the Forest Steward

Spring 2021

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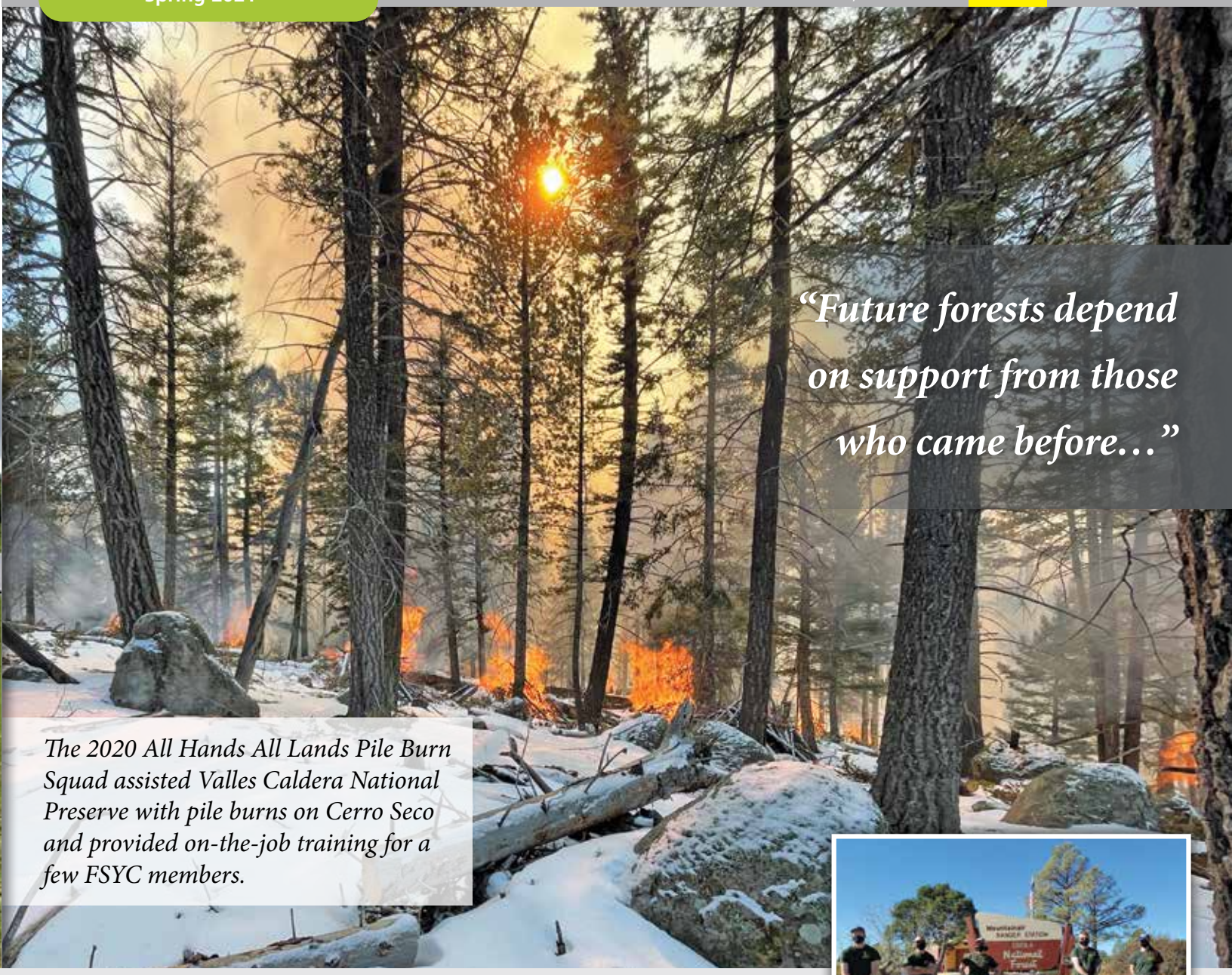

"Future forests depend on support from those who came before…"

The 2020 All Hands All Lands Pile Burn Squad assisted Valles Caldera National Preserve with pile burns on Cerro Seco and provided on-the-job training for a few FSYC members.

The 2020 Fall Fire and Fuels crew of the Forest Stewards Youth Corps was based out of the Mountainair Ranger Station and assisted Forest Service Staff.

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Forest Stewards Guild

putting the forest first

INSIDE

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Supporting the next generation of forest stewards

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FSYC crew members learn ecological monitoring of a restoration treatment on the Coyote Ranger District of the Santa Fe National Forest.

The Guild values young professionals in forestry and affiliated fields because of the perspectives they bring to the field right now, and because they hold the future of these disciplines in their hands. You'll read here about their innovative research, technological skills yet untapped, and inclusive approach.

We have tried-and-true opportunities to support students, and some brand-new offerings! Thank you to the individuals and organizations who donate and partner with us for these student-centered efforts. To support similar work, please email **membership@forestguild.org**. We are looking for:

- Financial support or match to launch and maintain student opportunities,
- Professional members and companies to partner on internships,
- Students willing to communicate needs and aspirations from their perspective and help us build relevant programs.

None of the work featured on the back page of this issue is possible without the support of an entire community. Within the Guild community:

- I am inspired by donors who see the potential and make internships, trainings, mentorship, and networking opportunities possible.
- It is an honor to work with staff and with partners who quickly turn ideas and contributions into something meaningful.
- Our members consistently earn my gratitude, such as the authors in this issue who stepped up to provide insights to help others.
- I trust that students, like those who are Guild members, will get the support they need to translate their compassion, energy, and intellect into solutions we don't yet imagine, for the good of the forests and all who depend on them.

It's life-changing work, one human and acre at a time, and it deserves our attention and support. Thank you to this community, and for your understanding of how it feels to want to do things differently, and the support it takes to get there. Let's continue to keep the Guild spark alive across generations, so we may confidently pass the torch.

- Colleen Robinson

A faculty perspective

➤ **Doug Cram, New Mexico State University, Las Cruces, NM**
➤ **Miranda Curzon, Iowa State University, Ames, IA**
➤ **John Gunn, University of New Hampshire Cooperative Extension, Durham, NH**
➤ **Jessica Leahy, University of Maine, Orono, ME**
➤ **James Schmierer, Michigan Technical University, Houghton, MI**
➤ **Ken Smith, University of the South, Sewanee, TN**

We asked faculty Guild members from institutions around the country to respond to the following questions. Their answers bring awareness to current projects, offer students helpful insights, and illustrate how faculty can learn from their students as well as the other way around.

How are your students helping to fill gaps in our knowledge about climate, forests, and forestry?

➤ **James:** Students are examining responses of populations of northern red oak from different regions. They perform aboveground physiological measurements and assess differences in gene expression among oak populations in the plantings. This has direct implications for persistence, growth, and survival of the species under a changing climate, especially regarding precipitation. Other students are also evaluating various insect and wildlife responses to silvicultural treatments.

➤ **Doug:** High-severity forest fires are leaving thousands of acres across southwestern forests without trees – one of nature's most significant magnets for absorbing carbon. To make matters worse, instead of trees returning via natural reforestation to sequester carbon, grass and shrublands are becoming the dominate vegetation type. Scientists at New Mexico State University are exploring how to turn this runaway train around by experimenting with artificial regeneration of ponderosa pine – known as outplanting. While this strategy is not new, outcomes have historically been dismal (0-12% survival rates). However, by manipulating soil moisture (with mulch), vegetation competition, and seed stock adapted to drought conditions, both in the field and in the greenhouse, scientists will be better able to advise foresters on best planting practices for outplanting survival – thereby allowing trees to return to the canopy to capture carbon.

Skyler Roe is a graduate student at New Mexico State University pursuing her master's degree in Plant Sciences. Her research takes an on-the-ground look at how to improve out-planting success of ponderosa pine saplings at the John T. Harrington Forestry Research Ctr. Credit: D. Cram

➤ **John:** It is becoming clearer to the non-forestry world how important forests are as one aspect of mitigating climate change. I am working with students who are interested in using "big data" to help understand how forest management decisions influence how well forests can play this role into the future. Big data may be in the form of historical and current forest inventory datasets or growth and harvest simulations. This kind of work requires developing new quantitative skills, often in collaboration with computer scientists and statisticians. But interpreting the results requires an understanding of ecology and the silvicultural tools we will need to leverage forests as a climate change solution. This combination of more traditional forestry knowledge and complex quantitative abilities will be skills that can place graduates in many different contexts, from non-profit conservation groups to timber investment organizations.

Katie Fernald taking measurements at MacFarland Park, Story County, IA. Credit: M. Curzon

➤ **Jessica:** A team at the University of Maine is tackling a complicated study of how forest management affects tick populations and Lyme disease prevalence, while also factoring in landowner behavior and their support for community response strategies. Climate change, land use, fragmentation, silviculture, small mammal populations, deer populations, and human behavior all come together.

➤ **Miranda:** Graduate students in my lab are exploring basic questions related to management impacts on adaptation and climate-growth relationships. One student has examined the impacts of climate adaptation treatments on natural regeneration and the shrub layer in red pine-dominated woodlands. Another student is assessing the long-term effects of harvest-related soil disturbance on the ability of aspen to respond to drought.

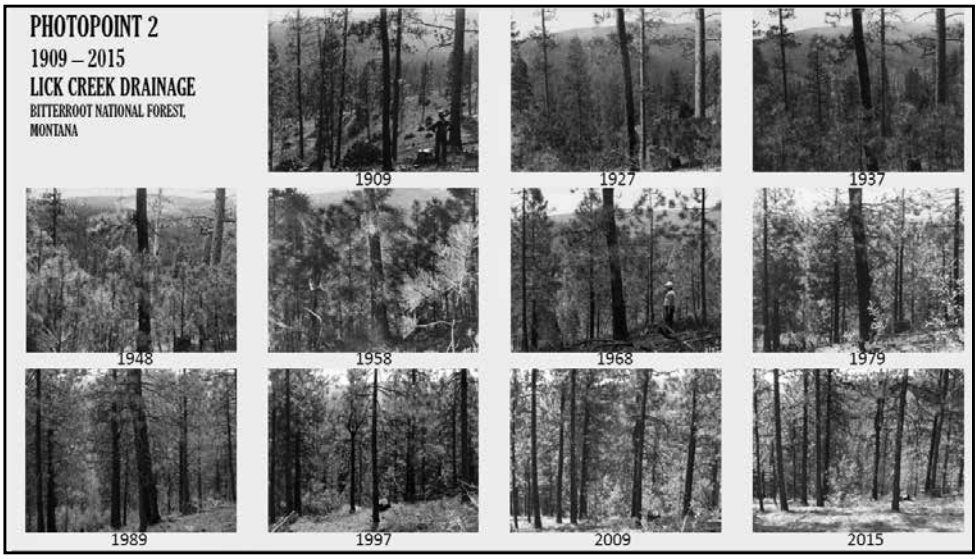
Wade Stocksleger, Alex Miller, Sierra Phipps (from left to right) at Stephens State Forest, owned and managed by the Iowa DNR. Credit: M. Curzon

What do you hope students will gain or benefit from by studying and observing forests now versus 50 years ago?

➤ **Ken:** Although there was a lot of clever work going on 50 years ago, we now know more about how forests function and their response to management compared to the 1960s and 1970s. We have made great strides in understanding the potential benefits of fire in some (certainly not all) forests, and how animals respond to various kinds of vegetation management. In addition, we try to impress on our students the importance of both written and verbal communications skills. Now more than ever, it is important for young natural resource professionals to have the ability to clearly express their thoughts in a public forum.

➤ **Doug:** Today, forestry instructors stand on the shoulders of giants who had the foresight to document their forest experiments with repeat photography – in many cases, over the course of decades. Nothing quite opens the eyes of a new forestry student as seeing a 50-year photo series of a forest stand undergoing succession – sometimes following a disturbance event such as fire or a harvest treatment, or even 50-years of undisturbed growth. Likewise, visiting a demonstration forest with side-by-side treatments that have been photo-documented over decades is invaluable to help students comprehend and internalize how forests grow and change over time.

➤ **John:** The acceptance of uncertainty as part of ecological systems, particularly in a changing climate, is an important aspect of any forestry education today. We have the benefit of over 100 years of Pinchot's "scientific forestry" in this country. This hindsight can teach us a great deal about uncertainty, but modern analytical techniques can teach us how to use that uncertainty in our decision making about forests. My hope is that current students of forestry can be forward-looking and do their best to anticipate the wild pitches climate change will be throwing at us.



Example from Management and Succession at the Lick Creek Demonstration/Research Forest, Montana. http://doi.org/10.1093/jofore/fvy030

➤ **Jessica:** I recently ran across a statement from Patrick Baker, Professor of Silviculture and Forest Ecology at the University of Melbourne: "The fundamental conundrum

Dr. Leahy carries out weeviled white pine leaders in her pack basket as part of a sanitation pruning effort. Credit: J. Leahy.

of silviculture: to manage today's forests, which have been shaped by yesterday's decisions, to meet tomorrow's objectives." As a human dimensions scholar who is also a forestry professor, I try to share techniques that can be used in the field, or from the computer, to detect the choices humans made 50 years ago, and how that created the forest conditions we have today.

➤ **Miranda:** We talk a fair amount about the history of silviculture in my classes, and I hope it broadens students' perspectives and leads them to engage in forest stewardship humbly and thoughtfully. By the time I interact with them in their junior or senior year (or as graduate students), they understand that forests are dynamic

and complex. Complementing that knowledge with the stories of how ideas and management approaches have developed and changed over time seems to increase their respect for scientific research and for the broader field of forestry. I hope that helps them contribute to the collaborative work that needs to be done whether as a forester, a scientist, a science communicator, or other engaged partner.

How do you feel you are best able to support students in your role?

➤ **Ken:** Most professors work hard to help each individual develop as a person and as a professional. It is important for students to gain relevant work experience to complement their studies before they graduate, so I am always talking to them about summer job opportunities. If a student has performed well in class and has obtained relevant work experience, letters of recommendations are easy to write!

➤ **Doug:** Thinking back to my time in undergraduate and graduate school, I most appreciate the outside-the-classroom opportunities that faculty created for students. Students expect to be fed a mountain of information in the classroom. However, when faculty take the extra step to create scenarios where the students are not only allowed but expected to take a leadership role in the planning and implementation of student-run field trips, experiments, demonstrations, or volunteer events, the experience is richly rewarding. It mimics a real-world job environment where outcomes determine performance evaluations. In my case, it was first learning the art and science of prescribed burning, but the ultimate experience came when I was assigned the roll of burn boss.

➤ **John:** I spent most of my career outside of the academic world before taking on my current role. Every chance I get, I try to relate how what they are learning applies to real world applications and daily decisions. I give examples of solutions that organizations are

UMaine Sean McCluskey and Todd Reed. Credit J. Leahy

trying to develop or implement to achieve different conservation outcomes. In some cases, I can facilitate getting students directly involved in that work outside of the university setting. My hope is that those experiences or examples open their eyes to the world of opportunities they have with the ecological education they are getting.

➤ **Jessica:** I recently went through the process of becoming a licensed professional forester in Maine, which required a six-year long internship period for me to complete all the requirements given my professor job duties. I felt a little weird being a PhD and an intern, but the rules are there to protect landowners and ensure enough hours of boots on the ground. I am much better able to support my students because of this, so it has been worth it.

What have you learned from your students that is valuable in expanding your own perspectives?

➤ **James:** My students demonstrate a strong interest in service to their campus and local community. They participate in a wide variety of hands-on volunteer projects like tree planting, invasive species control, forest road and trail improvements, and some that also involve community members and K-12 students and teachers. This shows me the importance of volunteerism and service as personal and professional activities. There are valuable outreach and education opportunities in engaging with the public in local forests.

➤ **John:** Students impress me with their knowledge of, and commitment to, ideals of "sustainability" defined broadly. They come into the field of forestry interested in living their lives in a manner that considers sustainability with a level of sophistication that I certainly did not have as a student. It encourages me to know that these students already have a bigger picture understanding of the important context their forestry education sits within. This hopeful perspective sheds a light for me on the doom and gloom of so many environmental problems we face.

➤ **Jessica:** My students have a much better understanding of diversity, equity, and inclusion than I do. They have less tolerance for discrimination and exclusion. I admire their sense of social justice and love the opportunity to listen to them about this. I often ask, "When can we put them in charge?" and look forward to the forest managers they will become with such strong values.

➤ **Miranda:** My students inspire me with their optimism, particularly during our current circumstances, and they have reminded me that every minor victory is progress we can build on.

Student members of the University of the South's prescribed fire team preparing to burn a shortleaf pine restoration site as part of a Forest Stewards Guild cooperative project. Credit: K. Smith.

A PhD student perspective

➤ **Kate Jones, PhD candidate, NC State**
➤ **Jonathan Kleinman, PhD candidate, University of Alabama**

We heard from these students about their "why," and barriers they face.

The Guild appreciates and wants to amplify these voices. Watch for our "student voice" article each month in our Across the Landscape e-newsletter. If you are a student who would like to write for the Guild community, please be in touch with us anytime.

What excites you about your current field of study?

➤ **Kate:** Working on a PhD in geospatial analytics excites me because geospatial work bridges disciplines and connects theory, application, and teaching opportunities. Specifically, I study wildland fire management and governance as they relate to community land stewardship and resource equity. We expect the number of communities affected by wildfire to increase. I hope my work contributes to planning and implementation of strategic mitigation (forest fuels reduction, Wildland Urban Interface development planning, etc.), and how we can leverage geospatial data and interdisciplinary methods to better serve a broad, diverse population of at-risk communities.

➤ **Jonathan:** Catastrophic wind disturbances like tornadoes are becoming more frequent in the southeastern United States and it is exciting that my research can impact how we manage naturally disturbed forests. I work in the Alabama Fall Line Hills, which contains the largest remnant of the longleaf pine ecosystem in the state. This region is

A decade of longleaf pine ecosystem recovery after catastrophic wind disturbance, salvage logging, and prescribed fire in the Alabama Fall Line Hills. Credit: J. Kleinman.

understudied compared to other longleaf pine ecosystems, and I am fulfilled knowing that my research contributes critical information to our ability to achieve range-wide longleaf pine conservation.

What needs or concerns do you have as you look to build your career future?

➤ **Kate:** My educational and professional experiences include land grant universities and a government lab, yet I realize that NGO's, non-profits, and a variety of agencies play critical roles in land stewardship and planning. The most daunting aspect of a post-PhD career is the lack of connection to these valuable and diverse non-academic spaces. More opportunities for externships or informal interviews with interdisciplinary, but sometimes less well known, organizations would help me to better understand where my skills, motivations, and desired impacts might fit. I hope to work at the interface of research and application but finding like-minded entities and individuals can be difficult in research-centric labs and academia.

Kate Jones

A Guild program graduate perspective

➤ **Joy Havens, FSYC Crew Member at Mountainair, NM, Summers of 2016 –2018. Currently at New Mexico State University.**

The Guild has been training youth for more than three decades to help prepare them for a career in natural resource stewardship. Joy provides her reflections as a graduate of the program, offering examples of why it is successful.

What are the top barriers and opportunities you experienced in securing a job in this field?

The amount of competition is a barrier in the natural resource management field. These positions are sought after by people across the United States who are equally or even more qualified than you. It is a challenge to set yourself apart from so many other talented and experienced individuals.

Did your FSYC experience help you fulfill a career dream, or get closer to fullfilling one?

My time as a FSYC crew member gave me a great foundation of knowledge and experience to build from. For example, I was able to apply the basic trail maintenance, wildlife survey, and habitat management techniques I learned to a wildlife technician position with the U.S. Forest Service.

A field professional perspective

We asked a few of our professional members what they look for in the next generation of forest stewards. Some common themes appeared, as well as unique suggestions from the field.

- **Bruce White, Silviculture Director, GFR Forestry Consultants, Raleigh, NC**
- **Ethan Tapper, Chittenden County Forester, Vermont Dept of Forests, Parks and Recreation, Burlington, VT**
- **Rebecca Ensign, Woodlands Environmental Manager, Packaging Corp of America, Manistee, MI**
- **Seth Zuckman, Executive Director, Northwest Natural Resource Group, Seattle, WA**

What do you watch for when hiring early career professionals?

Bruce: Two qualities, if shown by emerging forestry professionals upon graduation, will benefit both them and the profession immensely. The first is a willingness- or better yet an eagerness- to spend meaningful time in the woods, in both good weather and bad, in both briar infested swamps and open park-like stands. Honest field work is a necessary foundation upon which an honorable career can be built. This quality is becoming increasingly rare in new hires. The second quality is the desire to embrace a life-long curiosity about our forests, and a willingness to continually ask the right questions in order to learn something new every day.

Seth: Three timeless qualities we look for most:

- good observational skills to see what's happening in the forest, learn from its condition, and contextualize it in the landscape,
- unshakeable integrity and a passion to do right by the forest in recommending prescriptions and making judgment calls, and
- a competence and comfort with traversing the forest and recording measurements and observations in the woods, whether it's a pleasant, sunny, 65-degree spring day in open understory or a 35-degree drizzle in a sea of salal.

Do you see a niche or two for young professionals? What gaps do we most need to fill?

Ethan: We need young foresters who are thoughtful and innovative, who embrace nuance and complexity, who are willing to have tough conversations and to fundamentally rethink the way we do things. That said, we also need foresters who are respectful and humble. As a young forester, I wish I had been humble enough to ask more questions. I spent lots of time pretending I knew what I was doing when I should have been utilizing the knowledge of more experienced foresters and loggers. Today, asking questions is a critical tool guiding my ongoing learning, and an important strategy for how I show respect and build relationships.

What do you suggest to students transitioning from studies to forestry-related professions?

Rebecca: On the logistical side, have a good driving record and keep it. You may drive as much as you work in the field/woods. More broadly, I agree with what all the authors have shared in response to these questions. Well said!

Seth: Look for a position that will get you out in the woods to do field work, preferably with a mentor who can help you notice the aspects of the forest that they have learned from their years as a practitioner. There's no substitute for seeing a lot of forested country on the ground and comparing notes with someone else who has also just walked through it. You'll build a sense of how to translate the poetry of your passion for good forestry into the prose of a practical prescription.

Willingness to be in the forest in a wide range of conditions.
Ability to be humble, listen, observe, and learn.

Left: Ethan and UVM students at the Hinesburg Town Forest. Credit: E. Tapper
Left Center: Bruce White and a big cypress snag. Credit: B. White

Right Center: Forester Teo Rautu measures the diameter of a tree in the woods of Washington State. Credit: NNRG/Jaal Maan.
Right: Forestry technician Spencer Vieira navigates a stand in the woods of Washington State. Credit: NNRG/Rowan Braybrook.

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Student programs in the Guild

The Forest Stewards Youth Corps has been running for more than 30 summers. Three years ago, we expanded the program to include a Fall Fire and Fuels program for older participants. These programs provide essential training, skills building, and certifications for youth in rural, underrepresented communities in New Mexico. Many graduates have continued as program Crew Leaders, joined our All Hands All Lands burn teams, or started their careers in natural resources and fire management through connections and experience gained in FSYC.

We offer **internships** in our Southwest office, and in South Carolina through a collaboration with the U.S. Fish and Wildlife Service. We want to support more internships, especially in partnership with our professional members, organizational sponsors, and at Guild Model Forests.

We have **student chapters** across the nation who are doing exceptional work with community-building, outreach, and on-the-ground management.

New this year

The **Forest Stewards Mentorship Program!** The FSM program will select two individuals from the Forest Stewards Youth Corps (FSYC) for an academic-year mentoring program. Skills and experience built during the mentorship will support participants' professional development and prepare them to pursue future employment, including internships and full-time positions with the Guild.

The **Northeast Apprenticeship Program!** An up-and-coming forest steward will work with Guild staff and members in the field and develop their professional commitment to forest stewardship's highest standard. The work will focus on storytelling, while writing short stories with Indigenous land stewards and Guild members. The apprentice will also help the Guild better connect with natural resource students, our future professional members.