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Read about the new MS degree in
Applied Biology!

<http://www.salisbury.edu/biology/>

Lighten your ecological footprint!
See Page 14 for 10 easy tips!



ANNOUNCEMENTS AND AWARDS

On May 7th 2009, 24 new students will be inducted into **Tri Beta, a national Biological Honor Society**. Congratulations to Jillian B. Albrecht, Samantha O. Aylor, Charles H. Barton, Matthew J. Blackwell, Samantha S. Bowie, Lacey L. Chapman, Harsh K. Desai, Jessica D. Douse, Leslie R. Fox, Julie C. Grier, Bernadette M. Gross, Lindsey M. Hagan, Laura C. Hundy, Lauren G. Hunt, Kristin E. McAleer, Meghan E. Neal, Nathan D. Peroutka-Bigus, Katherine M. Pflaum, Brandon L. Phillips, Melissa L. Stansbury, Quynh Tran, Lauren M. Truffer, Michael K. Wroten, Kristin N. Zuravnsky.

Michele Thiess, student coordinator of the Creekwatchers Team, was selected in March as the Center for Student Achievement's Scholar Holler recipient. Michele presented the results of a long-term analysis of the Creekwatcher data at the SUSRC, 2010.

Dr. Lawler will be leading a "Birds and Botany" walk at the Ward Museum during their Native Plant Sale on May 9, at 12:30 PM.

Dual Degree May graduate **Nicole Martin** will begin as a Master's student at Frostburg State University in the fall.

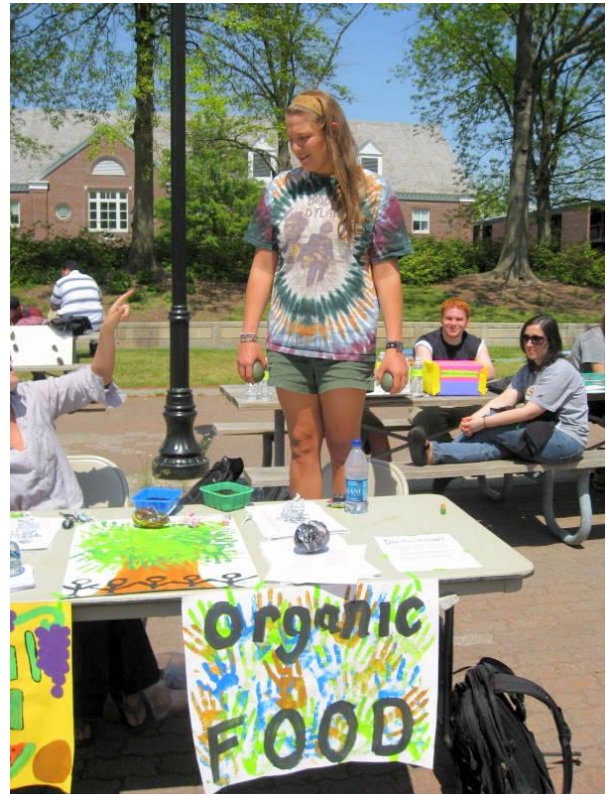
Steven Sanders was accepted to the Biological Sciences PhD program at the University of Kansas. He will be investigating the phylogeny and systematic of jelly-fish (Cnidaria).

Kayla Pennerman received a nine-week summer internship through the Kelman Scholars program at NC State University. She will be working in Dr. Paola Veronese's lab studying the molecular interactions between plants and their pathogens. The internship will end with a poster presentation on her work at the undergraduate symposium.

Patrick Masterson will be graduating in May, and is going to spend the summer in the Bioinformatics and Computational Molecular Biology Undergraduate Summer Research Program at the University of Wyoming.

EARTH DAY 2010

Earth Day 2010 was the biggest and best yet on the campus of Salisbury University! It was a beautiful day and red square was brimming with positive energy. Here are a few students from Dr. Maloof's Earth Literacy class sharing their knowledge and enthusiasm.



Dr. Gutberlet and Dr. Hogue are working with the state of Maryland, UMES, and regional nonprofits to document reptile and amphibian distributions on the lower eastern shore of Maryland. This is a five year project that is entirely dependent on volunteer assistance. We are looking for individuals to take responsibility for specific geographic areas (USGS quads) where they agree to help look for reptiles and amphibians throughout the year. We are happy to take incidental sightings of these animals as well. See our website for more information: www.salisbury.edu/lowershoreherpatlas. If you or someone you know is interested in participating, please let Dr. Gutberlet or Dr. Hogue know.

Coral Reef Biology

If you are interested in Coral Reef Biology, please consider taking the winter class, BIOL 399, **International Field Studies, Coral Reef Biology**. Go to the following website for a complete course description and application: <http://www.salisbury.edu/intled/StudyAbroad/winter/roatan/> Applications are still being accepted. Please contact Dr. Ann Barse (ambarse@salisbury.edu), Dept. of Biological Sciences, soon if you are interested.

The Department of Biological Sciences now has a Facebook page.

This is a great place for everyone to post biology department-related pictures.

SU's Biology 210 Field Trip to Assateague Island, April 17, 2010

Activities included, Life of the Forest, Canoeing, Seining, Life of the Marsh, and lunch on the beach.



SU's Biology Department Relay for Life team – "The Beatles"

On April 30, 2010 at the Salisbury University Intramural Fields, SU's Biology Department Team rocked the fields with their Beatles T-shirts and Mealworm cookies! Our team managed to raise over \$2,100 for the event! Special thanks to Alexz Goldin (not shown below) who walked from 6:00 p.m. to 3:00 a.m. (when the team finally called it a night), and the softball women who made the cookies. Thank you everyone for your donations and for supporting our team!

The day of the event, faculty supported our team by wearing the team t-shirt



A few of our Biology Department team members



Salisbury University Arboretum

Spring is here and the plants of the Salisbury University Arboretum are putting on a spectacular show. Walk around campus and enjoy these delights. Brought to you by Dr. Chris Briand.

If you live far away, check out our website: <http://www.salisbury.edu/arboretum/>

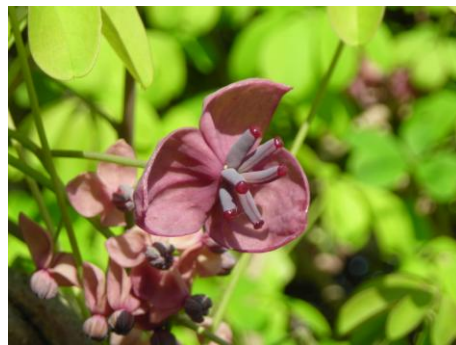
Ipheion uniflorum (spring star flower)



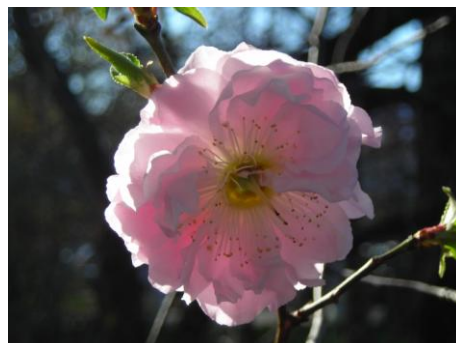
Virburnum carlesii (Korean spice)



Akebia quinata (five-leaved akebia)



Prunus mume (Japanese apricot)



UPCOMING EVENTS

Native Plant Sale & Seminar Series - Saturday, May 9, 9 AM – 1 PM

Purchase and learn about the benefits and beauty of native plants during this annual event. Pre-order forms for native plants are available online now at the [Lower Shore Land Trust](#) website or by calling 410-641-4467. New this year, the Ward Museum will host a seminar series in conjunction with the Native Plant Sale. More information, including a schedule of events, will be available online soon!

Family Nature Club

Join the Ward Museum for a new outdoor adventure each 3rd Saturday starting in February. We've taken the guesswork out of where to go to enjoy time spent outdoors with your family and friends. Monthly club adventures include: hiking, biking, fishing, birding, camping, canoeing and kayaking. All outdoor gear is provided; just show up and experience time spent outdoors with your friends and family. Enroll by the month or for the year. Cost is \$20 for members, \$25 for non-members per family unit per outing. Space limited and pre-registration is required. For more information or to register, call 410-742-4988 ext. 110 or email WardEducation@salisbury.edu.

Sat., May 15, 9 AM-Noon - Camping

Sat., June 19, 9 AM-Noon - Biking

Sat., July 17, 9 AM-Noon - Kayaking

The Art of Screen Painting with John Iameiri - Saturday, June 26, 10 AM – 5 PM

Participants discover the history and functionality of screen painting. Learn the art of dry brush dragging as you create your very own door-sized screen. Space limited. Registration required. (M\$80, NM\$95, Youth \$55)

OPPORTUNITIES

<http://www.Disneyinterns.com>

Disney has many internships within Animal Programs and Epcot Science that might appeal to SU students. There are 2 internship sessions: January-June and June-January. Disney is currently accepting applications for the Fall 2010 semester on the website. Erin Deno (SU graduate) is in charge of the interviews for the Conservation Education internships. You can also email

(WDWAnimalProgramInterns@disney.com). Below is the list of science internships available.

- **Disney's Animal Kingdom® Theme Park** - Animal Behavior, Animal Nutrition, Animal Research and Technology, Chemistry, Conservation and Behavior, Conservation Education Presenter, Husbandry Team Associate, Vet Hospital, Veterinary Medical Records, Research Administration, Reproductive Biology
- **Disney's Animal Kingdom Lodge** - Conservation Education
- **The Seas with Nemo & Friends Pavilion at Epcot** - Conservation Education, Aquatic Research, Aquatic Vet Hospital, Marine Biologist & Aquarium, Marine Mammal
- **The Land Pavilion at Epcot** - Plant Science, Aquaculture, Entomology, Biotechnology, Conservation and Behavior

FEATURED FACULTY

DR. PATTI ERICKSON

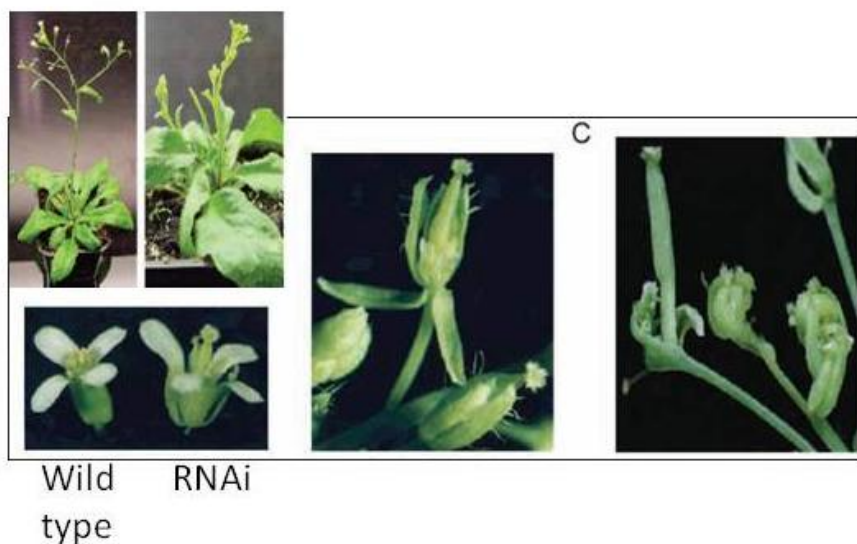


Courses taught at SU: Introductory Biology for Majors (Biol210), Cellular Biology (Biol350), Contemporary Genetics (Biol440), Senior Seminar (Biol418), Research in Biology (Biol415)

Life before SU: I was a research and development scientist at BioRad Laboratories who created Biotechnology Explorer kits and curricula to teach molecular biology at the high school and college level. After moving to Salisbury and starting a family, I also started a small, chocolate business and made fresh cream chocolate truffles.

Research interests: My research interests include epigenetics, which is the study of inherited traits that are not due to changes in DNA sequence. The two most common epigenetic mechanisms involve modifying the histone proteins that package DNA into chromatin and the modification of the DNA itself with methyl groups. Both mechanisms can alter gene expression and, therefore, phenotypes. My previous research in the model plant *Arabidopsis* involved a chromatin-modifying protein, MSI1/p48, that is necessary for normal development.

RNA interference (RNAi) is a type of epigenetic phenomenon where double-stranded RNA can be used to “knock down” the expression of a gene and generate a mutant. In Contemporary Genetics (Biol440), we use this incredibly powerful, Nobel-prize winning technique in the nematode worm *C. elegans* in a guided-research style course. We design and create a construct to knock down a gene we’ve chosen. We observe what happens when the gene is not expressed properly in worms, and then use real-time, quantitative PCR to measure the residual level of gene expression.



Current Research

Current research in my lab involves *C. elegans* as well as *Arabidopsis*. Mike Wroten is examining the effect of the anti-oxidant nordihydroguaiaretic acid (NDGA), which is isolated from the creosote bush, *Larrea tridentata* that Dr. Hunter also studies. *Larrea* extracts have been used in traditional medicine, and studies have shown that NDGA has a wide range of physiological effects, including potential epigenetic roles. Mike is performing toxicological experiments to determine potentially therapeutic levels of NDGA in worms, as well as to identify toxic levels useful for future mutant screens. We plan to use green fluorescent protein (GFP)-promoter constructs to measure the responses of NDGA-treated and untreated worms when exposed to thermal and oxidative stress. I am initiating experiments with *Arabidopsis* that will enable the selection of mutants with altered responses to NDGA, which will perhaps give some insight into its normal cellular function within plants.

C. elegans expressing GFP
www.bcgsc.ca



Off campus, I serve on the board of directors for the Local Eastern Shore Sustainable Organic Network (LESSON), whose goal is to develop a just, sustainable, regional food system. We support farmers who are transitioning to sustainable practices, and we promote the growth and consumption of local, organic foods. At home, I can be found enjoying time with Dr. Erickson and our son.

Most recent publication

Exner, V., P. Taranto, N. Schonrock, W. Gruissem, L. Hennig. 2006. Chromatin assembly factor CAF-1 is required for cellular differentiation during plant development. *Development* 133:4163-4172.

MEETINGS/ PRESENTATIONS/ TRAVEL

Lauren Brenneman and **Dr. Dana Price** presented the poster “Species diversity of dung beetles (Scarabaeidae, Geotrupidae, and Trogidae) collected on Maryland’s Eastern Shore” at the Entomological Society of America, Eastern Branch Conference, Annapolis, MD, March 7-9. Dr. Price received a Henson Faculty travel grant for this as well.

Dr. Clement Counts will be participating on the Poster Review Committee for the Gordon Research Conference on Science and Technology Policy held in Waterville Valley, New Hampshire, August, 2010.

Chuck Davis presented Effects of nitrogen availability on lipid production in *Neochloris oleoabundans* at the Mid-Atlantic Section of the American Society of Plant Biologists, Bowie State University, Bowie, MD. Faculty advisor Dr. Mark Holland.

Bernadette Gross, Emily Farr and **Dr. Ann Barse** presented the poster “Effect of Photoperiod on Cercariae Release of the trematode *Zoogonus rubellus* from mud snails *Ilyanassa obsoleta* in Rehoboth Bay” at The 3rd Annual UMES Aquatic and Fisheries Science Symposium, Assateague Island, March 26, 2010.

Dr. Ellen Lawler presented “Cranes and More! Birding in New Mexico” to the Tri-County Bird Club on April 26.

Michelle Meininger, Laura Hundy and **Dr. Judith Stribling** traveled to the Atlantic Estuarine Research Society Conference March 4-6, in Atlantic City, NJ, where Michelle presented the poster “Near-term assessment of water quality data on the Wicomico River.” Michelle received both a USARA travel grant and a student travel grant from AERS, and Dr. Stribling received a Henson Faculty travel grant for this as well.

Kayla Pennerman presented “*Cuscuta* transmission and secondary infection of *Fusarium* wilt” at the Mid-Atlantic Section of the American Society of Plant Biologists, Bowie State University, Bowie, MD. Faculty advisors Dr. Mark Holland, Dr. Samuel Geleta, and Dr. Christopher Briand.

Katherine Pflaum and **Dr. Elizabeth Emmert** presented "Use of *Bdellovibrio bacteriovorus* as a biocontrol agent to protect *Caenorhabditis elegans* from Gram negative pathogens" at the American Society for Microbiology general meeting, Philadelphia, PA, May 2009.

Biology students **Ryan Protzko** and **Chuck Davis** presented their research projects at NCUR in Missoula, MT, April 15-18, 2010. Ryan received an SU NCUR Travel Award.

Shelby Smith and **Jordan Estes** presented “Nordihydroguaiaretic Acid in the Polyploids of *Larrea tridentata*: Effects of Temperature and Developmental Stage” at the Washington Academy of Sciences, Arlington, VA, March 2010. Faculty advisor Dr. Kimberly Hunter.

Brittney Uhlund and **2009 SU grad Sarah Rubin** were co-authors of a poster, "Observations on Natural History by Eighteenth Century Maryland Merchant, Henry Callister" presented by Biology faculty member, Dr. Ellen Lawler at the annual meeting of the American Society of Environmental History, Portland, OR, March, 2010.

**THE FOLLOWING PRESENTATIONS WERE GIVEN AT THE SALISBURY UNIVERSITY
STUDENT RESEARCH CONFERENCE (SUSRC) - FRIDAY, APRIL 23, 2010**

Species Diversity of Dung beetles (Scarabaeidae, Geotrupidae, and Trogidae) Collected on Maryland's Eastern Shore

Lauren Brenneman

Faculty Advisor Dr. Dana Price

Effects of Nitrogen Availability on Lipid Production in *Neochloris oleoabundans*

Chuck Davis

Faculty Advisor Dr. Mark Holland

Quantifying Changes in Loggerhead Shrike (*Lanius ludovicianus*) Populations in Maryland through Analysis of Citizen Science Databases

Daniel Denmark

Faculty Advisor Dr. Ronald Gutberlet

Analysis of Nordihydroguaiaretic Acid Monthly in Green House Grown *Larrea* and Herbarium Samples from Members of Zygophyllaceae

Jordan Estes, Devin Hudson, Ashlyn Cohil & Susan Shoemaker

Faculty Advisor Dr. Kimberly Hunter

Ecological Design's Role in a Sustainable Society

Anne Gilbert

Faculty Advisor Dr. Judith Stribling

The Effect of Photoperiod on Patterns of Cercarial Release for Trematode Parasites Infecting Mud Snails (*Ilyanassa obsoleta*) in Rehoboth Bay

Bernadette Gross, Emily Farr & Jordana Todd

Faculty Advisor Dr. Ann Barse

Genetic Diversity in the Federally Endangered Species *Ptilimnium nodosum*

Shandi Hiebler, Steven Sanders, Danielle D'Armi & Ericka Veliz

Faculty Advisor Dr. Kimberly Hunter

Trace Chemicals and Human Health: A Closer Look at Bisphenol-A

Emily Kansler

Faculty Advisor Dr. Barbara Pollock

Changes in the Expression of Genes for Lipid Metabolism in Chinook Salmon during Temperature Change

Sabrina Kunciw, Jennifer Scott & Anh Nguyen

Faculty Advisor Dr. Eugene Williams

Classification of Salisbury University's Wild Grapevine Using Microsatellites, Single Nucleotide Polymorphism (SNP) and Morphological Characterization

Leah Miller and Stephanie Mellott

Faculty Advisor Dr. Les Erickson

Expression of Mitochondrial Uncoupling Protein in Honeybee Flight Muscle

John O'Neil

Faculty Advisor Dr. Stephen Gehrlich

Cuscuta Transmission and Secondary Infection of *Fusarium* Wilt

Kayla Pennerman

Faculty Advisor Dr. Samuel Geleta

Use of *Bdellovibrio bacteriovorus* to Control Infection in *Caenorhabditis elegans*

Katie Pflaum and Justin McGrath

Faculty Advisor Dr. Elizabeth Emmert

Carbohydrate Dynamics of Sweet Sorghum Juice Fermentation for Biofuel Production on Maryland's Eastern Shore

Ryan Protzko

Faculty Advisor Dr. Les Erickson

Recovery of *Escherichia coli* and *Enterococcus faecalis* from Maryland and Delaware Shore Sediments using Two Different Extraction Media

Megan Robison and Amy Hafez

Faculty Advisors Dr. Mark Frana, Dr. Elichia Venso and Dr. Brent Zaprowski

Five-Year Water Quality Assessment of the Wicomico River

Michele Thiess

Faculty Advisor Dr. Judith Stribling

A Plastic World: The Physiological Effects of Long Term Exposure to Bisphenol-A

Jordana Todd

Faculty Advisor Dr. Stephen Gehrlich

Wicomico Creekwatchers

Michele Thiess and Michelle Meininger

Faculty Advisor Dr. Judith Stribling

Genetic Variability in Five Species of Tree Ferns Collected from Cusuco National Park (Honduras)

Steven Sanders, Christine Davis & Brett Spangler

Faculty Advisor Dr. Kimberly Hunter

Delmarva Through the Eyes of an Amateur Naturalist: The Letters of Henry Callister

Brittney Uhland

Faculty Advisor Dr. Ellen Lawler

The Decline and Disappearance of Mammalian Carnivores on Delmarva

Andy Yancura, Bryan Mounts, and Ben Groves

Faculty Advisor Dr. Aaron Hogue

THE FOLLOWING PRESENTATIONS WERE GIVEN AT THE BIENNIAL CAPSCI MEETING SPONSORED BY THE WASHINGTON ACADEMY OF SCIENCES. THIS YEAR'S CONFERENCE WAS HELD AT THE HEADQUARTERS OF NSF IN ARLINGTON, VA. MARCH 2010.

Effects of nitrogen availability on lipid production in *Neochloris oleoabundans*

Chuck Davis

Faculty Advisor Dr. Mark Holland

More than meets the ear: male position relative to foam nests influences female mate choice in the túngara frog, *Physalaemus pustulosus*

Christina M. Martin

Faculty Advisor Dr. Ryan Taylor

Cuscuta transmission and secondary infection of *Fusarium* wilt

Kayla Pennerman

Faculty Advisor Dr. Sam Geleta

Use of *Bdellovibrio bacteriovorus* to control infection in *Caenorhabditis elegans*

Katie Pflaum and Justin McGrath

Faculty Advisor Dr. Elizabeth Emmert

Nordihydroguaiaretic Acid in the Polyploids of *Larrea tridentata*: Effects of Temperature and Developmental Stage

Jordan Estes and Shelby Smith

Faculty Advisor Dr. Kimberly Hunter

Temperature-induced changes in the expression of enzymes involved in membrane restructuring in Coho salmon cells

Sabrina E. Kunciw

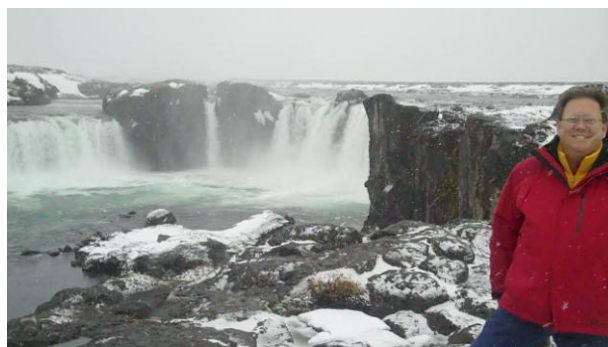
Faculty Advisor Dr. E. Eugene Williams

Genetic Variability in Five Species of Tree Ferns Collected from Cusuco National Park (Honduras)

Steven Sanders, Christine Davis and Brett Spangler

Faculty Advisor Dr. Kimberly Hunter

During spring break Dr. Williams traveled to Iceland in preparation for his summer 2010 course **The Biology of Arctic Fishes**. Below are some pictures from his ventures.



PUBLICATIONS/ARTICLES/ABSTRACTS

(*Undergraduate, **Masters Student, ***Emeritus)

Hogue, A. and ***S. ZiaShakeri**. 2010. Molar crests and body mass as dietary indicators in marsupials. *Australian Journal of Zoology* 58:56-68.

Smith, B.L., W. G. Holliday, and H. W. Austin. 2010. Students' comprehension of science textbooks using a question-based reading strategy. *Journal of Research in Science Teaching* 47 (4): 363-379.

Taylor, R. C., Klein, B. A., Stein, J., and M. J. Ryan. *In press*. Spatial and Temporal Variation in Multimodal Signal Assessment in the Túngara Frog, *Physalaemus pustulosus*: How important is matching a signal with its signaler? *Journal of Experimental Biology*.

ALUMNI

Recent biology graduate **Beth Clifton** has taken a new position as a molecular biological technician at Accugenix in Newark, DE.

Erin Gallagher (now **Erin Deno** as of '04), class of '02 moved to Florida after graduation and has been working at Disney World ever since... and using her biology degree! From Erin: "I did an Entomology internship at Epcot and a Conservation Education internship at Disney's Animal Kingdom in 2003. In 2005, I joined the Conservation Education Presenter team as a coordinator and that's where I still am today!"

ECO Friendly Tips

1. Live Simply! Only keep belongings that you use/enjoy on a regular basis.
2. Only grab what you will eat! Food is wasted everyday due to eyes being larger than the stomach.
3. Cutting back on meat is a great way to save lots of money – meat is pretty expensive compared to tofu, beans, vegetables, fruit, or grain staples. Additionally, cutting the fat for many people will mean saving on future medical bills as well. Yes, you can still get enough protein if you stop eating meat, or even reduce your consumption to only a couple times a week.
4. Avoid creating trash wherever possible: when ordering food, avoid receiving unnecessary plastic utensils, straws, etc., buy ice cream in a cone instead of a cup, don't accept "free" promotional products, buy products with the least amount of packaging, etc.
5. Pack a waste free lunch!
 - Use a reusable bag (cloth or your favorite Lunch box).
 - Use a reusable container.
 - Use a refillable coffee mug or refillable bottle for drinks.
 - Use cloth napkins to wash and reuse.
 - Bring silverware from home.
6. Walk, bike, use public transit, carpool, drive slower, and keep your tires inflated.
7. Don't wait until you get your electric bill to reduce your energy consumption.
8. If you live on campus, reduce the electricity you use in your dorm.
 - Turn off the lights before leaving for meals or class.
 - Unplug unused electronics especially on weekends when you go home.
 - Reduce the amount of laundry done each week by only doing laundry when you have a full load of clothes, and by washing clothes in cold water.
9. Create a tree-free environment in your home.
 - Create and use note pads from once-used paper.
 - Leave messages on a reusable message board.
 - Print documents on once-used paper.
 - Reuse notebooks that still contain paper at the end.
10. Salisbury University has an amazing and well run recycling program, including recycling bins all over campus and people who take care to empty these for us. Walk the extra 10 feet to the recycling bin, instead of the trash can.



**Thank you to Dr. Ron Gutberlet for his help editing this material.
His work is much appreciated.**

**If you have announcements to add or general comments regarding the Newsletter,
please contact Dr. Dana Price: dlprice@salisbury.edu
Your opinion matters!**