Predation on Plasticine Model Caterpillars: Engaging High School Students Using Field-Based Experiential Learning & the Scientific Process

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Abstract

Engaging students in hands-on inquiry helps them develop skills associated with the scientific process. Development of simple experiments using model caterpillars can provide an experiential demonstration of the scientific process and ecological principles for high school students. Caterpillar models are formed from plasticine, a nontoxic, nondrying modeling clay, and are an excellent tool for quantifying relative predation rates by birds, small mammals, and invertebrates. Lifelike surrogate larvae are glued to vegetation for short periods (one week) and retain identifiable marks (beak, teeth, mandible imprints) following predator attack. This technique is simple, inexpensive, and provides rapid and clear results, rendering it a highly effective method of inquiry for high school students. Students can use these methods to ask a variety of research questions, such as comparison of predation in nearby habitats (park vs. backyard), vegetation (tree vs. shrub), season (spring vs. fall), or coloration (aposematic vs. camouflage). For many students, this may be one of few opportunities at the high school level to investigate science “in the field” and integrate scientific practices, such as the scientific method and inquiry, in an authentic research experience. Participants develop their scientific reasoning skills through creation of research questions and interpretation of results. They learn experimental technique, build field skills, and work collaboratively. This experiment aligns with the Next Generation Science Standards.

Key words: Ecology; experiential; field skills; predation; scientific inquiry; scientific method.

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