Nature Journaling: Sharing Perspectives Between Art and Science

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It is the height of summer and you've ventured out on your favorite trail. Late afternoon sun sets the overhead leaves aglow, and the scent from yesterday's rain emanates from the soil beneath your feet. A bird, plumed with vibrant stripes of yellow and black, perches amid the pine boughs and calls a looping, muddled chirp. You pause in wonder, taking in this new sight and sound among the otherwise familiar landscape. Taking a notebook and pencil from your pack, you roughly sketch the bird's shape and a map of the woods around you, jotting a few words to describe its distinctive call. Another bird calls back, and you note the number of birds joining the chorus. This bridging of scientific observation and artistic practice is nature journaling.

Nature journaling invites us to connect with our curiosity for the natural world by keeping records of our observations (Figure 1). Documentation can include words, numbers, sketches, diagrams, photos, collage, maps, and found objects. Anyone—even those not trained in art or science—can use nature journaling to cultivate mindfulness and wonder, build critical thinking skills, develop greater perception, and deepen their understanding of the environment. Nature journaling instruction can be adapted to any audience, from children curious about basic processes in nature, to biology students supplementing their academic training with real-world observation, to those seeking to spend quiet, intentional time in nature.

To share the practice of nature journaling, we invite scientists, artists, and the public to engage in an annual Nature Journaling webinar series. The program was developed in 2020 as a partnership between W. K. Kellogg Biological Station (KBS) and the Kalamazoo Institute of Arts (KIA) with the goals of building participants' understanding of ecology and evolution, developing nature drawing skills, and encouraging journaling practices. During each of four webinars, a KBS scientist teaches an introductory ecology seminar focused on a particular biological scale—landscapes, communities, populations, or organisms—and presents an example from their research. For example, a lesson on landscape ecology includes a case study on local habitat restoration (e.g., prescribed burning to maintain a native grassland) whose goal is to connect patches of habitat for native insect pollinators. A KIA artist then follows with a brief lecture on art concepts that correlate to the week's themes and, using a photograph

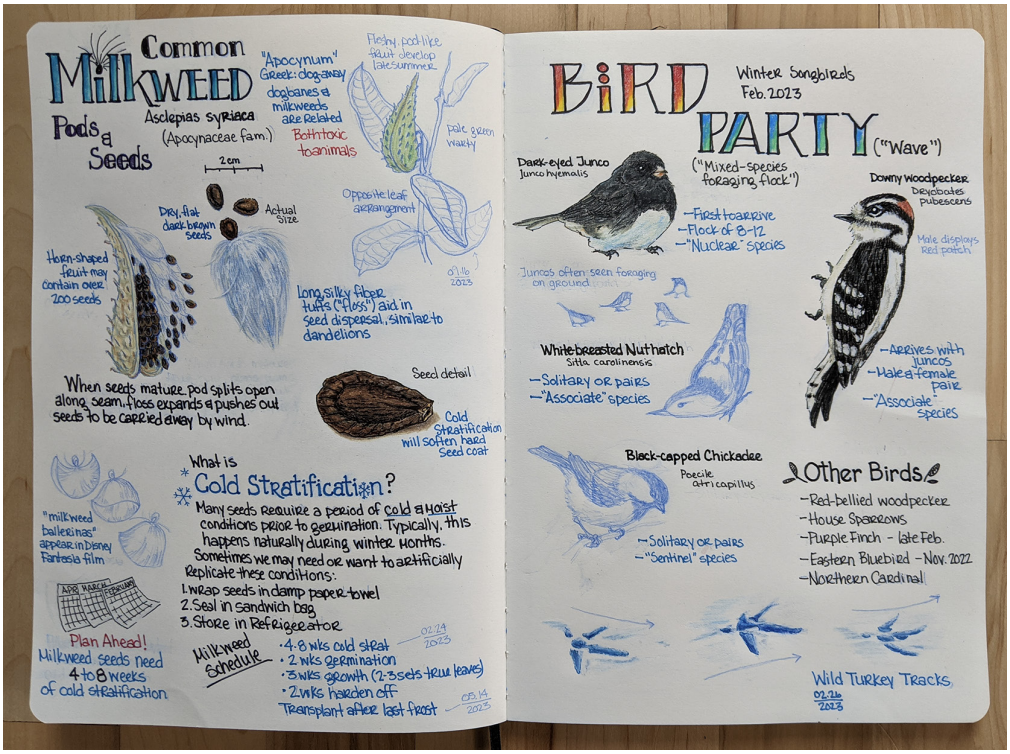

Figure 1. *Sample nature journaling page provided by 2023 participant Briar Hallowstone.*

from the scientist's research, guides participants through an observational sketch of a landscape, species interaction, or individual organism, each week demonstrating a new technique. Participants reflect on the activity and talk through challenges they encountered.

Since 2020, we have partnered with ten scientists and two artists who have presented a range of ecology concepts and creative techniques in an accessible format. Ecology presentations have included topics such as prairie ecology and management, the role of soil microbes in bioenergy cropping systems, and moth species identification. Art segments have incorporated art history, math, and visual sciences to align instruction with each week's science theme. For example, following a presentation on the mutualism between ants and extrafloral nectaries, an artist demonstrated that accurate proportions can be drawn by interfacing multiple visualization techniques. First, students were taught to reproduce correct shapes from observation using their reference image to measure lengths and a mutual angle at two scales. Then, by learning to visualize negative space, students effectively used geometric proofs to test their proportions. The blending of these two techniques demonstrated that in art, as in science, the more data that can be synthesized, the more accurate the results. Under the umbrella of "mutualism," this lesson pairing facilitated deeper observation and understanding of the relationship between things that rely on each other, whether they are plants and insects, or lengths and angles.

Our four annual programs have reached 248 participants from eight states. The majority of surveyed participants report improved understanding of scientific concepts (81%) and increased interest in starting or continuing their nature journaling (95%). Participants deepen their relationship with nature and art, are compelled to be observant, and gain new knowledge about local ecology in their own backyards.