



Plant Blindness

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Plants fuel life on Earth by tapping the sun's energy. But if plants are the main mediators between the physical and biological worlds, why do most people tend to appreciate animals so much more than plants?

That question is at the center of a new campaign whose rallying cry is "Prevent Plant Blindness." The aim of the campaign is to liberate students from the many traps that lead to a lack of appreciation for and understanding of plants, say its leaders, botanist-educators James Wandersee of Louisiana State University, in Baton Rouge, and Elizabeth Schussler of the Ruth Patrick Science Education Center, in Aiken, South Carolina. Wandersee runs LSU's 15° Laboratory (www.15degreelab.com), which takes its name from the observation that people prefer to view objects that are between 0 and 15 degrees below eye level.

In 1998, Wandersee and Schussler introduced the term *plant blindness* after years of discussion, literature searching, investigation, and "a fair amount of trepidation," says Wandersee. They define plant blindness broadly, including "the inability to see or notice the plants in one's own environment, leading to the inability to recognize the importance of plants in the biosphere and in human affairs." Plant blindness also comprises an "inability to appreciate the aesthetic and unique biological features" of plants and "the misguided, anthropocentric ranking of plants as inferior to animals, leading to the erroneous conclusion that they are unworthy of human consideration."

The problem is, if most people don't pay attention to plants and the fundamental role they play in maintaining life, society isn't likely to agree that plant conservation is among humanity's most crucial issues, much less support plant science research and education. All this while, by some estimates, one in eight plant species is threatened with extinction

and the (plant-dependent) human population continues to climb.

What causes plant blindness? Some researchers have long concluded that various social and educational biases are responsible. For example, "zoochauvinistic" educators at all levels tend to use animal examples to teach basic biological concepts, whether in the classroom, lab, or field.

While not discounting those biases, Wandersee and Schussler argue in an article published in *Plant Science Bulletin* that the primary contributor to plant blindness is the nature of the human visual information-processing system (www.botany.org/bsa/psb/2001/psb47-1.pdf). They cite evidence showing that humans don't see all their surroundings by just opening their eyes. Other researchers have calculated that each second, the eyes generate more than 10 million bits of data for visual processing, but the brain extracts only about 40 bits and fully processes only the 16 bits that reach our conscious attention.

How, in confronting this tremendous bottleneck, does the brain decide which 16 bits of visual information to focus on? Put simply, it searches for movement, conspicuous colors and patterns, objects that are known, and objects that are potential threats. Since plants are static, blend in with the background, and don't eat humans, they generally don't get visual attention.

"There is a kaleidoscopic array of visual information bombarding our retinas every waking second, and plants are so easy to ignore unless they are in bloom," Wandersee says. "Plant blindness is the human default condition."

Their research and that of other biology educators has shown not only that most students prefer to study animals more than plants, but that early experience growing plants with a knowledgeable, friendly plant mentor is a good

predictor of a student's later interest in plants.

To help the nation overcome plant blindness, Wandersee and Schussler have taken a self-described "activist" approach to appeal to teachers and students. They developed a classroom poster that says "Prevent Plant Blindness" as part of a national campaign to raise awareness. The 20-by-30-inch poster shows a pair of red-tinted glasses hanging over a tree-lined river valley. This symbolizes how looking through such a visual filter blinds someone to seeing the plant world. The back of the poster contains the definition and symptoms of plant blindness and 20 plant-related activities. The poster, endorsed by the Botanical Society of America, has been distributed to more than 20,000 teachers in the United States.

Wandersee and Schussler also spread their message at botanical gardens and meetings of science teachers. In 1999 they published an illustrated, 40-page children's picture book, "Lost Plant!" which tells the story of a plant mystery. They established the annual Giverny Award in 1998 for the best science picture book.

Perhaps most important, they advocate more plant mentors to give young people experience in growing plants, and they praise the role of botanical gardens in public education about the role of the plant world. "Our research has shown that having a plant mentor in one's life makes a pivotal difference in whether one notices, appreciates, seeks to understand, and cultivates plants," Wandersee says. "Without informal and formal horticultural and botanical education—such as mentors and botanical gardens provide—one is not likely to care about plants or to realize that all life depends on plants."

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