PLEASE DO NOT PRINT THIS!

SU Opens Field Station in Nassawango Creek Preserve

Nassawango Field Station
Presentation
Saturday, December 4th,
3:00 pm

See pg. 2 for more information.

ANNOUNCEMENTS AND AWARDS

Dr. Lisa Leslie, the Henson School Advising Services Coordinator, was selected as the Employee of the Month for October 2010! Dr. Leslie has been a great help to the Biology Department Faculty and students, as well as the entire Faculty within the Henson School. Congratulations!

Campus Sustainability
The Environmental Student Association has partnered with Terracycle, an organization that turns trash into useful new products, to encourage students to recycle potato chip bags. Receptacles for these bags will be placed at Cool Beans in the Guerrieri University Center and at all satellite dining locations. For each bag collected, Terracycle will donate 2 cents to the Wicomico Environmental Trust. Make sure you look for these receptacles when disposing of your trash.

Starting October 21, 2010, bring your own clean cup to Cool Beans and save 15 cents on your drink. (Beverages served are 12 oz, 16 oz and 20 oz)

See page 15 for more ways to make your Thanksgiving an Ecofriendly one.

SU Nassawango Field Station
By Libby Young

Junior and senior environmental studies majors at SU are required to complete a "Senior Seminar" class, in which they work as a group to improve and encourage local environmental awareness and well being. This year, half of the class has devoted their semester to improving the Nassawango Field Station. The field station is located about 10 miles from campus on Nature Conservancy property. The university has access to both the field station and the surrounding land, and the biology, environmental studies and philosophy departments use it regularly. This year's senior seminar group has recognized the potential for the field station and is working to make it even more accessible. So far, the group has made cosmetic repairs and has working plans for future installments of a solar water heater, composting toilet and a rain barrel. On December 4th, 2010, the group will be hosting an on-campus information session about the field station. SU students, faculty and staff are welcome to attend. There will be presentations and exhibits detailing the progress that has been made this semester, as well as future plans and expectations. Keep an eye out for updates and announcements around campus!
For more information: http://www.salisbury.edu/fieldstation/
Nature Conservancy link:
http://www.nature.org/wherewework/northamerica/states/maryland/preserves/art21134.html

Student Research Conference Submissions
The Salisbury University Student Research Conference (SUSRC) committee announces the 10th annual SUSRC on Friday, April 29, 2011. Students from all four of SU's academic schools may share their original work in presentation and poster sessions. The SUSRC celebrates student scholarship, artistic merit and professional achievement. Presentations are organized into themed sessions, ranging from molecular biology to music composition, from education to economics. The conference culminates in a poster reception where the Outstanding Research Mentor Award is presented to a faculty member for excellence in guiding student research. The submission process involves three required steps: (1) the deadline for a student to submit her or his intent is March 15, (2) the faculty mentor must approve the student's work, and (3) the deadline to submit final abstracts is Friday, April 1, 2011, by midnight. The conference is free and the public is invited. For more information visit http://www.salisbury.edu/susrc

Salisbury Zoo is Ready for an Extreme Make-over!

Renew the Zoo

UPCOMING EVENTS

The Fall 2010 Biology Seminar Series:
November 18, Hemayet Ullah (Howard University) will present "Arabidopsis Scaffold Proteins RACK1 Regulate Diverse Environmental Stress Signaling Pathways". Hosted by Patti Erickson.

December 2, Mark Frana (Salisbury University) will present "What's Contaminating that Water? Bacterial Source Tracking Can Provide Some Answers!" Hosted by Elizabeth Emmert.

December 7, Laura Sullivan-Beckers (Henson Seminar) will present "Sex, Bugs and Rock n' Roll: the Evolution of Two Arthropod Mating Signals". Hosted by Ryan Taylor.

December 9, Oliver Beckers (University of Nebraska-Lincoln) will present "Fantastic Plastic: Developmental Plasticity in the Communication System of a Katydid". Hosted by Ryan Taylor.

Ward Museum Activities

- **The Decoys of Massachusetts:** October 1-January 23
  The sandy coast of Massachusetts attracts many species of wildfowl. At the turn of the century, gale force nor'easters forced entire flocks over the outlying coasts of Cape Cod, providing gunners with rich hunting opportunities. Massachusetts's craftsmen created decoys of a wider variety of shorebird species and forms than any other region. This exhibition showcases many species and techniques, allowing for examination of the works of both well known and unidentified carvers.

- **Carving and Painting Class**: December 4-5
  Use carving techniques and hand tools to carve and paint a holiday-themed figurine. Start a tradition or make as a gift. Great for beginners or those with some carving experience.

- **Holiday Greens Sale**: December 4, 2010
  Adkins Arboretum - 12610 Eveland Road, Ridgely, Maryland
  Just in time for all of your holiday decorating needs, visit the arboretum for fresh local greens, decorated wreaths, swags, roping, boxwood trees and other natural materials.

- **Woodcarving Club**: January 4, 2011
  Carve, learn, share and socialize. All skill levels welcome! Must bring your own materials.

- **Nature Tales for Tots**: January 5, 2011
  Ward Museum, 909 S. Schumaker Drive, Salisbury, Maryland
  This FREE program introduces children ages 3 to 6 to the natural world. Each program is organized around a theme and features stories and crafts. Held on the first and third Wednesday of each month.

- **Nature Photography Workshop:** January 22nd
  Join expert photographer Bill Wallen as he leads this half-day workshop about techniques for wildlife photography at the Chincoteague National Wildlife Refuge.

- **Wild Delmarva: The Photography of Kevin Fleming**: January 2-April 10, 2011 **Reception: January 28, 5-7p.m.** The work of award-winning nature photographer Kevin Fleming is presented in the LaMay Gallery. A Delaware native, Kevin began his career as a newspaper photographer before spending a decade with National Geographic, documenting subjects as diverse as the subatomic world of high-energy physics and the lives of New Zealand sheep ranchers. In 2008, Kevin Fleming published Wild Delaware, and the large coffee table book instantly became the state's number-one bestseller. This exhibit features images from his upcoming book Wild Delmarva (available November 2010), a spectacular selection of images of wildlife and wild places across the peninsula.

- **East Coast Commercial Fishermen's & Aquaculture Trade Expo**: January 28, 2011
  Ocean City Convention Center - 40th Street and the Bay; Ocean City, Maryland

- **Delmarva Birding Weekend**: April 28, 2011
  Various Delmarva Locations
  A unique opportunity for wildlife enthusiasts. Trips by foot, kayak, canoe, or boats, with experienced guides. Social events and more.

- **41st Annual Ward World Championship Wildfowl Carving Competition & Art Festival:**
  April 29–May 1, 2011
  Roland E. Powell Convention Center, Ocean City, MD Carvers and visitors from across the world convene for the most prestigious competition of contemporary wildfowl art. The event includes judging, benefit auction, classes, seminars, demonstrations, children's activities and exhibitor booths of artisans and supplies. Friday 10 am-5 pm, Saturday 9 am-5 pm with award ceremony starting at 5 pm, and Sunday 10 am-4 pm. Admission multi-day pass - $18, Day pass, adults - $10, Seniors & Students - $8, Children under 12 free if accompanied by an adult.

The Ward Museum of Wildfowl art is located at 909 South Schumaker Drive, Salisbury MD. Visit MapQuest for detailed directions to The Museum from your location.

OPPORTUNITIES

Institute of Cancer Research, Postgraduate Research Studentships
http://www.icr.ac.uk/education/science_students_opportunities/index.shtml
The sponsor invites applications for full-time PhD studentships. Deadline: 12/01/2010

Environmental Protection Agency
Greater Research Opportunities (GRO) Fellowships for Undergraduate Environmental Study (NCER)
Program URL: http://epa.gov/ncer/rfa/2011/2011_gro_undergrad.html
The sponsor offers fellowships to support quality environmental education for undergraduate students. Fellowships cover stipend, tuition, and expenses for a two-year period. A summer internship is also required. Deadline: 12/09/2010

Marine Biological Laboratory (Woods Hole): Nikon Fellowship
Web Site: http://www.mbl.edu/research/summer/awards.html
Program URL: http://www.mbl.edu/research/summer/awards_general.html
A summer fellowship at the Marine Biological Laboratory is available to a young investigator for research in an area of biology in which they can make extensive use of advanced microscopy provided by Nikon, Inc., and also benefit from technical expertise offered by Nikon, Inc. Deadline: 12/15/2010

Torrey Botanical Society: Undergraduate Training Fellowship
http://www.torreybotanical.org/grants.html#Undergraduate_and_Graduate_Training
The sponsor supports student training with an annual award of $1,000. Deadline: 12/31/2010

Mount Desert Island Biological Laboratory: **Undergraduate Student Fellowships**
http://www.mdibl.org/edu/undergrad.shtml
In-residence summer fellowships at Mount Desert Island Biological Lab for undergraduate students with a minimum of one semester of undergraduate biology. Deadline: 01/14/2011
Link to full program description: http://www.infoed.org/new_spin/spin_prog.asp?02340

German Academic Exchange Service (DAAD)
Research Internships in Science and Engineering (RISE)
Program URL: http://www.daad.de/rise/en/11638/index.html
Support for undergraduate students from the US, Canada and the UK in the fields of biology, chemistry, physics, earth sciences and engineering for a summer research internship in Germany. RISE summer placements take place with research groups across Germany. The RISE interns are matched with a doctoral student whom they assist and who will also serve as their mentor. Deadline: 01/31/2011

Graduate Training in Computational Biology at the University of Tennessee
Contact Dr. Harry Richards, SCALE-IT Program Manager Email: harry@utk.edu
Unique opportunities for graduate students to work at the interface of computational biology and biological sciences. The Scalable Computing and Leading-Edge Innovative Technologies (SCALE-IT) Program is an NSF-funded IGERT traineeship that funds PhD students interested in computational biology research. Students, who are accepted into PhD programs in several departments, including Biochemistry and Cellular and Molecular Biology, the Program in Genome Science and Technology, Electrical Engineering and Computer Science, and others, are eligible to apply for support. Deadline is February 1, 2011, but early applications are encouraged.

Environmental Resources Manager: Lake of the Woods Association
HOA in Orange County VA is seeking qualified applicants for the full-time salaried position of Environmental Resources Manager. Position is a department manager for community amenity and is responsible for budgetary and personnel items pertaining to lakes, marinas, erosion and sediment control and environmental control. ERM performs monitoring, research, data collection, and analyses related to lakes and tributaries for the purpose of implementing long-term watershed management strategies. Must possess skills in GIS analysis and mapping, technical writing, and interpreting environmental data. Forward resume and cover letter to: Lake of the Woods Association. 102 Lakeview Parkway. Locust Grove, VA 22508. www.lowa.org

Rutgers, the State University of New Jersey: Research in Science and Engineering (RISE)
(http://rise.rutgers.edu/riseinfo.html) The sponsors provide a Research in Science and Engineering program for 20-25 outstanding undergraduates to participate in cutting edge research in the sciences, math, and engineering under the guidance of prominent faculty mentors. Deadline(s): 01/15/2011

Johns Hopkins University Biology Department - Research Experiences for Undergraduates - JHU BioREU: Visualization of Macromolecules in Biological Research
E-mail: pwhite18@jhu.edu (http://www.bio.jhu.edu/BioREU/)
The sponsor provides a ten-week program designed to provide an intensive, mentored research experience for undergraduates, especially those attending institutions with limited research opportunities. The focus of the program will be the visualization of macromolecules in biological research.
Deadline: 02/01/2011 The application will be available online by January 1, 2011.

Case Western Reserve University: Summer Program in Undergraduate Research (SPUR)
E-mail: julia.brown@case.edu (http://www.case.edu/artsci/biol/hhmi/spur.html)
The Program is designed to acquaint students with all aspects of scientific research, from formulation of a question to production of a final report. The program runs from May 23 to July 29, 2011. All participants are required to conduct ten weeks of research. Deadline: 02/01/2011

University of Pennsylvania: Summer Undergraduate Internship Program
E-mail: edwardhm@mail.med.upenn.edu (http://www.med.upenn.edu/bgs/applicants_suip.shtml)
The internship program provides an intense research experience to students interested in graduate study in the biomedical sciences. Interns complete ten weeks of full-time laboratory research, attend research seminars, and receive career counseling from faculty and administrators. Deadline: 02/01/2011

Harvard Medical School: Summer Honors Undergraduate Research Program (SHURP)
E-mail: SHURP@hms.harvard.edu (http://www.hms.harvard.edu/dms/diversity/shurpintro.html)
SHURP is a ten-week summer research program primarily for college students belonging to groups that are under-represented in the sciences. The Program is offered for currently enrolled undergraduates who are considering careers in biological or biomedical research sciences. Deadline: 02/01/2011

Louisiana State University: Undergraduate Summer Research Program
E-mail: sheri@lsu.edu (http://www.biology.lsu.edu/hhmiprog/undergrad/)
The sponsor is hosting nine week research opportunities for eligible undergraduate students in the Life Sciences. Work will be done in established laboratories, with interaction among scientists and peers.
Deadline: 02/09/2011

Association of Public Health Laboratories : EID Advanced Laboratory Training Fellowship
E-mail: fellowships@aphl.org (http://www.aphl.org/profdev/fellowships/eid/Pages/default.aspx)
The sponsor provides a one-year fellowship for bachelor's or master's level scientists, with emphasis on the practical application of technologies, methodologies, and practices related to emerging infectious diseases. Deadline: 02/11/2011

Boston University: Summer Undergraduate Research Fellowships (SURF)
E-mail: urop@bu.edu (http://www.bu.edu/urop/surf/about/)
The sponsor provides ten to twenty $4,500 awards for a ten-week research experience that supports undergraduate students for the summer. Deadline: 02/11/2011

University of Wisconsin-Madison
Integrated Biological Sciences Summer Research Program for Undergraduates
E-mail: beasen@wisc.edu (http://www.wisc.edu/cbe/srp-bio/)
For ten weeks, participants work full time with UW-Madison faculty and researchers in state of the art research facilities. Deadline: 02/15/2011

Rocky Mountain Biological Laboratory: Research Experience for Undergraduates
E-mail: admin@rmbl.org (http://rmbl.org/home/index.php?module=htmlpages&func=display&pid=134)
The sponsor provides an opportunity for undergraduates to conduct summer research. Students should have a sincere interest in a career in field biology research. Deadline: 02/15/2011

Georgia Institute of Technology: Aquatic Chemical Ecology REU Program
E-mail: REU.Coordinator@biology.gatech.edu
http://www.biology.gatech.edu/undergraduate-program/reu/index.php
Aquatic Chemical Ecology (ACE) at Georgia Tech is summer research program that gives students the opportunity to perform exciting research with faculty. Deadline: 02/15/2011

California Academy of Sciences: Internship in Biological Illustration
E-mail: rmooi@calacademy.org (http://research.calacademy.org/opportunities/illustration)
Funding is provided for an internship program for students interested in developing illustration techniques related to biological specimens. Deadline: 02/18/2011

Innes (John) Centre: **Undergraduate Studentship Programme**
E-mail: USRTP@bbsrc.ac.uk (http://opportunities.jic.ac.uk/summerprogramme/)
The sponsor offers a training program to provide research experience to undergraduates with research potential, in order to encourage them to consider a career in scientific research. Deadline: 02/21/2011

Mountain Lake Biological Station: Research Experiences for Undergraduates Program
E-mail: mlbs-reu@virginia.edu (http://www.mlbs.org/REU.html)
The sponsor provides support for a ten-week summer program of guided, but independent, original research in field biology. The program supports ten positions each summer. Deadline: 02/20/2011

Field Museum: Research Experiences for Undergraduates (REU)
(http://www.fieldmuseum.org/research_collections/scholarships/default.htm)
The sponsor will provide support and training for a cohort of at least seven students in biodiversity-related research in a 10-week summer program. Deadline: 03/01/2011 (Email: psierwald@fieldmuseum.org)

FEATURED FACULTY

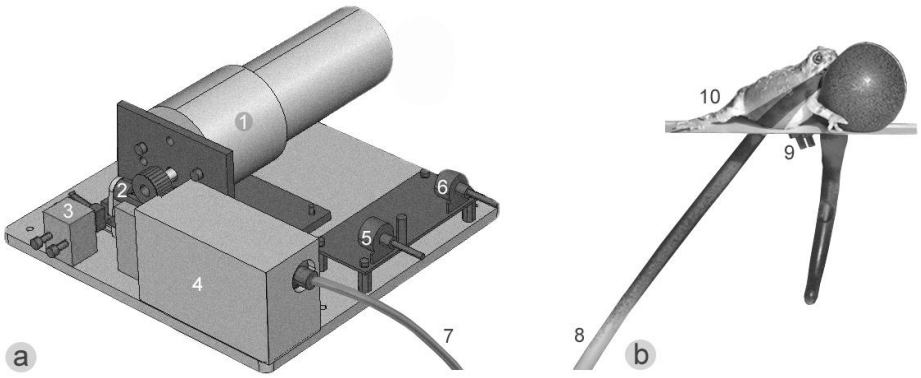
DR. RYAN TAYLOR

Not only is field biology in Panama hard work, so is foraging at the grocery store. You have to make lots of trips!

Courses taught at SU: Human Anatomy & Physiology I (BIOL 215), Fundamentals of Human Anatomy & Physiology (BIOL 205), Animal Behavior (BIOL 490), Research in Biology (BIOL 415/515).

Research interests: I am broadly interested in all aspects of evolution, ecology, and animal behavior. However, I am especially interested in understanding how communication behavior drives the diversity of male traits. In a group of closely related birds, for example, the differences in color pattern, song type, and display behavior among the species often differ dramatically. These traits are almost always species-specific signals that allow individuals to identify other members of their own species. In addition, these signals are typically produced by the male and often communicate information such as male size or energetic condition. Male communication signals rarely occur in isolation; instead, multiple signal components are often combined. For example, the courtship of male birds often consists of both song and dance, effectively producing an audio-visual signal for females. These signals produced in multiple sensory channels (e.g. audio-visual) are known as multimodal signals. It has been long understood that females prefer to mate with males having "flashier" signals, and this preference provides a selective pressure driving the evolution of male traits. What is not well understood, however, is how the individual components of multimodal signals interact to influence female mate choice.

In my research I use frogs as a model system to examine how multimodal signals influence female mate choice decisions. Male frogs congregate at ponds and produce vocalizations as advertisement calls. While vocalizing, the males also inflate a vocal sac under their chin producing a dramatic visual signal component. One approach I have adopted is the use of robotic frogs (faux frogs) to present female frogs with both auditory and visual courtship displays. The vocal sac on the faux frog is electronically controlled and can be inflated synchronously or asynchronously with a male vocalization produced from a speaker. By varying the temporal coupling of the two signal components, I am gaining a better understanding of how females integrate these signal components during their mate choice decisions.



I have worked on two frog species fairly extensively, the squirrel treefrog in North America and the túngara frog in Central America. My data show a distinct difference in the way that females of these two species evaluate multimodal signals. Thus, I am planning to conduct a broader comparison among species to understand better how evolution has shaped multimodal signaling within frogs. This spring, my graduate student Kyle Wilhite will begin investigating courtship behavior in spring peepers here on the Delmarva.


Red-eyed treefrog, Agalychnis callidryas, in Panama.


Leaf litter toad, Bufo typhonius, on the forest floor in Soberania National Park, Panama

Ryan and Kelly at the base of a fig tree while exploring the rainforest in Soberania National Park, Panama

Recent Presentations

Anuran courtship: what can a fixed signal tell us about multimodal signaling? Invited talk for symposium on *Signaling in Multiple Modalities*. Animal Behaviour Society Conference. The College of William and Mary, July 2010.

Martin, C.M., L. Guy, and **R. C. Taylor**. Do expecting mothers prefer white? Male position relative to foam nests influences female choice in the túngara frog. Animal Behavior Society Meeting, Snowbird, UT, 2008.

Taylor, R. C., B. A. Klein, J. Stein & M. J. Ryan. Faux frogs: multimodal signaling and robotics in animal behavior. Animal Behavior Society Meeting, Snowbird, UT, 2008.

Recent Publications

Taylor, R.C., Klein, B.A., and M. J. Ryan. *In review*. Inter-signal interaction and uncertain information in anuran multimodal signals. Current Zoology.

Martin, C.M., Guy, L., and **R.C. Taylor**. *In press*. Male position relative to foam nests influences female mate choice in the túngara frog, *Physalaemus pustulosus*. Journal of Herpetology.

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.

Taylor, R.C. *In press*. Scientific Knowledge and Evolutionary Biology. In: *Genesis Evolution and the Search for a Reasoned Faith*. St. Mary's Press.

Taylor, R. C., Klein, B. A., Stein, J., and M. J. Ryan. 2008. Faux frogs: multimodal signaling and the value of robotics in animal behaviour. Animal Behaviour, 76:1089-1097.

Media Coverage of Research

Frog princes woo with a song and a sac. New Scientist, July, 2008.

MEETINGS/ PRESENTATIONS/ TRAVEL

Biology 210 Assateague Field Trip

On October 23, 200 students in Biology 210 and seven faculty traveled to Assateague Island for the course's Ecology Field Trip. It was a beautiful day, and students were able to experience firsthand this barrier island's ecosystems, including forests, salt marshes, the beach and dunes, and Sinepuxent Bay. Hiking, seining, and canoeing, they observed migrating birds, the not-so-elusive Sika deer, fish, blue crabs and ghost crabs, as well as the impacts of pony grazing and human recreation on the island. Here are some scenes!

Life of the Forest Trail

See a house on the bottom of this pond?

Life of the Marsh Trail

Life of the Marsh Trail

Saltwort
Did you try eating this?

Biology 210 Assateague Field Trip (cont.)

Lunch on the Beach






Biology 210 Assateague Field Trip (cont.)

Sammie the Sea Gull and Dr. Taylor keep an eye on things.

ISLAND WILDLIFE – Sika deer (above) and a Red Admiral (below)

In August Dr. Counts was a conferee at the Gordon Conference on Science and Technology Policy held at Waterville Valley, New Hampshire.

Dr. Clement Counts went on a collecting trip to Hawai'i in July and collected land and tree snails on the islands of Hawai'i, Kaua'i, and Oah'u.

Collection site at Kealakekua Bay, site of death of Capt. James Cook, Kona Coast, Big Island of Hawai'i.

Collection site at Kiluea Light, Kaua'i

ALUMNI

The United States Marine Corps has reported that George Ivasc (SU Biology Major) has joined the Corps.

Jordan Estes (May 2010 graduate) received a CDC fellowship and will be working with the State Hygienic Laboratory in Iowa for one year. Jordon is working with laboratory staff in infectious diseases and virus testing, including food borne disease outbreaks, influenza and West Nile virus. She also will work with the DNA fingerprinting process used to confirm *Salmonella* and *E. coli* outbreaks, and with molecular and traditional methods to isolate viruses. For more information see the following link: http://news-releases.uiowa.edu/2010/september/092310shl_fellows.html

GOBBLING GREEN

Source information was taken from the Nature Conservancy article "Green Living" By Darci Palmquist. For the full article go to: (http://www.nature.org/activities/art29966.html?src=gpg)

Make your holiday a little more Earth friendly by choosing an eco-theme for your feast**.**

Eat Local and In Season

Do your Thanksgiving shopping at local farmers markets and farms — for food items like eggs, milk, veggies, turkey, potatoes, pie fillings and more. The eco-benefits of eating locally? Food grown or raised in your region has fewer food miles, meaning the carbon emissions associated with local foods are smaller. Plus, local fruits and veggies usually taste better.

What about the turkey, you say? There are a growing number of small farms that sell turkeys directly to the public. Localharvest.org has a searchable map so you can hone in on sustainably foods.

The Tree-Hugger: Shop Organic

The benefits to your health might not be proven yet, but there's no doubt that organic agriculture is better for the landscape — fewer pesticides and other toxic chemicals seeping into soil and running off into rivers and lakes. Go organic from start to finish — and don't forget to include organic wines and other beverages on your menu! When it comes to turkey, pasture-raised, organic turkeys are the way to go.

The White Rabbit: Go Vegetarian

Eating vegetarian has been touted as one of the best ways to help save the planet. Conventional meat production is a major cause of deforestation and global greenhouse gas emissions — more so than the transportation sector, according to a 2006 study from The United Nations Food and Agriculture Organization. Dr. Price also suggests eating insects!

There are easy ways to have a vegetarian Thanksgiving: The feast usually has so many vegetable-based sides — mashed potatoes, caramelized brussel sprouts, roasted carrots, pumpkin soup, cranberry sauce and more — that you could easily go without a main course and feel completely satisfied. If you want to try out a turkey alternative, there are plenty of different companies making tofurkey.

The Full Monty: Eat Local, Organic AND Vegetarian

It's true, just one eco-theme above won't achieve maximum sustainability benefits. This will be the ultimate challenge for your new holiday tradition.

It's Not Just About the Feast
What else is there to consider besides the delectables you'll be eating? Oh, just decorations, recycling, composting and travel. Here are a few quick tips to round out your big day:

- Decorating with nature instead of plastic.
- Burn candles made from soy or beeswax rather than paraffin candles, which are made from petroleum and produce more soot than these alternatives.
- Compost and Recycle. Do it!
- Thanksgiving is often the biggest holiday for travel. Offset the carbon emissions of your holiday travel. Web sites like TerraPass, Carbonfund.org and The Nature Conservancy's own carbon calculator can help you calculate the amount of carbon you emit and offer ways of offsetting those emissions. If you're driving, check your air filter and make sure your tires are fully inflated.

If you have announcements to add or general comments regarding the Newsletter, please email dlprice@salisbury.edu. Your opinion matters!

Editor: Dr. Dana Price
Coeditor: Dr. Ronald Gutberlet