During the annual fish migration in January and February, thousands of fishermen descend on the Tonle Sap, a tributary of the Mekong River, to take advantage of the river’s bounty – billions of fish of all shapes and sizes.

Wonders of the Mekong
by MIKE WOLTERBEK ’02

The University’s Global Water Center research team officially launched its Wonders of the Mekong initiative in Phnom Penh, Cambodia Tuesday, Feb. 7. The five-year project aims to preserve a functional, biodiverse and healthy Mekong River. The Wonders of the Mekong: A Foundation for Sustainable Development and Resilience is funded by the U.S. Agency for International Development (USAID).

“This project is a great opportunity for us to share our knowledge and expertise on water and biodiversity issues with other institutions and learn from the experiences of experts in the Mekong River Basin,” said Zeb Hogan, assistant research professor at the University of Nevada, Reno and lead researcher on the project. Hogan has been conducting research on the river for 20 years.

The team will be working with one of the main partners on this project, the Cambodian Inland Fisheries Research and Development Institute, on fisheries studies, migration studies and endangered species research. The launch event featured remarks from USAID-Cambodia Mission Director Polly Dunford and Ministry of Agriculture, Forestry and Fisheries Secretary of State Nao Thuk.

“The Mekong River, with its total length of about 2,700 miles, is the most productive river on Earth,” said Thuk. “The project will contribute to conserving the beauty and sustainability of this mighty river for the benefit of the people living on and along it.”

“USAID is pleased to partner with the University on this important initiative that will help maintain the ecological, cultural and economic integrity of one of the most important river and delta systems in the world,” Dunford said.
Students at Mamie Towles Elementary School learn about animals from Cara Goff '12, Main Station Farm manager and research technician.

Excellence in animal care and research

by JANE TORS '82

The Association for Assessment and Accreditation of Laboratory Animal Care International recently renewed the University’s full accreditation for use of animals in teaching, testing and research, reflecting Nevada’s commitment to going above and beyond the letter of the law in achieving excellence in animal care. AAALAC International is a private, nonprofit organization that promotes the humane treatment of animals in work with animals, and helps develop curriculum and learning opportunities for students.

“The University’s animal program is complex, and the corresponding rigorous review is highly valued and keeps the focus on continued improvement,” said Animal Resources Director and Campus Attending Veterinarian Ben Weigler. In addition to faculty-led Institutional Animal Care and Use Committee oversight and the AAALAC International accreditation review, the University’s animal program is reviewed at least annually by the USDA and is subject to oversight by the Office of Animal Laboratory Welfare, part of the National Institutes of Health.

Hannah Jackson awarded Silver Paw

by HANNAH RICHARDSON, Class of 2017

The University’s Center for Student Engagement awarded Hannah Jackson with the fall 2016 Silver Paw Award. The award recognizes students who exhibit civic responsibility, leadership and personal growth, and embody the ideals and spirit of an engaged student.

Jackson is a sophomore double majoring in secondary education and journalism with a minor in political science. She is also involved with a number of student groups and organizations on campus. “To me, the practice of civic engagement is the laboratory in which we become better citizens,” Jackson said. Jackson will receive a personalized plaque and will have her profile and accomplishments displayed on campus.
Nevada robots could help clean up nuclear waste

by MIKE WOLTERBEEK ’02

Cleaning up old nuclear waste sites around the country is a long, expensive and dangerous process—and research at the University of Nevada, Reno promises to help with a combination of advanced, intelligent, autonomous aerial and ground robots that have a new level of perception, navigation and planning abilities.

The College of Engineering’s Autonomous Robots Lab, under the direction of Assistant Professor Kostas Alexis, has completed a proof of concept for a drone that flies by itself in dark corridors looking for nuclear radiation and toxic chemicals.

“We’ve designed and built an aerial robot with multimodal mapping capabilities that includes inertial sensing, LiDAR, cameras with synchronized flashing LEDs, as well as sensors for radiation and chemical sensing to localize itself and comprehensively map its environment in very high quality,” Alexis said. “Basically, it flies itself into a dark corridor, maps the area, including complex structures such as tanks or barrels, and simultaneously finds radioactive areas or toxic chemicals using a variety of sensors. It learns the environment—the space, the contents and the dangers—and reports back to us.”

Their work is part of a National Robotics Initiative project funded by the Department of Energy to clean up the legacy sites of the Manhattan project that have been shuttered for decades. The information will be used by the Department of Energy to build a cleanup plan based on what the autonomous robots locate, analyze and map. “Specifically, we are hoping that we can enable the autonomous multimodal mapping of the PUREX tunnels where multiple train cars are holding nuclear waste,” said Alexis.

For the three-year program, they have put together an interdisciplinary team of experts in perception, motion-planning, ground robots, micro aerial vehicles, and nuclear robotics, including colleagues at the Robotics Institute of Carnegie Mellon University.
The Nevada men’s basketball team returned to the nation’s biggest stage this season after a 10-year absence when it qualified for the NCAA Tournament following a championship Mountain West season. Nevada’s March Madness charge ended in the Big Dance as the 12th-seeded Wolf Pack fell to No. 5 seed Iowa State in the first round, losing 84-73 at the Bradley Center in Milwaukee. The loss ended the Wolf Pack’s sensational season with a record of 28-7.

The Wolf Pack basketball team celebrates its first ever Mountain West Championship after beating Colorado State in the final regular season game at Lawlor Events Center in March.

Wolf Pack hoops team returns to prominence with championship season

by CHAD HARTLEY ’03

The Wolf Pack claimed the MW regular season title by beating Colorado State 85-72 at Lawlor Events Center on March 4. The victory came in front of its second sold-out crowd of the season as Nevada set a school record with an average of 8,923 fans per home game in 2016-17. The regular-season championship is the first for the Pack since joining the conference in 2012.

Nevada went on to the MW Tournament championship the following week in Las Vegas, defeating Utah State in the quarterfinals and Fresno State in the semifinals to set up a showdown against Colorado State in the final. The Wolf Pack never trailed in the championship game, building a 16-point lead in the first half and then holding off a Rams charge to claim a 79-71 victory and sweep the conference trophies for the season.

Wolf Pack Head Coach Eric Musselman was named the District VIII Coach of the Year by the United States Basketball Writers Association. After inheriting a team that won just nine games the season prior, Musselman has led the Pack to 52 wins in the past two seasons.
From coffee rings to DNA sequencing

by MIKE WOLTERBEEK ’02

The formation of the humble coffee stain has been the subject of complex studies for decades, though it turns out there remain some stones still to be overturned. Researchers in the College of Engineering have modeled how a droplet of coffee evaporates and found a previously overlooked mechanism that more accurately determines the dynamics of particle deposition in evaporating sessile droplets.

“Understanding and manipulating the dynamics of particle deposition during evaporation of colloidal drops can be used in DNA sequencing, painting, ink jet printing and fabricating ordered micro/nano-structures,” said Hassan Masoud, assistant professor in the Department of Mechanical Engineering. “And now we understand it better than ever before. We believe our findings are going to fundamentally change the common perception of the mechanism responsible for the so-called coffee-ring phenomenon.”

Until now, the coffee-ring stain was thought to form as a result of the fluid flow inside the drop. Masoud and his team found that the free surface of the droplet, the top layer where it is in contact with the air, plays a critical role in the deposition of the particles.

“Our innovative approach — and using some ugly-long equations — distinguishes our work from previous research,” he said. “No one else has used this coordinate system for this problem, and this allows us to track the motion of particles in the drop in a natural way.”

The discovery allows scientists to manipulate the motion of solute particles by altering the surface tension of the liquid-gas interface rather than controlling the bulk flow inside the drop.

“We can use surfactants to tweak the surface tension,” Masoud said. “In a simple example, if you are cleaning solar panels, which can lose up to 90 percent of their efficiency when dirty, the preferred method of cleaning is with water, but that leaves behind a stain that is hard to wipe out. Changing the flow dynamics during evaporation with a specialized cleaning agent could leave the panels cleaner and able to operate more efficiently.”

Despite a decent amount of server space and speed, Assistant Professor of Mechanical Engineering Hassan Masoud, center, his doctoral student Saeed Jafari Kang, right, and post-doctoral fellow Vahid Vandadi ’15 Ph.D. opted to write out their many equations in longhand form on dozens of large pieces of newsprint paper as they modeled a more accurate look at coffee ring droplet deposition.

Nevada Leads

by NICOLE SHEARER ’03

The University of Nevada, Reno’s College of Education is partnering with Washoe County School District to redesign its Educational Leadership graduate student program, Nevada Leads. Launched in spring 2017, Nevada Leads is a program designed to prepare graduate students to be elementary, middle and high school principals.

“Nevada Leads is an innovative, University-district partnership designed to improve the preparation of effective educational leaders,” said Melissa Burnham ’94 (human development), ’96 M.S. (human development), associate dean and professor in the College of Education. “Well-prepared leaders improve teacher retention, which is a key strategy to address Nevada’s severe teacher shortage.”

Supporting Nevada Leads are 14 Washoe County School District principals who will serve as mentors to 25 teachers in the first cohort. Many of the principals will also assist in course creation and serve as co-instructors.

“This program will deepen the pool of highly qualified teachers who are excited and ready to assume leadership roles in our schools in order to prepare our more than 64,000 students for college, career and global citizenship,” shared Salwa Zaki, Washoe County School District professional learning director and Nevada Leads co-creator. “Nevada Leads will be the model principal-preparation program in our state and beyond.”

Funding for the first year of Nevada Leads is provided by a $113,000 grant the University received through the Nevada Department of Education.
The Professional Grounds Management Society recognized the University of Nevada, Reno with a Grand Award in the Society’s 2016 Green Star Awards competition. The award was given in the University and College Grounds category for exceptional grounds maintenance.

“This is an exciting achievement and national recognition for our University,” said Marty Sillito, assistant director of grounds services in the University’s Department of Facilities Maintenance Services.

Sillito, along with the University’s Arboretum Board, his team of 26 grounds crew members including student workers, and many others worked hard to achieve Tree Campus USA status for the University of Nevada, Reno in 2014, with the official ceremony held Arbor Day 2015.

The Green Star Awards program brings recognition to grounds maintained with a high degree of excellence, complementing other national landscape award programs that recognize outstanding landscape design and construction.

“I believe we were awarded, in part, because of some of our large-scale green waste diversion, green waste recycling and all-natural soil fertility projects,” Sillito said. “The all-organic composted products that the University purchases for its lawns and gardens reduce reliance on chemical pesticides and herbicides. Our campus landscape also provides a variety of attractive features such as waterfalls, wisteria-covered trellises, creeping vines, blooming rose gardens, a wide variety of daffodils, tulips, irises and hyacinth and a beautifully manicured lawn on the historic Quad, which is listed on the National Register of Historic Places and surrounded by century-old elms.”

Grand Award for gorgeous grounds

by NATALIE SAVIDGE ’04

Nevada is known for its clear blue skies, and Heather Holmes aims to keep it that way.

Heather Holmes, Ph.D. has a passion for understanding air pollution and its effects on human health. Her research combines numerical weather prediction, chemical transport modeling and field experiments to investigate pollutant accumulation, transport and mixing. She shares her work with epidemiologists for health and public policy assessments. Thanks to Heather’s research, folks around the world and across Nevada can live healthier and breathe easier.