



The need for clean water, renewable fuels and materials, low carbon economies, and biological conservation has never been greater.

The dynamic times ahead

A message from Dean Paul M. Winistorfer



While we have recently celebrated the 25th anniversary of the College of Natural Resources and Environment and the incredible journey that has brought us to where we are today, our work has only just begun. The next five to seven years may be the most dynamic time in the history of the college. I want to tell you about the challenges – and opportunities – that lie ahead.

Our changing landscape

This dynamic period ahead comes at a time of growing world populations, especially in urban areas, and extreme pressures on our global natural resources. The need for clean water, renewable fuels and materials, low carbon economies, and biological conservation has never been greater. Just as great is our need for advances in technology to assess and manage these resources and a growing need to understand the mountains of data now available. Virginia Tech aspires to be a leading global land-grant institution addressing these most pressing problems.

We are revisiting and renewing our responsibility to serve the citizens of Virginia and beyond by providing educational programming, engaging with local communities, and stewarding our natural resources for a sustainable future. Land-grant universities across the country are interwoven into the social and economic fabric of our states and are integral to a successful future.

Here on campus, the next few years will also be distinguished by a changing landscape in higher education and the positioning of Virginia Tech for the future. Undergraduate enrollment will increase by 5,000 students, and the university is committed to becoming more diverse and inclusive. Higher education funding remains a topic of national interest, and Virginia Tech is developing a new budget model that will allocate resources based on measurable performance goals.

In the college, we also face a number of challenges and opportunities in critical areas:

- A wave of faculty and staff retirements.
- A shortage of physical space for our current and growing programs. The quality and quantity of space will be even more evident as we begin hiring new faculty. Peer programs nationally outshine our physical infrastructure.
- Undergraduate enrollment that will grow from just under 1,000 students to 1,250 students by 2022.
- The adoption of Virginia Tech's new budget model that will be based on enrollment, student credit hour production, research production, faculty scholarship, and philanthropy.
- Challenges related to maintaining and advancing natural resources programming at a research-intensive university with growing global aspirations.
- Competition for research funding from government, private, and nonprofit sectors.

Meeting the challenges

How we prepare for the future and address these challenges and opportunities is paramount to the future of the college and the contributions we make in research, learning, and community engagement.

Leading this list is the pending retirement of approximately 20 senior faculty and, consequently, the hiring of new faculty. When filling these positions, we must preserve the core capabilities that are our strength while recruiting creative individuals who will lead the evolution of the disciplines. Our new faculty must secure research funding in an ultra-competitive environment, become leaders in scholarship of the disciplines, be cognizant of the interdisciplinary approaches to solving the most challenging problems, and successfully mentor the next generation of students.

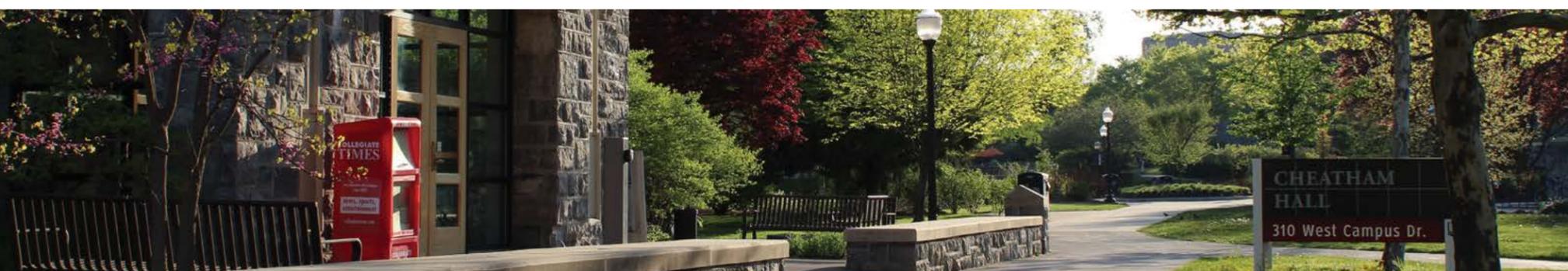
Also, and perhaps most importantly, will be our continuing and unwavering commitment to student education and to contributing to the interdisciplinary spaces emerging in the curriculum. Virginia Tech is positioning itself as a leader in interdisciplinary education through several initiatives launched by President Sands. Beyond Boundaries is an initiative to imagine the university of the future, and the Destination Areas initiative seeks to develop thematic thrusts around research, curriculum, and student experiences. The university is also launching thematic Pathways minors beginning in fall 2018 as an evolution of the core curriculum. We look forward to sharing with you our progress and impact in these new campus endeavors.

Planning for the future

As we enter this dynamic period of change – and the opportunity to shape the future of the college – we will begin a comprehensive planning process. We have already begun meetings and informal conversations that will lead us into more formal strategizing. At the State of the College address in August, department heads and other unit leaders described the conversations they have been having with faculty, staff, and students about our future as a first step in the planning process. We need and will continue to collect input from all of our stakeholders as we envision our future.

On this note, I invite you to consider the profiles of the college and our academic departments featured in this issue of CNRE News. This never-before-used format allows us to portray who we are today, yet also signifies that we are entering a time of change.

I am confident we can build on our core disciplines across all four departments and our unique graduate offerings in the National Capital Region while being in perfect sync with the aspirations of a changing Virginia Tech. The College of Natural Resources and Environment is well positioned for a successful future. We will continue to evolve and cement our position as one of the leading universities in North America for the study of natural resources and the environment, and work to develop the next generation of skilled and passionate leaders for our sustainable future. I hope you will join us and help create the future of the college.

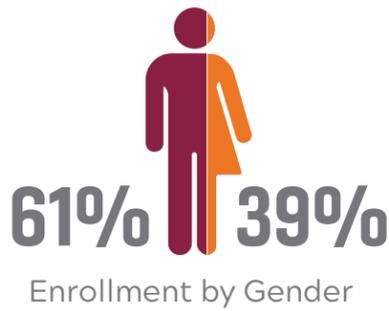
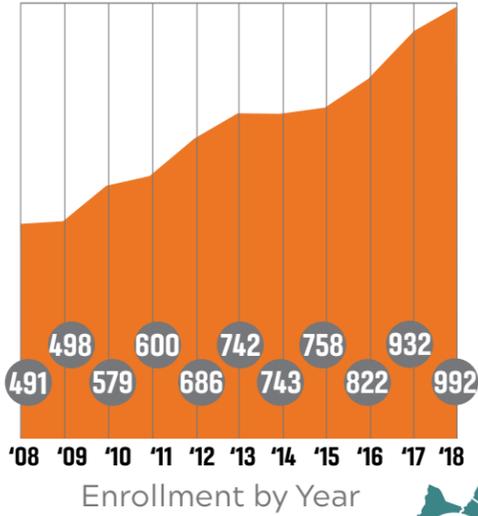


CNRE by the numbers

CNRE HAS BEEN RANKED THE NATION'S NO. 1
NATURAL RESOURCES AND CONSERVATION PROGRAM
 by College Factual for the fourth consecutive year.

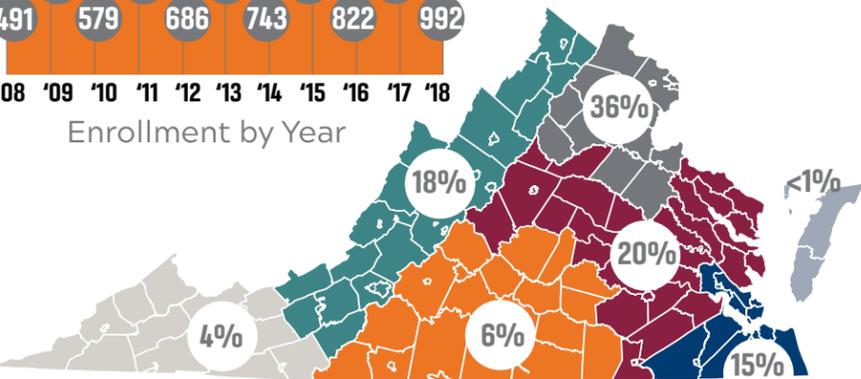
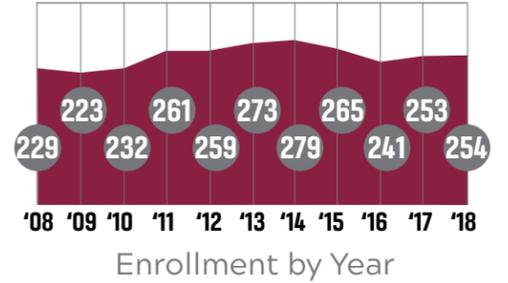
UNDERGRADUATE ENROLLMENT

992 Students | Fall 2018



GRADUATE ENROLLMENT

254 Students | Fall 2018



IN-STATE STUDENT RESIDENCY BY REGION (79% of Total Students)

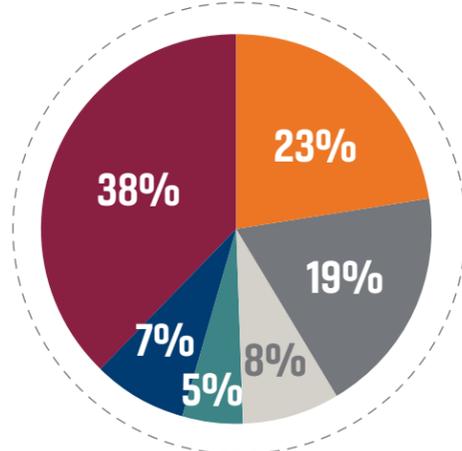
FRESHMAN ADMISSION



Year	Amount
2009	\$12,859,659
2010	\$14,896,641
2011	\$18,029,445
2012	\$15,052,332
2013	\$15,577,271
2014	\$14,138,732
2015	\$18,468,355
2016	\$21,240,482
2017	\$15,817,687
2018	\$16,841,275

FULL-TIME FACULTY
71 Tenure | Tenure-Track
17 Instructional | Other
65 Scientists | Postdocs
153 TOTAL

GRADUATE ENROLLMENT BY PROGRAM



- Fisheries and Wildlife Sciences
- Geospatial and Environmental Analysis
- Forestry
- Forest Products
- Geography
- Master of Natural Resources (Based in the National Capital Region; offered in online and executive formats)

over \$1.5M
 1,000 gifts

DONOR GIFTS
 2017-2018

\$301,220
 111 CNRE Scholarships

SCHOLARSHIPS
 2018-2019

The undergraduate enrollment and freshman admission figures on this page are higher than the sum of those on the department pages that follow because some students enter the college as "natural resources (undecided)" before selecting a specific major.

CNRE NEWS

COLLEGE OF NATURAL RESOURCES AND ENVIRONMENT

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A message from the department head

Joel Snodgrass



Welcome to the Department of Fish and Wildlife Conservation. The department strives to significantly contribute to fish and wildlife resource conservation and management at state, national, and international levels through integrated programs in research, teaching, and engagement. We are passionate about natural resource conservation and management, and about making a difference in how our society values sustainable natural resources. Through our commitment to excellence in research, teaching, and engagement, we are training the next generation of leaders in natural resource conservation and management, and influencing decisions and policy in Virginia, the nation, and the world.

We offer a bachelor of science degree in fish and wildlife conservation with majors in fish conservation and wildlife conservation. At the graduate level, we offer a master of science and a doctor of philosophy in fisheries and wildlife sciences. All of our programs stress experiential learning and development of mentoring relationships between faculty and students. Our alumni occupy leadership roles in federal and state agencies and academic institutions in nearly all 50 states and abroad, and in many private companies.

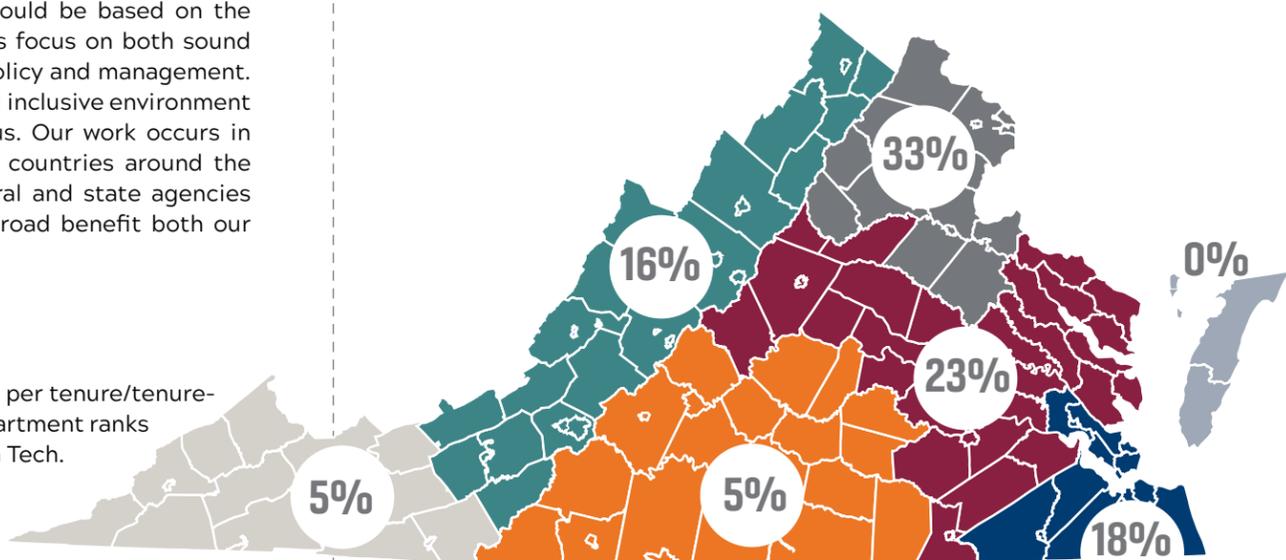
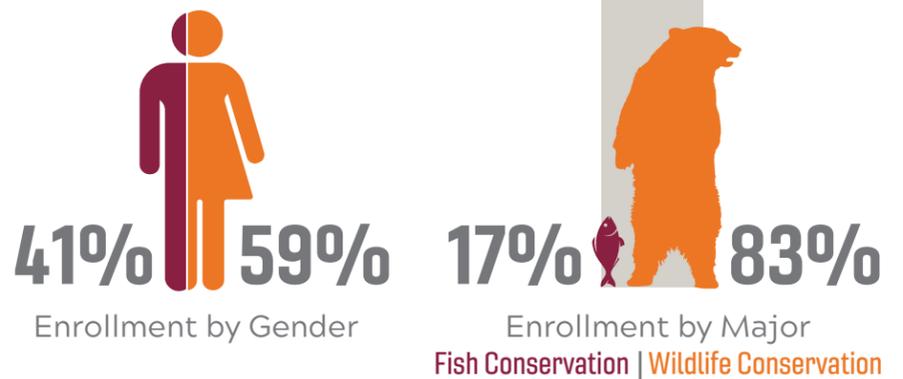
Our scientific expertise is wide-ranging, and we value collaboration across the natural and social sciences. Because we believe that decisions and policy concerning the management of natural resources should be based on the best available science, our faculty, staff, and students focus on both sound science and the translation of scientific results into policy and management. We value diversity and strive to create a welcoming and inclusive environment here at Virginia Tech and anywhere our work takes us. Our work occurs in Virginia, throughout the United States, and in many countries around the world. Our strong partnerships with a range of federal and state agencies and nongovernment organizations in the U.S. and abroad benefit both our students and our partners.

DID YOU KNOW?

- With more than \$1.9 million in total external funding per tenure/tenure-track faculty member in the past four years, our department ranks second among all academic departments at Virginia Tech.
- Partnerships with federal and state agencies, such as the U.S. Fish and Wildlife Service, U.S. Geological Survey, National Park Service, and Virginia Department of Game and Inland Fisheries, as well as university centers and institutes, afford students and faculty opportunities to conduct research, join project teams, and solve resource management problems.
- Our faculty conduct research critical to managing fisheries in large rivers, from the New River in Virginia to the Amazon River in South America to the Yangtze River in China.
- We have one of the largest collections of experts in stream fish ecology in the world.
- Our wildlife biologists study carnivores, including lions, tigers, cougars, and ocelots in Central and South America, Africa, and Asia. Here at home, our faculty study coyotes and foxes and their impacts on game and endangered species.
- Each year, our Freshwater Mollusk Conservation Center raises thousands of juvenile mussels, including several endangered species, for release into rivers to help restore native populations.
- Researchers in our shorebirds program work up and down the Atlantic and Gulf coasts, along the shores of prairie rivers and lakes, and internationally to promote the conservation of seabirds and shorebirds, including the endangered piping plover.
- Many of our faculty and graduate students are affiliated with Virginia Tech's Global Change Center. Directed by department faculty member Professor William Hopkins, the center addresses challenges posed by the interaction of climate change, pollution, invasive species, disease, and habitat loss.
- Students taking Wildlife Field Techniques participate in a 10-day residential program at the Mountain Lake Biological Station, where they practice orienteering, camera trapping, setting mist nets, and capturing, tagging, and releasing wildlife.

FISH AND WILDLIFE CONSERVATION by the numbers

FALL ENROLLMENT | 2018 241 Undergraduates



IN-STATE STUDENT RESIDENCY BY REGION (82% of Total Students)



FRESHMAN ADMISSION

FULL-TIME FACULTY

- 17 Tenure | Tenure-Track
- 14 Scientists | Postdocs
- 31 TOTAL

A message from the department head

Jay Sullivan



The study of forestry at Virginia Tech began nearly 100 years ago. Today, we are a recognized national leader in education, research, and outreach efforts that are rooted in one of our most precious resources on the planet: forests.

Forests cover two-thirds of Virginia and nearly one-third of the Earth's land surface, and forested ecosystems represent a critical element of environmental health and human well-being worldwide. They play an important role in sustaining the Earth's climate, are fundamental in providing clean water, support floral and faunal populations, and comprise critical habitats for threatened and endangered species. Healthy forests also provide necessary products ranging from lumber and fiber to commercial biofuels that are essential to economies around the world.

In our department, we have many opportunities to build on this extraordinary program and, more importantly, to help our students acquire the professional skills and ethics needed to conserve and manage forested ecosystems. This work is complex and involves boots-on-the-ground field effort, remote sensing and data analytics, laboratory science, and planning and policy analysis, as well as assessments of human needs, impacts, and motivations.

To develop leaders for meeting those challenges, we offer a bachelor's degree in forest resources and environmental conservation, with majors in forestry, environmental resources management, natural resources conservation, and environmental informatics. Our interdisciplinary bachelor's degree in water: resources, policy, and management is unique in the nation and engages faculty across the campus. Our master's and doctoral degrees encompass all of these areas and support a vibrant student research program.

Ours is one of the largest programs in North America, and we are committed to providing the highest quality education in forestry and environmental resources management. We carry the legacy for future generations and must ensure that our forests and environment are passed on in an even better condition than we received them.

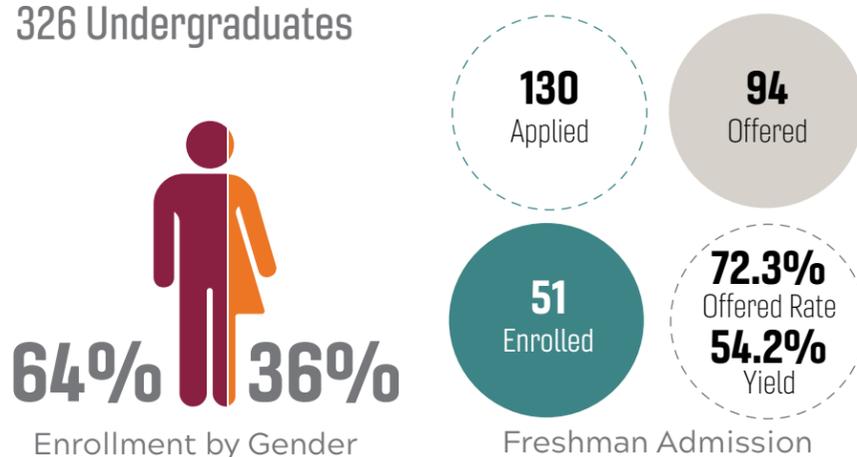
DID YOU KNOW?

- Our forestry program has been ranked No. 1 in the country for the second year in a row by College Factual.
- The 1,353-acre Fishburn Forest, which is located only 10 minutes from campus, provides space for teaching and research activities.
- All three of the options within the forestry major – forest operations and business, forest resources management, and urban forestry – are accredited by the Society of American Foresters, the national scientific and educational organization representing the forestry profession in the U.S.
- Our new water degree – water: resources, policy, and management – is the most interdisciplinary such program offered anywhere in the U.S. and is the first of its kind in Virginia. The broad curriculum is built on a collaborative partnership that includes seven departments and four other colleges at Virginia Tech.
- Students in our new environmental informatics program learn about the application of big data, geospatial technology, and remote sensing to a variety of fields related to the study and management of natural resources: land use, soil, water, fish and wildlife, climate, etc.
- Faculty in the department are leading a multi-university effort called Urban Forestry 2020, which examines where the jobs are, what students think about a career in urban forestry, and the challenges of an urban forestry career.
- Students who take Wildland Fire Ecology and Management can train and qualify to serve on Virginia Tech's Wildland Fire Crew, which works with state and federal agencies to suppress wildfires or manage prescribed burns.
- Faculty in the department are leading research into applying probabilistic forecasting, such as is used in weather predictions, to both water quality and forest productivity.

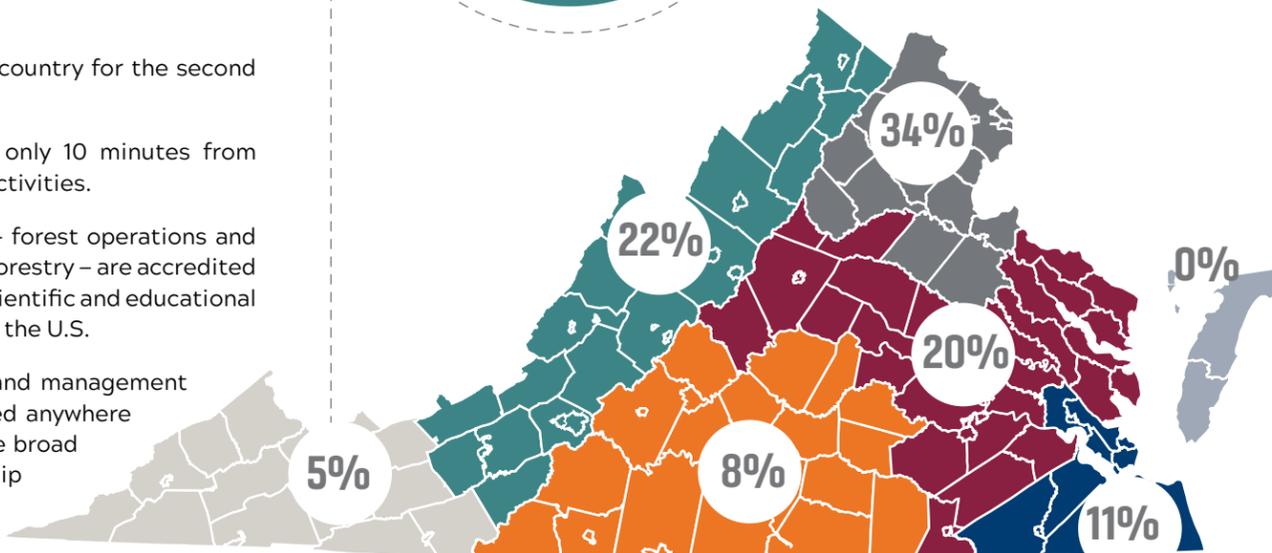
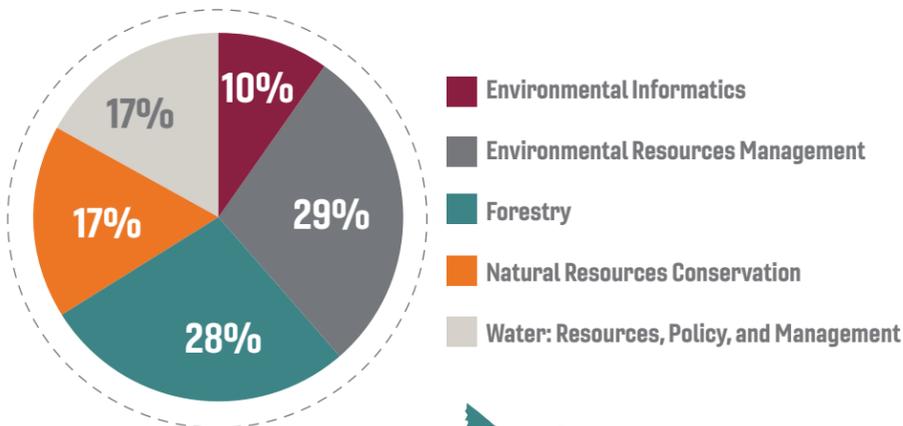
FOREST RESOURCES AND ENVIRONMENTAL CONSERVATION by the numbers

FALL ENROLLMENT | 2018

326 Undergraduates



ENROLLMENT BY MAJOR



IN-STATE STUDENT RESIDENCY BY REGION (83% of Total Students)

FULL-TIME FACULTY

26 Tenure | Tenure-Track
 1 Instructional | Other
 17 Scientists | Postdocs
44 TOTAL

A message from the department head

Tom Crawford

The Department of Geography has experienced a year of significant change and accomplishment. I took the helm of the department in July 2017, and we welcomed two new faculty members. We are known for the high quality and quantity of our instruction and advising. Faculty members Tim Baird, John Boyer (aka the Plaid Avenger), Drew Ellis, Bob Oliver, and Stewart Scales won awards this year recognizing their excellence and innovation in teaching. A sampling of new courses in recent years includes Sustainable Urbanization, Geospatial Land Change Modeling, Climate Change and Society Impacts, Tropical Meteorology, and Africa Together.



The department is well positioned in the new Pathways general education curriculum and leads a new Pathways minor in Sustainability. Faculty members taught international field courses this year that took students to Antarctica (Lynn Resler), Croatia (Anamaria Bukvic), and New Zealand (Lisa Kennedy). Instructor Dave Carroll again led a group of students on his ever-popular Hokie Storm Chase course to the Midwest.

Geography teaches the highest volume of credit hours at Virginia Tech on a per faculty basis. Along with outstanding teaching, the department has been highly productive in our research mission, with many publications in top journals and three currently active National Science Foundation-funded projects investigating topics in Bangladesh, Tanzania, and Tidewater Virginia. Other research themes include human health in Appalachia, alpine biogeographic response to climate change, water resources in South Asia, spatial analysis of tropical cyclones, and urban mega-events (e.g., the Olympics), to name a few. Following the 2017 Charlottesville incident, the department co-hosted a campus event engaging themes of race, space, and place, featuring the president of the American Association of Geographers as the keynote speaker.

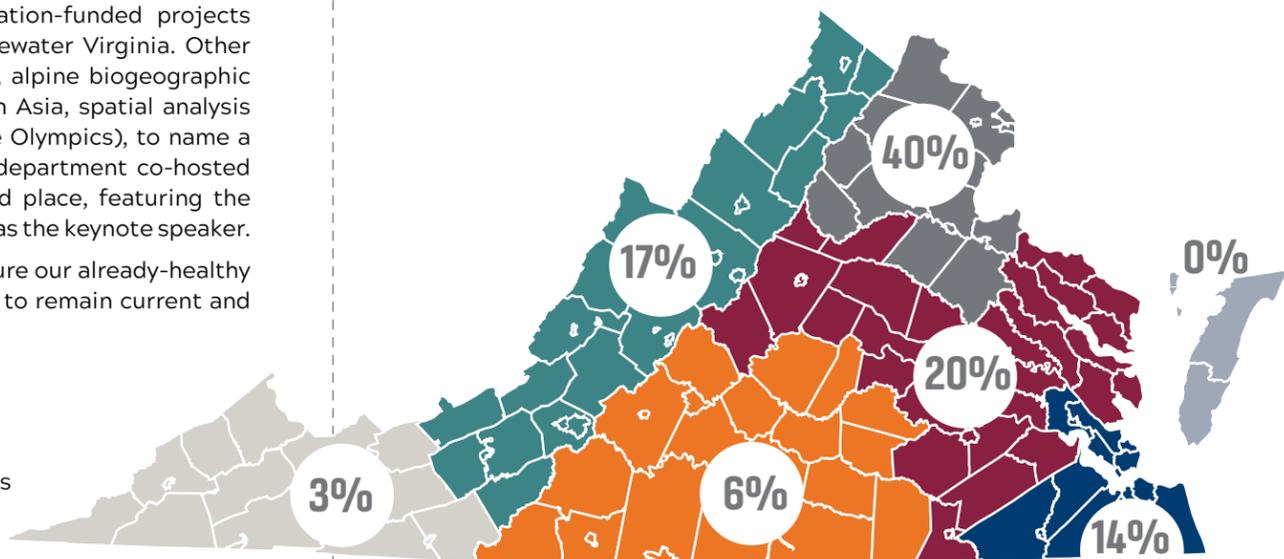
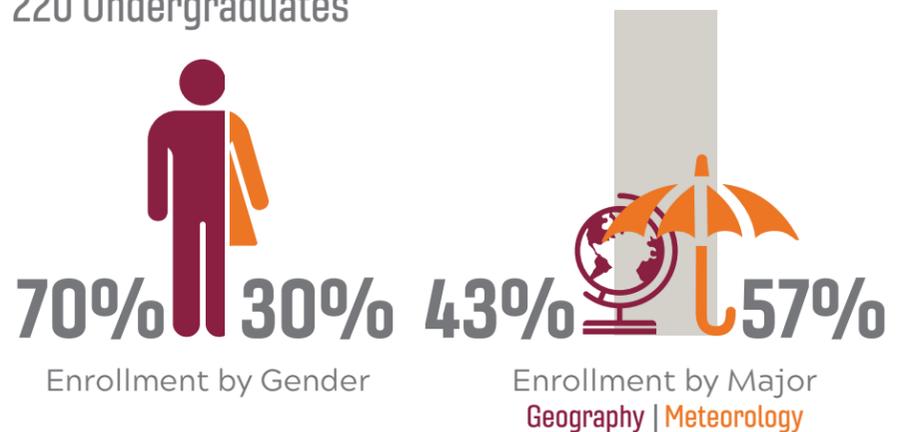
As we move into the future, strategic planning will ensure our already-healthy status, allow us to grow with the college, and steer us to remain current and nationally relevant within our disciplines.

DID YOU KNOW?

- The department houses the state's only bachelor's degree in meteorology in addition to its bachelor's and master's programs in geography, and is a major participant in the interdisciplinary geospatial and environmental analysis doctoral program.
- The geography department is a leader in geospatial technology on campus – 227 students are enrolled in the gateway Principles of Geographic Information Systems course, with 77 percent of them coming from outside the department.
- In 2017, Senior Instructor John Boyer, who teaches the enormously popular World Regions course, taught the most students of any faculty member at Virginia Tech and was named a 2017 Master Educator by Course Hero. Plausible estimates suggest that for recent years, 35-40 percent of Virginia Tech's graduating seniors have taken at least one of Boyer's courses.
- Selected faculty research funded by the National Science Foundation: Tim Baird investigates how mobile phones are altering livelihood strategies of the rural Maasai population in Tanzania; Anamaria Bukvic studies coastal community vulnerabilities to sea-level rise on the U.S. East Coast; Tom Crawford maps rates of shoreline erosion and societal impacts at the mouth of the combined Ganges-Brahmaputra river in Bangladesh.
- Meteorology Instructor Dave Carroll has developed the High Elevation Mountain Mesonet – a constellation of eight remote-access, solar-powered weather stations located in unique sites of the Central/Southern Appalachian region that stream real-time weather data.
- Five undergraduates were inducted into the prestigious Phi Beta Kappa honor society in 2018: Kathryn Dyer, John Herrick, Shawn Rosenthal, Aaron Swiggett, and Madeline Williams.
- Supported by department funds and generous donor gifts each year, multiple students regularly attend national and regional conferences of the American Association of Geographers, American Meteorological Society, and Environmental Systems Research Institute (Esri).
- In 2018, undergraduate students interned at NASA, Smithsonian Institution, Esri, National Park Service, and National Weather Service, among others.

GEOGRAPHY by the numbers

FALL ENROLLMENT | 2018
220 Undergraduates



IN-STATE STUDENT RESIDENCY BY REGION (80% of Total Students)



FRESHMAN ADMISSION

FULL-TIME FACULTY

- 11 Tenure | Tenure-Track
 - 5 Instructional | Other
 - 2 Scientists | Postdocs
-
- 18 TOTAL

A message from the department head

Bob Smith



The forest products industry has always been vital to our nation's and the commonwealth's economy. It is estimated that more than 100,000 citizens are employed in Virginia's forest products industry, which contributes more than \$21 billion to our economy annually. Recognizing the importance of forest resources and wood products manufacturing, Virginia Tech established the Department of Wood Science and Forest Products nearly four decades ago to train students to enter this field.

We have evolved over the years in service to our students and the industry. We changed our name to the Department of Sustainable Biomaterials in 2012 to better reflect our faculty's expertise and broaden our appeal to a changing student population, and established two separate degree programs in 2014. The sustainable biomaterials degree, which reflects our past wood science program, retains its focus on teaching the fundamentals of the processing, manufacturing, drying, and marketing of wood and other biomaterials. The packaging systems and design degree emphasizes the importance of 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.

With close to 200 undergraduates and 18 faculty members, we are one of the largest programs in North America. Our students are in high demand from the forest products and packaging industries. Students have many opportunities for industrial internships, hands-on experiences such as running a business with our Wood Enterprise Institute, and numerous study abroad courses that expose them to the international aspects of forestry and forest products. Owing to these efforts, we received one of three Exemplary Department Awards from the university in 2017.

The department continues to have one of the largest wood products cooperative extension programs in the country. Our extension specialists cover all aspects of wood manufacturing, drying, secondary processing, business management, and marketing. They regularly conduct mill studies and offer workshops to help the lumber industry increase its competitiveness.

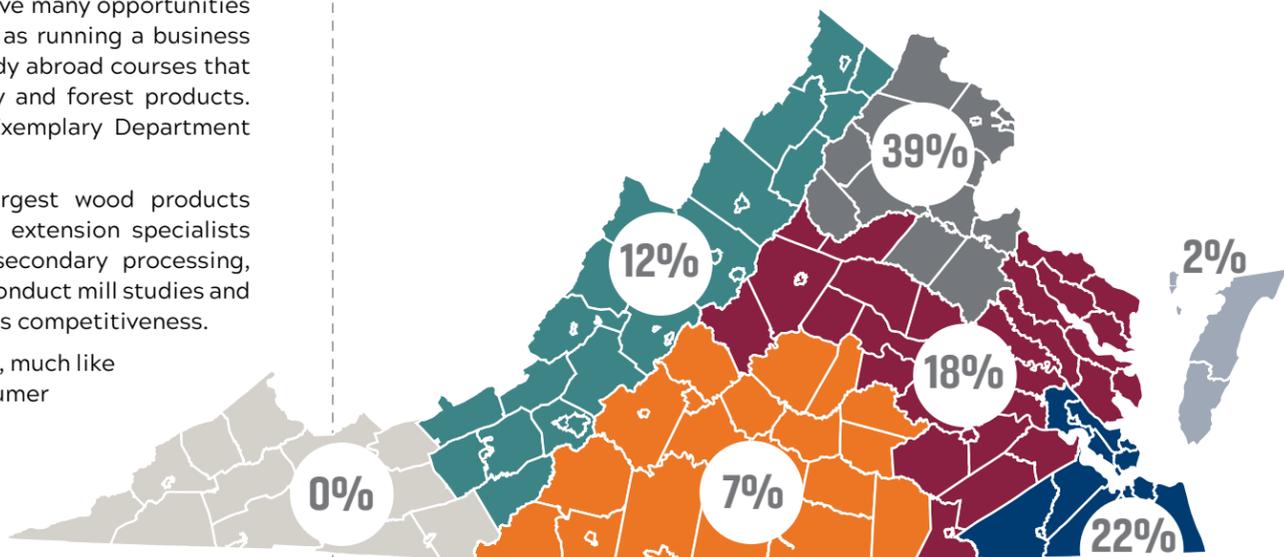
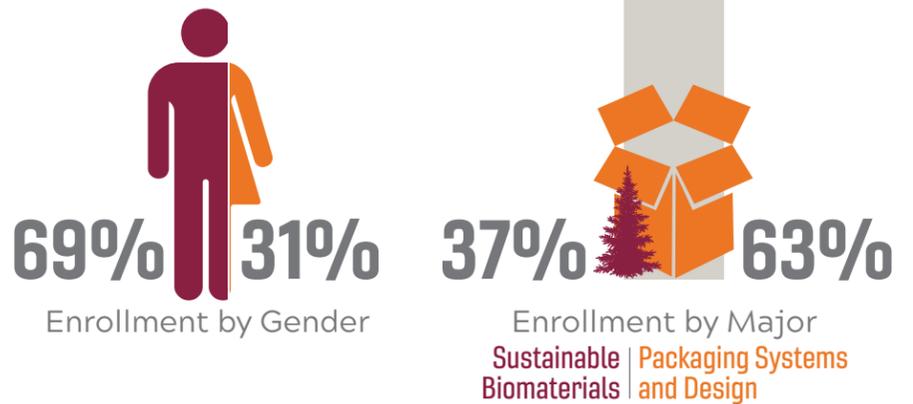
Our name and degree programs have evolved over time, much like the products and industry that we rely on for many consumer goods. Preparing students for successful careers is our most important goal so they can help our industry remain competitive in a global marketplace.

DID YOU KNOW?

- Packaging is the largest use of wood fiber in the world. Our packaging systems and design program is teaching students about better ways to design, produce, and recycle packaging materials.
- Our scientists are using the building blocks of wood (cellulose) to develop targeted drug delivery methods for cancer treatments as well as nanoscale materials for bone repair scaffolds.
- Our wood engineering faculty are testing new species of lumber for use in cross-laminated timber panels, which are now being used to construct buildings over 18 stories high.
- Our packaging faculty run one of the largest pallet and unit load testing facilities in North America. Six to 12 student interns conduct the majority of testing in the lab, under faculty supervision.
- Our extension faculty help forest products companies implement lean manufacturing techniques that can lead to better production efficiencies, less waste, reduced energy consumption, better product throughput, and reduced operations costs.
- Our students learn that wood is the most environmentally friendly, sustainable building material and that it helps store carbon and reduce greenhouse gas emissions.
- Our Sustainable Biomaterials program is one of the largest of its kind in North America. Our students are preparing to enter the forest products, packaging, and sustainable materials sectors to help create a sustainable future.

SUSTAINABLE BIOMATERIALS by the numbers

FALL ENROLLMENT | 2018
179 Undergraduates



IN-STATE STUDENT RESIDENCY BY REGION (68% of Total Students)



FRESHMAN ADMISSION

FULL-TIME FACULTY

- 15 Tenure | Tenure-Track
- 3 Scientists | Postdocs
- 18 TOTAL

Outstanding students

GRADUATING SENIOR: **Kylie Campbell**
 HOMETOWN: **Purcellville, Virginia**
 MAJOR: **Water: Resources, Policy, and Management**

Main accomplishment: I applied for my own grant and secured funding from the Virginia Water Resources Research Center through the Sustainable Water Undergraduate Research Fellowship to complete a research project on zooplankton ecology. The project was a continuation of work that I assisted with as a research assistant in the Department of Biological Sciences. It was incredibly rewarding to see the project through every stage of the research process: from field work to lab analysis to data visualization and analysis to writing a final paper. It was definitely the most challenging thing I've ever done, and I learned a lot about science and grew so much as a person through the process.



MASTER'S STUDENT: **Chelsea Weithman**
 HOMETOWN: **Powell, Ohio**
 MAJOR: **Fisheries and Wildlife Sciences**

Research focus: My thesis is examining a small population of federally threatened piping plovers on the Outer Banks of North Carolina. I am looking at what factors influence the movement and behavior of chicks between when they hatch and when they fledge, as well as population dynamics and use of the islands by migratory piping plovers. My research will not only aid in the management of the species locally, but also potentially contribute to the knowledge of the species as a whole by examining multiple periods of its life cycle.



DOCTORAL STUDENT: **Erin Poor**
 HOMETOWN: **East Lansing, Michigan**
 MAJOR: **Fisheries and Wildlife Sciences**

Research focus: My overall goal is to shed light on the detailed habitat use and movements of tigers in Sumatra's Riau Conservation Landscape and to aid in the development of wildlife-friendly management practices of plantations and "corridors," which, in the long term, will aid in increasing the Sumatran tiger population. I have identified three components to identify connectivity to provide a complete view of tiger connectivity: genetic connectivity, structural connectivity, and functional connectivity or animal movement.



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Recent alumni award

Jeff Dawley ('07 B.A. geography) was honored with the college's Recent Alumni Award. After graduating from Virginia Tech, Dawley went on to earn a master's in geographic and cartographic sciences and a graduate certificate in geographic information systems from George Mason University. Since 2012, he has taught Introduction to Geospatial Technology as an adjunct professor at Northern Virginia Community College.



Dawley is the team lead for the National Geospatial-Intelligence Agency Account within the Intelligence Industry at Esri – a worldwide leader in geographic information systems. Jeff has developed unique skill sets to understand geospatial technologies, align that technology to meet customer requirements and expectations, and develop cost-effective and sustainable geospatial solutions that best support mission operations to ensure longer term programmatic success.

Dawley has served Virginia Tech as a member of the CNRE Alumni Board of Directors (2009-15), finishing his term as president; as a guest lecturer for the geography department; and by attending as many Hokie football games as possible.

"I am both honored and humbled to accept this award," Dawley said. "To be in the presence of these amazing Hokies at the College of Natural Resources and Environment – it is truly inspiring to see how the college has grown in the past 15 years. Thank you very much to the Virginia Tech Alumni Association and to the college and the Department of Geography."

New faculty

David Carter, Assistant Professor
 DEPARTMENT OF FOREST RESOURCES AND ENVIRONMENTAL CONSERVATION
 Ph.D. (2018) University of Minnesota; M.S. (2015) University of Maine; B.S. (2010) University of Wisconsin-Madison



Special interests: High-yield production forestry, site-specific silviculture, multi-aged silviculture, adaptive management, dendrochronology, vegetation management, hardwood silviculture, restoration, forest soils, invasive plant management, regeneration ecology

Thomas Pingel, Associate Professor
 DEPARTMENT OF GEOGRAPHY
 Ph.D. (2010), M.S. (2004) University of California-Santa Barbara; B.S. (1999) Georgetown University



Special interests: Geographic information science and technology, geovisualization, geocomputation, lidar (light detection and ranging), unmanned aerial vehicles (UAVs), spatial cognition

Faculty and staff awards

Several college faculty and staff were honored with university-level awards this spring.

Forestry Professor **W. Michael Aust** received the William E. Wine Award for Teaching Excellence, which includes induction into the Academy of Teaching Excellence. Aust was recognized as a dedicated and demanding professor who provides a positive and active learning environment where students are challenged academically and given hands-on experiences. Outside the classroom, Aust is easily approachable; his students seek him out for mentoring, advising, and learning opportunities.

Geography Assistant Professor **Tim Baird** received the XCaliber Award, which recognizes those who integrate technology in teaching and learning. For the past two years, Baird has taught his two-semester course sequence Seeking Sustainability 1 and 2 in sensor-rich classrooms where accelerometers and cameras record patterns of human movement throughout the semester. The measurements are paired with social data to examine how students' movements are correlated with different content, pedagogies, and high-impact practices.

James Bock Jr., a plant health care specialist with the building maintenance and grounds unit in Virginia Tech's Facilities Department, received the President's Award for Excellence. Bock is taking forestry courses toward his degree while working full time. He identifies diseased trees on campus and works with his supervisor to acquire resources to treat and save the infected trees. In addition, he is working on campus

forestry mapping, which keeps the inventory of trees up-to-date.

Recently retired Communications Director **Lynn Davis** received the Staff Career Achievement Award. Davis was the longest serving college communicator on campus and used her extensive network to benefit the college and Virginia Tech. One of her major career accomplishments was winning the bid for Virginia Tech to host the 2008 Society of Environmental Journalists Conference. She spent two years preparing the program, which was attended by more than 900 environmental journalists from around the country.

Wildlife Conservation Associate Professor **Sarah Karpanty** received the Graduate School's Outstanding Mentor Award. Her approach to mentorship is "engaging, enlightened, and rigorous," said students who nominated her. She helps students secure grants needed for their work and fosters strong relationships with them. Students also noted that Karpanty, who serves as the graduate program coordinator for the Department of Fish and Wildlife Conservation, helped them develop mentoring skills and modeled effective teaching practices for them as well.



W. Michael Aust



Tim Baird



James Bock Jr.



Lynn Davis



Sarah Karpanty



John Gray Williams

Recruitment Director **John Gray Williams** received the Presidential Principles of Community Award for exemplifying and promoting a welcoming and inclusive environment. Williams was heavily involved in diversity and inclusion efforts as a Virginia Tech student and has continued that trend since returning as a professional. His many accomplishments include co-founding the Ex Lapide Society for LGBTQ Alumni, organizing Virginia Tech's participation in the Capital Pride festival, and helping create the "Year Zero Reunion," an annual graduation reception for LGBTQ graduates.

A student's passion for skateboarding sparks a passion for research

Many of us have heard the old adage “loving what you do is half the job,” but **Dylan Willard of Lexington, North Carolina**, a junior majoring in sustainable biomaterials, has figured it out earlier than most.

Willard, an avid skateboarder, investigated the potential for reengineering wooden skateboard decks for use in other products. The idea came to him in summer 2017 when he returned to Blacksburg after a study abroad experience in the Dominican Republic and found himself with some downtime before the start of the fall semester.

“I moved back early, and most of my friends hadn’t returned yet, so I was looking for something to do in my spare time,” Willard said. “I had taken Introduction to Sustainable Biomaterials the previous semester and really enjoyed the work we got to do. I had seen items made from recycled skateboards online that were incredibly artistic.”

Skateboard decks are typically made of high-quality plywood but may only last several months before wear and tear require the rider to replace them. While the outer layers display this abuse more prominently, the inner layers of plywood usually remain intact, making them ideal for repurposing.

Willard asked Professor Joseph Loferski about using facilities at the Department of Sustainable Biomaterials’ Brooks Forest Products Center. “He got really excited about the idea,” Willard said. “He encouraged me to turn it into a formal research project, and I’m so glad I did. It’s really gotten me interested in research.”

Loferski also appreciated the possibilities of the research. “It was a completely novel idea that I had never considered before,” he said.

Willard and Loferski also collaborated on a technical paper, which was published in the online journal *Recycling* in May.

Willard began his research by collecting information on the skateboard manufacturing process and industry. He explained that while most companies could not provide data on how many skateboards they produce each year, the number is estimated to be in the millions. “With so many boards being manufactured, there is potential to build a market around recycled skateboards.”

Willard first had to determine if the skateboard decks could be repurposed into structurally sound wooden panels. Working under Loferski’s supervision,

he sanded the decks to remove paint, dirt, and other stains, and then cut the protruding nose and tail off of each board.

Using a radial arm saw and a band saw, Willard cut the middle, concave section of the board into strips so they could be reoriented and machined into a flat surface. The strips were then glued together and sanded to create smooth, square panels. “Many skateboard companies dye the layers of veneer in the boards, which are exposed when the strips are reoriented into panels, so being able to see those patterns adds an aesthetic value,” he said.

Once Willard created the panels, he tested each sample for qualities such as stiffness, the amount of stress a board can withstand before breaking, moisture content, specific gravity, and the moisture durability of each sample when exposed to water. He also determined the type of wood used.

“The results show that the process of reengineering makes for a strong wood product that could be appealing to those interested in developing products from recycled materials,” Willard explained. “Plus, all of the samples we tested were made of sugar maple, which is considered one of the more valuable hardwood species in North America. Knowing that can give reassurance of value to the end user.”

Recycled skateboard panels can be used in a variety of applications, limited only by an individual’s imagination. For example, Willard crafted several clock faces out of the panels, which he gave as gifts to family and friends. He envisions the panels being used as an artistic medium as well as in home construction for counter tops or flooring.

Willard, a two-time recipient of the Morgan Lumber Company Team Management Scholarship, said that this experience has inspired him to conduct further undergraduate research. “Having my own idea and putting it into action was great, and I couldn’t have picked anyone better to work with than Dr. Loferski. He’s always willing to help students, and I’ve learned so much from him.”

Loferski added, “Research gives students skills that are marketable when they graduate. From this experience, Dylan already knows how to do research, and he’s gotten a publication out of it. It also teaches him a way of thinking about how to solve problems. I’m there to guide him, but it’s ultimately up to him to apply knowledge and see the project through.”

Watch a video, read more about Dylan’s research, and access his published paper at bit.ly/2LFny90.



Dylan Willard sanded the decks of old skateboards to remove paint, dirt, and other stains, and cut off the protruding nose and tail.



By cutting the skateboard decks into strips and turning them 90 degrees, the colored layers of plywood are exposed.



Dylan displays a clock he made from one of the finished panels.

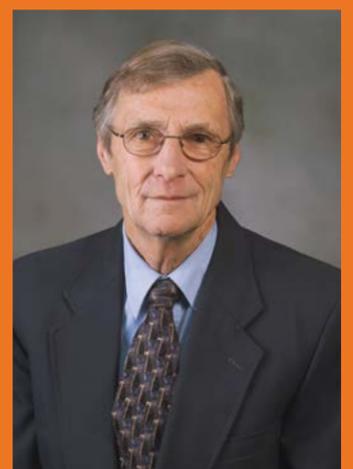


Dylan used a bandsaw to create this turtle cutout for a friend.

IN MEMORIAM

John F. Hosner
1925 - 2018

John F. Hosner, professor emeritus and honorary founding dean, passed away on September 13. Hosner’s hard work and tenacity brought to fruition his vision of establishing the College of Natural Resources and Environment. Read more about his legacy at bit.ly/2xy8Zz4.



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