FROM THE DEAN'S DESK – December 18, 2018

THE RADFORD UNIVERSITY ARTIS COLLEGE OF SCIENCE AND TECHNOLOGY NEWSLETTER

Primatology students with Dr. Cassidy Urista at the North Carolina Zoo in Asheboro.

RADFORD UNIVERSITY PROFESSOR OF MATHEMATICS AND STATISTICS RECOGNIZED WITH OUTSTANDING FACULTY AWARD

Dr. Agida Manizade, Professor of Mathematics and Statistics has been recognized by the State Council for Higher Education in Virginia as a 2019 Outstanding Faculty Award recipient. This prize recognizes excellence in teaching, research, and service among the faculties of Virginia's public and private colleges and universities.

Nominees are selected by the institutions, reviewed by a panel of peers and chosen by a committee of leaders from the public and private sectors.

Dr. Manizade is a remarkable educator who consistently seeks new pathways for student success in the form of grant awards and innovative programs. She is a member of the Radford University "Million Dollar Circle" having been awarded more than $2.2 million over the last decade to fund projects designed to help enhance student learning and growth.

In addition to teaching, Dr. Manizade serves as Editor-In-Chief of the Virginia Mathematics Teacher Journal, she is the Founding Director/Co-director of the Secondary Mathematics Professional Development Center and is Board President of Radford Child Development Inc., an organization dedicated to providing high-quality, nationally-accredited childcare options in Radford, Virginia.

Dr. Agida Manizade

Dr. Manizade has also conducted research activities related to learning & teaching, Geometry, Educational technologies in the Mathematics classroom, Mathematics teaching, and Mathematics teacher education.

A formal ceremony will be held in March in Richmond. The awards are made through a grant from the Dominion Foundation, the philanthropic arm of Dominion Resources. Dominion Virginia Power is a subsidiary of Dominion Resources.

PASSER PROJECT FEATURED IN SCIENTIFIC JOURNAL

Faculty and students in the department of Biology have had their research published in the distinguished journal "Ecology and Evolution." The PASSER Project, Programmable Automated System for Songbird Ecological Research, allows for the study of interaction between the environment and behaviors of wild songbirds. Dr. Jason Davis, Associate Professor of Biology, Dr. Sarah Foltz, Assistant Professor of Biology, Dr. Andrew Ray, Associate Professor of Information Technology, and Conner Philson, a senior Biology major all contributed to the article.

ORIGINAL RESEARCH

WILEY Ecology and Evolution

Programmable Automated System for Songbird Ecobehavioral Research (PASSER): Using flexible computer-integrated feeders to conduct high resolution studies of environment–behavior dynamics in songbirds

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Funding information
Radford University Artis College of Science and Technology; Radford University

Abstract

Field studies seeking to identify interactions between the environment and behaviors of wild songbirds are often restricted by time, labor, and accessibility of the site; hampering the collection of long-term, high-resolution data. Here, we describe the development, utilization, and initial results of a long-term field study of wild songbird feeding patterns using data collected through an inexpensive microcomputer-controlled automated feeder. Our studies indicate the "smart feeder" is capable of reliable and accurate data collection on feeding and behavioral metrics over long durations with relation to a wide range of environmental conditions. This enables detailed analysis of songbird's environment-behavior interactions. Our results have identified trends in environment-behavior interactions, microhabitat variations, species-specific feeding profiles, and differences in the frequency and involvement of displacement events. Computerized feeders enabled us to address environment–behavior interactions, resulting in more detailed data than traditional observational methods. This reinforces conclusions from previous work regarding the potential for automated data collection to be adapted for a wide variety of research studies across the field of ethology.

KEYWORDS

automated data collection, behavior, behavior dynamics, bird feeder, computerized feeder, environment, ethology, feeding patterns, microhabitat, songbird, spatiotemporal variation

1 | INTRODUCTION

Ethological and ecobehavioral field studies are often hampered by the scale and difficulty of data collection. Long periods of time and complex data acquisition procedures are required to compose an accurate picture of environmental-behavioral interactions at a single site. Expanding this to include concurrent data from multiple sites that may have varying habitats spread across multiple locales exacerbates existing data collection issues and limits the number of populations that can be studied (Bonier et al., 2007).

Identifying how the environment can influence animal behavior becomes even more difficult when the conditions or events being studied are uncommon or unpredictable. For instance, many animals may alter behavioral patterns dramatically in the face of unusual or extreme weather patterns (Bateman et al., 2015; Romero, Reed, & Wingfield, 2000), but observation and data collection during such

"I'm extremely proud of our team and the work that they've accomplished" stated Dr. Davis. "We already have a second article prepped for submission before the end of the month and I'm optimistic that we'll have several more article from this work out in 2019, not to mention several student presentations at the upcoming SICB meetings in Tampa."

DEPARTMENT OF MATHEMATICS AND STATISTICS ANNOUNCES STUDY ABROAD SCHOLARSHIP

Students in Mathematics and Statistics will have support available for international education opportunities. A study abroad scholarship was recently announced by the department to allow students to travel with faculty to a variety of destinations around the globe as they enhance their academic experience at Radford University. Department Chair Dr. Neil Sigmon led such an expedition this past year as he took a group of students to Washington D.C. and London to study codes and cyphers.

Interested students should contact Dr. Sigmon and an online form with additional details will be forthcoming.

ANTHROPOLOGICAL SCIENCES FACULTY MEMBER FEATURED ON NATIONALLY KNOWN PODCAST

Dr. David Anderson, Instructor in the Department of Anthropological Sciences, was recently the featured guest on a nationally recognized podcast, Science Vs. The goal of the show is to take on fads, trends, and the opinionated mob to find out what's fact, what's not, and what's somewhere in between.

Dr. Anderson shared his thoughts on the topic "Ancient Aliens: Who really built the pyramids?" The episode is available at the following location.

https://www.gimletmedia.com/science-vs/ancient-aliens-who-really-built-the-pyramids#episode-player

SCIENCE DAY ALUMNUS SHARES HER EXPERIENCES WITH NEXT GENERATION

Madison Hull

Madison Hull, a senior majoring in Biology, began her Radford University STEM experience years ago when she had the opportunity to visit campus for one of the "Science Day" programs held for K-12 students every year. "One of the trips we had to look forward to in 8th and 9th grade as honors science students was spending a day traveling to Radford University for Science Day" she recalled. "My teachers, Dr. Nowall and Mrs. Coleman, always talked up the trip and how much fun it always was. They were more than right."

Madison added "I remember attending a chemistry session where a professor (whom I now know as Mrs. Libby Watts) lit a Bunsen burner and used different elements to make the flame change colors. At that age, we all thought that was one of the "coolest" things we had ever seen. I also remember attending a forensic science session where we had the opportunity to look at different bones- something we had never had the opportunity to see before."

Madison now works to share her love of discovery with a new generation of budding scientists. "As a junior last year and senior this year, I was excited to have the opportunity to share the excitement of Science Days with younger students" she said. "Last year, I gave a presentation and was able to let the students watch a Fire-Bellied Toad while I shared facts about how they stayed warm (thermoregulation). I never expected the excitement a toad could bring students!"

Madison continued "This year, I am a TA in Anatomy and Physiology, so I was able to let students participate in hands-on activities such as piecing together a human skeleton and touching "real" human brains and lungs as well as pig lungs. While some students claimed it was a very "stinky" experience, others were thrilled." She added "The questions they would ask were priceless and brought multiple smiles to my face. I can only hope I was able to create memories for them just as I have wonderful memories from attending RU Science Days as a young student myself."

The value of the Science Day events is evident to Madison. "I find these days very beneficial to younger students because science in middle and high school is nothing like science classes at the college level" she stated. "College brings so many more opportunities to branch out into different aspects of science."

Madison even goes above and beyond the call of duty when needed. "My younger brother and a teammate had the opportunity to attend a RU Science Day last year but were going to have to miss it due to an away baseball game" she recalled. "I couldn't let this happen because I knew how much fun they were and the potential for so many good memories. Thankfully, I was able to make arrangements to take him and his teammate to meet the bus after Science Day, so they did not have to miss. Throughout the car ride to meet the bus, I could sense the enjoyment they had during Science Day as 9th graders."

The value of the event outside the academic was also evident to Madison. "It was also fun to see younger students from my hometown of Carroll County, VA and let them see somebody they know as a college student" she said. "I feel like this gives some students a little extra motivation and excitement to make it to college."

PRIMATOLOGY CLASS VISITS NORTH CAROLINA ZOO

In October, students from the ANSC 330 "Primatology Class" visited the North Carolina Zoo to spend a day observing and recording behaviors. The course is designed as a survey of both living and past primates as unique members of the animal kingdom. It includes discussions of general primate characteristics, taxonomy of living primates, primate behavior and primate (including human) evolution.

Primatology students with Dr. Cassidy Urista at the North Carolina Zoo in Asheboro.

Students from this course frequently process their observations and create presentations to explain what they have learned at the Radford University Undergraduate Research Forum held in April each year.

TheNorth Carolina Zoo is home to Chimpanzees, Western Lowland Gorillas, Monkeys, and a wide variety of primates in natural settings.

NEW ERP COURSE ADVANCES STUDENTS' IT AND BUSINESS SKILLS

Radford University's Information Technology Department is now offering an Enterprise Resource Planning (ERP) course. Information Technology 497 (ITEC 497)-ERP Systems offers students an introduction to ERP systems, ERP managed business processes, the primary ERP modules such as sales and inventory management, ERP selection, implementation, configuration and operation. It also covers system security, and the use of ERP for strategic advantage.

Dr. Bob Phillips, Professor of information Technology, is teaching the first offering of ITEC 497 and said the class ties the business and IT courses together that students have taken. "This class is now being offered because without it there would be a hole in the curriculum. Our classes provide students excellent IT and business skills, but there needs to be courses that bring them together," Dr. Phillips explained.

Dr. Bob Phillips talking with students in the ARTIS Lab in Davis Hall on the Radford University Campus.

"This class has direct applications to what many of our students will be doing in their future jobs; having people to support this software in different ways is critical," Dr. Phillips' said. "This class provides skills that students will be able to put to use. If students aren't going to directly work with these systems, they will at least interface with them if not manage them."

This course is a mixture of lectures and hands-on activities. The students are learning by working with NetSuite, an ERP system offered by Oracle, and also through theoretical lectures on ERP.

Matt Senn, a student currently enrolled in the class, suggests that all IT and business professionals take the course. "I work in the field with an ERP and all of the material in the class is relevant in the business world," Matt stated. "Since starting the class, I've been able to better understand where a sales transaction starts and finishes and how to maintain the ERP system."

"I want my students to leave this class understanding the importance of enterprise level software, which is what ERP really is, and how complex it is," Dr. Phillips said. "I want them to know the job opportunities out there to help select, configure, integrate, and support those systems"

As students go into this course Dr. Phillips suggests that they keep their mind open to the big picture, "They don't need to get caught up in the details of the software, but just to understand the importance of the software as a whole, at an analysis and design level."

All students who are graduating with an Information Systems major are now required to the ERP course or its sister course, ITEC-496: ERP Systems for Healthcare. Students who are registered in the older catalogue can still take one of these courses as a technical elective.

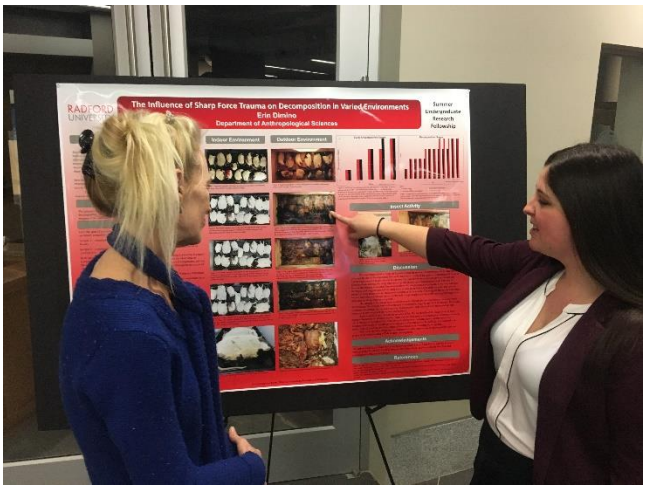
Story by Emily Lewis

ARTIS COLLEGE STUDENTS PRESENT RESEARCH AT INAUGURAL END OF SEMESTER CELEBRATION

On December 6, more than 60 students from across disciplines within the Artis College of Science and Technology showcased their recent research and field work at a poster session held in the Center for the Sciences.

ANTHROPOLOGICAL SCIENCES:

STUDENT: ERIN DIMINO
FACULTY: DONNA BOYD
TITLE: THE INFLUENCE OF SHARP FORCE TRAUMA ON DECOMPOSITION IN VARIED ENVIRONMENTS



Erin Domino shares her research with Dr. Donna Boyd.

BIOLOGY:

STUDENT: MADISON HULL
FACULTY: CHRISTINE SMALL
TITLE: CONSERVATION OF MEDICINAL PLANTS: LIGHT, SOIL FERTILITY, AND HARVEST RESPONSE

STUDENTS: DANEKA FOWLER, NICOLAS LOUDERMILK, KRISTIN RANSOME, HANNAH ROBERTS, DOMINIQUE SCOTT, TAYLOR VANCE
FACULTY: CHRISTINE SMALL
TITLE: DIVERSITY OF WILDLIFE AT WILDWOOD PARK AND SELU CONSERVANCY

STUDENTS: ANDREW CARDENAS, DIONT'E HADDEN, RAYNA KEEN, DEAN ROCCO, JOSEPH MAYES JR., EMILY MORAN
FACULTY: CHRISTINE SMALL
TITLE: DO WILDLIFE AVOID PERIODS OF HUMAN ACTIVITY?

STUDENTS: ALEX BROOKS, AUSTIN BISSELL, BROOKE VENTURA, JONATHAN BORSELLINO, LAYNE SIGMON
FACULTY: CHRISTINE SMALL
TITLE: HUMAN INFLUENCE ON WILDLIFE BEHAVIOR

STUDENTS: BODURIN OGUNNUPE, CHRISTIAN MONCION, DELANEY PETERS, JARED MCCORMICK, KYERA WATKINS
FACULTY: CHRISTINE SMALL
TITLE: INFLUENCE OF DOMESTIC DOGS AND HUMANS ON WILDLIFE

STUDENTS: FOREST & WETLAND ECOLOGY STUDENTS (BIOL 476)
FACULTY: CHRISTINE SMALL
TITLE: FOREST ECOLOGY & HEALTH ASSESSMENT, WILDWOOD PARK, RADFORD, VA

STUDENT: DAELEN CHAMAUR WILLIAMS
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: EVERGREEN AND DECIDUOUS TREE ABUNDANCE ON VARYING ELEVATIONS

STUDENTS: HALEY G. COLLINS, BOBBI S. LOWE , HUNTER M. VILLANUEVA, NATHAN M. NALL
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: COMPARING THE MOISTURE CONTENT AND PH BETWEEN TWO SLOPES IN WILDWOOD PARK

STUDENTS: JESSICA RAMIREZ, ABIGAIL POINDEXTER, MEGAN HODGES, AND ALEXIS SMITH
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: LIGHT INTENSITY AFFECTS THE ABUNDANCE OF ARTHROPODS IN WILDWOOD PARK

STUDENTS: MOHAMAD M. OMAR, NATASHA S. COLLINS, ALYSSA I. NOVO, AND JACEY A. ESTEP
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: COMPARING THE HEIGHT OF DIFFERENT SPECIES OF FLOWERS ON THE EAST- AND WEST-FACING SLOPES

STUDENTS: PARKER HUTCHINSON
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: COMPARING THE RED OAKS (*QUERCUS RUBRA*) GROWING ON THE EAST- AND WEST-FACING SLOPES IN WILDWOOD PARK, RADFORD, VIRGINIA

STUDENTS: ALEXIS ABERNATHY, RYAN CASEY, AND ROSEMARY LAVELLE
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: THE EFFECT OF SOIL MOISTURE AND PH ON MUSHROOM ABUNDANCE BETWEEN TWO SLOPES

STUDENTS: SAVANNAH LANCASTER AND REBECCA SALEN
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: COMPARING MACROINVERTEBRATE DIVERSITY AND STREAM HEALTH BETWEEN TWO STREAMS IN WILDWOOD PARK, RADFORD, VA

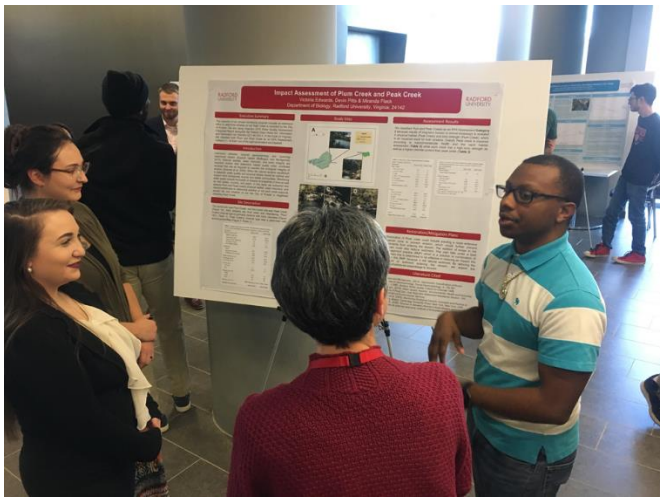
STUDENTS: JESSICA BUTLER, ANGIE HOLMES, ALEX HOLDER, AND SHERRY AMAGOH
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: IMPACT OF THE LANDFILL ON CONNELLY'S RUN IN RADFORD, VIRGINIA

STUDENTS: HEATHER YI, ANDREW EHRAT, BERNICE ADJALOKO, AND DARION HARDWARE
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: ECOLOGICAL WATER QUALITY ASSESSMENT OF CRAB CREEK

STUDENTS: BREANN MULLEN, KARISSA ELLIS, ZOE KRAJCIROVIC, AND TIA THOMPSON
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: INVESTIGATING THE EFFECTS OF WATER TREATMENT PLANT DISCHARGE ON THE HEALTH OF CRAB CREEK

STUDENTS: MATT COOLEY, SAMANTHA JONES, STEPHEN RUPPERT, AND NICOLE JONES
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: PEAK CREEK: THE EFFECTS OF URBANIZATION ON STREAM QUALITY

STUDENTS: VICTORIA EDWARDS, DEVIN PITTS, AND MIRANDA FLACK
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: IMPACT ASSESSMENT OF PLUM CREEK AND PEAK CREEK



Local areas such as Plum Creek were the focus of much research.

STUDENTS: KYLE FARLEY, MAC LANDWERMEYER, AND KAYLA OGDEN
FACULTY MENTOR(S): JAMIE K. LAU
TITLE: DOES COW ACCESS TO A TRIBUTARY OF CRAB CREEK IMPAIR STREAM QUALITY?

STUDENTS: KACEE FERRELL, ELIZABETH LAMPMAN, KAYLIN RICHARDSON, MCKENZIE CLORE, PHILIPINIA ODURO-SARPONG
FACULTY: BOB SHEEHY
TITLE: DNA BARCODING OF INVERTEBRATES:

Students showcasing their work regarding the DNA Barcoding of Invertibrates.

STUDENTS: LAUREN BURROUGHS, TREVOR SHEPPARD, MICHAEL LUCAS
FACULTY: BOB SHEEHY
TITLE: IDENTIFICATION OF INVERTEBRATES AT SELU CONSERVANCY USING DNA BARCODING

STUDENTS: ASHLEY DUKE, PATRICIA LEE, DREW MYERS, JULIAN WOTZ
FACULTY: BOB SHEEHY
TITLE: BIODIVERSITY INVENTORY OF SELU CONSERVANCY USING DNA ANALYSIS

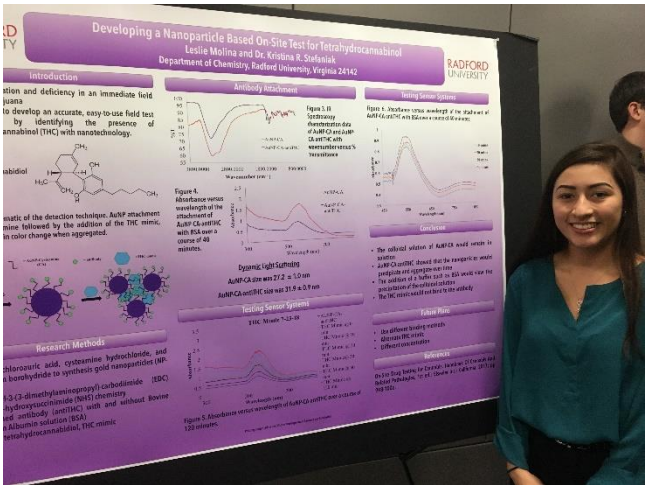
STUDENTS: AUTUMN ROBERTS, ANGIE LEON, GIDEON SARPONG, BRITTANY GAFFNEY
FACULTY: BOB SHEEHY
TITLE: BIODIVERSITY OF INVERTEBRATES AT SELU CONSERVANCY

STUDENTS: ALEXIS ARREDONDO, LINDSAY BRUMFIELD, AUBRY HORNE, CLAUDIA PANIAGUA UGARTE
FACULTY: BOB SHEEHY
TITLE: DNA BARCODING AT SELU CONSERVANCY

STUDENTS: EMILY HANSEN
FACULTY: BOB SHEEHY
TITLE: ALTERNATIVE COLLECTION OF DNA AND SPECIES IDENTIFICATION WITH RESTRICTION SITES

CHEMISTRY:

STUDENT: LESLIE MOLINA-ARANA
FACULTY: KRISTINA R. STEFANIAK
TITLE: DEVELOPING A NANOPARTICLE BASED ON-SITE TEST FOR TETRAHYDROCANNABINOL



Topical issues like THC testing were presented.

STUDENTS: DHARMINDRA DULAL, ALLISON MCBRIDE, AND KRISTINA WADE
FACULTY: KRISTINA STEFANIAK
TITLE: THE ANALYTICAL ANALYZES OF SPECIFIC IONS IN PEAK AND PLUM CREEEK

STUDENT: EMILY PEREZ
FACULTY: KRISTINA STEFANIAK
TITLE: TESTING THE HARDNESS OF WATER UTILIZING TITRATION

STUDENT: HUNTER BRANDON
FACULTY: KRISTINA STEFANIAK
TITLE: IMPACT OF A WASTEWATER TREATMENT PLANT ON SURROUNDING WATER SOURCES

STUDENT: JESSE T. NEWMAN
FACULTY: KRISTINA STEFANIAK
TITLE: DETERMINATION OF CALCIUM AND CHLORIDE CONTENT IN MILK SAMPLES

STUDENTS: KATIE BISHOP AND LIZ RODRIGUEZ
FACULTY: KRISTINA STEFANIAK
TITLE: WATER ANALYSIS FOR BREWERY

STUDENTS: KATIE M. MANKOWSKI AND EMILY K. WHEALTON
FACULTY: KRISTINA STEFANIAK
TITLE: DETERMINATION OF ALKALINITY AND IRON IN IMPACTED STREAM WATER

STUDENTS: JESSIE ALLEN AND MAKENZIE BENNINGTON
FACULTY: KRISTINA STEFANIAK
TITLE: THE IMPACT LANDFILLS CAN HAVE ON WATER HARDNESS AND ALKALINITY OF STREAM WATER

STUDENTS: MATT GRIFFEY AND LIZABETH THOMAS
FACULTY: KRISTINA STEFANIAK
TITLE: DETERMINATION OF CHLORIDE AND FLUORIDE IN WATER

STUDENT: MORGAN YATES
FACULTY: KRISTINA STEFANIAK
TITLE: ANALYSIS OF IRON COOKIE

STUDENTS: DILLON EDWARDS AND TWISHA MISTRY
FACULTY: KRISTINA STEFANIAK
TITLE: DETERMINATION OF STARCH AND IRON IN TWO DIFFERENT OATMEAL SOAPS

GEOLOGY:

STUDENTS: SOPHIA RASIAK AND SYDNEY LOBBINS
FACULTY: DR. ELIZABETH MCCLELLAN
TITLE: FUTURE DEVELOPMENT GUIDED BY ANALYSIS OF THE PAST: FIELD TO LAB STUDY OF RIFT-TO-DRIFT DEPOSITS IN THE NEOPROTEROZOIC TO EARLY CAMBRIAN CHILHOWEE GROUP, SW VA

PHYSICS:

STUDENT: CORY ASHWORTH
FACULTY: DR. SHAWN HUSTON
TITLE: TEMPERATURE DEPENDENCE OF DIBROMOANTHRACENE THIN FILM GROWTH

STUDENT: ZACH GWYN
FACULTY ADVISOR: MICHAEL FREED
TITLE/TITLE: MAPPING VELOCITIES OF PLASMA SHEETS FOUND IN SOLAR FLARES

STUDENT: SAM WILLIAMS
FACULTY: TODD RUTKOWSKI
TITLE: THERMODYNAMICS OF EVAPORATIVE COOLING

STUDENTS: ALDEN EWELL AND ALEX ANDERSON
FACULTY: RHETT HERMAN
TITLE: CENTER OF THE SCIENCES THERMAL BUDGET

STUDENTS: CORY ASHWORTH AND FRED WOODALL
FACULTY: RHETT HERMAN
TITLE: RADFORD UNIVERSITY THERMAL BUDGET PROJECT FOR WHITT BUILDING

STUDENTS: RYAN FRY, CONNOR PARKS
FACULTY:RHETT HERMAN
TITLE: MCCONNELL LIBRARY THERMAL BUDGET

STUDENT: A.J. GREENE
FACULTY: RHETT HERMAN
TITLE: THERMAL BUDGET ANALYSIS: CENTER FOR THE SCIENCES

STUDENT: ZACHARY GWYN
FACULTY: RHETT HERMAN
TITLE: THERMAL BUDGET OF THE CENTER FOR THE SCIENCES

STUDENT: MICHAEL HESS
FACULTY: RHETT HERMAN
TITLE: ENERGY FLOW IN AND OUT OF THE CENTER FOR SCIENCES

STUDENTS: MELLY LUCAS, ERIK OWESNEY
FACULTY: RHETT HERMAN
TITLE: THERMAL BUDGET OF KYLE HALL

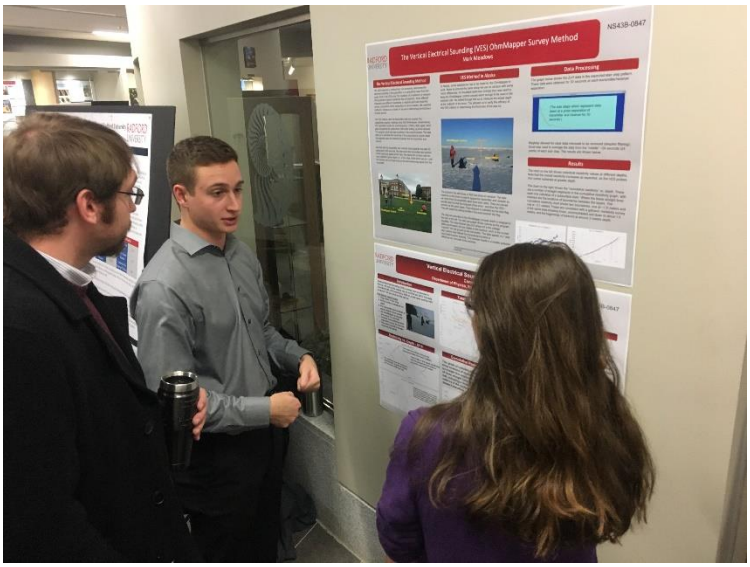
STUDENTS: TATE MCPHERSON, PERCIE LYONS
FACULTY: RHETT HERMAN
TITLE: THERMAL ENERGY FLOWS FOR CENTER FOR SCIENCES

STUDENTS: JOSH PARKER, BENJAMIN ZACHARY
FACULTY: RHETT HERMAN
TITLE: HEAT TRANSFER AND ENTROPY IN THE CENTER FOR THE SCIENCES AT RADFORD UNIVERSITY

STUDENT: RYAN FRY
FACULTY: RHETT HERMAN
TITLE: VERTICAL ELECTRICAL SOUNDING (VES) OF CHUKCHI SEA ICE

STUDENT: CONNOR PARKS
FACULTY: RHETT HERMAN
TITLE: VERTICAL ELECTRICAL SOUNDING (VES) IN THE ARCTIC

STUDENT: MARK MEADOWS
FACULTY: RHETT HERMAN
TITLE: THE VERTICAL ELECTRICAL SOUNDING (VES) OHMMAPPER SURVEY METHOD



Some on-going projects such as the polar ice research project we updated during the presentation.

STUDENTS: RYAN FRY, CONNOR PARKS, MARK MEADOWS,
FACULTY: RHETT HERMAN
TITLE: VERTICAL ELECTRICAL SOUNDING (VES) OF CHUKCHI SEA ICE

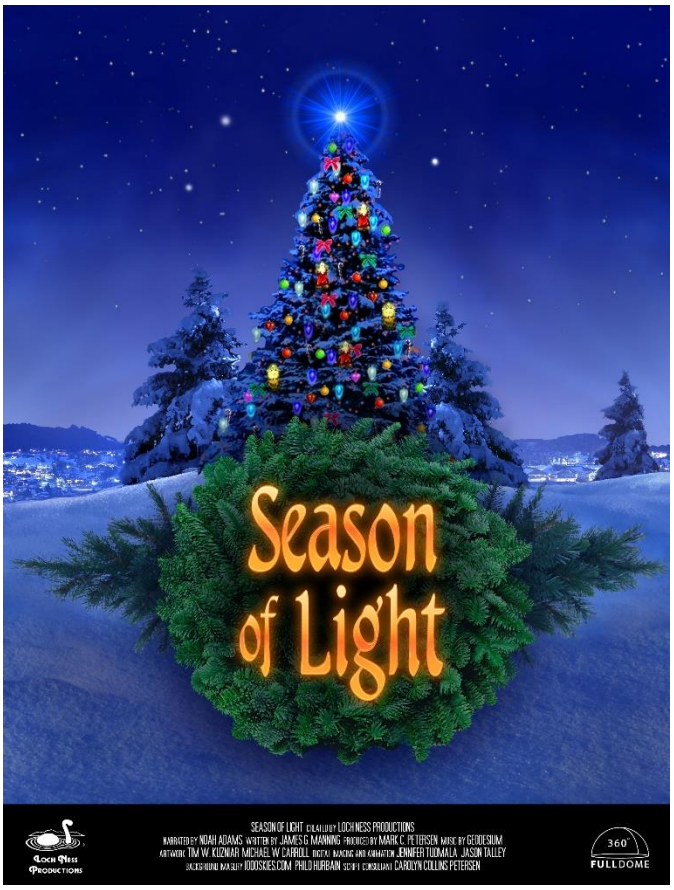
The event received support from Dr. Joe Wirgau and the Office of Undergraduate Research and Scholarship and Dr. Jeff Aspelmier from the Department of Psychology in addition to the many faculty and staff members in the Artis College who assisted students in preparation.

SEASON OF LIGHT AT THE RADFORD PLANETARIUM

An annual tradition at the Radford University Planetarium is the show from Loch Ness Productions, " 'Tis the Season" which describes the legends associated with the stars that appear during the Christmas season, including the Star of Bethlehem, Saint Nick and his various forms, holiday lights and candles.

Presents and festivals are also explored in this festive show. A sky tour prior to the show discusses the more prominent stars and constellations of the season, and why the sky played such a prominent role in their lives.

This 35-minutes show is narrated by Noah Adams of NPR's "All Things Considered."



Show dates:

Saturday Dec 15 - 10:30 a.m. - 11:30 a.m.

Monday Dec 17 - 7:00 p.m. - 8:00 p.m.

Tuesday Dec 18 - 7:00 p.m. - 8:00 p.m.

Wednesday Dec 19 - 7:00 p.m. - 8:00 p.m.

Shows in the Planetarium are free, but seating is limited. It is recommended to arrive at least 30-45 minutes prior to show times to help ensure entrance. Groups are strongly encouraged to contact the Planetarium Director Dr. Rhett Herman, rherman@radford.edu. Special shows may be arranged for groups of at least 20 based on availability.

Please enter the Center for the Sciences on the Main Street Level Parking Lot C to visit the Planetarium Hearing-assist receivers are available for our sound system--please bring your own earphones (1/16 inch [3.5mm] stereo jack). No food/drinks allowed in the planetarium. For more information please visit www.radford.edu/planetarium