

THE AMERICAN BIOLOGY TEACHER



About Our Cover

Shown on this month's cover is a partial cluster of samaras from the yellow poplar tree (*Liriodendron tulipifera*) resting on a chestnut oak leaf (*Quercus montana*). The yellow poplar is primarily distributed in the eastern and southeastern United States and is considered one of the tallest hardwood trees in North America. The shape of the flowers and the distinctive leaf shape both bring to mind the shape of tulip flowers; thus, yellow poplars are sometimes referred to as "tuliptrees" or "tulip poplars."

Samaras are often known by other names, such as "helicopters," "wingnuts," or "whirlybirds." The fibrous, paper-like "wing" developed from the ovary wall of the dry fruit (called an "achene") containing the seed, enables the seed to be carried by wind. These wind-dispersed samaras are an anomaly, as most eastern trees with showy flowers produce fleshy fruits and rely on animals for seed dispersal.

The image was taken in Scott's Run Nature Preserve in Fairfax County, Virginia, using a tripod-mounted Nikon D750 with a 60 mm Micro-Nikkor lens, by Bob Ford, Professor of Environmental Biology at Frederick Community College, Frederick, MD.

Contents

Feature Articles

- To Key or Not to Key: A New Key to Simplify & Improve the Accuracy of Insect Identification**
Improving student accuracy when identifying bugs using a dissecting microscope
Jennifer A. Zettler, Scott C. Mateer, Melanie Link-Pérez, Jennifer Brofft Bailey, Geneva DeMars, Traci Ness 626
- Understanding Causal Relationships in Food Webs Using "Data-Rich Problem" Tasks**
Understanding the interdependent ecological relationships and the nonlinear & sustaining effects of loss of species.
Marin E. Silva, April C. Maskiewicz 635
- Reading Fiction in Biology Class to Enhance Scientific Literacy**
Enhancing literacy skills in biology students while simultaneously encouraging scientific discourse and creativity
Helen C. Boswell, Tasha Seegmiller 644

Research on Learning

- Impacts of Active Learning on Student Outcomes in Large-Lecture Biology Courses**
Encouraging instructors to integrate active learning in their classrooms
Kristy L. Daniel 651
- Available online at <http://www.nabt.org/websites/institution/index.php?p=762>

Inquiry & Investigation

- Smells Like Science: Olfactory Exploration of the Biosphere**
Olfactory learning at its best is achieved in contact with living nature
Marcel Robischon 657
- An Inquiry-Based Investigation of Freshwater Diatom Ecology**
Using diatoms as a proxy for field sample collection, data analysis & ecological interpretation
Jay Y. S. Hodgson, Kirk O. Barber, Christopher J. Husted 664
- A Simple Microscale Setup for Investigating Yeast Fermentation in High School Biology Classrooms**
An alternative way for high school biology instructors to teach the difficult-to-learn topic of respiration
Kam Ho (Kennedy) Chan 669



Tips, Tricks & Techniques

- Clarifying Confusing Science Rules, Vocabulary & Diagrams**
A guide to spotting confusing rules in science teaching that could lead to enduring student misconceptions
Kristin L. Cook, Sarah B. Bush, Karen Karp 676
- A Simple Experiment Demonstrating Hormonal Control of Cutaneous Drinking in Toads**
Comparing water absorption rate and time spent in the water absorption response between control and AII-treated toads
Joseph Agugliaro 679
- A Technique for Expediting Comprehensive Written Feedback on Assignments**
Developing an archive of comments while marking student work
Michael C. Calver, James R. Tweedley 684

Departments

- Guest Editorial • How Well Are You Teaching One of the Most Important Biological Concepts for Humankind?**
A Call to Action • Scott A. Bonar, Deanna A. Fife, John S. Bonar 623
- Book Reviews** • Elizabeth Cowles, Department Editor 689
- Sacred Bovines • Is Science Self-Correcting?** • Douglas Allchin, Department Editor 695