

*Sensory Ecology & Evolution* (produced by the Sensory Ecology and Evolution Group at University of Exeter; <https://www.sensoryecology.com/games>)

From a young age, children are fascinated by hide-and-seek games. These visual acuity games strengthen observational skills while increasing a competitive spirit to find a fellow playmate or a hidden object in an image. Unknowingly, children are using ecological and evolutionary principles of camouflage, mimicry, and adaptation when playing these classic games.

The website *Sensory Ecology & Evolution* (<https://www.sensoryecology.com/games>), curated by the Centre for Ecology & Conservation at the University of Exeter in the United Kingdom, utilizes citizen science games to develop new tools to study visual observations in reference to organism coloration in a variety of realistic habitats. Human “predators” participate in computer experiments to contribute to an understanding of camouflage, disruptive coloration, and distractive markings. The center’s research also focuses on laboratory and field data with the aim of understanding animal vision, with applications to ecology, evolution, and animal behavior. Organisms, ranging from beetles to moths to crabs to frogs to hares to birds’ eggs to plants, are highlighted in the various citizen science games that will be sure to test your students’ visual acuity and be a perfect springboard for discussion around natural selection, adaptation, camouflage, and animal behavior, to name a few.

When selecting a game for classroom or individual use, teachers should play the game first to test their own visual acuity. The habitats and various backgrounds are real images recorded and curated directly from the natural environments of the organisms. By clicking “start,” the participant

agrees to have their data included in the larger research study. General instructions are included in the beginning of each game, with an example of the organism with size reference to be located. Silhouettes with various designs, ranging from solid colors to stripes to polka dots to more realistic-looking organisms such as frogs or herbs, are also featured in the games.

Most of the games have a timer and bar count across the bottom of the screen where the observer is tasked with finding a particular number of organisms within a set time limit. Each game also asks whether the observer has played the game before. When one’s score and visual spotting percentage is revealed at the end of the game, it becomes a springboard for friendly competition with students. Most high school students would immediately jump at the chance to compete with me and with one another. The game provides a leaderboard at the end for quick identification, but an individual class leaderboard could also be easily generated as a class. Once the students recognize the organism’s shape and possible coloration and patterns, they will become invested in finding the organisms in the real images of habitats.

The games can be utilized to introduce and reinforce observational skills or prior to evolution or ecology laboratories. For example, “Find the Camouflaged Moth” uses a simple triangular moth shape to see whether coloration or a particular pattern can evade predators more successfully. “Evolving Bugs” employs a beetle image to study whether a particular pattern optimizes camouflage. When introducing variation in a population, natural selection, and differential survival and reproduction, these games are perfect and contribute to a larger research endeavor.

One of the highlights of these citizen science games is the ability to differentiate them for all grade levels. For example, “Spot the Hares” or “Frog Finder” can be utilized by lower elementary school students as they spot the hares or frogs among the field sites. Younger students can test their identification speed with a race against the clock and a chance to obtain a high score on the leaderboard, whereas an older student may connect the ability to spot the hare to climate change that could alter the snowy landscape over time. Furthermore, students can access the official publications and connect the games to the field studies, which enables the games to evolve into another educational opportunity for reading and evaluating scientific literature.

When one thinks of camouflage, plants are not usually considered. However, one of the games, “Spot the Plant,” focuses on plant evolution of fritillaries used as medicinal plants in southwest China. This game is unique, in that one can play the game as a human or a yak. It is interesting to see how the selective pressure varies when the predators’ vision differs.

As children explore the natural world, the classic hide-and-seek games can demonstrate the universal biological importance of observation, camouflage, and visual acuity. Biological principles and NGSS standards of natural selection, adaptation, environmental conditions, and biodiversity are evident in these citizen science games through *Sensory Ecology & Evolution*. A fun, competitive childhood game evolves into a research study worthy of further exploration.

Karen Cruse Suder  
Science Faculty  
The Summit Country Day School  
Cincinnati, OH 45208  
[suder\\_k@summitcds.org](mailto:suder_k@summitcds.org)