

Annual Report



Center for Forest Products Business

Alfred P. Sloan Foundation Industry Studies Center

Department of Sustainable Biomaterials

College of Natural Resources and Environment

Virginia Tech

Reporting Period July 1, 2013 - June 30, 2014



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July 19, 2014

Letter from Director:

Center Members and Friends:

This year marks the 35th anniversary as an independent department in the College of Natural Resources and Environment that focuses on the efficient management and utilization of our natural resources. Established in 1979 as the Department of Wood Science and Forest Products with 4 faculty, our department has grown to 16 faculty and over 130 undergraduate and graduate students. In 2012 we changed our name to the Department of Sustainable Biomaterials to better reflect our faculty's expertise and to broaden our appeal to a changing student population. In the past 35 years, the Commonwealth has moved from primarily a rural population to an ever expanding urban population. It is estimated that over 75% of our citizens and students now live in urban areas. Historically, a large portion of our departments' students came from rural areas where they were regularly exposed to our natural resources and the importance of the forest products industry to Virginia. This is not necessarily true with today's incoming students. We know that the forest products industry is the leader in the sustainable management of our natural resources. Our new name is meant to reflect that to our incoming students, and attract them to the great careers that this industry holds for them.

2014 also marks the establishment of two separate degree programs in the department. The Sustainable Biomaterials degree (which reflects our past Wood Science option) remains to focus on teaching the fundamentals of the processing, manufacturing, drying and marketing of wood and other biomaterials. These includes lumber manufacturing, secondary processing, wood based composites and other natural resource based chemical industries, wood engineering, domestic and international marketing of forest products and business management as it applies to our forest products industry. The second degree is in Packaging Systems and Design. Packaging and pallets remain the largest use of wood fiber in the country and this program is one of only six offered in the U.S. This program emphasizes the importance the sustainable use of packaging materials, how packaging can enhance product performance and markets, and how new uses of wood fiber can be used to replace petroleum based plastics. Our undergraduate program currently has over 90 students, with 15-20 graduating each spring. Nearly all students find jobs in manufacturing, quality control, research, marketing or sales.

Your center has had a good year. Our faculty accomplishments are listed later in this report. The Center is in its 22nd year thanks to your continued support. We awarded over \$20,000 of scholarships in the fall of 2013 and will award nearly that amount again in fall of 2014. We remain one of the largest forest products program in the United States. We have updated our website to provide more information, so please visit us at <http://www.cfpb.vt.edu> I thank you for your continued support of our center. If there is anything I can do, please feel free to contact me at 540-231-7679 or rsmith4@vt.edu.

Bob Smith

"20 years from now you will be disappointed by the things you didn't do than by the one's you did. So throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in your sails. Explore. Dream. Discover."

-Mark Twain



Participating Faculty/Staff

Smith, Robert	Director, Department Head and Professor	(rsmith4@vt.edu)
<i>Buehlmann, Urs</i>	Associate Professor, Sustainable Biomaterials	(buehlmann@gmail.com)
<i>Bush, Robert</i>	Professor, Sustainable Biomaterials	(rbush@vt.edu)
<i>Jeremy Withers</i>	Communications Manager and Grad. Student	(jbuilditbigger@gmail.com)
<i>Hammett, A.L. (Tom)</i>	Professor, Sustainable Biomaterials	(himal@vt.edu)
<i>Kline, Earl</i>	Professor, Sustainable Biomaterials	(kline@vt.edu)
<i>Quesada, Henry</i>	Assistant Director and Assistant Professor	(quesada@vt.edu)
<i>Riegel, Angela</i>	Program Specialist, Sustainable Biomaterials	(ariegel@vt.edu)

Mission

To assist the forest products industry by improving the management of their operations and the marketing of their products.

Significant Accomplishments

Distributed 2 Center Focus newsletters

Students Active in the Center

Adrienn Andersch, Department of Sustainable Biomaterials
Edgar Arias, Department of Sustainable Biomaterials
Melissa Brenes, Department of Sustainable Biomaterials
Sevtap Erdogan, Department of Sustainable Biomaterials
Courtney Kepley Department of Sustainable Biomaterials
Tyler Matusevich Department of Sustainable Biomaterials
Stephanie Smith Department of Sustainable Biomaterials
Jeremy Withers, Department of Sustainable Biomaterials



Proposals Funded

Agricultural Energy Efficiency

Investigator(s): PI Walker, Martha A., CO-PIs: Ignosh, John P., Latimer, Joyce G., Mariger, Stanley C., Quesada Pineda, Henry J., Reed, Thomas D., Jerrell, Scottie L., Fannon, Amy G., Clarke, C T., Blevins, Philip K., Barts, Stephen G., Jessee, Denny S., and Martel, Cyn
Sponsor: Virginia Tobacco Indemnification & Community Revitalization Commission
Amount: \$314,886
January 1, 2014 - January 31, 2015

Analysis and Impact of Energy Recommendations in the Wood Products Industry

Investigator(s): Brian Bond and Henry Quesada-Pineda
Sponsor: USDA, Forest Service, Northern Research Station
Amount: 20,000
August 1, 2013 - July 31, 2016

Analysis of Factors Impacting the International Value Chain of Hardwood Products: A Comparison between Asia and Western Europe

Investigator(s): Quesada-Pineda, H.J. and Smith, R
Sponsor: USDA/FSMIP
Amount: \$150,300 with \$75,150 from USDA/FSMIP
September 1, 2011 - August 31, 2013

Development of Engineering and Manufacturing Guidelines for Improved Cross-Laminated Timber Buildings".

Investigator(s): Kline
Sponsor: McIntire-Stennis, USDA CSREES
Program support funding for 2013-2018

Development of low-grade hardwood cross-laminated timbers

Investigator(s): Hindman, D. P., J. R. Loferski, B. Bond, D. E. Kline, and H. Quesada
Sponsor: USDA, NIFA Integrated Forest Products Special Grant
Amount: \$300,616
September 1, 2012 - August 31, 2015

Development of Low-Grade Hardwood Cross-Laminated Timbers

Investigator(s): Hindman, D., Loferski, J., Kline, E., Bond, B., and Quesada-Pineda, H.J
Sponsor: Forest Products Research Program at USDA
Amount: \$300,316
October 1, 2012 - September 30, 2015



Donation of CAM Sample Cutting Table

Investigator(s): Robert Bush and Robert Mollenhauer

Sponsor: Gerber Technologies

Amount: \$55,000 estimated value

August 17, 2012 - August 1, 2017

Health & Prevention Influencer Research

Investigator(s): D. Espinoza, Urs Buehlmann

Sponsor: Robert Bosch Corporation

Amount: \$18,743

13 – 14years time frame

Industry Directory for the VA Forest Products Industry

Investigator(s): Quesada-Pineda, H.J., and Smith, R

Sponsor: Virginia Department of Forestry (VDOP)

Amount: \$85,336 (\$42,688 from VDOP)

February 1, 2013 - July 31, 2014

Research Experiences for Teachers: Innovation-based Manufacturing

Investigator(s): Williams, C. (PI), Brand, B., Hendricks, R., Subhash, S., Sturges, R., Quesada-Pineda, H.J., Camelio, J., Ellis, K., and Druschitz, A

Sponsor: National Science Foundation

Amount: \$450,000

December 1, 2012 - November 30, 2016

U.S.-India Joint Clean Energy Research and Development Center (JCERDC). Project 2, subtask 3: Sustainability and Marketing

Investigator(s): Alavalapati, J., Quesada-Pineda, H.J., and Smith, R

Sponsor: Department of Energy (DOE)

Amount: \$971,496 with \$485,748 from the DOE

October 17, 2012 - October 1, 2017

Use of Southern Yellow Pine as an alternative Material for the Manufacture of Cross-Laminated Timber Panels for Commercial Construction

Investigator(s): Daniel Hindman, Earl Kline

Sponsor: Southern Virginia Higher Education Center

Amount: \$342188

October 1, 2012 - April 30, 2014

Support for the Wood Enterprise Institute

Investigator(s): Kline / Buehlman

Sponsor: Various sponsors and donors

Amount: 2013, \$45,500



Refereed Journal Publications

Buehlmann, U., O. Espinoza†, and C. Fricke*. 2013. Adaptation of Lean in the wood industry. In: *Advances in Sustainable and Competitive Manufacturing Systems - Lecture Notes in Mechanical Engineering*. Editor: Américo Azevedo. Cham, Switzerland. pp. 1539-1551.

Buehlmann, U., O. Espinoza†, M. Bumgardner, and M. Sperber*. 2013. Small enterprises' importance to the U.S. secondary wood processing industry. *International Scientific Conference on Hardwood Processing (ISCHP2013)*. Peer reviewed. IRC IV ALSA, Florence, Italy. October 2013. pp. 306-313.

Espinoza, O.†, U. Buehlmann, and M. Deaver*. 2013. Solid wood panel manufacturing using low quality materials. In: *Advances in Sustainable and Competitive Manufacturing Systems - Lecture Notes in Mechanical Engineering*. Editor: Américo Azevedo. Cham, Switzerland. pp. 105-120.

Espinoza, Omar, R. Smith, H. Quesada and B. Bond. 2013. EDUCATIONAL NEEDS OF THE FOREST PRODUCTS INDUSTRY IN MINNESOTA AND VIRGINIA. *Forest Product Journal*. 62(7/8):613-622.

Espinoza, O.†, U. Buehlmann, and M. Dockry. 2013. Status of forest certification. *International Scientific Conference on Hardwood Processing (ISCHP2013)*. Peer reviewed. IRC IV ALSA, Florence, Italy. October 2013. pp. 298-305.

Espinoza, O.†, U. Buehlmann, and B. Bond. 2014. Quality Measurement in the Supply Chain. *Proceedings of the 24th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM 2014)*. Peer reviewed. Editor: F. Chen. DEStech Publications, Inc. Lancaster, PA. May 2014. pp. 1119-1126.

Conrad IV, Joseph L., M. Chad Bolding,* W. Michael Aust, Robert L. Smith, and Andy Horcher. 2013. Harvesting productivity and costs when utilizing energywood from pine plantations of the southern Coastal Plain USA. *Biomass and Bioenergy*: 52(85-95).

Lyon, S., Quesada-Pineda, H.J., Smith, R., and Kline, D.E. 2013. Identifying Market Opportunities for Appalachian Forest Products Companies in Central America. *Southern Journal of Applied Forestry*. 37(4): 202-207.

Lyon, S., Quesada-Pineda, H.J., and Crawford, S. 2014. Reducing Electrical Consumption in the Forest Products Industry Using Lean Thinking. *Bioresources*. 9(1):1373-1386.

Moore, Elizabeth, John Munsell, A. L. (Tom) Hammett, and Keith Moore. 2014. Agroforestry preferences in refugee hosting communities in Cameroon. *Agroforestry Systems*. April 2014.



Moya, R., Bond, B., and Quesada-Pineda, H.J. 2014. A review of heartwood properties of *Tectona grandis* trees from fast-growth plantations. *Wood Science and Technology*. 48(2):411-433.

Quesada-Pineda, H.J., Lyon, S., and Smith, R. 2013. Marketing Factors Impacting Imported Wood Products in Central America. *International Wood Products Journal*. 5(2):108-120.

Quesada-Pineda, H.J., and Madrigal, J. 2013. Sustaining Continuous Improvement: A Longitudinal and Regional Study. *International Journal of Engineering Business Management*. Online journal 5(43):1-13.

Stevens, Glen, R. Smith and A. Downing. 2014. International Study Abroad Experiences with Agents and Students: A Case Study in Belize. *Journal of Extension*. February 2014. Volume 52. Number 1. 11pgs.

Thomas, E., O. Espinoza†, and U. Buehlmann. 2014. Improving Lumber Yield Using a Dual System. *Proceedings of the 24th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM 2014)*. Peer reviewed. Editor: F. Chen. DEStech Publications, Inc. Lancaster, PA. May 2014. pp. 771-776.

Trade Journal Publications

Bumgardner, M., U. Buehlmann, A. Schuler, and K. Koenig. 2013. Housing trends and impacts on wood products manufacturing. *Wood Products*. July 2013. pp. 21-28.
<http://www.woodworkingnetwork.com/wood-market-trends/woodworking-industry-news/wood-industry-reports/Housing-Construction-Trends-on-Wood-Products-Manufacturing-214620441.html#sthash.1pKrleu4.dpbs>.

Buehlmann, U. 2013. Housing market updates. *Sustainable Biomaterials Newsletter* 8(2):8-9.

Buehlmann, U. 2014. Housing market updates. *Sustainable Biomaterials Newsletter* 9(1):16-17.

Hanson, C. 2013 (Interview to Quesada-Pineda, H.J.). 2013. Rise of the Portables. *Biomass Magazine* July, pp. 1-2.

Other Publications

Andersch, A.*, U. Buehlmann, J. Palmer, J. K. Wiedenbeck, and S. Lawser. 2013. Product costing program for wood component manufacturers. *Forest Products Journal* 63(7/8):247-256

Arias, E., Lyon, S., Quesada-Pineda, H.J., and Smith, R. 2013. Exports of U.S. Hardwood Products: Increasing Performance in Asia and Western Europe. *Center for Forest Products Business*. Newsletter. Fall.



Arias, E., H. Queada and R. Smith. 2014. Factors impacting the Export of US Hardwoods in Germany, China, and Vietnam. Proceedings of the 57th International Convention of the SWST June 23-27. Zvolen, Slovakia. Pgs. 70-77.

Buehlmann, U. and A. Schuler. 2014. Markets and Market Forces for Secondary Wood Products. In: The Global Forest Sector – Changes, Practices, and Prospects. Editors: E. Hansen, R.

Montague, I., A. Andersch*, J. Wiedenbeck, and U. Buehlmann. 2013. Hardwood supply chain and the role of log brokers in 2012. Forest Products Journal 63(5/6):182-189.

Panwar, and R. Vlosky. CRC Press Taylory & Francis Group, Boca Raton, FL. ISBN: 13-978-1-4398-7928-3. pp. 77 – 98.

Hanson, C. 2013 (Interview to Quesada-Pineda, H.J.). 2013. Rise of the Portables. Biomass Magazine July, pp. 1-2.

Palmer, J., A. Andersch*, J. Wiedenbeck and U. Buehlmann. 2014. Users guide for WoodCite, a product quotation tool for wood component manufacturers [computer program]. Gen. Tech. Rep. NRS-126. Newton Square, PA. U.S. Department of Agriculture, Forest Service, Northern Research Station. 12 p.

Quesada-Pineda, H.J. 2014. Dime con andas y te dire por quien votar. Newspaper article in the editorial section. www.crhoy.com.

Smith, Robert, Urs Buehlmann, and Matthew Bumgardner. 2013. Impacts of changing hardwood markets on distribution channels. Final Report for Cooperative Agreement. USDA Forest Service, Princeton, WV. 18 pgs.

Graduate Theses/Dissertations

- Eoghan O’Conner. Undergraduate Visiting Student Exchange Scholar Thesis, July 2013. “Computer Numerical Control Methods for the Wood Enterprise Institute”. Virginia Tech. Co-advisors: Earl Kline, Robert Bush, and Patrick Tobin.
- Vivienne McEvoy. Ireland’s Wood Products Manufacturing Industry: Primary & Secondary Timber Supply Chain Integration. Undergraduate student research report. GMT Letterfrack, Ireland. June, 2014. Co-advisors: Patrick Tobin and Earl Kline



Presentations

Alderman, D., U. Buehlmann and A. Schuler. 2013. The United States housing market and the forest products industry. Virginia Forest Products Association (VFPA). Invited Presentation. Virginia Beach, VA. September 2013.

Espinoza, O.†, U. Buehlmann, and M. Deaver*. 2013. Solid wood panel manufacturing using low quality materials. 23rd International Conference on Flexible Automation and Intelligent Manufacturing. Porto, Portugal. June 2013.

Buehlmann, U., O. Espinoza†, and C. Fricke*. 2013. Adaptation of Lean in the wood industry. 23rd International Conference on Flexible Automation and Intelligent Manufacturing. Porto, Portugal. June 2013.

Buehlmann, U., O. Espinoza†, M. Bumgardner, and M. Sperber*. 2013. Small enterprises' importance to the U.S. secondary wood processing industry. International Scientific Conference on Hardwood Processing (ISCHP2013). Florence, Italy. November 2013.

Espinoza, O.†, U. Buehlmann, and M. Dockry. 2013. Status of forest certification. International Scientific Conference on Hardwood Processing (ISCHP2013). Florence, Italy. November 2013.

Bumgardner, M., U. Buehlmann, A. Schuler, and K. Koenig. 2014. Impacts of Construction Markets on Firm Performance and Behaviors in the Secondary Woodworking Industry, 2010-2013. 19th Central Hardwood Forest Conference. Springfield, IL. March 2014.

Buehlmann, U. 2014. Workshop introduction. Wood Industry Week @ Wood Education and Resources Center (WIW@WERC). Princeton, WV. March 2014.

Buehlmann, U. 2014. Plant layout. Wood Industry Week @ Wood Education and Resources Center (WIW@WERC). Princeton, WV. March 2014.

Buehlmann, U. 2014. Plant optimization. Wood Industry Week @ Wood Education and Resources Center (WIW@WERC). Princeton, WV. March 2014.

Buehlmann, U. 2014. Mill layout and optimization. Wood Industry Week @ Wood Education and Resources Center (WIW@WERC). Princeton, WV. March 2014.

Buehlmann, U. 2014. Theory of constraints. Wood Industry Week @ Wood Education and Resources Center (WIW@WERC). Princeton, WV. March 2014.

Buehlmann, U., D. Alderman, and A. Schuler. 2013. Growing Wood Exports – background and opportunities. NC Wood Export Conference. Invited Presentation. New Bern, NC. November 2013.



Buehlmann U (Keynote)., Alderman, D., and Al Schuler 2013. Wood market update. Coating Wood and Wood Composites Conference. Keynote presentation. Charlotte, NC. October 2013.

Espinoza, O.†, U. Buehlmann, and B. Bond. 2014. Quality Measurement in the Supply Chain. 24th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM 2014). San Antonio, TX. May 21, 2014. pp. 1119-1126.

Horvath, Laszlo; Jonghun Park; and Robert Bush. 2014. The Status of Wood Pallet Repair Operations in the United States: A Survey Study. Presented at the 19th IAPRI World Conference on Packaging. June 17. Melbourne, Australia.

Quesada-Pineda, H.J., and Haviarova, E. 2014. Life Cycle Assessment in the Wood Products Industry. Professional College of Engineers and Architects. Curridabat, Costa Rica. March 17, 2014. Attendance: 35.

Quesada-Pineda, H.J. 2013. Markets for Certified Forest Products. Green Building Systems. Room 317B. Cheatham Hall. Virginia Tech. November 13, 2013. Blacksburg, VA.

Quesada-Pineda, H.J. 2013. Incorporating Experiential Learning and Education for Sustainable Development into Study Abroad Programs. SBIO 5004. Graduate Seminar. Room 111. Brooks Center. Virginia Tech. November 20, 2013. Blacksburg, VA.

Quesada-Pineda, H.J. 2013. Payments for Environmental Services (PES) The case of Costa Rica. SBIO 2784. Global Forest Sustainability. Room 317B. Cheatham Hall. Virginia Tech. October 29. Blacksburg, VA.

Smith, B. Invited speaker at the Michigan Biomaterials Conference held from October 3-6, 2013 in Traverse City, Michigan.

Smith B. Invited speaker at the Southern Group of State Foresters Utilization and Marketing Committee meeting October 15-16, 2014 in Louisville, Kty.

Smith B. Invited speaker at the Virginia Forestry Association annual meeting on April 3-5 in Williamsbrug, VA.

Smith B. Presentations at the Society of Wood Science and Technology meeting held in Zvolen, Slovakia on June 22-28.

Smith B. Invited lecturer at the University of Applied Sciences in Salzburg, Austria. November 16-22.

Thomas, E., O. Espinoza†, and U. Buehlmann. 2014. Improving Lumber Yield Using a Dual System. 24th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM 2014). San Antonio, TX. May 2014.



Kline: Youth Conservation Camp. Hosted a group of 54 students from the Youth Conservation Camp. Demonstrations included mechanical testing of wood, packaging, and Computer manufacturing Technology. July 16, 2013, Brooks Forest Products Center, Virginia Tech.

Short Course & Continuing Education

Financial Management for Forest Products Businesses.
Instructor: Quesada-Pineda, H.J. (presenter/organizer).
Location: Four Points Sheraton Hotel. Richmond, VA.
Dates: May 15, 2014. Attendance: 22.

Financial Management for Sugar Cane Farmers.
Instructor: Quesada-Pineda, H.J. (presenter).
Location: Orange Walk, Belize.
Dates: December 3-5, 2013. Attendance: 110.

Fourth Innovation-based Manufacturing workshop.
Instructor: Quesada-Pineda, H.J. (co-organizer), Camelio, J. (co-organizer), Reynolds, E., Brooke, R., and Schlaepfer, C. .
Location: The Inn at VT. Blacksburg, VA.
Dates: November 7, 2013. Attendance: 51.

National Hardwood Lumber Association (NHLA) Grading short course.
Instructor: Richards, B. and Quesada-Pineda, H.J. (translator).
Location: Culpeper, VA.
Dates: November 15-17, 2013. Attendance: 22.

Statistical Process Control for Sawmills.
Instructor: Quesada-Pineda, H.J. (presenter/organizer).
Location: Zapote, Costa Rica. .
Dates: March 19, 2014. Attendance: 20.

Transforming Cellulosic Waste to Energy. Presented at the 37th Annual Fall Forestry and Wildlife Field Tours 2013 (The Bus Tours).
Instructor: Quesada-Pineda, H.J., and Withers, J. .
Location: Critz, VA.
Dates: October 15, 2013. Attendance 16.



Conference Proceedings

Arias, E., Quesada-Pineda, H.J., and Smith, R. 2014. Exports of U.S. Hardwood Products: Increasing Performance in Asia and Western Europe. 57th Society of Wood Science and Technology Conference. Poster Presentation. Zvolen, Slovakia. June 22-27, 2014.

Espinoza, O.; Buehlmann, U.; and Bond, B. 2014. Quality Measurement in the Supply Chain. Lecture Proceedings of the 24th International Conference on Flexible Automation and Intelligent Manufacturing. DEStech Publications, Inc. Lancaster, PA. San Antonio, Texas. May 2014. pp. 1119-1126. Refereed Proceedings.

Haviarova, E., Bois, J., and Quesada-Pineda, H.J. 2013. Development of Optimal Forest Products Supported by Life Cycle Assessment for Sustainable Use of Natural Resources. International Scientific Conference on Hardwood Processing (ISCHP). Session IV: Hardwood Market and Sustainability. October 7-9. Florence, Italy.

Quesada-Pineda, H.J., Arias, E., and Smith, R. 2014. Factors Impacting the Exports of US Hardwoods to Germany, China, and Vietnam. 57th Society of Wood Science and Technology Conference. Oral Presentation. Zvolen, Slovakia. June 22-27, 2014.

Quesada-Pineda, H.J., and Haviarova, E. 2014. Incorporating Experiential Learning and Education for Sustainable Development into Study Abroad Programs. 57th Society of Wood Science and Technology Conference. Poster Presentation. Zvolen, Slovakia. June 22-27, 2014.

Bond, B. and Quesada-Pineda, H.J. . 2013. Integrating Lean Manufacturing Techniques and Energy Savings Practices. Proceedings of the 2013 Forest Product Society International Convention. Poster # 89, page 65. June 9-11. AT&T Hotel and Conference Center, Austin, TX.

Brenes, M. and Quesada-Pineda, H.J. 2013. Current Research in GIS Marketing Applications in the VA Wood Products Industry. Proceedings of the 2013 Forest Product Society International Convention. Poster # 6, page 52. June 9-11. AT&T Hotel and Conference Center, Austin, TX.



Courses Taught

SBIO 1234. Introduction to Wood Design and Craftsmanship

Semester: Fall 2013.

Credit Hours: 3

Instructors: Kline / Buehlmann

No. of Students: 20

SBIO 2104. Principles of Packaging (Section 1, 2)

Semester: Fall 2013.

Credit Hours: 3.

Instructor: R.J. Bush.

No. Of Students: 49.

SBIO 2614. Introduction to Forest Products Marketing.

Semester: Spring 2014.

Credit Hours: 3.

Instructor: R.J. Bush.

No. Of Students: 41.

FOR 2784. Global Forest Sustainability

Semester: Fall 2013.

Credit Hours: 3

Instructor: Buehlmann

No. of Students: 36

SBIO 2784. Global Forest Sustainability

Semester: Fall 2013.

Credit Hours: 3

Instructor: Buehlmann

No. of Students: 23

GEOG 2984. Guest Lecture, Seeking Sustainability

Semester: Fall 2013.

Credit Hours:

Instructor: R.J. Bush.

No. Of Students: 40

SBIO 3314. Mechanical Properties of Wood

Semester: Spring 2013

Credit Hours: 4

Instructor: Kline

No. of Students 19.



SBIO 3446. Wood Design and Innovation II
Semester: Spring 2013
Credit Hours: 3
Instructor: Kline
No. of Students 18.

SBIO 3446. Wood Design and Innovation II
Semester: Fall 2013
Credit Hours: 3
Instructor: Kline / Buehlmann
No. of Students 9.

SBIO 3446. Wood Design and Innovation 1
Semester: Spring 2014
Credit hours: 3
Instructor: Buehlmann
No. of Students 9.

SBIO 3464. Forest Products Business Systems.
Semester: Spring 2014.
Credit Hours: 3.
Instructor: Quesada-Pineda, H.J.
No. Of Students: 13.

SBIO 3634. Wood Products Manufacturing.
Semester: Fall 2013.
Credit Hours: 3.
Instructor: Dr. Brian Bond and Dr. Urs Buehlmann.
No. Of Students: 26.

SBIO 3634: Wood Products Manufacturing
Semester: Fall 2013.
Credit Hours: 3
Instructors: Bond / Buehlmann
No. of Students: 25

SBIO 3954. Global Issues in Sustainability.
Semester: Spring 2014.
Credit Hours: 3.
Instructor: Quesada-Pineda, H.J.
No. Of Students: 8.



SBIO 3984. Culture, Natural Resources and Design in Ireland.

Semester: Spring 2014.

Credit Hours: 3.

Instructor: R.J. Bush / Kline

No. Of Students: 12.

SBIO 4004. Seminar in Forest Products Business.

Semester: Spring 2014.

Credit Hours: 2.

Instructor: R.J. Bush.

No. Of Students: 18.

SBIO 4964. Independent study.

Semester: Fall 2014.

Credit Hours: 3.

Instructor: Quesada-Pineda, H.J.

No. Of Students: 1.

SBIO 5004. Graduate Seminar

Semester: Fall 2013.

Credit Hours: 1

Instructor: Smith

No. of Students: 10

GEO . Wintermester –Study Abroad to New Zealand

Semester: Fall 2013

Credit Hours:

Instructor: Smith

No: of Students 18

SBIO 5984. Professional Skills for Sustainable Biomaterials Graduate Students.

Semester: Spring 2014.

Credit Hours: 2.

Instructor: R.J. Bush.

No. Of Students: 10.



Professional Service

Robert J. Bush

Manuscript review for Forest Products Journal.

Manuscript review for Forest Products Journal .

Earl Kline:

Contributions to diversity:

- SBIO Enrollment Management Committee. Development of departmental display and recruitment materials to target a diverse student body. 2010-2013
- SBIO Enrollment Management Committee. Creation of the SBIO student ambassador program to promote and support a diverse climate in the department.

University Service

Earl Kline:

College Service:

- CNRE College P&T Committee. SBIO representative. December, 2013.

Department Service:

- Enrollment Management Committee Chair, 2010-2013. Responsible for coordinating student ambassador program and to represent the SBIO major at important university events.
- Faculty Mentor, 2007-2013.
- P&T Committee, 2013.
- SBIO SHEV Degree Proposal Committee. 2012-2013. Design, development, and implementation of the new Sustainable Biomaterials degree program.

Service to students:

- Faculty Advisor and Mentor, Registered Student Organization of the Wood Enterprise Institute,. 2010-2013
- Faculty Advisor, Student Ambassadors, Dept. of Sustainable Biomaterials. 2013.

Robert J. Bush:

Undergraduate Student Advising.

Primary advisor for 43 undergraduate students.



Awards and Honors

Henry Quesada received a promotion to Associate Professor in the Department of Sustainable Biomaterials.

International research collaborations:

- Kline: Coordinated the study abroad program of Eoghan O'Conner, foreign exchange student from Galway-Mayo Institute of Technology (GMIT), Ireland, Spring Semester 2013. Mr. O'Conner's studies worked jointly with students in the Wood Enterprise Institute and SBIO 1234 at Virginia Tech to satisfy part of his internship requirements at GMIT.
- Kline: Invited as a Visiting Professor to the Galway Mayo Institute of Technology, Letterfrack, Ireland. Conduct research on forest industry supply chains in Ireland and taught courses in Lean Manufacturing, January-May 2014.



Members

Askins Publishing / American Lumber and Pallet Magazine

PO Box 1136
Fayetteville, TN 37334

Phone: (931) 433-1010

Fax: (931) 433-1081

Email: bill@amlumber.com

Website: <http://www.amlumber.com>

Contact:

W.R. (Bill) Askins, Jr., President

American Lumber and Pallet is a monthly buy and sell publication which specializes to sawmills, pallet mills, woodworking/veneer mills and logging operations.

Anderson-Tully Lumber Company

PO Box 38
Vicksburg, MS 39180

Phone: (601) 636-3876

Fax: (601) 636-4719

Email: richardw@andersontully.com

Website: <http://www.Anderson-Tully.com>

Contact: Richard Wilkerson, Vice President of Lumber Sales

Appalachian Hardwood Manufacturers, Inc.

PO Box 427
High Point, NC 27261

Phone: (336) 885-8315

Fax: (336) 886-8865

Email: tom@appalachianwood.org

Website: www.appalachianwood.org

Contact:

Tom Inman, President

AHMI is an association that promotes logs, lumber and products from the Appalachian region.

Atlanta Hardwood Corporation

5596 Riverview Road
Mableton, GA 30126-2914

Phone: (404) 792-2290

Fax: (404) 792-2294

Email: ahc@hardwoodweb.com

Website: www.hardwoodweb.com

Contacts:

James W. Howard, Jr., President

Marty Payny, Sales Manager

Patrick G. Altham, VP Export

Products:

boards, common; boards, select; flooring; moulding

Species:

alder, ash, basswood, beech, cherry, hickory, imported hardwoods, mahogany, hard maple, soft maple, white maple, red oak, white oak, poplar, walnut, eastern white pine



Baillie Lumber Company

PO Box 6
Hamburg, NY 14075

Phone: (716) 649-2850
Fax: (716) 649-2811
Email: information@ballie.com
Website: www.baillie.com

Contacts:
Jeff Meyer, President
Kenneth A. Philbrick, Yard Operations Manager

Products:
boards, common; boards, select

Species:
ash, basswood, beech, birch, cherry, red elm,
hickory, hard maple, soft maple, red oak, white
oak, poplar, walnut

Boehm-Madisen Lumber Co., Inc.

PO Box 906
Brookfield, WI 53008-0906

Phone: (262) 544-4660
Fax: (262) 544-0795
Email: boehmmad@execpc.com

Contacts:
Thomas J. Kestly, Sr.

Products:
boards, common; boards, select; flooring; timbers;
cutstock; log cabin siding; glued-up stock; pattern
stock; decking, laminated; decking, roof;
dimension, furniture; dimension, precut; edge-
glued products; fingerjointed; stepping; millwork,
moulding & trim; plywood, hardwood; plywood,
prefinished; shops & factory grades; siding,
decking; treated products

Species: hardwoods, softwoods

Bingaman & Son Lumber, Inc.

PO Box 247
Kreamer, PA 17833

Phone: (570) 374-1108
Fax: (570) 374-5342
Email: cbingaman@bingamanlumber.com
Website: www.bingamanlumber.com

Contacts:
Chris Bingaman, Vice President Operations/Sales
Manager

Products:
boards, common; boards select; glued-up stock;
furniture dimension

Species:
ash, basswood, birch, cherry, hickory,
mahogany, hard maple, soft maple, red oak,
white oak, poplar, black walnut, eastern white
pine

Columbia Forest Products

PO Box 1148
Old Fort, NC 28762

Phone: (800) 637 – 1609,
(828) 724 - 4191
Fax: (828) 724-4066
Email: sfranklin@columbiaforestproducts.com
Website: www.columbiaforestproducts.com

Contact:
Don Carter, Human Resource Manager
Ed Woods, VP Sales and Marketing

Products:
hardwood veneer; hardwood plywood; laminated
products; flooring; veneer raised panels and door
inserts

Species: red oak, birch, maple, cherry, ash, pine,
mahogany, walnut, white oak, teak



Conner Industries, Inc.

3800 Sandshell Dr., Ste 235
Fort Worth, TX 76137

Phone: (817) 847-0361
Fax: (817) 232-9264
Email: info@connerindustries.com
Website: www.connerindustries.com

Contacts:

H. Grady Payne, III, Vice President

Products:

Dimension stock; boards; timbers; panel products; engineered wood products; pallet and crating lumber

Species:

SYP; SPF; and mixed hardwoods

Danzer Group

Danzer Veneer Americas
PO Box 3455
Williamsport, PA 17701

Phone: (570) 322-4400
Fax: (570) 322-7213
Email: vijay_reddy@danzerveneer.com
Website: www.danzerveneer.com

Contact:

Dr. Vijay Reddy, Vice President
(724)827-8366 Darlington, PA.

Products:

veneers for panel, furniture, door, cabinet, edge-banding and flooring, dimension, dry; cutstock; glued-up stock; moulding; fingerjoint stock; furniture dimension; window & sash stock

Species:

white ash, aspen, basswood, birch, cherry, black cypress, hickory, hard maple, poplar, red oak, soft maple, white maple, white oak, walnut ash

Cotton-Hanlon, Inc.

PO Box 65
Cayuta, NY 28603

Phone: (607) 594-4600
Fax: (607) 594-4604
Email: ch@onlineimage.com
Website: www.cottonhanlon.com

Contacts:

Mike Hanlon, President

Species:

cherry, maple

Cotton-Hanlon, Inc. is a timberland management company. Tree species include Red Oak, Maple, Ash and Cherry.

Fitzpatrick & Weller, Inc.

PO Box 490
Ellicottville, NY 14731-0490

Phone: (716) 699-2393
Fax: (716) 699-2893
Email: sales@fitzweller.com
Website: www.fitzweller.com

Contacts:

Dana Fitzpatrick, Executive Vice President

Products:

boards, common; boards, select; dimension, dry; glued-up stock; moulding; dimension, furniture

Species:

ash, white ash, basswood, beech, birch, cherry, hickory, maple, hard maple, soft maple, white maple, red oak, white oak, poplar, hemlock, eastern white pine



Frank Miller Lumber Company, Inc.

1690 Frank Miller Road
Union City, IN 47390

Phone: (765)-964-3196
Fax: (765)-964-6618
Email: clea@frankmiller.com
Website: www.frankmiller.com

Contacts:

Martha Miller Mathias – President, CEO, COB

Products:

boards, common; boards, select; dimension, green, quarter rift lumber

Species:

white ash, basswood, beech, cherry, elm, hackberry, hard maple, soft maple, white maple, red oak, white oak, yellow poplar, black walnut

Granite Hardwoods, Incorporated

PO Box 226
Granite Falls, NC 28630

Phone: (828)-396-3395
Fax: (828)-396-8182
Email: sales@granitehardwoods.com
Website: www.granitehardwoods.com

Contact:

Richard W Buchanan, III, President

Products:

boards, common; boards, select

Species:

ash, red oak, hard maple, poplar, elm, cherry, soft maple, hickory-pecan, walnut, white oak, basswood

Godfrey Lumber Company, Inc.

PO Box 615
Statesville, NC 28677

Phone: (704) 872-6366
Fax: (704) 872-2341
Email: barry@godfreylumber.com
Website: www.godfreylumber.com

Contact:

Barry Godfrey, Vice President

Products:

boards, common; boards, select; log cabin siding; pattern stock

Species:

oak, poplar, yellow pine, white pine, eastern white pine

Hardwood Distributors Association

C/O Heidler Hardwood Lumber Company

2559 S Damen Ave
Chicago, IL 60608

Phone: (773) 847-7444
Fax: (773) 847-7833
Website: www.hardwooddistributors.org

Contacts:

Skip Heidler

Hardwood Distributors Association supports the wholesale distribution yards involved in the merchandising of hardwood lumber, plywood, and flooring, including additional items manufactured from same; or any additional lumber and forest products that custom and practice has, or may develop, in the represented marketing regions.



Hardwood Manufacturers Association

665 Rodi Road, suite 305
Pittsburgh, PA 15235

Phone: (412) 244-0440

Fax: (412) 244-9090

Email:

Website: info@hardwood.org

Contacts:

Linda Jovanovich

HMA is an association that assists the furniture, flooring, kitchen and bath, and moulding and woodwork industries with hardwood information.

Hardwood Market Report

PO Box 2633
Memphis, TN 38088-2633

Phone: (901) 767-9126

Fax: (901) 767-7534

Email: hmr@hmr.com

Website: www.hmr.com

Contact:

Judd Johnson, Editor

Hardwood Market Report, established in 1922, is a weekly publication giving benchmark pricing information and marketing commentary on North American hardwood lumber and the hardwood products industry.

Hardwood Publishing Company, Inc.

PO Box 471307
Charlotte, NC 28274-1307

Phone: (704) 543-4408

Fax: (704) 543-4411

Email: george@hardwoodreview.com

Website: www.hardwoodreview.com

Contact:

George Barrett, Editor-Hardwood Review
Andy Johnson, Associate Editor

Hardwood Publishing Company, Inc. are publishers of Weekly Hardwood Review and Hardwood Review Export. They also support Hardwood Search which allows companies to buy and sell lumber online.

Industrial Timber & Lumber Company

23925 Commerce Park
Beachwood, OH 44122

Phone: (216) 831-3140

Fax: (216) 831-4734

Email: sales@itlcorp.com

Website: <http://www.itlcorp.com>

Contacts:

Larry Evans, President



ISK Biocides, IBC manufacturing

416 E. Brooks Road
Memphis, TN 38109-0158

Phone: (901) 344 5350

Fax: (901) 344 5387

Email: info@ibio.com

Contact:

Joe Ignatoski, President , COO
Lance Johnson, District Sales Supervisor

Products:

sap stain and mold preventatives; industrial wood preservatives; WOODguard and Natural Home--wood protection for the homeowner.

Southeastern Lumber Manufacturers Association

200 Greencastle Road
Tyrone, GA 30290

Phone: (770) 631 - 6701

Fax:

Email: alexis@slma.org

Website: www.slma.org

Contact:

Brian Smalley, President

Jim C. Hamer Company

PO Box 418
Kenova, WV 25530

Phone: (304) 453-6381

Fax: (304) 453-6587

Email: jdearing@jimchamer.com

Website: www.jimchamer.com

Contacts:

Steve Hamer, President

Products:

boards, common; boards, select; dimension, furniture

Species:

ash, beech, hard maple, soft maple, red oak, white oak, poplar

Structural Systems, Inc.

201 Poplar Avenue
Thurmont, MD 21788

Phone: (800) 800-7414

Fax: (301) 271-5252

Email: jsteinbruck@ssi-midatl.com

Website: <http://www.ssi-midatl.com>

Contacts:

John Steinbruck

Products:

Distributes building materials such as Trus Joist engineered wood, and USP connectors, and Jeld-Wen, Silverline, Therma-Tru, and Summit windows and doors. Manufacturer of trusses and wall panels from premium Southern Yellow Pine and SPF lumber.



Spartanburg forest Products, Inc.

1431 Highway 101 South
Greer, SC 29651

Phone: (864) 699-3100

Fax: (864) 699-3101

Email: smichael@gsponline.net

Website: www.sfpinc.biz

Contact:

Stephan W. Michael, President/CEO

Spartanburg Forest Products, Inc. is a marketing and management organization, focusing in treated and engineered wood products.

T & S Hardwoods, Inc.

Harrisburg Road
PO Box 1233
Milledgeville, GA 31059

Phone: (478) 453-3492

Fax: (478) 453-9002

Email: dsmith@tshardwoods.com

Website: www.tshardwoods.com

Contacts:

Larry N. Thompson III., President

Products:

boards, common; boards, select; dimension, green;
railroad ties; timbers

Species:

brown ash, cherry, cottonwood, soft elm, sap gum,
hickory, soft maple, red oak, white oak, pecan,
yellow poplar, sycamore, black walnut, cedar,
cypress



The Shannon Lumber Group

PO Box 16929
Memphis, TN 38186-0929

Phone: (662) 393-3765
Fax: (662) 393-2063
Email: jbrown@jtshannon.com
Website: www.jtshannon.com

Contacts:

Jack Shannon - President
Jennie Brown, Administrative Officer

Products:

boards, common; boards, select; dimension, dry;
dimension, green; fingerjoint stock; dimension,
furniture; glued-up stock; pattern stock; moulding

Species:

white ash, cherry, cottonwood, mahogany, hard
maple, soft maple, red oak, white oak, poplar,
black walnut

USDA Forest Service

Northern Research Station
180 Canfield St.
Morgantown, WV 26505

Phone: (304) 285 – 1500

Contact:

Ed Cesa, Research Scientist

USDA Forest Service

Southern Research Station
1650 Research Center Dr.
Blacksburg, VA

Phone: (540) 231 – 1707

Contact:

Phil Araman, Senior Research Scientist

UC Coatings Corporation

PO Box 1066
Buffalo, NY 14215

Phone: (716) 833-9366
Fax: (716) 833-0120
Email: tom@uccoatings.com
Website: www.uccoatings.com

Contact:

Norman E. Murray, Chairman

Products:

ANCHORSEAL - End sealer for logs and
lumber, is the best known brand name in
the world for wax emulsion end sealers.
GEMPAINT and GEMPAINT*PLUS
BATES Boothcoating / Glue Release makes it
easy to clean dried glue off machines and
equipment.

Virginia Forest Products Association

220 East Williamsburg
PO Box 160
Sandston, VA 23150-0160

Phone: (804) 737-5625
Fax: (804) 737-9437
Email: vfpa@att.net
Website: www.vfpa.net

Contact:

Susan Jennings, President

VFPA is an association active in promoting state
and local codes and regulations developed to
provide safety to life and property from the
hazards of fire.



Weaber, Inc.

1231 Mt Wilson Rd
Lebanon, PA 17042

Phone: (717) 867-2212
Fax: (717) 867-1711
Email: matt@weaberlumber.com
Website: www.weaberlumber.com

Contact:
Matt Weaber, President

Products:

S4S boards and moulding; finger jointed poplar; finger jointed and edge glued material; random width and ripped to width hardwoods; ties; pallet cants; logs; secondary hardwood products

Species:
red oak, white oak, poplar, ash

Wood Component Manufacturers Association

741 Butlers Gate, Suite 100
Marietta, GA 30068

Phone: (770) 565-6660
Fax: (770) 565-6663
Email: skelawser@aol.com
Website: www.woodcomponents.org

Contact:
Steven W. Lawser, CAE
Executive Director

The WCMA represents U.S. and Canadian manufacturers of wood component products. Member companies produce a wide range of rough, semi- and fully machined hardwood, softwood and engineered wood components for the furniture, cabinet, millwork, building products, and related wood product industries

W. M. Cramer Lumber Company

PO Box 2888
Hickory, NC 28603

Phone: (828) 397-7481
Fax: (828) 397-3763
Email: wmc@cramerlumber.com
Website: www.cramerlumber.com

Contact:
Wendell Cramer, President

Products:

boards, common; boards, select

Species:
poplar, red oak, white oak, ash, hickory, beech, soft maple, cherry, hard maple, elm, basswood, chestnut, mahogany, white pine, ponderosa pine

Wood Preservers, Inc.

PO Box 158
Warsaw, VA 22572

Phone: (804) 333-4022
Fax: (804) 333-9269
Email: mwright@woodpreservers.com
Website: www.woodpreservers.com

Contact:
Morgan Wright, President

Products:
boards; softwood dimension; timbers; ties

Species:
loblolly pine, longleaf pine, shortleaf pine