TIGERS UNITED

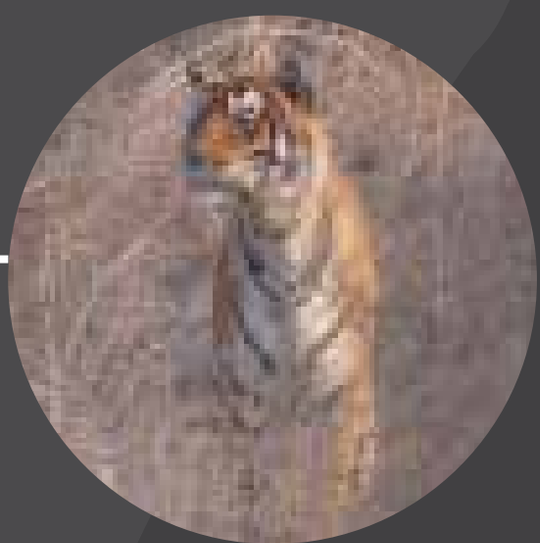
UNIVERSITY CONSORTIUM

2023

ANNUAL REPORT

TIGERS UNITED

A CENTER OF EXCELLENCE IN TIGER CONSERVATION ADDING LAND-GRANT CAPACITY TO THE GLOBAL TIGER FORUM



FRONT & INSIDE COVER TIGER IMAGES TAKEN BY SARAH WHITE, PH.D., CLEMSON UNIVERSITY, SPRING 2023. GROUP PHOTO ABOVE FEATURES CLEMSON PH.D. STUDENT, HRISHITA NEGI, AT THE MOWGLI SCHOOL IN INDIA THIS YEAR.

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LETTER FROM THE DIRECTOR

DEAR AUBURN, CLEMSON, LSU AND MISSOURI TIGERS, AND TIGER SUPPORTERS AROUND THE WORLD:

We have arrived at that time of year where things slow, ever so slightly, and we historically give thanks for the bounty harvested over the year. Similarly, it is also the time that I try to take stock of the large bounty achieved by the members of Tigers United in our efforts to assist the Global Tiger Recovery Program in increasing the number of tigers living in the wild. Indeed, a lot was accomplished this year.

The year began with the annual meeting of the Provosts' Council. It was heartening to see and hear the voices of support from these academic leaders of our four universities. In the spring, Auburn University's School of Forestry, Wildlife and Environment hosted representatives from each university in Auburn. Dean Janaki Alavalapati and his faculty and staff were wonderful hosts, and a productive dialogue was had.

For international tiger day, TU hosted a well-attended seminar on tiger research by Dr. Sandeep Sharma -- over 150 registrants participated. Further, in this issue you will find two reports regarding some very exciting, cutting-edge research being performed by our university faculty scientists.

In the fall, I returned to Auburn to participate in the signing ceremony between Auburn University and India's Forest College and Research Institute in Hyderabad, India. Congratulations to Auburn! I believe this agreement can serve as a model for other future bilateral agreements between our member institutions and academic institutions in other tiger range countries. In addition, this year, I led a trip to India, in collaboration with the dean of Clemson's Wilbur O. and Ann Powers' College of Business, Wendy York. The purpose of this trip was to find opportunities to merge industry with conservation – i.e., the business of conservation. Based upon this trip, faculty travelers developed and will teach a university-wide course this year that addresses global challenges, entitled, "Saving Our Mascot."

In closing, I am pleased to report that it was announced recently that the number of tigers in wild has increased to an estimated 5,574 tigers, particularly across the Indian sub-continent and surrounding countries. However, as a counter-point, countries in Southeast Asia have experienced downturns in populations, with three countries (Lao PDR, Cambodia and Viet Nam) acknowledging that their populations were functionally extinct.

As we look to 2024, you can see there is a great deal to be thankful for, and a great deal of work still left to do. To all of you who have joined us in this journey, please accept my heartfelt gratitude. I hope you enjoy our annual report.

GO/GEAUX TIGERS!

Brett A. Wright, Ph.D.
Director, Tigers United

LETTER FROM GTIC & GTF

FROM THE GLOBAL TIGER INITIATIVE COUNTIL (GTIC) AND GLOBAL TIGER FORUM (GTF) TO TIGERS UNITED READERS:

The journey from the St. Petersburg Declaration and genesis of Global Tiger Recovery Program to the present was eventful. The ambitious goal of TX2 was achieved by some TRCs in South Asia (Indian and Nepal), while tigers became locally extinct in three range countries of South East Asia. Though a bag of mixed experience, it is encouraging to see tiger range countries come together and do their bit for the tiger cause with the desired level of political support. Malaysia stands out in South East Asia, with several strong measures for improved tiger governance. Cambodia is keen to bring back tigers.

The recent global wild tiger estimate is around 5,600. The GTF and collaborators could do this update based on inputs from tiger range countries. The GTRP Version 2.0 has also been released by the GTF, as a technical arm of the GTIC. This was released on the International Tiger Day (July 29, 2023) at Thimphu, Bhutan.

The GTRP 2.0 is based on lessons learnt and provides a collaborative, futuristic roadmap. The Tigers United University Consortium supported professional skill building of in-service forest officers and conservation practitioners from India. This further sharpens the domain expertise of such personnel.

The collaboration also supported technical visits from Clemson to tiger destinations in India. Participants could get a feel of ground reality. The GTF-Clemson partnership has also supported the use of AI based camera trapping systems to strengthen the wildlife-human interface in the field.

Quite a few thematic actions are on the anvil in sync with GTRP 2.0. Such actions would also be a step towards the Convention on Biological Diversity (CBD) targets. The role of the Tigers United University Consortium and its collaboration with the GTIC/GTF is of great value, and has helped in creating a north-

GTI Council

Keshav Varma
CEO and Executive Director
GTIC

GTF

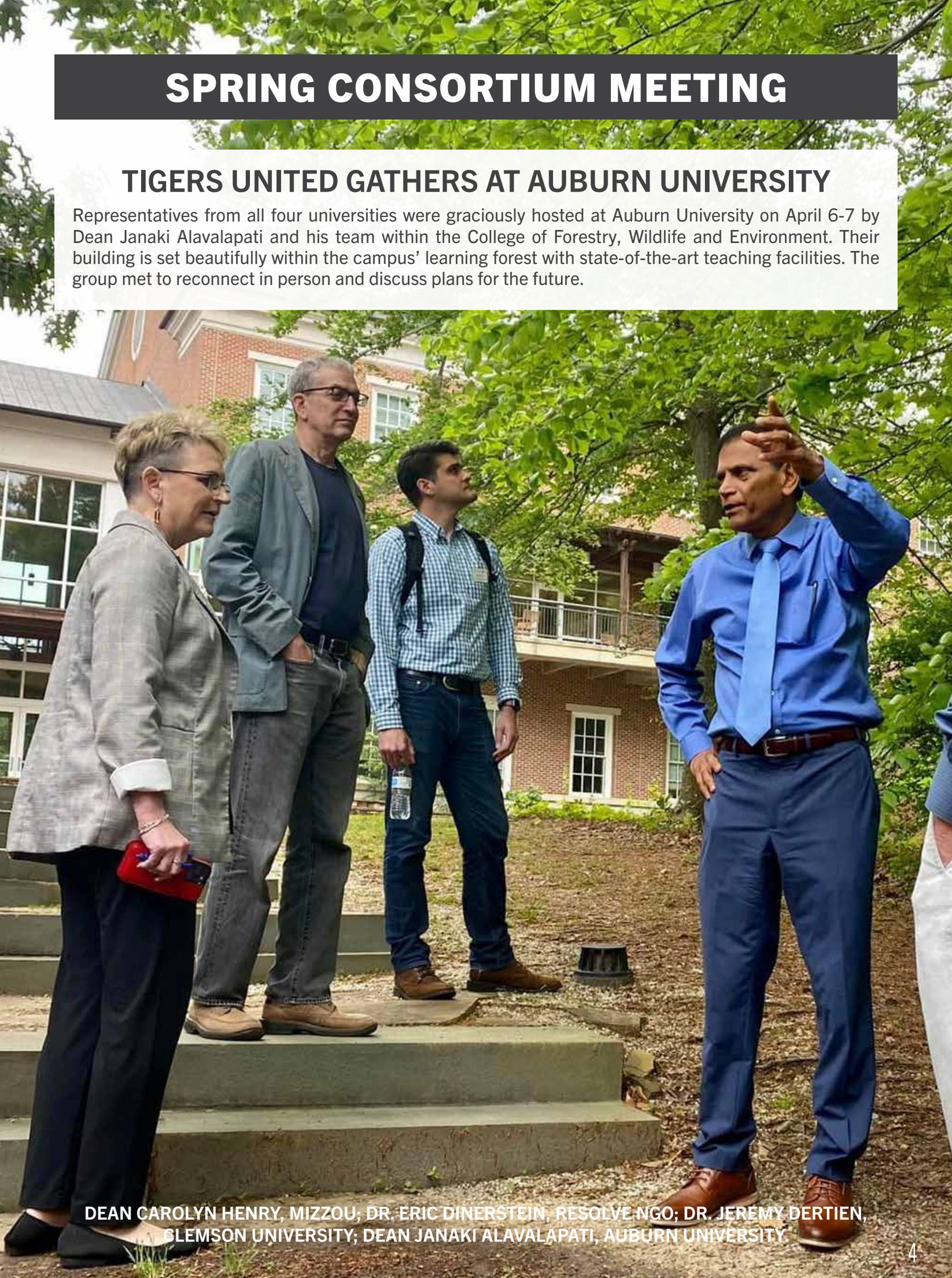
Rajesh Gopal
Secretary General
GTF

Mohnish Kapoor
Head – Programme and Partnerships
GTF

SPRING CONSORTIUM MEETING

TIGERS UNITED GATHERS AT AUBURN UNIVERSITY

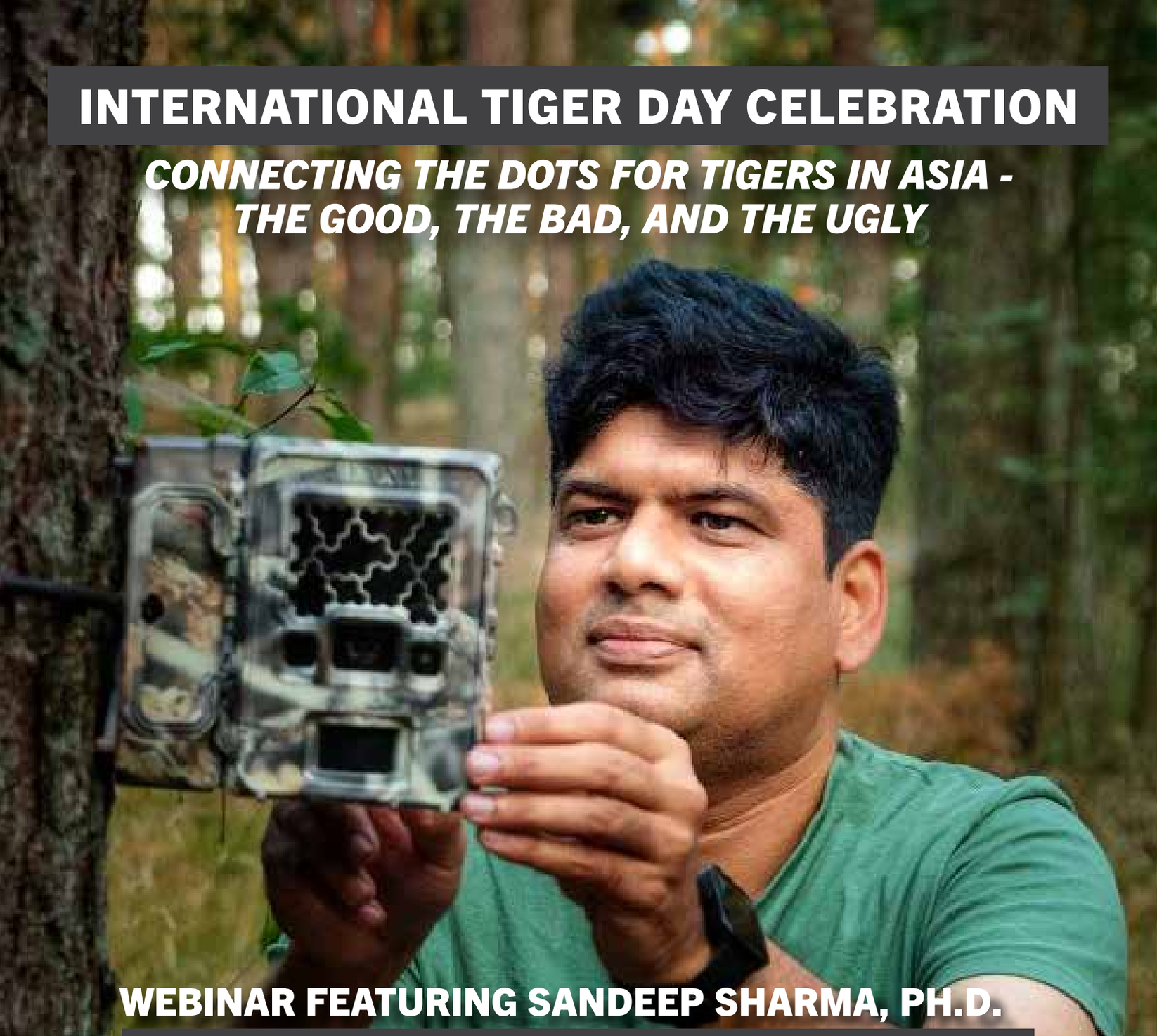
Representatives from all four universities were graciously hosted at Auburn University on April 6-7 by Dean Janaki Alavalapati and his team within the College of Forestry, Wildlife and Environment. Their building is set beautifully within the campus' learning forest with state-of-the-art teaching facilities. The group met to reconnect in person and discuss plans for the future.



DEAN CAROLYN HENRY, MIZZOU; DR. ERIC DINERSTEIN, RESOLVE NGO; DR. JEREMY DERTIEN, CLEMSON UNIVERSITY; DEAN JANAKI ALAVALAPATI, AUBURN UNIVERSITY.

INTERNATIONAL TIGER DAY CELEBRATION

CONNECTING THE DOTS FOR TIGERS IN ASIA - THE GOOD, THE BAD, AND THE UGLY



WEBINAR FEATURING SANDEEP SHARMA, PH.D.

Tigers United was honored to have Sandeep Sharma, Ph.D., speak online in celebration of this year's International Tiger Day. Sharma provided an insightful talk on tiger conservation and biology. He was introduced by his renowned mentor, John Seidensticker, Ph.D., in whose honor the webinar was hosted. People tuned in from across the globe. We thank Sandeep, John and Clemson's Rob Baldwin, Ph.D., for participating in this summer's webinar.

Tigers United webinars are hosted periodically as a free resource for anyone who wishes to attend - university alumni, students, faculty, fans and others in the conservation community. For suggestions on who to feature in upcoming webinars, email tigersunited@clemson.edu.

152 INTERNATIONAL REGISTRANTS

MISSED IT? WATCH NOW ON YOUTUBE: @TIGERSUNITED

AUBURN UNIVERSITY CHARTERS IMOU

MOU SIGNED WITH FCRI

Auburn University's College of Forest, Wildlife and Environment (CFWE) Dean Janaki Alavalapati and Priyankaa Varghese, dean of India's Forest College and Research Institute (FCRI) Hyderabad, of Telangana State, signed a new International Memorandum of Understanding (IMOU) between the institutions during the fall of 2023.

Following a spring visit to India, Dean Alavalapati initiated the partnership with FCRI Hyderabad to share costs of the Tigers United initiative and to advance its mission and vision within the tiger range country. The IMOU will chiefly support graduate education to advance research topics such as technology-based monitoring of tigers; tiger habitat movement; tigers' interaction with herbivores; tiger's water access; and tiger and human conflict.

Dean Alavalapati and Brett Wright, director of the Tigers United University Consortium, agree the IMOU can serve as a model for partnerships with other global institutions within countries such as Indonesia, Malaysia, and Thailand. According to Alavalapati, here is how the model works:

- The FCRI has three to four graduate students apply for Auburn's master's or doctoral program. Auburn then selects one to two students to participate in a program each year.
- Upon admittance, the students will be assigned one Auburn faculty member and one FCRI faculty member as co-advisors.
- The students' research objectives are agreed upon by both institutions.
- The student's complete classroom education at Auburn and conduct field work in India.
- Auburn covers students' expenses on its campus; FCRI covers students' expenses in India.
- The agreement is initially in place for six years.

"In India, our partnerships with GTF and now FCRI will ensure a strong tie to the world's preeminent tiger range country moving forward," said Wright. "We are grateful for their support in navigating the country's logistics, permitting and culture."

Dean Varghese foresees the partnership driving "lots of new ideas and conservation strategies from different parts of the world to promote and conserve the tiger."

AUBURN UNIVERSITY
College of Forestry, Wildlife and Environment

INTERNATIONAL MEMORANDUM OF UNDERSTANDING

Between

COLLEGE OF FORESTRY, WILDLIFE AND ENVIRONMENT
AUBURN UNIVERSITY

And

FOREST COLLEGE AND RESEARCH INSTITUTE
HYDERABAD AT MULUGU
INDIA

The College of Forestry, Wildlife and Environment at Auburn University, Auburn, Alabama, USA, and the Forest College and Research Institute, Hyderabad at Mulugu, Siddipet District, Telangana, India, wishing to develop a partnership based on established contacts and mutual understandings to pursue a program in tiger conservation in the state of Telangana, India, agree to areas of cooperation and methods for six years and as mutually agreed thereafter, as signed ceremoniously on Wednesday, September 13, 2023, at Auburn University.

Janaki Alavalapati,
Emmett F. Thompson Dean
College of Forestry, Wildlife & Environment
Auburn University

Priyankaa Varghese,
IFS, Dean
Forest College and Research Institute
Hyderabad at Mulugu, Telangana, India

PICTURED (LEFT PAGE): AUBURN PROVOST EMERITUS, TIM BOOSINGER, TAKES A PHOTO OF AUBURN DEAN ALAVALAPATI, FCRI DEAN VERGHESE AND TIGERS UNITED DIRECTOR WRIGHT AFTER THE IMOU SIGNING.

MU SCIENTISTS MAP TIGER GENOME

FIRST-EVER ANALYSIS COMPARES NEARLY GAPLESS GENOME ACROSS CAT SPECIES AND WITH HUMANS TO SHINE LIGHT ON EVOLUTION

Originally published by Roger Meissen, Bond LSC, MU Decoding Science blog

The tiger doesn't know it, but a difference deep in its genome sets it apart from other cats.

This big cat preserved a distinct sense of smell thanks to a few chromosomes it uniquely retained over millennia of evolution that other feline species did not.

A study published in the journal Nature Genetics details this finding where scientists from the University of Missouri partnered with Texas A&M University and others to compare, for the first time, nearly gapless cat genomes across multiple species and with humans. This genome map correctly strings together nearly all chromosomes of these felines — from one end to the other without missing segments — to give an animal genetic reference that rivals the human genome.

"This study is a comprehensive look at the genome sequence structures that could be driving cat speciation, the evolutionary process by which populations became distinct species," said Wes Warren, a Bond Life Sciences Center researcher and MU professor of genomics. "We found distinct differences between how great apes, including humans, and cat sequences evolved in a similar period of time. There were many interesting differences to consider, such as why certain chromosome regions have similar but novel sequence landscapes even across species of cats."

In tigers, scientists previously identified genes associated with the chemosensory system, perhaps lending them heightened senses of smell key to their survival.

"We see cats have olfactory receptors for sensing smell that are greater than most mammals but, among cats, the tiger stands out with the largest repertoire," Warren said. "We know tigers have a solitary lifestyle, and that acute sense of smell helps males detect females for mating and lets them avoid the territory of other males to enhance their chances of survival." When thinking about other unique sensory features to explore, researchers also looked to the fishing cat, a rare nocturnal feline native to marshy areas in Southeast Asia. They searched for molecular signatures that would explain its sleek body, partially webbed feet and prowess for hunting fish, characteristics tailored to its life around water.

"There are specific olfactory receptors that detect waterborne odorants as well as a much larger number of receptors tailored for terrestrial smell detection; we asked if fishing cats would have more functional receptors for waterborne odorants than other cats, and that's exactly what we saw," Warren said. "In fishing cats, all gene copies were complete while other cats

had broken copies, suggesting natural selection was at work because of their aquatic hunting behavior."

While these illustrations are notable, scientists also learned from their extensive analysis of sequence structural variation.

What stood out overall were fewer differences in cat chromosomes — coding for traits like hair length and color, bone structure and size, fertility and senses — compared to great apes despite both families diverging into distinct species over a period of 13 million years.

Using the latest assembly techniques, the scientists pieced together the genomes of multiple cat hybrid species — the Bengal cat, the safari cat and the liger — and then compared the five lineages. New techniques severely limited genomic dark matter, which is genetic information researchers previously were unable to characterize and assign meaning to, thus enabling them to shine new light on this novel sequence structure.

Some of those pieces came from Leslie Lyons, the Gilbreath-McLorn Endowed Professor of Comparative Medicine in veterinary medicine and surgery at the MU College of Veterinary Medicine. She sequenced two of the cat hybrids nearly 25 years ago.

"I was at the National Cancer Institute as a postdoc when I sequenced the Geoffroy's cat and Asian leopard hybrids, and I had no idea they would ever be reused for a project like this, but fortunately they were," Lyons said. "Now, we have a cat genome that is comparable to the human genome, which is one of the best in the scientific world, so the cat has really leapt forward in terms of genomic resources."

Structural differences in the X chromosome, in particular a region that displays features of a supergene, stood out to the team. This presumed supergene in cats, a complex interaction where a chromosomal region of neighboring genes are inherited to fix a trait with fitness consequences, could be the process of evolution that led to hybrid sterility if certain feline species cross. It is evolving faster than most of the cat genome. Much like the mule — a cross of a male donkey and a female horse — cannot produce offspring, the liger bears no offspring when lions and tigers mate. The team hypothesizes this is due to a failure in meiosis, the process that produces egg and sperm cells.

"We found multiple inversions on X chromosomes of interest in cats that include the complex DXZ4 region," Warren said. "In these cats, we identified entire copies of this complex, repetitive region that harbors the only X-linked speciation gene identified in mammals."

While these advances in genetics push our understanding of evolution in exciting new ways, Lyons has much more pragmatic uses for this work.

"I'm an end user," Lyons said. "These good genetic maps allow us to find mutations that cause inherited diseases in cats, so this genome allows us to bring precision medicine to feline veterinary health care."

Bill Murphy, paper co-lead and professor of veterinary integrative biosciences at Texas A&M, points to the future value of this work.

"Our findings will open doors for people studying feline diseases, behavior and conservation," he said. "They'll be working with a more complete understanding of the genetic differences that make each type of cat unique."

Drs. Lyons and Warren with the MU tiger mascot

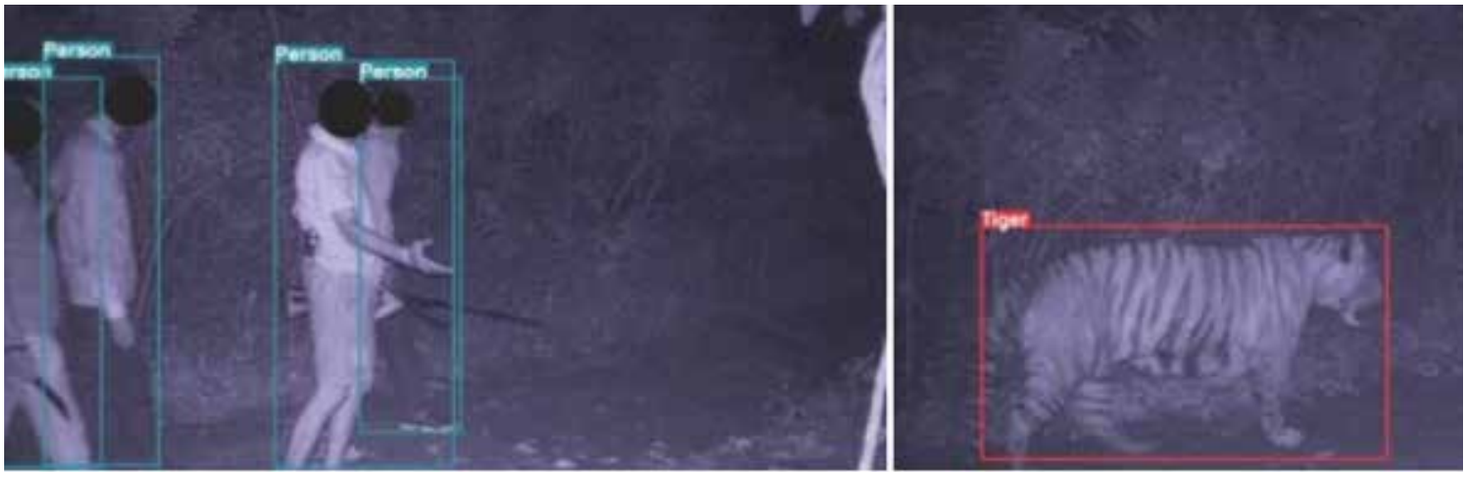
Nature Genetics published "Single-haplotype comparative genomics provides insights into lineage-specific structural variation during cat evolution" Nov. 2, 2023. The study was conceptualized by Bill Murphy — VMBS professor of veterinary integrative biosciences at Texas A&M and Wes Warren — principal investigator in the Bond Life Sciences Center and professor of genomics in the College of Agriculture, Food and Natural Resources at the University of Missouri. Additional collaborations involved researchers from the University of Washington, University College Dublin, the Institute for Systems Biology in Seattle, Louisiana State University and the Guy Harvey Oceanographic Center.

This work was funded through a grant from the Morris Animal Foundation, which works to improve and protect the health of animals through scientific innovation, education and inspiration.

CLEMSON TECHNOLOGY UPDATE

CLEMSON STUDENTS' DEPLOYMENT OF NOVEL CAMERA ALERT SYSTEM, TRAILGUARD AI, FEATURED IN BIOSCIENCE, PROMOTES COEXISTENCE OF TIGERS, HUMANS

Originally published on Clemson News at Clemson.edu/Tigers-United



For decades, tiger biologists have dreamt of a 'smart' camera alerting system capable of detecting tigers on the prowl and sending images of only tigers and poachers instantly to a cell phone. Whether at dawn, dusk or midnight, through monsoon rains or stifling heat, the remote unit would function 24/7 with long battery life to detect and monitor tigers occupying buffer areas close to villages and protect both the tigers and the villagers.

Last year, the Global Tiger Forum, the National Tiger Conservation Authority and RESOLVE partnered with Clemson University to test conservation technology: TrailGuard AI, a camera-alert system powered by artificial intelligence (AI) that remains hidden from poachers while detecting wild tigers and transmits real-time images to the cell phones and computers of concerned entities like park rangers.

Since May 2022, TrailGuard AI has been placed in and around five tiger reserves in sections of two of the most productive tiger landscapes in the world: the Kanha-Pench landscape in Madhya Pradesh, and the Terai-Arc landscape in north India and overlapping into lowland Nepal. The technology proved its worth almost immediately, detecting tigers moving very close to villages and using the same trails as wildlife poachers. The elapsed time from the motion sensor triggered by the passing tiger, to running the AI algorithm, to transmission to the cell network, Internet and designated authorities is less than 30 seconds, making this technology a true alerting system. To complete the wish list, using cellular communication TrailGuard AI can transmit more than 2,500 images on a single battery charge. In short, the tiger biologists' dreams have come true.

Now, these results are made widely available by Clemson wildlife conservation students and co-authored by industry leaders in the peer-reviewed journal, BioScience, covering the first few months of the field deployment: *Mitigating Human-Wildlife Conflict and Monitoring Endangered Tigers Using a Real-time Camera-Based Alert System.*

CLEMSON TIGERS SAVING TIGERS

Clemson post-doctoral researcher, Jeremy Dertien, Ph.D., and Clemson Ph.D. candidate, Hrishita Negi, took part in the deployment, testing and field training of TrailGuard AI.

"Leading the deployment of TrailGuard AI in the Kanha-Pench corridor has been an immense privilege as this technology has the real potential to be game-changer for two of the world's biggest wildlife conservation issues: poaching and human-wildlife conflict," said Dertien.

After the deployment and testing, Negi and Dertien held workshops within the local communities showing how TrailGuard AI could alert villagers gathering firewood in the forests or lingering in multi-use areas to the presence of tigers.

"Integrating communities is essential for co-existence to work and we have gained valuable experience in explaining the technology and listening to how to improve their safety when using the buffer zone," explained Negi.

"Conserving wild tigers is one of the last, great challenges we face," said Rob Baldwin, Ph.D., professor of conservation who led Clemson's involvement in the study. "Massive predators living in close proximity to millions of people means we need to deploy the latest technologies to intervene before there are serious conflicts."
The project is enthusiastically supported by Tigers United, a Clemson-initiated consortium of U.S.-based, land-grant universities —Clemson, Auburn, Louisiana State, and University of Missouri—who cherish tigers as their mascot.

> **"Clemson University is proud to be a leader in tiger conservation. This project is special to us not just because the tiger is our university's mascot, but more importantly because it is engaging local and global communities in novel ways to solve significant conservation challenges leading to long-lasting benefits."**
>
> **BOB JONES, PH.D.**
> **CLEMSON PROVOST**

INDIAN OFFICIALS PRAISE TECHNOLOGY

The wished-for technology could not come at a more important juncture. Announced this year, India has managed to double its wild tiger population over the past 12 years – perhaps the greatest conservation success story in the first half of the 21st century. Seventy percent of the world's tigers occur in India, but 40% of that total are found in populations between protected areas. In fact, many tigers pass their entire lives completely outside India's 53 designated tiger reserves. The potential for conflict with communities that live along the borders or in these corridors and rely on the multi-use buffer areas for livestock grazing is a cause of concern and can result in tigers frequently killing livestock or, in rare occasions, attacking humans, leading to retaliation by villagers. From this scenario emerges the major wildlife challenge of our time: how can the recovery of endangered large mammal populations like tigers continue, bolstered by the introduction of new technologies, enabling policies and innovative community–driven programs that promote their coexistence in human-dominated landscapes?

While tiger numbers are in ascendance in India, Nepal, and Bhutan, they are declining in much of the rest of the range. Landscape-scale conservation is the most effective way to save area-sensitive, wide-ranging top predators like tigers.

READ MORE AT CLEMSON.EDU/TIGERS-UNITED

AUBURN UNIVERSITY

STUDENT PRESENTS RESEARCH

Auburn University doctoral student Vasavi Prakash, under the advisement of Drs. Robert Gitzen and Christopher Lepczyk, conducted analyses and drafted chapters for her dissertation focused on carnivore conflicts and coexistence, an applied study of human-tiger conflicts in India.

As lead author or co-author, Vasavi has been very productive and expects two manuscripts to be submitted to high-level journals by the end of 2023. She presented components of her research at the 2023 Ecological Society of America (ESA) Annual Meeting and the Gordon Research Conference. During 2023, Vasavi received multiple awards, including the ESA Leadership Award, an Auburn Graduate Student Council Travel Fellowship, and an Early Career award from the University of New Brunswick.

Further, Vasavi was asked to be part of a German Centre for Integrative Biodiversity Research working group (sDiv) and to assist with a U.S. Fish and Wildlife Services project. She is currently the Student Liaison for the Asian Ecology Section of ESA and Treasurer of the ESA Student Section for 2023.

Vasavi expressed that although the initial funding provided by the Tigers United University Consortium was beneficial, the challenges she has experienced due to the pandemic have slowed her research and required her to find alternative support.

MOU SIGNED WITH FCRI

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The IMOU will chiefly support graduate education to advance research topics such as technology-based monitoring of tigers; tiger habitat movement; tigers' interaction with herbivores; tiger's water access; and tiger and human conflict.

Read more about this exciting partnership on pages 6-7 of this annual report.

CONTACT: Jamie Anderson, jla0015@auburn.edu.

CLEMSON UNIVERSITY

TIGER *BUSINESS*

Clemson University is in the 'business' of saving tigers. Dean Wendy York, Wilbur O. and Ann Powers College of Business at Clemson University, visited India with Tigers United Director, Brett Wright, in Spring 2023 with business faculty to meet with members of the eco-development committees surrounding the Periyar Tiger Reserve.

After seeing the entrepreneurial spirit of Khandal and others who are determined to take control of their future and create a positive impact on tiger conservation, York brainstormed with Wright to create an outline for what she hopes will become a set of academic programs that create amazing student experiences and unique faculty research opportunities — all while strengthening the local economies that surround tiger reserves in India.

"Ecotourism can contribute to the success of these local economies, but the animals have to thrive alongside the businesses in order for this to work," said York.

Read more about the business trip to India and plans for the future at Clemson.edu/Tigers-United.

TRAILGUARD AI IS GOING *WILD*

In the summer of 2022, a Clemson team deployed *TrailGuard AI*, a novel, artificially-intelligent trail camera system in the forests of India alongside RESOLVE-NGO. *TrailGuard AI* is the first ever real-time alerting system that will capture images of only tigers and poachers to alert nearby forest guards. After a year, the system has been wildliy successful, preventing several instances of human-tiger conflict. The devices are now being manufactured in India and the team hopes to expand the cameras to other tiger range countries.

Read more about *TrailGuard AI* on pages 10-11 of this report.

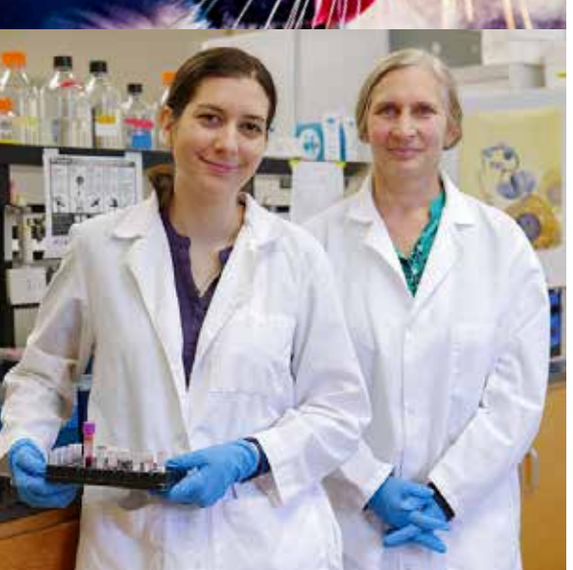
CONGRATS GRADUATE!

Pramod Yadav, Ph.D., is the first Tigers United fellow to graduate from Clemson University. He defended his research on tigers in the Himalayas at the end of 2022 and then returned to India to continue his work with the Global Tiger Forum. We are immensely proud of Pramod and all of his hard work at Clemson University and in the field.

CONTACT: Kayla Rogers, krroge2@clemson.edu

LOUISIANA STATE UNIVERSITY

DOMESTIC TIGER DNA RESEARCH



Dr. Sabrina Taylor, Weaver Brothers Distinguished Professor of Wildlife, Conservation Genetics, and her Ph.D. student, Alessandra Bresnan, continue to work on the conservation genomics of captive tigers in the U.S. Last year, it was announced that LSU's Tiger Athletic Foundation (TAF) would fund her research in the amount of $250,000 through 2028.

Alessandra's research is focused on the captive tiger population found in the U.S., which could be up to 5,000 tigers - possibly more than are found in the wild. Only a small proportion of these captive tigers are managed in AZA-accredited zoos via species survival plans (SSPs), with the majority of captive tigers found outside of the zoos, either in private hands, breeding farms, circuses, roadside zoos, or sanctuaries. These tigers are called "generics" since they are a combination of different tiger subspecies and have unknown genetic history.

Alessandra has various research goals, one of which is to evaluate the kinship of Amur, Malayan and Sumatran tigers managed in the SSPs to facilitate their captive breeding. To this end, Alessandra has collected samples from 125 tigers across U.S. zoos. She has sequenced the whole genomes of these samples and aligned them to the reference tiger genome generated by Texas A&M and University of Missouri's joint efforts.

Another research goal is focused on better understanding the genetic makeup of generic tigers in the U.S., identifying the different subspecies and determining inbreeding levels. Through a collaboration with scientists at Texas A&M, Alessandra was able to sequence the whole genomes of 192 generic tigers.

Currently, Alessandra is ready to commence analyses for a total of 487 whole tiger genomes, consisting of genomes from the SSP tigers and generic tigers she sequenced, in addition to the genomes of tigers that have been used for published studies and made publicly available. The first step of analysis is to identify the genetic differences between all individuals, which will allow her to carry out all additional analyses.

Understanding the population genetics of captive tigers will be useful for effective ex situ tiger conservation since it is increasingly important to have a genetically viable captive population as wild tiger populations struggle, either as stock for artificial insemination of wild tigers or as candidates for eventual re-introduction.

CONTACT: Dr. Sabrina Taylor, staylor@agcenter.lsu.edu

UNIVERSITY OF MISSOURI

MU AND TEXAS A&M SCIENTISTS PARTNER ON FELINE, TIGER GENOME STUDY

Published Nov. 2023 in the journal *Nature Genetics*, a study combining the efforts of scientists at the University of Missouri and Texas A&M found that a distinct set of chromosomes in the tiger's genome sets it apart from other cats. For the first time ever, researchers mapped a nearly gapless cat genome across multiple species, stringing together nearly all of the feline chromosomes without missing segments.

In tigers, scientists previously identified genes associated with the chemosensory system, perhaps lending them heightened senses of smell key to their survival.

"We see cats have olfactory receptors for sensing smell that are greater than most mammals but, among cats, the tiger stands out with the largest repertoire," said Wes Warren, Bond Life Sciences Center researcher and MU professor of genomics.

Leslie Lyons, Gilbreath-McLorn Endowed Professor of Comparative Medicine in veterinary medicine and surgery from MU's College of Veterinary Medicine, is excited to use these findings to help bring precision medicine to feline health care.

Read more on pages 8-9 of this report and on MU's *Decoding Science* blog at **decodingscience.missouri.edu.**

PH.D. STUDENT FIELD WORK

An enthusiastic wildlife researcher, Anam Ahsan completed her master's degree in wildlife sciences from Aligarh Muslim University and after that joined the Indian Institute of Remote Sensing in Dehradun for another masters in GIS specialization. Most of Anam's master's work was focused on conservation corridors for tigers using technical and modeling approaches. Before coming to the United States for her Ph.D., Anam worked in Corbett National Park as a wildlife researcher. During her tenure in Corbett, Anam was involved in a number of wildlife conservation activities including field surveys, biodiversity monitoring, and geospatial analysis technical work. During her masters and work experience with the Indian Forest Department, Anam also worked on forest biomass estimation, fire hotspots analysis, watershed management and habitat suitability analyses. Now, under the advisement of Dr. Michael Byrne at MU, Anam is conducting carnivore and vegetation surveys in and around Indravati Tiger Reserve in India.

CONTACT: Dr. Shibu Jose, joses@missouri.edu

SUPPORT STUDENTS SAVE TIGERS

As partners, fans and alumni of tiger mascot universities, we can't sit back as the few tigers left dwindle down to the point of extinction. We must take a stand alongside our fellow tiger schools to protect our beloved mascot.

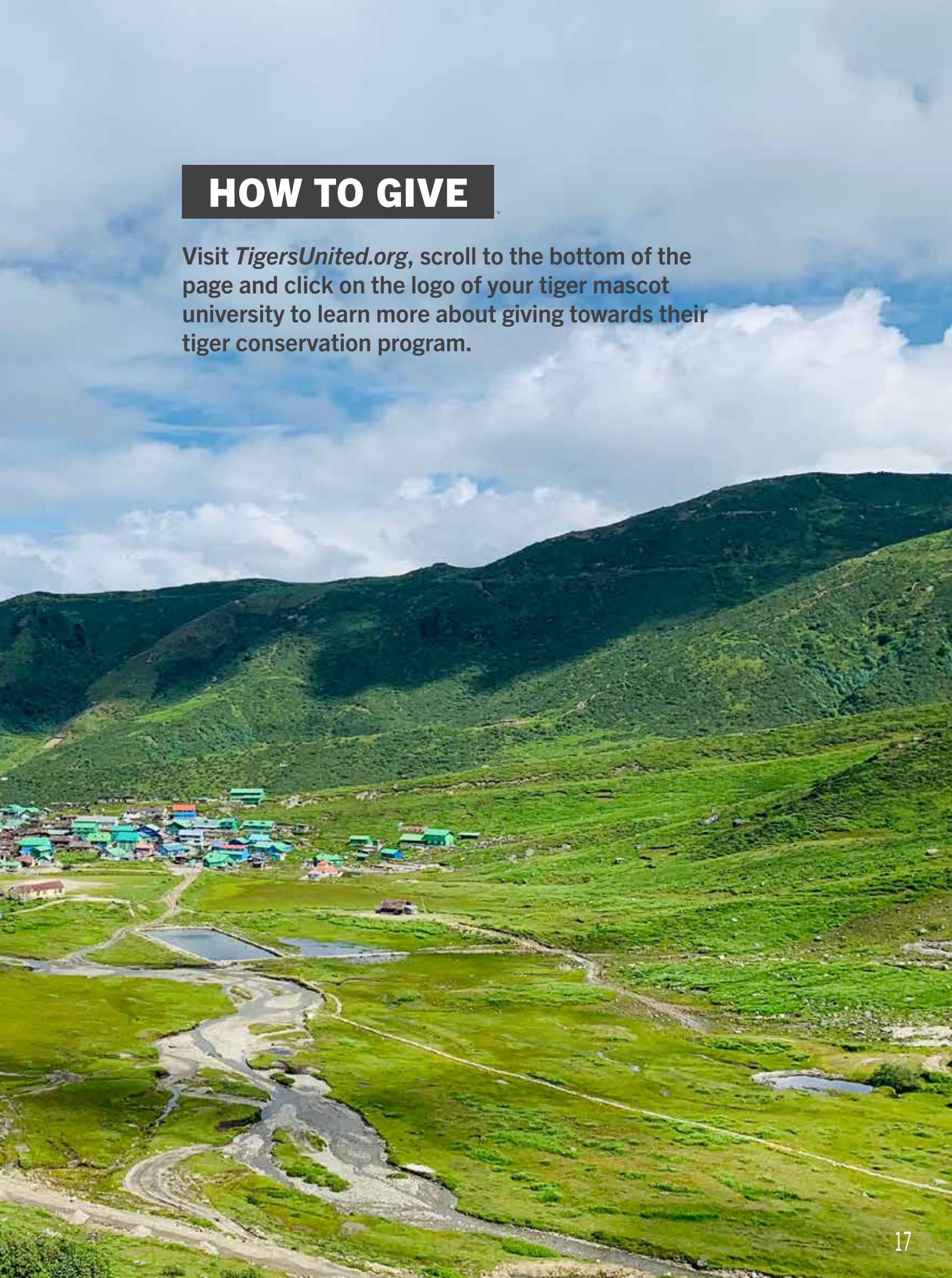
You can help save wild tigers by supporting the students at our universities - Auburn, Clemson, LSU and Mizzou - as they work on the ground across the globe to find practical ways to save wild tigers and help them live in harmony with people.

Your donation will directly support their field work.

PICTURED: A VILLAGE IN THE HIMALAYAS PROVIDED BY PRAMOD YADAV, PH.D. CLEMSON TIGERS UNITED FELLOW, RECENTLY GRADUATED

HOW TO GIVE

Visit *TigersUnited.org*, scroll to the bottom of the page and click on the logo of your tiger mascot university to learn more about giving towards their tiger conservation program.



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