	Housekeeping	Dr. Lori Eckhardt
<i>Forest Health Dynamics Lab Project Updates</i>		
1:10 – 2:00	Mapping loblolly pine decline hazard and risk across the southeastern United States	Matt Meyerpeter - MS Student
2:00 – 2:50	Bark beetle populations related to silviculture disturbances	Dan Anderson - Research Associate
2:50 – 3:30	Resistance of <i>Pinus taeda</i> families against <i>Leptographium</i> root fungi and assessment of family morphological traits linked to <i>Leptographium</i> infection	Amritpal Singh - MS Student
3:30 – 3:50	BREAK	
3:50 – 4:20	Invasive Species Update	Dr. Nancy Loewenstein - SFWS
4:20 – 5:00	Cogongrass: Does it affect root-feeding beetle populations and pine decline susceptibility	Ben Brunson - MS Student
5:00 – 5:20	RW19 Update –LA and GA	John McDaniel - Forestry Technician
5:20 – 5:30	Forest Health Cooperative Diagnostics Laboratory Update and Sudden Oak Death Survey Laboratory Update	Dan Anderson - Research Associate
5:30 – 6:00	Wood Product Cooperative	Dr. Brian Via – SFWS
6:00	Adjourn for the Day	
6:00 – ???	BBQ DINNER AND SOCIAL	

Thursday – June 21, 2012

<u>TIME</u>	<u>EVENT</u>	<u>SPEAKER</u>
8:00 – 9:00	Breakfast	
9:00 – 10:30	Work Plan Discussion	Dr. Lori Eckhardt
10:30 – 10:45	BREAK	
10:45 – 11:30	Business Meeting	Dr. Lori Eckhardt
11:30 – 12:00	Budget Review	Dr. Lori Eckhardt
12:00	Adjourn – Have a Safe Trip Home!	

FY 2013 ADVISORY COMMITTEE MEETING

June 20 and 21, 2012

MINUTES

FY2013 Proposed Work Plan

Discussion on the FY2013 Proposed Work Plan began at 9:00 am on June 21st 2012, after the members conversed over breakfast.

Goal A: Research

Objective 1: Identify research projects

Dr. Eckhardt summarized the proposed research projects for the upcoming fiscal year. No discussion was held for Work Plan Proposals #1 “Ecology of siricids...” #2 “Exploring soil microbial communities...” or #3 “Sudden Oak Death Detection ...” There was no further discussion by the coop members. Discussion was held on approving Work Plan Proposal #4 “Family (genetic) and time of planting...” Control of competition was discussed and it was agreed upon that the measures described in the proposal were sufficient.

Alan Wilson (Rayonier) started a discussion about seedling selection and planting type. It was decided that bare-root seedlings should be used in the study. It was also suggested that one grower should grow all the seedlings for the study. Patrick Cumbie (Arborgen) suggested that that would be possible.

Daniel Crawford (RMS) asked for clarification of whether or not the seedlings used in this study would be from the resistant and non-resistant seedlings screened through the family resistance study. Dr. Eckhardt confirmed that the screened families will be used.

Jim Peeler (RMS) started a discussion on the desired spacing of the seedling and how that could affect study data as well as cost and. Daniel Crawford (RMS) added to the conversation by asking what the idea sites would look like. Dr. Eckhardt clarified that the locations for the study would have to each meet the same criteria to ensure study consistency and that six locations with established populations of the pine decline pathogens and vectors would be ideal.

Cooperative members interested in having a study location on their managed properties were Delaney, Rayonier, RMS, Westervelt, Weyerhaeuser, and Plum Creek (via email).

The viability of mechanical site preparation was discussed, ripping, and it was agreed upon to not include mechanical site preparation into this study but was suggested as a possibility for a future study.

A possible addition to the study was suggested by Dr. Eckhardt to include a mycorrhizal association component and the coop members agreed that it would be acceptable.

Alan Wilson (Rayonier) made the motion to vote on Work Plan Proposal #4 and it was seconded by Jim Peeler (RMS). The proposal was approved by a vote of 6 “yea”, 0 “nay” and 0 abstaining.

Objective 2: Recruit graduate students

Dr. Eckhardt discussed the ongoing process of seeking graduate students for upcoming studies and informed the coop of the soon to arrive Ph.D. student Andy Gougherty. Coop members approved and no further discussion was held.

Objective 3: Initiate and continue research projects:

Dr. Eckhardt summarized the research that is to continue and the work that is yet to be completed. Coop members approved and no further discussion was held.

Goal B: Technology Transfer

Objective 1: Serve as a clearing house...

Dr. Eckhardt described the past efforts and future plans for the Forest Health Cooperative to become the storage location of forest health related data. Coop members approved and no further discussion was held.

Objective 2: Efficiency and regularly transfer...

Dr. Eckhardt described the past efforts and future plans for the dissemination of coop funded research to the coop members through research reports and newsletters. Coop members approved and no further discussion was held.

Objective 3: Provide a limited consultancy...

Dr. Eckhardt described the services available to coop member and the rates associates with those services for field visits and the processing of diagnostic samples. Dr. Eckhardt then reminded coop members about the upcoming short course for 2012 and for 2014 and verified attendance for the 2012 course.

Goal C: Coop Development

Objective 1: Provide a continual relevancy ...

The Forest Health Cooperative meeting was agreed to be held on June 19th and 20th 2013.

Discussion was held on increasing coop membership and Dr. Eckhardt summarized her efforts to increase membership. Coop members approved and no further discussion was held.

Objective 2: Increase the visibility and effectiveness...

Dr. Eckhardt summarized the past efforts and future plans for student and professional presentations and listed the publications associated with Forest Health Cooperative funded research.

A discussion was held concerning the continuation of the family resistance screening study for FY2014 and members agreed that the study would be worthwhile and would seek approval.

Alan Wilson (Rayonier) made the motion to vote on Work Plan for FY2013 and it was seconded by Philip Johnson (Delaney). The work plan was approved by a vote of 6 “yea”, 0 “nay” and 0 abstaining.

FY2012 Accomplishments

Dr. Eckhardt summarized the accomplishments for FY2012 including the acquisition of funding for the continuation or inception of five research projects. Dr. Eckhardt discussed the progress on completed studies, Yuan Zeng’s completion of her study of insect response to thinning and harvest treatments and the completion of her Master’s Degree program and Matthew Meyerpeter’s near completion of his research creating a hazard map for loblolly pine decline in the southeast, and the progression of current studies, Amritpal Singh’s study of family resistance to ophiostomatoid fungi and Ben Brunson’s study of the relationship of cogongrass to insect and pathogens associated with pine decline. Dr. Eckhardt also summarized the scope of the published research work for FY2012. Coop members approved and no further discussion was held.

FY2013 Budget

Dr. Eckhardt provided clarification on the progression of the FY2012 budget and highlighted the carryover amount for the next budget year.

Discussion was held on the approval of a new technician position for FY2013. Coop members were shown projected budgets for the coming fiscal years with and without the added position. Jim (RMS) made the motion to vote on the proposed budget for FY2013 which included the forestry technician position. It was seconded by Wilson Edwards (Westervelt). The budget for FY2013 was approved by a vote of 6 “yea”, 0 “nay” and 0 abstaining.

Adjournment

The meeting was adjourned at 12:30 pm on June 21, 2012.

AUBURN UNIVERSITY
FOREST HEALTH COOPERATIVE

FY2012 BUDGET - PROJECTED VERSUS ACTUAL
(End FY 2012)

FISCAL YEAR
(Oct. 1, 2011 - Sept. 30, 2012)

	<u>FY12</u> (Projected)	<u>FY 12</u> (Actual)	<u>Difference</u>
REVENUE			
Carryover from Previous Year	56,212	56,212	0
Current Year's Income	78,500	79,042	542
Total Revenue	134,712	135,254	542
EXPENDITURES			
Personnel Costs			
Professional/Non-Faculty	30,700	6,753	23,947
Graduate Assistants	15,540	13,569	1,971
Other Personnel	0	7,031	(7,031)
Employee Benefits (ESTIMATED)	8,850	2,468	6,382
Total Personnel Costs	55,090	29,822	25,268
Operating Costs			
Travel/Vehicle Mileage	12,000	5,278	6,722
Supplies/Equipment	8,000	19,629	(11,629)
Total Operating Costs	20,000	24,906	(4,906)
Total Expenditures	75,090	54,728	20,362
CARRYOVER FOR NEXT YEAR	59,622	80,526	20,904

AUBURN UNIVERSITY
FOREST HEALTH COOPERATIVE

THREE YEAR FINANCIAL STATEMENT

(End FY 2012)
(with a Forestry Technician)

	FISCAL YEAR		
	(October 1, 2012 - September 30, 2013)		
	<u>FY13</u> (Projected)	<u>FY14</u> (Projected)	<u>FY15</u> (Projected)
REVENUE			
Carryover from Previous Year	80,526	76,827	50,588
Current Year's Income	86,000	91,000	96,000
Total Revenue	166,526	167,827	146,588
EXPENDITURES			
Personnel Costs			
Professional/Non-Faculty	10,314	34,300	36,015
Technician/Staff	13,700	27,400	28,770
Graduate Assistants	15,540	18,100	18,100
Other	23,140	0	0
Professional Benefits (ESTIMATED)	6,604	16,968	17,816
GA Benefits (ESTIMATED)	401	471	471
Total Personnel Costs	69,699	97,239	101,172
Operating Costs			
Travel/Mileage	12,000	12,000	12,000
Supplies/Equipment	8,000	8,000	8,000
Total Operating Costs	20,000	20,000	20,000
Total Expenditures	89,699	117,239	121,172
CARRYOVER FOR NEXT YEAR	76,827	50,588	25,416

FY 2012 ACCOMPLISHMENTS

As presented to the Forest Health
Cooperative Advisory Committee

Dr. Lori G Eckhardt - Director

6/20/2012

AUBURN UNIVERSITY - FOREST HEALTH COOPERATIVE

FY 2012 WORK PLAN

GOAL A: RESEARCH

Objective 1. Identify research projects

Forest health evaluation of stand health in association with biomass removal and standard silvicultural practices – FHP, USFS for all travel, supplies and student worker. (Eckhardt)

➤ *Accomplishments: Funded by USFS National Forest System.*

Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician

➤ *Accomplishments: Refunded by USFS Forest Health Monitoring grant.*

Field evaluation of a controlled vapor delivery method in an integrated pest management system for citrus and loblolly pine – AU-IGP in collaboration with AU Chemical Engineering

➤ *Accomplishments: Funded by AU OVPR.*

Root disease model to determine how pine decline and annosum root rot interact – SFWS for travel, supplies, graduate student stipend.

➤ *Accomplishments: Funded by SFWS.*

Mycorrhizal fungal colonization and disease resistance – SFWS and University of Mississippi for all travel, supplies and graduate student stipend.

➤ *Accomplishments: Funded by SFWS and University of Mississippi.*

Objective 2. Recruit graduate students

There are two openings for a graduate student in the Coop:

1. Open - Resistance of *Pinus taeda* families under artificial inoculations with native and non-native *Leptographium* species involved in premature mortality.

➤ *Accomplishments: Search underway*

2. Closed – Root disease model to determine how pine decline and annosum root rot interact.

➤ *Accomplishments: Student committed for Fall 2012 – Andy Gougherty*

Objective 3. Initiate research projects: Determine location, cooperators, and set up research plots dependent upon projects chosen by the membership.

Hylastes population dynamics and forest health evaluation in association with thinning and harvesting. Plots have been installed in Georgia on Rayonier and F&W properties, in Alabama on Weyerhaeuser, Westervelt and Sizemore & Sizemore properties.

- ***Accomplishments: Project completed and Yuan Zeng graduated May 2012.***

Cogongrass and ecologically based weed management strategies: Impacts on insect diversity and pine decline in the southeastern United States. Data about possible research stands is currently being collected. Stands will be visited in December and plots installed in January. Current members with possible available stands are Rayonier, Delaney Development Inc, Sizemore & Sizemore, Forest Investment Associates, and Westervelt.

- ***Accomplishments: Plots were identified December 2009 on Westervelt property in south MS. Plots were installed in January 2010. Insect traps were installed end of February 2010 and insect data collection started March 2010 and completed February 2012. Plot data currently being collected: tree measurement and vigor, root infection, and resin. Year one data is being analyzed for a FY12 Research Report.***

Delineating loblolly pine decline in the Southeast using county survey and FHM/FIA data. Data retrieval has recently been approved by FIA and an account set up to access all FHM data from FIA database for the southeastern states.

- ***Accomplishments: Project completed and maps being delivered to USFS. Matt Meyerpeter graduating August 2012. He has been hired by International Paper.***

Resistance of *Pinus taeda* families under artificial inoculations with native and non-native *Leptographium* species involved in premature mortality. Working with the Tree Improvement Cooperative to determine families to be tested for tolerance/resistance.

- ***Accomplishments: Year one screening is complete and paper being written. Data is currently being collected and analyzed from the year two screening. Families were chosen and sown at Plum Creek nursery in for FY13.***

Hylastes population dynamics and forest health evaluation in association with thinning and fertilization on new RW19 in Louisiana – Funding through FHP and FHC.

- ***Accomplishments: Plots for the RW-19 study were identified in March of 2011, on land managed by Forest Health Partners in Leesville, Louisiana. Study plots and insect traps were installed in May of 2011, and an initial eight weeks of insect data was collected pre-study thinning treatments. The insect traps were reinstalled in December of 2011, after treatment application and insect data is being processed up to the current collection period. Insect collections will continue until October of 2012. In May of this year plot data was collected for tree measurements and vigor, root infection, and resin. Year one data is being analyzed for a FY12 Research Report.***

Evaluation of stand health in association with biomass removal and standard silvicultural practices – Funding through USFS National Forest System and Alabama Power.

- *Accomplishments: Plots identified. Awaiting completion of treatments to install insect traps February 2013.*

Field evaluation of a controlled vapor delivery method in an integrated pest management system for citrus and loblolly pine – Funded through AU-IGP in collaboration with AU Chemical Engineering.

- *Accomplishments: Plots identified. Awaiting completion of vapor delivery system to install insect traps February 2013.*

GOAL B: TECHNOLOGY TRANSFER

Objective 1. **Serve as a clearinghouse of information related to forest health issues.**

Maintain and Update Forest Health Cooperative Web Site

The Forest Health Cooperative Staff will continue to update the Forest Health Cooperative website for use by Forest Health Cooperative Members. (Eckhardt)

- *Accomplishments: The website is updated. Advisory Agenda's with each speaker's presentation available for Forest Health Cooperative Members. Research Reports and Technical Notes are updated. Changes in Forest Health Cooperative staff updated and current.*

Objective 2. **Efficiently and regularly transfer the results of cooperative research to the membership.**

Research Reports (Staff)

We plan on producing Research Reports and Technical Notes in FY12 now that research projects are underway.

- *Accomplishments: Research Report 2012-1 and 2012-2 will be out before the end of the year. Year one screening data and nutrition and disease data.*

Newletters (Staff)

Newsletter distribution will be planned for September FY2012. Members are encouraged to submit articles.

- *Accomplishments: A Fall 2012 Newsletter will be sent to all Forest Health Cooperative Members in September 2012, approximately 20 on the mailing list.*

Objective 3. **Provide a limited consultancy function to the membership in the area of forest health.**

Individual and Organized Contacts

An on-going activity and is handled as individual situations and cases arise. (Staff)

	Eckhardt	Anderson
Phone calls	35	4
Letters	2	8
Emails	54	10
Site Visits	2	3
Diagnosis	47	8

Short Courses

Forest Health Short Course will be offered in odd years starting with FY2009. Not enough members signed up for the course in FY2009 or FY2011 and if there is enough interest, a Short Course in Forest Health will be planned for August 2013. (Staff)

- *Accomplishments: We will be holding a short course June 2012 at the request of membership and enough participants. The next short course will be planned for 2014.*

GOAL C: COOP DEVELOPMENT

Objective 1. Provide for the continual relevancy and efficiency of the Cooperative research and technology transfer programs.

Advisory Committee Meeting

The FY13 Advisory Committee Meeting will be held the third week in June 2012. A 2 day meeting will be planned. If there are any meetings that conflict with this time frame, let us know and we can try and accommodate Advisory Members. (Eckhardt/Anderson).

- *Forest Health Advisory Meeting held in Auburn on June 20-21, 2012*

Forest Health Cooperative Membership

The Forest Health Cooperative staff should make an effort to recruit new members. (Staff)

- *Two new member joined the Forest Health Cooperative in FY2012 – Burgin Land, Inc. and Forestry and Land Resource Consultants.*

Update the Cooperative Membership Directory

An on-going activity. (Bowersock/Eckhardt)

- *Accomplishments: Membership directory updated and loaded onto website.*

Objective 2. Increase the visibility and effectiveness of the Cooperative as a source of information on issues related to forest health.

Presentations at Meetings

Forest Health Cooperative staff will continue to be encouraged to participate as a speaker or attendee in regional and national meetings. (Staff)

- *Accomplishments: Forest Health Cooperative Staff gave 32 presentations and published 2 articles on the subject of Forest Health.*

- Eckhardt, L.G. 2012. *Pine root disease, root-feeding bark beetles and ophiostomatoid fungi in the United states and their impact on forest health*. Institute for Commercial Forestry Research. Pietermaritzburg, South Africa.
- Eckhardt, L.G. 2012. *The biology of pine decline in the southeastern US*. Alabama Natural Resource Council Outreach Symposium. Auburn University, Auburn, AL
- Singh, A. and Eckhardt, L.G. 2012. *Variation in resistance of Pinus taeda families against Leptographium root infecting fungi*. The Southern Forest Insect Work Conference and South-wide Forest Disease Workshop Joint Meeting, Charlottesville, VA.
- Brunson, B.A., Carter, E.A., and Eckhardt, L.G. 2012. *Assessing the impacts of cogongrass (Imperata cylindrica (L.) Beauv) on root-feeding bark beetle populations associated with southern pine decline*. The Southern Forest Insect Work Conference and South-wide Forest Disease Workshop Joint Meeting, Charlottesville, VA
- Meyerpeter, M.B. and Eckhardt, L.G. 2012. *Mapping loblolly pine decline hazard and risk across the southeastern United States*. The Southern Forest Insect Work Conference and South-wide Forest Disease Workshop Joint Meeting, Charlottesville, VA.
- Zeng, Y. and Eckhardt, L.G. 2012. *Thinning effects on incidence of ophiostomatoid fungal species in decline impacted Pinus taeda stands*. Research and Creative Scholarship, Research Week, Graduate Student Forum, Auburn University, Auburn, AL.
- Singh, A., Anderson, D.D., and Eckhardt, L.G. 2012. *Variation in resistance of Pinus taeda and P. elliotii families against Leptographium root infecting fungi*. Graduate Research Forum, Auburn University, Auburn, AL.
- Zeng, Y. and Eckhardt, L.G. 2012. *Thinning effects on incidence of ophiostomatoid fungal species in decline impacted Pinus taeda stands*. Graduate Research Forum, Auburn University, Auburn, AL.
- Steury, T.D., Eckhardt, L.G., Lowery, D., Hunter, S.A., Romagosa, C.M., Ditchkoff, S.s., Angle, C.T., and Tom, B.M. 2012. *Success and failures of an ecological detection dog service*. Alabama Chapter of the Wildlife Society meeting, Decatur, AL
- Brunson, B.A., Carter, E.A., and Eckhardt, L.G. 2012. *Assessing the impacts of cogongrass (Imperata cylindrica (L.) Beauv) on root-feeding bark beetle populations associated with southern pine decline*. American Phytopathology Society Southern Division 2012 Meeting, Birmingham, AL.
- Anderson, D.D., Oak, S.A., Enebak, S.A., and Eckhardt, L.G. 2012. *Comparison of stream baiting protocols for recovering Phytophthora ramorum from streams and nursery discharge*. American Phytopathology Society Southern Division 2012 Meeting, Birmingham, AL.
- Singh, A., Anderson, D.D., and Eckhardt, L.G. 2012. *Variation in resistance of Pinus taeda and P. elliotii families against Leptographium root infecting fungi*. American Phytopathology Society Southern Division 2012 Meeting, Birmingham, AL.
- Meyerpeter, M.B. and Eckhardt, L.G. 2012. *Mapping the extent of loblolly pine decline in Alabama and Georgia*. American Phytopathology Society Southern Division 2012 Meeting, Birmingham, AL.
- Zeng, Y. and Eckhardt, L.G. 2012. *Thinning effects on incidence of ophiostomatoid fungal species in decline impacted Pinus taeda stands*. American Phytopathology Society Southern Division 2012 Meeting, Birmingham, AL.
- Steury, T.D., Eckhardt, L.G., Lowery, D., Hunter, S.A., Romagosa, C.M., Ditchkoff, S.s., Angle, C.T., and Tom, B.M. 2011. *Success and failures of an ecological detection*

dog service. *65th Annual Conference of the Southeastern Association of Fish and Wildlife Agencies*, Nashville, TN

- Zeng, Y. and Eckhardt, L. 2012. Third row thinning effect on root-feeding beetle population dynamics and incidence of ophiostomatoid fungal species in decline-impacted loblolly pine stands. *The Southern Forest Insect Work Conference and South-wide Forest Disease Workshop Joint Meeting*, Charlottesville, VA.
- Brunson, B.A., Carter, E.A. and Eckhardt, L.G. 2012. Assessing the impacts of cogongrass (*Imperata cylindrica* (L.) Beauv) on root-feeding bark beetle populations associated with southern pine decline. *Joint Meeting of the 14th Annual Southeast Exotic Pest Plant Council Conference and the 10th Annual Alabama Invasive Plant Council Conference*, Auburn, AL.
- Meyerpeter, M. and Eckhardt, L. 2012. Mapping the extent of loblolly pine decline in the southeastern United States. *Alabama Natural Resource Council Outreach Symposium*. Auburn University, Auburn, AL.
- Brunson, B.A., Carter, E.A. and Eckhardt, L.G. 2012. Assessing the impacts of cogongrass (*Imperata cylindrica* (L.) Beauv) on root-feeding bark beetle populations associated with southern pine decline. *Alabama Natural Resource Council Outreach Symposium*. Auburn University, Auburn, AL.
- Zeng, Y. and Eckhardt, L. 2012. Third row thinning effect on root-feeding beetle population dynamics and incidence of ophiostomatoid fungal species in decline-impacted loblolly pine stands. *Alabama Natural Resource Council Outreach Symposium*. Auburn University, Auburn, AL.
- Singh, A. and Eckhardt, L. 2012. Variation in resistance of *Pinus taeda* and *Pinus elliotii* families against root infecting fungi. *Alabama Natural Resource Council Outreach Symposium*. Auburn University, Auburn, AL.
- Anderson, D., Oak, S., Enebak, S., and Eckhardt, L. 2012. Comparison of stream baiting protocols for recovering *Phytophthora ramorum* from streams and nursery discharge. *Southeastern Society of American Foresters Annual Meeting*, Jekyll Island, GA.
- Brunson, B.A., Carter, E.A. and Eckhardt, L.G. 2012. Assessing the impacts of cogongrass (*Imperata cylindrica* (L.) Beauv) on root-feeding bark beetle populations associated with southern pine decline. *Southeastern Society of American Foresters Annual Meeting*, Jekyll Island, GA.
- Zeng, Y. and Eckhardt, L. 2012. Thinning effects on the incidence of ophiostomatoid fungal species in decline-impacted *Pinus taeda* stands. *Southeastern Society of American Foresters Annual Meeting*, Jekyll Island, GA.
- Meyerpeter, M. and Eckhardt, L. 2012. Mapping the extent of loblolly pine decline in the southeastern United States. *Southeastern Society of American Foresters Annual Meeting*, Jekyll Island, GA.
- Singh, A. and Eckhardt, L. 2012. Variation in resistance of *Pinus taeda* and *Pinus elliotii* families against root infecting fungi. *Southeastern Society of American Foresters Annual Meeting*, Jekyll Island, GA.
- Brunson, B.A., Carter, E.A. and Eckhardt, L.G. 2011. Impact of cogongrass on populations of bark beetles associated with pine decline. *IUFRO Forest Protection Joint Meeting*, Colonia del Sacramento, Uruguay.
- Zeng, Y. and Eckhardt, L.G. 2011. Third row thinning effect on root-feeding beetle population dynamics and incidence of ophiostomatoid fungal species in decline-impacted

loblolly pine stands. IUFRO Forest Protection Joint Meeting, Colonia del Sacramento, Uruguay.

- Meyerpeter, M.B., and Eckhardt, L.G. 2011. *Mapping pine decline hazard sites in Alabama and Georgia. IUFRO Forest Protection Joint Meeting, Colonia del Sacramento, Uruguay.*
- Singh, A., Anderson, D.D., and Eckhardt, L.G. 2011. *Resistance of Pinus taeda families against Leptographium root fungi and assessment of family morphological traits linked to Leptographium infections. Tree Improvement Cooperative Contact Meeting, Macon, GA.*
- Eckhardt, L.G. 2011. *Pine decline: new developments and management. Tree Improvement Cooperative Annual Contact Meeting, Macon, GA*
- Eckhardt, L.G. and Matusick, G. 2011. *Variation in pathogenicity and virulence of four ophiostomatoid fungi and Heterobasidion irregulare in healthy loblolly and slash pine roots. XIII Conference on Root and Butt Rot of Forest Trees, Firenze, Italy.*

Publications

Forest Health Cooperative staff member are encouraged to publish research results in scientific journals. (Staff)

- Matusick, G., Somers, G., and Eckhardt, L.G. 2012. *Root lesions in large loblolly pine (Pinus taeda L.) following inoculation with four root-inhabiting ophiostomatoid fungi. For. Path. (Published first online in 2011: DOI: 10.1111/j.1439-0329.2011.00719.x) For. Path. 42: 37-43.*
- Eckhardt, L. and Steury, T. 2012. *Root diseases and timber dogs. Forestry Source. May 2012 Vol. 17, No. 5, p. 13.*

Extramural Funding of Forest Health Cooperative Projects

Forest Health Cooperative staff will continue to be encouraged to locate and generate extramural funding opportunities directly related to forest health. (Staff)

➤ ***Accomplishments: Forest Health Cooperative Staff were awarded the following grants totaling \$456,818.***

- Eckhardt and Enebak. 2012. *Sudden Oak Death – Phytophthora ramorum surveys - \$49,000.*
- Eckhardt. 2012. *Biomass thinning effects on Hylastes populations – USFS National Forest System and Alabama Power - \$16,810.*
- Neuman and Eckhardt. 2012. *Field trial of a controlled vapor delivery method in an IPM system – AU-IGP in collaboration with AU Chemical Engineering - \$97,000.*
- Eckhardt. 2012. *Root disease model – SFWS - \$64,500.*
- Hoeksema and Eckhardt. 2012. *Mycorrhizal fungal colonization and disease resistance – SFWS and University of Mississippi - \$25,000.*
- Enloe, Loewenstein, Eckhardt and Held. 2009. *Cogongrass and ecologically based weed management strategies: Impacts on insect diversity and pine decline in the southeastern United States. AFRI-NIFA. \$494,000 (FHC component: \$181,000). Additional funds from AU-SFWS \$18,100. In final year of grant.*
- Via and Eckhardt. 2012. *Wood chemistry and disease resistance. SFWS - \$5,000.*

FY 2013 PROPOSED WORK PLAN

As presented to the Forest Health
Cooperative Advisory Committee

Dr. Lori G Eckhardt - Director

6/20/2012

FY 2013 WORK PLAN

GOAL A: RESEARCH

Objective 1. Identify research projects

Proposed FY2013:

1. Ecology of siricids and fungal associates in southeastern pine forests: potential for biological control and competition – APHIS for travel, supplies and graduate student \$99,493 - *Decision pending dependent upon continuation of funds*
2. Exploring soil microbial communities as mediators of complex threats to southern conifers – Agriculture and Food Research Initiative Competitive Grant (3 years) \$497,000 - *Will resubmit fall with modifications if suitable RFP released*
3. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician \$42,000 – *Will submit August*

Newly Funded FY2013:

1. Field evaluation of a controlled vapor delivery method in an integrated pest management system for citrus and loblolly pine – AU-IGP in collaboration with AU Chemical Engineering for all travel, supplies and student worker - \$97,000
2. Root disease model to determine how pine decline and annosum root rot interact – SFWS for travel, supplies, graduate student stipend - \$64,000
3. Mycorrhizal fungal colonization and disease resistance – SFWS and University of Mississippi for all travel, supplies and graduate student stipend - \$25,000
4. Wood chemistry and disease resistance – SFWS (to get preliminary data for larger grant) \$5,000

Funded FY2012:

1. Hylastes population dynamics and forest health evaluation in association with thinning and fertilization on new RW19 in Louisiana – Funding through FHP and FHC
2. Delineating loblolly pine decline in the Southeast using FHM/FIA data – submitted to FHM, USFS for all travel and supplies associated with the project \$35,000 – (Funded Year 2 for \$17,000)
3. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician \$47,000

Objective 2. Recruit graduate students

Currently searching for masters student for FY2012 starting Fall to continue family screening.

Objective 3. Initiate and continue research projects: Determine location, cooperators, and set up research plots dependent upon projects chosen by the membership.

Cogongrass and ecologically based weed management strategies: Impacts on insect diversity and pine decline in the southeastern United States.

- Plot data currently being collected: tree measurement and vigor, root infection, and resin.

Resistance of *Pinus taeda* families under artificial inoculations with native and non-native *Leptographium* species involved in premature mortality.

1. Family screening data being collected and analyzed.
2. Need to identify families for FY14 screening and growing location. Need to identify species to be screened: loblolly and slash or longleaf.

Hylastes population dynamics and forest health evaluation in association with thinning and fertilization.

1. Plots and insects have been installed on the RW19 study in Leesville, LA. Eight weeks of insect trapping was completed prior to thinning treatments. The 52 weeks of collections following treatments are underway.
2. Waiting for plots to be installed on the RW19 study in GA (Rayonier and Plum Creek). Once installed, insect traps will be installed for eight weeks of insect trapping prior to thinning will be initiated.

Forest health evaluation of stand health in association with biomass removal and standard silvicultural practices between two land managers.

1. Treatments currently underway. Insect traps will be reinstalled upon completion.

Blue-stain fungi associated with feral hogs causing rooting damage in longleaf and loblolly pine stands.

1. Working on manuscripts for publication.

Field evaluation of a controlled vapor delivery method in an integrated pest management system for citrus and loblolly pine.

1. Sites have been located. Traps will be deployed February 2013.

Root disease model to determine how pine decline and annosum root rot interact.

1. Proposal will be written and sites selected for inoculations Spring 2013.

Mycorrhizal fungal colonization and disease resistance.

1. Families selected and growing at Ole Miss. Will be transferred in September 2012 to AU growth chamber for mycorrhizal inoculation.

GOAL B: TECHNOLOGY TRANSFER

Objective 1. Serve as a clearinghouse of information related to forest health issues.

Maintain and Update Forest Health Cooperative Web Site

The Forest Health Cooperative Staff will continue to update the Forest Health Cooperative website for use by Forest Health Cooperative Members. (Eckhardt)

Leveraging Forest Health Cooperative Data

The Forest Health Cooperative staff will continue to stress the importance of the Cooperative membership and when possible, leverage Cooperative information for grant proposals. (Staff)

Objective 2. Efficiently and regularly transfer the results of cooperative research to the membership.

Research Reports (Staff)

We plan on producing Research Reports and Technical Notes in FY13.

Newsletters

Newsletter distribution will be planned for September (Fall). Members are encouraged to submit articles.

Objective 3. Provide a limited consultancy function to the membership in the area of forest health.

Individual and Organized Contacts

An on-going activity and is handled as individual situations and cases arise. (Eckhardt/Anderson)

Short Courses

The Forest Health Cooperative will offer a Forest Health Short Course in Auburn for member personnel in July 2014. We need a minimum of 20 attendees and will survey the membership in January 2014 for interest.

GOAL C: COOP DEVELOPMENT

Objective 1. Provide for the continual relevancy and efficiency of the Cooperative research and technology transfer programs.

Advisory Committee Meeting

The FY13 Advisory Committee Meeting will be held on June 19-20, 2013. A 2 day meeting will be planned. If there are any meetings that conflict with this time frame, let us know and we can try and accommodate Advisory Members. (Eckhardt/Bowersock)

Forest Health Cooperative Membership

The Forest Health Cooperative staff should make an effort to recruit new members. (Staff)

Update the Cooperative Membership Directory

An on-going activity with an updated directory distributed annually. (Bowersock)

Objective 2. Increase the visibility and effectiveness of the Cooperative as a source of information on issues related to forest health.

Presentations at Meetings

Forest Health Cooperative staff will continue to be encouraged to participate as a speaker or attendee in regional and national meetings. (Staff)

Publications

Forest Health Cooperative staff are encouraged to publish research results in scientific journals. (Staff)

Extramural Funding of Forest Health Cooperative Projects

Forest Health Cooperative staff will continue to be encouraged to locate and generate extramural funding opportunities directly related forest health.

Interaction with other Research Cooperatives

The Forest Health Cooperative staff will make efforts to interact, attend, work with other regional and national forest research Cooperatives in an attempt to broaden and strengthen research ties that can benefit forest health.