MARCH 2017

VOL. 79 | NO. 3 THE AMERICAN

BIOLOGY TEACHER



About Our Cover

This black-tailed prairie dog (Cynomys Iudovicianus) was keeping guard of his family group or coterie on the edge of Rocky Mountain National Park near Estes Park, Colorado, Black-tailed prairie dogs during the day and live in large colonies, which are broken down into smaller "neighborhoods" and family groups. A coterie or family group is generally composed of a male with one to four females and their offspring younger than two years of age. As mentioned they are a very social animal, typically welcoming each other by touching noses.

Black-tailed prairie dogs are burrowing rodents that are a member of the squirrel family and closely related to ground squirrels. Their adult length is ca. 38 centimeters, including their 6-centimeter black-tipped tail. But unlike other species within their genus, Cynomys Iudovicianus do not hibernate.

Prairie dogs were historically thought to have covered seven million acres in Colorado, usually residing at altitudes below 6,000 feet. Their overall decline has come as a result of loss of habitat from agricultural land use habitat fragmentation, and sylvatic plague. At one time their range stretched from northern Chihuahua, Mexico, to southern Saskatchewan. The prairie dog's range now includes Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and

This photo was taken during a hike into Rocky Mountain National Park by Nancy L. Elwess (Distinguished Teaching Professor, Department of Biological Sciences, State University of New York at Plattsburgh) using a Nikon Coolpix P900, focal length 321 mm, f6.3, 1/800 sec.

Contents

Feature Articles		
The Effect of Climate Change on Mosquito-Borne Diseases Teaching students about climate change and vector-borne disease using the mosquito Peggy Deichstetter Available online at http://www.nabt.org/websites/institution/inde:	10 x.php?p=762	69
A Portable Augmented-Reality Anatomy Learning System Using a Depth Camera in Using the input of a depth camera to interactively teach anatomy to high school students Cristina Manrique-Juan, Zaira V. E. Grostieta-Dominguez, Ricardo Rojas-Ruiz, Moises Alencastre-Miranda, Lourdes Muñoz-Gómez, Cecilia Silva-Muñoz		76
Research On Learning		
The Role of Language in Anatomy and Physiology Instruction APB curriculum has the potential to be an effective type of instruction, especially for bilingual lead Angela M. Chapman, Hsuying C. Ward, Ashwini Tiwari, Amy Weimer, Jaime B. Duran, Federico Guerra, Paul Sale		84
Inquiry & Investigations		
Searching for Nitrogen-Fixing Microorganisms: An Original, Relevant, and Successful Early Research Experience Teaching students basic research techniques by promoting inquiry-based learning in a real research environment Amaya Garcia Costas, Devon L. Ragen, John W. Peters	recommended for AP Biology	91
The Small Mammal Project: Engaging Students as Scientists Illuminating the scientific process from the initial scientific questions to oral dissemination of results Erika V. Iyengar, Paul T. Meier, Rachel E. Hamelers	RECOMMENDATION	00
Hands-On Classroom Activities for Exploring Regeneration and Stem Cell Biology with Facilitating the exploration of animal regeneration biology & promoting curiosity-driven hands-on a the scientific method Alice Accorsi, Monique M. Williams, Eric J. Ross, Sofia M. C. Robb, Sarah A. Elliott, Kimberly Alejandro Sánchez Alvarado	application of C. Tu,	08
Investigating Aquatic Insect Emergence: A Demonstration of the 5E Learning Cycle Exploring the interactions and connections across aquatic and terrestrial habitat boundaries Kaleb K. Heinrich, Kelsey M. Robson, Colden V. Baxter	22	25

Tips, Tricks & Techniques

Learning the discipline-specific meanings of the terms "drug," "poison," "toxicant," and "toxin" Robert C. Wallon, Chandana Jasti, Barbara Hug	
Measuring Transpiration with a Simple Low-Cost, Single-Leaf Potometer Demonstrating transpiration in plants using the potometer Kishore Pawar	3
Botanical Phylo-Cards: A Tree-Thinking Game to Teach Plant Evolution Learning how scientists organize taxa into biologically meaningful, natural groups that illustrate important events in terrestrial plant evolution. J. Phil Gibson, Joshua T. Cooper	

Departments

Guest Editorial • Hemophilia and Learning to Love Science • Dennis Liu	165
Editorial • Thank You, ABT Publication Team Members • William F. McComas	167
Book Reviews • Amanda L. Glaze, Department Editor.	246