FOCUS

THE MAGAZINE OF THE OSU COLLEGE OF FORESTRY

SPRING 2023

Oregon State University

Dean
TOM DeLUCA

Senior Director of Development
ZAK HANSEN

Director of Marketing and Communications
KEVIN LEE

Assistant Director of Marketing and Communications
ANN VAN ZEE

Assistant Art Director
JULIA LONT

Cover Photograph
BRETT LOVELACE

Additional Contributions
JESSICA FITZMORRIS
IRENE SCHOPPY
EMILY HALNON

FOCUS *is published by Oregon State University College of Forestry. Our goal is to keep alumni, friends, faculty, staff and students informed about the college and its many events, activities and programs.*

This publication will be made available in an accessible alternative format upon request. Please contact Julia at 541-737-4270 or email julia.lont@oregonstate.edu.

To receive updates from the College of Forestry, please join our email list at beav.es/SoK

FOCUS • SPRING 2023

More than ever, we need creative solutions for today's pressing environmental and social challenges. As the world's population and associated demand for resources grows exponentially, we must seek new ways to meet the needs of society in harmony with the natural world.

The College of Forestry is driving those solutions forward. We are changing the way the world utilizes and nurtures forests, harvests timber, manufactures innovative wood products and combats climate change. Our research is providing the scientific basis for changing laws and policies that govern forest management, building codes and safety practices.

And we're doing this work with an emphasis on inclusivity and interdisciplinary collaboration.

The launch of our Indigenous Natural Resource Office explores, facilitates and honors the synergies between Traditional Ecological Knowledge, western science and other ways of knowing, weaving them together for inclusive excellence.

Our work with the Oregon Mass Timber Coalition expands the mass timber industry to support affordable housing, restore forests, create jobs and decrease the carbon footprint of built environments.

We also have the incredible opportunity through our proposed research in the Elliott State Research Forest to explore how to sustainably meet the wood demands of a growing population while protecting biodiversity.

This work requires the voices of everyone and inspiration from all sources. You never know what might spark a big question, ignite curiosity and fuel a passion for exploration to activate change.

Learn more about this work and more, in this issue of FOCUS.

Tom DeLuca
Cheryl Ramberg-Ford and Allyn C. Ford Dean
Oregon State University College of Forestry

IN MEMORIAM – LARRY GIUSTINA
1949-2022

Larry Giustina, '71, was not only a close friend and advocate of the College of Forestry, but a true embodiment of its mission to advance sustainable solutions in forest management. A life-long Oregonian, he was deeply committed to his family, community, the state of Oregon and Oregon State University. He died this past summer at age 73. Today, he lives on through his incredible legacy defined by service, integrity and generosity.

An OSU College of Business alumnus, Larry was managing general partner of the multi-generational, family-owned Giustina Land and Timber Company, based in Eugene, Oregon. Once an OSU Beaver golf team member, he was also the managing partner of the Eugene Tokatee Golf Course, established by his father, and active on the Corvallis Trysting Tree Golf Club board.

Larry's service to OSU was extraordinary, spanning more than 30 consecutive years on many leadership boards. He served as President of the OSU Alumni Association, the OSU Foundation Board of Trustees from 1993-2008 and as a member of The Beaver Club/Beaver Athletic Scholarship Fund. He was the founding chair of the College of Forestry board of visitors and, in 2017, he received the Lifetime Trustee Award, the OSU Foundation's highest honor.

Larry and his wife, Carolyn Keen Giustina, '71, generously supported endowed professorships in turf management (College of Agricultural Sciences) and forest management that honor his parents, Nat, '41, and Jacqueline Giustina, in addition to providing other gifts to the College of Forestry.

"Larry was an early champion of sustainable forest stewardship and had a lasting, positive impact on the lives and land he touched throughout his career," said Tom DeLuca, dean of the College of Forestry. "He had a way of connecting on a deep level with everyone he met, and his leadership, generosity and integrity ought to serve as inspiration for us all."

To learn more about Larry's legacy, watch his Lifetime Trustee video by scanning the code below or visiting beav.es/SZt

MODULAR MASS TIMBER

Creative solutions target the housing and climate crises

What if we could accelerate the use of mass timber, restore forests, create jobs *and* address the housing crisis in Oregon?

The Oregon Mass Timber Coalition thinks it's possible. In September 2022, the OMTC was awarded over $41 million by the U.S. Economic Development Build Back Better Regional Challenge, to strengthen Oregon's national leadership in mass timber, adding new capacity to produce mass timber modular housing.

"The housing crisis in Oregon is severe, with our state ranking 49 out of 50 for housing supply relative to its population," says Iain Macdonald, director of the TallWood Design Institute at the College of Forestry. "A thriving mass timber industry could help provide affordable housing, while also decreasing the carbon footprint of built environments, improving the resilience of forests and creating living-wage jobs."

Oregon State University is a key leader in the OMTC, which includes Business Oregon, the Oregon Department of Forestry, and the University of Oregon. The two universities are spearheading the research for the coalition, including the development of two new facilities: the Oregon Acoustic Research Lab at the University of Oregon, and the Oregon Fire Testing Facility at OSU.

Stewart Professor of Forest Operations Woodam Chung is leading an important pillar of the project. He aims to leverage "smart technology" to modernize the field of forestry.

Chung explains that forestry in the region — and its workforce — has suffered from a lack of innovation, jeopardizing the sector's sustainability and global competitiveness.

Forestry is also one of the most dangerous job sectors in the country — and has a diminishing and aging workforce.

But, Chung says, "smart forestry" can help shift these trends by modernizing forest practices through innovative technologies that make forestry more efficient and safer — from harvest to mill.

One pilot project Chung will pursue through the grant is the use of smart cameras on harvesting machines. The cameras use data-driven algorithms to detect which trees to harvest in real-time, based on their species, size, straightness and knot sizes. This kind of technology will enable foresters to utilize small-diameter trees for mass timber and maximize the value recovery of forest resources.

"We can apply this system to forest restoration practices, so we can efficiently separate trees that could be utilized for mass timber at harvest. This can improve the efficiency of wood handling and supply," he says.

He explains that this will also increase fire resilience, as it will help thin dense forests so there is less wildfire fuel left behind. This is important economically, too. Forest restoration is costly, and if the removed fiber can be gainfully used in a commercial mass timber product, the U.S. Forest Service will be able to treat more acres each year.

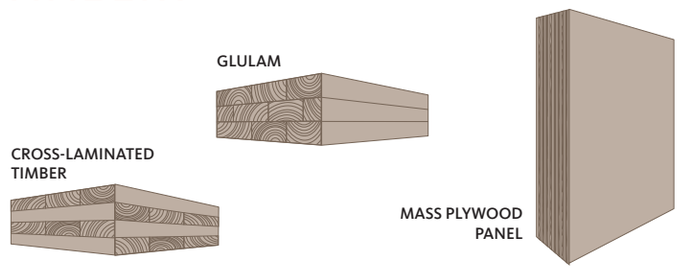
Chung is also working on landscape mapping, wearable devices to improve health and safety for workers, and smart sensors.

"This kind of technology is a win for forest health, fire resilience, economic development and the environment," says Chung.

"We're looking at all of these interconnected issues holistically and weaving together research projects that can enhance and expand the mass timber industry," says Macdonald. "It's an incredible opportunity to drive real change that will result in meaningful improvements to livelihoods and our environment."

WHAT IS MASS TIMBER?

Mass timber products are created by combining layers of lumber or veneers into structural elements like cross-laminated timber (CLT) and mass plywood panels (MPP), or columns and beams, such as glulam.



GOING BEYOND THE LAND ACKNOWLEDGMENT

Cristina Eisenberg, Maybelle Clark Macdonald director of Tribal initiatives in natural resources and associate dean of inclusive excellence at the College of Forestry, is committed to creating a safe space for learning where everyone thrives.

"Inclusive excellence means regardless of barriers like socioeconomic status, gender identity or if you are a first-generation student or a person of color, you will thrive because we are actively working to dismantle and remove barriers to success," said Eisenberg. "This work is a process and involves the whole community, working together, with cultural humility."

In her role as director of Tribal initiatives, she leads the newly formed Indigenous Natural Resource Office and within it, the Traditional Ecological Knowledge (TEK) Lab.

"Tribal initiatives have everything to do with inclusive excellence," said Eisenberg. "My job was created to take the College of Forestry beyond the land acknowledgment, which is not just about Indigenous peoples — it's about everybody."

The Indigenous Natural Resource Office guides people and the institutions with whom they work to find ways to support and empower Indigenous peoples and their communities while advancing social justice. Their work braids together TEK and western science and research to find solutions to humanity's most pressing natural resource conservation problems.

"Indigenous peoples have stewarded natural resources for millennia through their knowledge and traditional practices, and we want to decolonize and re-Indigenize the practice of science and advance holistic, systems-based thinking," said Eisenberg.

A priority for Eisenberg is to create, facilitate and support intercultural collaborative partnerships between Indigenous peoples, OSU, Federal agencies and conservation non-profits that identify mutual research interests, determine the tools needed and then co-create solutions that honor Tribal sovereignty.

Gail Woodside, Tribal liaison for the Indigenous Natural Resource Office and TEK Lab, says it's important that work with sovereign Tribal Nations be centered around not only decolonizing and partnering, but also following best practices and protocols.

"One way to do this, is to create a Memorandum of Understanding to lead and inform action," said Woodside. "As binding, enforceable contracts, these MOU's assist in protecting local knowledge, Elder interaction, and research processes in ceded lands, territories and fisheries in usual and accustomed locations."

Honoring Tribal sovereignty also means confronting the reality of what it means to be a land grant institution within an academic system founded on principles of settler colonialism.

"It means going beyond acknowledging to accepting responsibility for what was done to Indigenous communities — like forcible removal, displacement and trauma — and finding a solution," said Eisenberg.

Eisenberg believes education can be a powerful way to heal the damage. She is working to create opportunities and pathways for Tribal youth in higher education, using her lived experience as inspiration.

"I was a first-generation college student and am Latinx and Native American, of mixed Raramuri and Western Apache heritage," said Eisenberg. "I experienced homelessness, the farthest my parents made it was middle school, but I had a network of mentors that encouraged me to keep going. Everything I do is about paying that back."

While the TEK Lab's work takes place in the Western U.S., with a focus on the Pacific Northwest, the lab aspires to build allyships across cultures worldwide. Co-Principal Investigators like Tom DeLuca, dean of the College of Forestry, Tom Kaye of the Institute of Applied Ecology, and Luhui Whitebear of the Kaku-Ixt Mana Ina-Haws, embody this type of allyship.

"There is a hunger for Tribal inclusion, Tribal sovereignty, and honoring and respecting TEK," said Eisenberg. "And the College of Forestry is filled with changemakers, embodying inclusive excellence and allyship. From those who work within the Indigenous Natural Resource Office and participate in the College's Diversity, Equity and Inclusion workgroup, to those who work across the University, I have so much hope and feel so supported."

Haile Chase-The Boy and Monroe Fox harvesting sage, Fort Belknap Indian Reservation. Photo by Cristina Eisenberg.

Top: End of field season closing ceremony, Fort Belknap Indian Reservation; Photo by Erin LaMer. Bottom left: Dean Tom DeLuca collecting data with Savannah Spottedbird; Bottom right: Indigenous field technicians Monroe Fox and Tyrus Brockie braiding sweetgrass; Photos by Cristina Eisenberg.

TRADITIONAL ECOLOGICAL KNOWLEDGE LAB

Housed within the Indigenous Natural Resource Office, the TEK Lab includes Program Manager Holly Needham and project staff Savannah Buckman Spottedbird. Co-PI's include Tom DeLuca, Tom Kaye, Luhui Whitebear and Si Gao. Gail Woodside is the Tribal liaison and a postdoctoral scholar. The current graduate students are included below.

TESSA CHESONIS

"My research honors multiple ways of knowing and explores the benefits of moving away from a westernized approach to ecosystem management."

ALLISON MONROE

"Our research is based in reciprocity. In an increasingly challenging field, it is an honor to conduct research driven by both curiosity and care."

BROOKLYN RICHARDS

"I am interested in working within the nexus of TEK and western science to study the relationships between pollinators and plants in forest ecosystems."

ASHLEY RUSSELL

"I am researching various vegetation treatments and reforestation methods, including my Tribe's traditional methods, and how they affect the regeneration of culturally significant species."

STE(A)M POWERED FORESTRY

The College of Forestry is committed to integrating art and science to create and inspire sustainable solutions to climate change.

"As a mostly STEM college, it is all too easy to focus just on science, and yet, the arts help us be better scientists and citizens," said Tom DeLuca, dean of the College of Forestry.

Unveiled in October 2022, and co-presented by the College of Forestry and College of Liberal Arts, John Grade's sculpture, "Emeritus," is inspired by the form of an absent tree. Suspended in the middle of OSU's giant sequoias in the MU Quad, the 80-foot-tall sculpture invites viewers to peer vertically into the hollow, ghostly space of an imagined fourth trunk, formed of tens of thousands of cast and carved pieces that reference the species' cones, needles and branches. The sculpture was commissioned to celebrate the opening of the Patricia Valian Reser Center for the Creative Arts.

During its 14-month stay in the sequoia grove, College of Forestry researchers will collect data about the ecological conditions of "Emeritus" using automated dendrometer readings, bio-acoustic monitoring and rainwater DNA sequencing. College of Forestry researchers also helped install the sculpture.

"Emeritus" is open to visitors 24 hours a day and softly illuminated at night.

Watch the video to learn more about Grade's work, "Emeritus." or visit beav.es/SUF

Peavy Forest Science Center isn't just a living laboratory gathering data from two hundred sensors to contribute to mass timber research. It's also a showcase for public art, courtesy of Oregon's "Percent for Art" legislation.

Dedicated to providing Oregonians with high-quality, accessible art in public places, the Percent for Art legislation sets aside no less than one percent of funds for the acquisition of public-facing artwork in all state building construction projects. The program has placed nearly 2,400 works of art around Oregon for the public to visit.

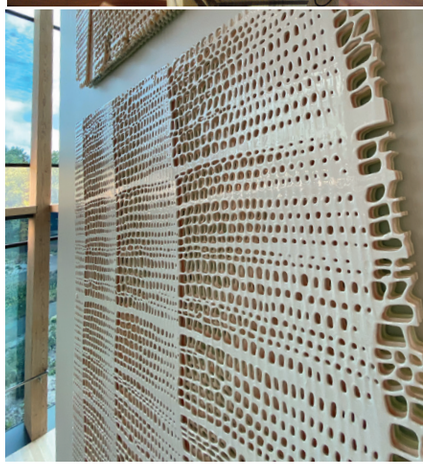
"The College is fortunate to host three extraordinary Percent for Art installations," said Tom DeLuca, dean of the College of Forestry. "These pieces of art bring life and reflection to our community and help us understand the past as we look forward."

Reaching 22 feet in height, Robert Horner's "The Perseverance of Decay" resides in the arboretum outside the building. This tree-like structure is built from torched ribs of wood, evoking the feeling of a burnt-out tree from a forest fire. The charred wood makes a direct connection to the fragility and impermanence of life. The inner core of the space, made of boulders and a basalt column that collects rainwater, prompts contemplation on how humans manage the environment.

"Things Remembered in the Flood" is an interior/exterior installation by The Wakanim Collaborative: Earl Davis, Shoalwater Bay Indian Tribe; Tony "Naschio" Johnson, Chinook Indian Nation; Travis Stewart, Confederated Tribes of Grande Ronde; and Shirod Younker, Coquille Indian Tribe. It tells the first dated story of the Mary's River Kalapuya, whose ancestral lands are what Oregon State University now occupies. Five exterior aluminum pieces illustrate lines of the Kalapuyan story, along with design elements of traditional Southern Oregon baskets. The exterior forms emerge as if from the drainage of flood waters, referencing the "Missoula Floods" (10,000–13,000 years ago). The interior figures, carved from diverse woods, represent Oregon's nine federally recognized Tribes. The tenth figure is for the Indigenous peoples still fighting for federal recognition, as well as acknowledging unknown Tribes lost to cataclysmic events. The artists intend the work to be a visual reminder of the responsibility to cultivate friendship and collaboration between OSU and the nine federally recognized tribes of Oregon.

The inspiration for Leah Wilson's "Listening to the Forest" came from the changing light quality and color she noticed while climbing the Discovery Tree in the H.J. Andrews Experimental Forest. The texture and color of the panels are based on the cellular structure of woods — specifically red alder, western hemlock, pacific yew and Douglas-fir trees — and the variances of light quality from forest floor to forest canopy. Each outward-facing surface is white, but the back layer of each panel is painted, creating a reflection of color and light.

Special thanks to Percent for Art committee members Seri Robinson, Mariapaola Riggio, Anthony Davis, Adrienne Wonhof, Thomas and Nicole Maness, Gail Woodside, Libby Ramirez, Bill Coslow, and Kate Ali.



Top: "The Perseverance of Decay," by Robert Horner, Middle: wood figure from "Things Remembered in the Flood" by The Wakanim Collaborative, Bottom: detail from "Listening to the Forest" by Leah Wilson.

TAPPING INTO OREGON'S MAPLE TREES

The sugar maple has a reputation as a powerhouse for maple syrup production — but it's not the only maple game around. An interdisciplinary team of researchers led by the College of Forestry is at the forefront of a movement to tap into Oregon's bigleaf maple. The goal? Put the Pacific Northwest on the maple syrup map.

"This is a great economic opportunity for Oregonians to build an industry centered around the bigleaf maple, particularly in western Oregon, where the tree is especially abundant," says Eric Jones, the principal investigator for the project and assistant professor of practice at the College of Forestry.

So why hasn't a bigleaf maple tapping industry taken off before in the Pacific Northwest? Economics. The bigleaf maple, acer macophyllum, has less sugar in its sap — usually about one-third to one-half — than the sugar maple. So instead of needing around 40 gallons of sap to make a gallon of syrup, as is the case with sugar maple, you need 80-90 gallons of bigleaf maple sap. But technology advancements like food-grade vacuum tubing that extract higher volumes of sap from trees and commercial reverse osmosis machines which remove 75 percent of water from the sap, have resulted in a cost-effective way to turn less sugary sap into syrup.

"This technology is a gamechanger for the bigleaf maple," says Jones.

To help establish a sustainable bigleaf maple industry in Oregon, Jones assembled a diverse research team including scholars and students from anthropology, food science, extension, geography, environmental arts and humanities, economics, ethnobiology and engineering. The U.S. Department of Agriculture awarded the team $1 million in funding through a pair of multi-year awards to promote the emerging industry, provide training and educate landowners interested in developing commercial enterprises.

"I think there's a romance and infectious nature to tapping bigleaf maples and we're trying to help landowners find the easiest and most economic and ecologically prudent path to get into 'sugaring,' as they refer to it in the maple industry," says Jones.

Besides producing maple syrup with a complex flavor profile, the bigleaf maple is the source of other products like nutritional maple water, edible flowers, honey, lumber, figured wood and firewood.

The research team is working to mitigate the risks involved with managing and sugaring bigleaf maples, including incorporating food safety standards into commercial production and investigating how wildlife, diseases and different climatic conditions affect bigleaf maple stands.

With climate change ushering in greater uncertainty about the future of Pacific Northwest forests, the team is interested in how the trees will fare under changing conditions. While hotter and drier weather in some areas will negatively impact bigleaf maple populations, the trees may prove resilient in certain microclimates. Jones is currently an advisor on a pilot project in Washington, where the group is planting thousands of bigleaf maple trees on old dairy land as part of a carbon offset program.

"The bigleaf maple is a tenacious tree, as any forester will attest to, and perhaps it has a role in helping mitigate climate change," says Jones.

Jones hopes that a growing maple industry will invite people to develop a deeper appreciation for the land and find new ways to engage with each other and with Oregon's biodiverse and ecologically complex environment.

"Our team of researchers is working hard to make the emerging bigleaf maple industry an inclusive and equitable economic opportunity," Jones says. "We hope to ignite a bigleaf maple culture in the Pacific Northwest like the sugar maple culture in the Northeast."

In May 2023, the team will hold the first bigleaf maple festival in Salem, Oregon. Learn more at www.oregontreetappers.net.

IMAGE 1. Tapping a bigleaf maple tree in the early spring.

IMAGE 2. Food-grade vaccuum tubing is linked to draw sap from multiple trees.

IMAGE 3. 80-90 gallons of bigleaf maple sap is required to make a gallon of syrup.

IMAGE 4. Commercial reverse osmosis machines remove 75% of the water from the sap to assist syrup production.

IMAGE 5. Bigleaf maple sap produces a rich syrup with a complex flavor profile.

THE RESEARCH TEAM

Eric Jones
CoF principal investigator

Melanie Douville + John Scheb
CoF graduate students

Barb Lachenbruch
CoF professor emeritus (tree physiology)

Ron Reuter
CoF associate professor (soil science)

Badege Bishaw
CoF courtesy faculty (agroforestry)

Tiffany Fegel
Forestry and Natural Resources Extension coordinator

Lisa Price
OSU professor (ethnobiology)

Joy Waite-Cusic
OSU associate professor (food safety)

Ann Colonna
OSU senior faculty research assistant, (sensory testing)

Rebecca McLain
Portland State University (ethnography)

TESTING THE TRIAD

Balancing timber production to maximize biodiversity

As the human population grows, the demand for resources is increasing. But at what cost to biodiversity? Just as the agricultural industry contends with how to sustainably feed eight billion humans, the challenge for forest managers is to find sustainable ways to meet human wood consumption needs, explains Matt Betts, Ruth H. Spaniol chair of renewable resources and professor in the department of Forest Ecosystems and Society.

“What we consume has a huge impact on our planet’s biodiversity,” said Betts. “But very few researchers have tested approaches to minimize tradeoffs between timber production and biodiversity conservation.”

Betts explains that in agriculture, there are two main camps of thinking. The first, “land sparing” involves setting aside large portions of the landscape as unmanaged reserves, and growing crops intensively in others. The second, “land sharing” involves low-intensity “nature-friendly” agriculture. This results in lower yield, increased total area for food production and therefore few or no reserves.

In forestry, this “land sharing versus sparing” model has been expanded to a triad approach, where a given landscape may be divided into differing proportions of three distinct management groups — reserves, focused on biodiversity conservation; intensive management, focused on wood production; and ecological forestry, which is a mix of both.

To test this approach, he is collaborating with stakeholders inside and outside the College of Forestry to launch a 20-year study across 40 different sub-watersheds in the Elliott State Research Forest. The research is designed to test different proportions of all three management types across various forest landscapes (watersheds). By doing this, Betts and his team hope to learn how these management approaches affect biodiversity and wood production over time.

Before the project can begin, it must gain the approval of many stakeholder groups to be completed on the state-owned forest. In the meantime, Betts is working on a shorter-term version of this project funded by the National Institute for Food and Agriculture.

In collaboration with several CoF researchers, including Klaus Puettmann, Doug Mainwaring and John Sessions along with Taal Levi, a professor in the Department of Fisheries, Wildlife and Conservation Sciences, and doctoral student Maggie Hallerud, Betts’ team is collecting data from forests that fall under the categories of reserve, intensive management and ecological forestry. They are performing preliminary modeling about how each approach affects biodiversity. Hallerud is leading the biodiversity data collection and analysis and Levi is leading the eDNA analysis in this work.

Before and after each experiment, the team counts various species, measures vegetation and incorporates cutting-edge research methods. Researchers are identifying recorded bird sounds through machine learning, tracking wildlife with game cameras powered by artificial intelligence and using DNA barcoding (eDNA) to monitor species diversity.

This study comes with limitations, however, and Betts thinks the most meaningful insights will come from a longer-term project with more controlled experiments at landscape scales.

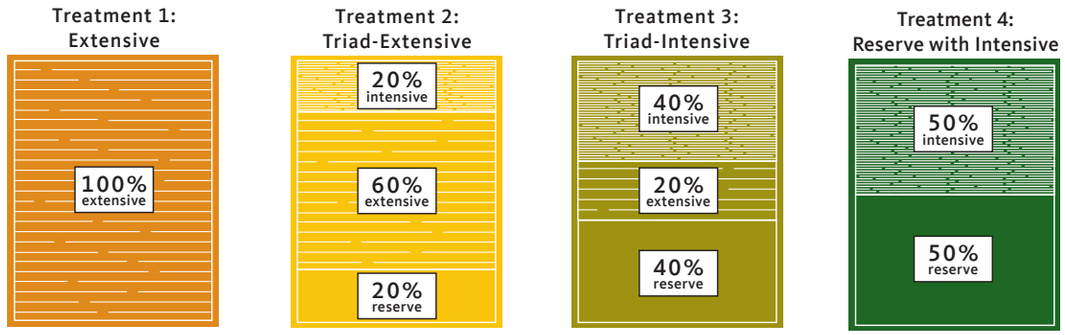
“That’s the real gold standard for science,” he says. “What we find in short-term studies is often overturned by what we find in long-term studies. And with how long-lived trees are, there’s certain information we could never get during a single career.”

Betts believes a long-term research project in the Elliott State Research Forest could offer critical insights into how to conserve biodiversity and sequester carbon while sustainably keeping up with society’s increasing demand for wood products.

“We don’t have enough information about this mix of forestry practices in the Pacific Northwest,” he said. “A long-term project like the one proposed for the Elliott would enable us to try to reduce the potential trade-offs between timber production and conservation — and identify an ideal mix of forestry management practices that enable production of wood while still maintaining biodiversity. If successful, this could be a fantastic example of approaches to balance human needs with biodiversity conservation, and how people can collaborate to move beyond historical conflicts about forest values.”

LANDSCAPE LEVEL TREATMENTS

These landscape-level treatments are designed to produce approximately equivalent wood yields using different combinations of stand-level treatments: reserves, extensive, and intensive management.



INTENSIVE STANDS
land managed using intensive forestry methods

EXTENSIVE STANDS
land managed using ecological forestry methods

RESERVE STANDS
land reserved for conservation of biodiversity

SOLVING THE MURRELET MYSTERY

Marbled Murrelet on its nest. Photo: Brett Lovelace/OSU

Heading out in search of Marbled Murrelets to tag at sea. Photo: Jaymi Heimbuch

College of Forestry researchers tackle challenging fieldwork to gain insights into how to protect this endangered species.

It's not easy to find a marbled murrelet's nest in Oregon. It wasn't until 1990 that researchers even located the first one in the state. The elusive breeding behavior of this threatened species has made it challenging to protect through conservation efforts and strategic management of coastal forests. It's clear the population of this small seabird has declined from historic levels — but the reasons why are murky.

That's why a team of College of Forestry researchers launched Oregon's first large-scale, long-term study of murrelet breeding biology. This collaborative project, initiated in 2016, drew immediate support from a diverse group of stakeholders across the state.

"Murrelets are a listed species, so there's a lot of interest in recovering this population," said Jim Rivers, an assistant professor of wildlife ecology who's leading the research effort. "But we haven't had the information we need to understand what's constraining reproductive output."

For phase one of the project, the research team turned to existing data to better understand why the birds travel inland to nest some years, but not others. Murrelets rely on the sea for their food, including forage fish like anchovy, herring, and smelt, and commute as much as 50 miles inland to nest in old-growth and late-successional forests, where they lay a single egg. The researchers learned when it's a bad sea year and ocean temperatures are too high, the birds forego breeding, unable to get food to feed their young.

For the next phase of research, the team studied the murrelet's breeding behavior, tracking them from sea to nest. Venturing out on a research vessel, the team boarded inflatable boats to catch murrelets, install radio tags and release the birds back into the wild. When breeding season hit, the team patrolled the coast with airplanes, listening for beeps from radio tags to narrow down potential nesting sites for the ground crew and tree climber to locate.

But because murrelets nest in older forests, just getting to the vicinity of a nesting tree usually involves scaling piles of blowdown and bushwhacking through thick growth for miles. And murrelets are sneaky nest-builders — and sitters. They don't use twigs and branches to build their nests like other birds. Instead, they find a mossy branch where they lay a single egg and take turns incubating it. They trade spots once every 24 hours, sitting so still that their only movement may be just the blink of an eye.

And when they're moving in and out of the nest, they're really moving. Murrelets have been clocked at nearly 100 mph and their typical cruising speed is 60-70 mph. They usually fly at dawn and dusk, so it takes an eagle eye to spot these birds and find their nests, a large reason there were only 29 active nests recorded in Oregon before this project. The team of OSU researchers more than doubled that number, also installing cameras at each nest to monitor success.

"We're learning a lot about where murrelets are nesting, how successful they are and what causes them to fail," said Rivers. "This information has been a long time coming, and it ties back to how challenging it is to do this fieldwork."

A small radio tag is affixed to a Marbled Murrelet so it can be tracked to its nest site. Photo: Jaymi Heimbuch

MARBLED MURRELET MARVELS:

IMPRESSIVE FLIGHT SPEEDS

60-70 mph cruising speeds, top speed nearly 100 mph.

SECRETIVE NESTING SITES

It is the last North American bird to have its nest identified, in 1974. Nest sites can be as far as 50 miles inland.

JUST ONE EGG

The female lays one egg on a wide moss-covered shelf created by the branch of a large tree. Pairs only nest in years when the fish supply can sustain offspring.

POWERFUL DISTANCE FLIERS

Adult birds fly from the ocean to nest sites, mostly at dusk and dawn, usually carrying just one fish per trip.

SHOW UP FOR COF ON DAM PROUD DAY 2023!

Once a year, Beavers from around the globe come together for Dam Proud Day, an annual 24-hour online fundraising event dedicated to building a better, stronger, more influential Oregon State University.

Funding gathered during this event directly supports College of Forestry students, who have the highest reliance on self-help loans when paying for tuition and basic needs while at OSU. This year's Dam Proud Day will be on **April 26, 2023**. During the event, you will have the ability to give directly to College of Forestry scholarships.

A donation to the College of Forestry will help our students afford a world-renowned education. Your gift will ensure they graduate with the skills and knowledge necessary to improve our forests, ecosystems and communities.

For more information about Dam Proud Day and how to donate to the College of Forestry, please visit **osufoundation.org.**

SAVE THE DATE

WEDNESDAY, MAY 24, 5:30 P.M.

COLLEGE OF FORESTRY **DEAN'S DINNER**

Celebrating our scholarship recipients, donors and outstanding alumni

FORESTRY.OREGONSTATE.EDU

IN MEMORIAM

Mike Newton

October 24, 1932 – August 30, 2022

Mike Newton was a faculty member at Oregon State for forty years. During that time he conducted extensive research on the use of herbicides to control weeds in a wide array of forest settings, with the ultimate aim of determining the ideal environment for reforestation initiatives.

Over the course of his OSU career, Newton led significant investigations into competition between trees, shrubs and weeds in areas of differing rainfall and soil type. He also oversaw a major program in silviculture, with specific focus on the response of trees to different managed competition environments.

Newton retired from OSU in 1999, but remained very active as a scholar and mentor. Over the course of his career, Newton supervised 66 graduate students, hailing from 11 different countries.

To learn more about Newton's career and his contributions to the College of Forestry, please visit the Oregon State Oral History Project at beav.es/SUt.

MARKETING + COMMUNICATIONS

213 Peavy Forest Science Center
College of Forestry
Oregon State University
Corvallis, OR 97331

541.737.2004
forestrycommunications@oregonstate.edu

@COFOREGONSTATE