VOL. 80 | NO. 7 THE AMERICAN

BIOLOGY TEACHER



VOL. 80 | NO. 7 THE AMERICAN

BIOLOGY TEACHER



out Our Cover

ng-eared owl (Asio otus), also referred to northern long-eared owl, is an orange, , and white owl with bright, large yellow This owl is not well-known and is a rarely and secretive owl that belongs to a group of known as typical owls. Long-eared owls are dium-sized owl about 30-40 cm in length a wing span of 85-100 cm and a body mass 0-450 g, with the female being larger and er-colored than the male. These owls are n for their erect, tri-colored ear tufts of ers that presumably make them appear er than they are.

ng-eared owls inhabit mostly dense forests r open grassland or meadow habitats and t small mammals such as voles, mice, rats, gophers as well as birds, bats, lizards, and es, mostly at night. These owls swallow their ey whole and then regurgitate indigestible rts in pellets (usually one per day), which can found under their roosts. Such owl pellets often prized by biologists and biology chers because they are a non-invasive way determine the diet of the owl and are a great aching tool for laboratory exercises.

The long-eared owl is a resident of North merica, Europe, and Asia. Like many birds, the ing-eared owl tends to move north to breeding rounds in the summer, then south during vinter. These birds nest mostly in trees, but nay also nest in cacti or on cliffs and may use bandoned nests of other birds. The female lays -10 eggs that she incubates 26-28 days while he is fed by the male. The young owls can begin make short flights at about 5 weeks of age. The conservation status of the long-eared owl not well-known, but declining populations re suspected as a result of habitat loss. The wl pictured here was unexpectedly found and hotographed sunning on a broken tree stump n the edge of its breeding range near Quesnel, ritish Columbia, in late autumn. Roy Rea, a iology instructor at the University of Northern ritish Columbia, in Prince George, BC, Canada, ptured this photo on November 3, 2016, with a anon 5D Mark 3 and a Canon 300mm/2.8 lens and x extender.

Contents

Feature Article

Typhoid Mary: A Story-Based Approach to the Teaching of Epidemiological Concepts A lesson to engage students in the learning and application of Koch's postulates in the field of epidemiology and to provide insight into the interplay between scientists and the public Allison Witucki, Lindsay Seals, David Rudge Considering Grand Challenges in Biology Education: Rationales and Proposals for Future Investigations to Guide Instruction and Enhance Student Understanding in the Life Sciences Areas of scholarship that might positively impact our understanding of teaching and learning in

biology and potentially inform practices in biology and life science instruction William F McComas, Michael J. Reiss, Edith Dempster, Yeung Chung Lee, Clas Olander, Pierre Clement, Dirk Jan Boerwinkel, Arend Jan Waarlo

Research on Learning

Enhancing Student Learning on Emerging Infectious Diseases: An Ebola Exemplar Using case pedagogy as a helpful teaching tool in emerging infectious diseases Derek Dube, Tracie M. Addy, Maria R. Teixeira, Linda M. Iadarola Adapting Traditional Field Activities in Natural History Education to an Emerging Paradigm in Biodiversity Informatics Integrating technology to enhance student engagement and student perception of learning Christopher R. Hardy, Nazlı W. Hardy Available online at https://www.nabt.org/ABT-Online-Current-Issue

483

Inquiry & Investigations

A "Sweet" Activity to Teach Basic Population Estimation Principles, Community Diversity Assessment, and Mathematical Reasoning to Biology Students Helping students gain a better understanding of mathematical applications in biological research

Penicillium Antibiotic Effect Investigating the effect of naturally produced antibiotics on bacteria in laboratory cultures OR AP DINGE

Jesse A. Lewis, Nadja Anderson

Tips, Tricks & Techniques

Training Tips: Tools to Teach Pipetting in the Classroom and Lab Teaching consistent and accurate manipulation of liquids using obvious visual targets Douglas Bernstein

Migration Mismatch: Bird Migration and Phenological Mismatching A board game developed to help elementary students learn about changes in phenology

Emily Argo

Departments

Errata

The ABT editorial office has been notified of two errors in the article entitled "Scientific Methods of Biology, Starting with Charles Darwin," ABT, 78(2) (2016): 109-17. The author has asked that the following corrections be made:

Under the heading "Testing Darwin's Concept..."

- The first paragraph, second sentence should read: The concept of "universal common ancestry (UCA) is a central pillar of modern evolutionary theory" (Theobald, 2010, p. 219); however, both the status and the nature of UCA have been questioned by several authors (Yonezawa & Hasegawa, 2010).
 - The second paragraph, second sentence (also quoting Theobald) should read: Using model selection theory to identify the hypothesis closest to reality, he found that UCA is the most accurate and parsimonious hypothesis—"at least 102800 times more probable" than the competing hypotheses of independent or parallel origins of different taxa in the three domains of lif (Eukarya, Bacteria, and Archaea).

We apologize for any confusion or inconvenience caused by the errors included in the original article.