**Laboratory 1: Plant Blindness and Experimental Setup**

A. Greenhouse Tour

Your TA will take small groups of students down to the greenhouse to tour the collection. You will be given 5 minutes to observe the plants in the greenhouse silently. You should not speak to other students while you are in the greenhouse. Try to observe as much as you can while you are in there. It’s OK to touch the plants and explore the whole room, but please do not collect anything.

When you come back to the classroom, describe everything you remember from the experience. What smells, colors, textures, etc. are most memorable to you? Did you see any plant in particular that you remember? Focus on writing down as much detail as you can about what you just saw. There are no correct answers—just write down what you observed and what affected you in the space below.

B. Plant Blindness: Do You Suffer from This Disease?

What is plant blindness? It is defined by Wandersee and Schussler (1998) as:

* + - 1. the inability to see or notice the plants in one's environment
				1. the inability to recognize the importance of plants in the biosphere and in human affairs
				2. the inability to appreciate the aesthetic and unique biological features of the life forms that belong to the Plant Kingdom
				3. the misguided anthropocentric ranking of plants as inferior to animals and thus, as unworthy of consideration

While you may not think you suffer from this grave affliction, it’s very likely that you do experience at least some of these symptoms, even if you do so unconsciously. Biology 2110, General Botany, will teach you many new things about plants. But equally important to learning new facts is being cured of this disease. The following activity is designed to help begin you on the path to recovery.

Step 1. Childhood memories of plants. By answering the questions below, you will begin to connect the experiences you had with plants as a youth with the concepts you are learning about plant biology in this course. Please answer these questions on your own without consulting with your classmates.

* 1. As a child, which plant was an important part of “play time” in your yard?
		1. What part of a plant interested you the most as a child?
		2. Was there a particular food item that you enjoyed picking and eating directly from the plant during your childhood? Describe.
		3. Did you have a particular job or duty as a youth that involved plants? Describe.
		4. Was there a favorite tree you used to sit under or love to climb in your neighborhood? Describe.
		5. As a youth, what was your favorite plant to smell?
		6. Did any of your childhood crafts involve making things from plant parts? Describe.
		7. Which plant had a texture you enjoyed touching as a youth?
		8. What was the most unusual native plant you encountered as a child?
		9. Did you tend your own garden plants or houseplants? If so, which ones?
		10. What crop was your town or geographic area most famous for?
		11. Which plant did you most carefully avoid as a child?
		12. What exotic plant (such as a cactus) made a big impression on you as a child?
		13. Were there any plants that made sounds you can remember from your childhood?
		14. Did you have a person in your youth who was your plant mentor and what did you learn from her/him about growing or identifying plants? Describe.
		15. What was your favorite flower as a child, and why?
		16. When you hear the word “green,” which plant’s shade/hue of green defines that color?

Step 2. Complete two mini-essays using memories that you’ve “tapped into” during Step 1. Choose any of these “take-off sentences” to begin each essay you write. Use the next page for the actual essay-writing. When you are done, share your essays with your lab partner or a friend in the class.

CHOOSE TWO:

* + - 1. It was one of the very best days of my childhood, and it involved the plant called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
				1. The plant I learned the most about from practical experiences in my childhood was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
				2. I had been warned about the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plant, but I didn’t …
				3. When I think of my (grandfather/grandmother/father/mother—circle one), the plant I associate most with that person is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. My memories revolve around …
				4. From my youth, I remember this plant, featured in a story [\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_], most prominently—of all the children’s books that I read—because …

Write your two short essays in this space below.

Step 3. Connections. What connections do you NOW see between your own memories of your botanical sense of place and three plant biology concepts (topics) that you will learn about in this biology course? You may want to look at your course syllabus or the text book for the major biology topics we will cover.

Biology concept A. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Connection to your botanical sense of place:

Biology concept B. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Connection to your botanical sense of place:

Biology concept C. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Connection to your botanical sense of place:

Step 4. Now, let’s examine some of the reasons why so many humans suffer from plant blindness.

Here are some research-derived visual principles that help to explain plant blindness described by Wandersee, Clary, and Guzman (2006[[1]](#footnote-1)):

* 1. Only 0.0000016 of the data our eyes process are actually considered consciously. It seems that visual consciousness is like a spotlight, not a floodlight. By default, if plants are not an aid or a threat to survival, they are less likely to receive conscious attention via search imaging.
		1. Plants can and do modify their visual signal values in accordance with the survival values conferred. Thus, they may appear more prominent at certain times of the year.
		2. Once objects have acquired meaning for an observer, they are more likely to be consciously perceived via vision. Inattention can become attention, once an object or event has acquired personal meaning.
		3. Vision is anthropocentric—we pay more attention to human faces than anything else. Studies also show that people, being animals themselves, pay more attention to animals than to plants, even though, paradoxically, plants form the basis of most animal habitats and all life on earth.
		4. To see an object in one’s visual field, it is necessary to attend to it. Looking is not the same as seeing. We pay little attention to things that have little meaning for us.
		5. The brain uses patterns of space, time, and color to structure visual experience. Because they are immobile autotrophs, plants in nature generally offer fewer spacing-based, time-based, or color-based visual cues for humans to observe than animals do—except, for example, during periods of pollination and dispersal.
		6. Paying attention to edges is the best way of dividing a static picture into separate objects. Plants often grow close together in populations, and thus have chromatic and spatial continuity. This makes it hard to see structural edges, and individual plants do not "pop out" from their background.
		7. Humans can only focus on one thing at a time. Attention is a zero-sum game. Brightness, low color contrast, and lack of shadows under daytime lighting conditions make plants less conspicuous, minimizing optic flow, except near dawn and dusk.
		8. Human attentional capacity is idiosyncratic, and it also decreases with increases in drugs, alcohol, fatigue, and age.
		9. Too many kinds of plants can seem overwhelming to consider—in one study, a maximum of 6 different visual choices was found to be ideal for viewer satisfaction, rather than arrays of 24 or 30.

Discuss these factors with your lab partner. Which of these seems most applicable to you, personally? Why? Write a short explanation below.

Step 5. After reading the scientific factors above, please evaluate these more “practical” factors that contribute to plant blindness (Slough, 2012). Mark your feelings about each statement.

1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

Factors that affect one’s ability to notice plants in their environment

\_\_\_\_\_\_\_\_\_ The overall appearance of a plant

\_\_\_\_\_\_\_\_\_ A job working with plants

\_\_\_\_\_\_\_\_\_ The color of a plant’s flowers

\_\_\_\_\_\_\_\_\_ Gardening or experiences growing plants

\_\_\_\_\_\_\_\_\_ Informal education on plants

\_\_\_\_\_\_\_\_\_ Formal education on plants

\_\_\_\_\_\_\_\_\_ The color of a plant's foliage

\_\_\_\_\_\_\_\_\_ The arrangement or presentation of a plant or group of plants

\_\_\_\_\_\_\_\_\_ A plant's size

\_\_\_\_\_\_\_\_\_ The time of year

\_\_\_\_\_\_\_\_\_ The individual's observation skills

\_\_\_\_\_\_\_\_\_ Plants' role as aesthetic elements

\_\_\_\_\_\_\_\_\_ A plant's fragrance

Factors that affect one’s ability to appreciate plants

\_\_\_\_\_\_\_\_\_ The individual's knowledge of plants

\_\_\_\_\_\_\_\_\_ The color of a plant's flowers (if any)

\_\_\_\_\_\_\_\_\_ Amount of prior exposure to plants

\_\_\_\_\_\_\_\_\_ Knowledge of the role that plants have within the ecosystem

\_\_\_\_\_\_\_\_\_ Experience growing plants

\_\_\_\_\_\_\_\_\_ An understanding of plant diversity

\_\_\_\_\_\_\_\_\_ Personal interest in/ enjoyment of plants

\_\_\_\_\_\_\_\_\_ Personal interest in/ enjoyment of natural environments

\_\_\_\_\_\_\_\_\_ The overall appearance of a plant

\_\_\_\_\_\_\_\_\_ A plant's fragrance

\_\_\_\_\_\_\_\_\_ A plant's uniqueness

\_\_\_\_\_\_\_\_\_ The arrangement or presentation of a plant or group of plants

\_\_\_\_\_\_\_\_\_ The edible qualities of some plants

\_\_\_\_\_\_\_\_\_ An understanding of agriculture

\_\_\_\_\_\_\_\_\_ Knowledge of plants' effects on property values

\_\_\_\_\_\_\_\_\_ The color of a plant's foliage

Factors that affect one’s ability to identify different types of plants

\_\_\_\_\_\_\_\_\_ Education through extension programs

\_\_\_\_\_\_\_\_\_ General education on plants and plant-based concepts

\_\_\_\_\_\_\_\_\_ Hands-on experience with plants

\_\_\_\_\_\_\_\_\_ Education by an individual/mentor

\_\_\_\_\_\_\_\_\_ Education by parks and botanical gardens

\_\_\_\_\_\_\_\_\_ Education through the school system

\_\_\_\_\_\_\_\_\_ A plant's fragrance

\_\_\_\_\_\_\_\_\_ General exposure to plants

\_\_\_\_\_\_\_\_\_ The importance of plants in the individual’s culture

\_\_\_\_\_\_\_\_\_ Amount of prior exposure to plants

\_\_\_\_\_\_\_\_\_ Whether or not a particular plant is perceived as a threat

\_\_\_\_\_\_\_\_\_ Education through media venues

Based on your answers to the surveys above, which factors do you think would be most important to focus on when trying to remedy the disease of plant blindness in other human beings? Are there any factors that were not mentioned that you think are important? Write your answer below.

C. Pet Plant Project Setup

Your instructor will provide you with an unknown seed in an envelope. Write the number code of your seed in the space below:

You will receive oral instructions on how to plant your seed. If you need additional supplies (larger pot, stakes, fertilizer, soil) in the coming weeks, your TA will provide you with those in lab as needed.

1. Wandersee, J., Clary, R. and S. Guzman, 2006. A Writing Template for Probing Students’ Botanical Sense of Place. The American Biology Teacher, 68:7, 419–422. [↑](#footnote-ref-1)