

Description and Outcomes of Curriculum Levels



Tiger salamander

The Mighty Acorns curriculum has three levels. Following is a brief description of each level and a list of outcomes for each level.

Level I

Fall Session

Adaptation is first introduced and explored as a part of the fall session. The theme of adaptation is developed through a series of activities that focus on both plants and animals. The stage is set with an activity based on the book *The Reason for a Flower*, which gets students thinking about flower and seed adaptation. It is followed by “Thumbs Up,” which gets students to observe their own adaptations. “Whose Habitat?” then defines the environmental needs of different creatures. The adaptation theme is further developed with the “Seed Scavenger Hunt,” the on-site activity, which explores the many ways plants disperse their seeds. Back in the classroom, students participate in “Create-A-Beast,” designing a “new” animal with perfect adaptations to a habitat. This activity will be revisited at the end of the school year.

Winter Session

Building on the adaptation theme introduced in the fall, the winter session has students exploring the concept of interdependence. “Dynamic Duos” introduces this topic by examining food webs and exploring competition for resources. Study of animal tracks and basic research into food webs prepares students for the winter site visit. The interdependence theme is further developed with the on-site activity, “Web of Life,” which broadens the focus by showing how plants are part of a larger web of organisms living together in a community. Back at school, students play “The Great Food Chase” to reinforce the lessons of interdependence and competition in a food web. “The Fire Game” focuses on how adaptations are related to specific habitats, and “Growing Grasses” uses an experimental approach to further the students’ understanding of plant adaptations.

Spring Session

While spring is often viewed as a time of beginning in nature, for the Mighty Acorns, the spring cycle is a time to bring to closure concepts introduced through the school year. Interdependence is explored through the study of flowering and pollination. In the classroom, flowering and pollination are introduced with “The Pollination Game” and explored with “Insects for Hire.” “Solar Food,” the spring on-site activity, shows how plants like garlic mustard can out-compete our native plants and supports the stewardship activity. “Create-A-Beast Revisited” asks students to integrate all they have learned about adaptation and interdependence to design fictitious plants and animals adapted to a specific habitat and then to work together as a group to determine how

these new species will relate to one another. Finally, “Flute’s Journey” provides another literature-based exploration of adaptation and habitat.

Outcomes for Level I

As a result of their completion of Mighty Acorns Level I, students will be able to:

1. List three land management practices used to restore native communities.
2. Know that through stewardship they can play an important role in ecosystem management and restoration at their chosen site.
3. Understand how plants and animals adapt to their ecosystems.
4. Be able to describe how at least three plant or animal species have adapted to their habitat.
5. Understand the significance of interdependent relationships in the functioning of ecosystems.
6. Be able to describe at least three unique interdependent relationships that exist in the ecosystem(s) they visited.

Level II

Fall Session

Students begin the year building an understanding of local natural plant communities, including an historical perspective, through “Connecting Past and Present.” “Constructing a Community” leads students to develop an image of the community they are to study and compares that to their field site. In “Who Goes There?” students also investigate native species and prepare a species checklist, which they will use when searching their site for the organisms they researched. The on-site activity, “The Pressure’s On,” introduces some of the problems natural communities face, such as fragmentation, and relates this to the need for stewardship. Following the fall trip students explore the jobs performed by members of their community, both natural and built, in “Which Niche Is This?” They also have an option of focusing on invasive plants and comparing ecosystem health to human health in “Alien Invasion.”

Winter Session

The winter session begins by introducing the concept of competition from introduced exotic species by exploring the needs of plants and the challenges of competing for sunlight, water, and nutrients in “Oodles of Boodles.” Students learn the parts of a tree trunk and learn how to read the growth rings for clues about the tree’s life history. The natural resources that communities need for survival are introduced at the field trip through “Every Tree for Itself,” when students actually play the role of individual trees in a community competing for food, water, and nutrients. The winter session is wrapped up by examining how all life depends on healthy communities in “Ecosystem Services.” Students also have an option of investigating a specific example of this in “Air Plants,” where they determine how much oxygen their school community consumes daily and how many trees are needed to support their need for oxygen.

Spring Session

After two seasons of studying communities, the spring session starts off by studying in depth the niche of sow bugs in “Nature’s Recyclers.” They return to the concept of adaptations, this time matching adaptations to Illinois ecosystems, in “Who Fits Here?” On site students integrate what they have learned about plant needs and the competition for meeting those needs through “What About My Needs?” The final activity, an “Ad Campaign for Restoration,” encourages students to summarize what they know about communities, ecosystem services, and restoration, in order to develop advertisements that will promote the benefits of healthy habitats. Optional additions are “Good Buddies,” which examines symbiotic relationships between local species, and “Migration Headaches,” a game that lets students dynamically experience some of the important factors that affect the survival of migratory bird populations.

Outcomes for Level II

As a result of their completion of Mighty Acorns Level II, students will be able to:

1. List at least eight species native to the community under study and at least one job/service that each of these species performs in its community.
2. List at least three community types native to Illinois and at least one defining characteristic of each community.
3. List at least two species that pose a threat to their community and be able to describe how and/or why they are threats.
4. List three land management practices used to restore native communities.
5. List two abiotic components for which exotic species tend to outcompete native species.
6. Describe five ways in which the area that students are restoring is different from and five ways in which it is the same as it was prior to European settlement.

Level III

Fall Session

The Level III fall session introduces species diversity in Illinois and Chicago Wilderness. “Illinois Biological Diversity” compares Illinois species diversity to world species diversity, and through a series of calculations and graphing, students gain a visual perspective of Illinois species biodiversity. In “Getting Bugged,” students compare insect biodiversity in their schoolyard to insect biodiversity at their field site. In “To Restore or Not to Restore,” students play a game that illustrates the effects of restoration on biodiversity. Students begin to develop skills in recognizing the presence of diversity through “Diversity Search,” where they spend time looking for different plants in the ecosystem they are restoring. The game “Prairie Web of Life,” played after the field trip, simulates life in the prairie, and students see how various events impact plants and animals. In “Place Characteristics over Time” with a series of landscape illustrations.

Winter Session

The winter session begins with “Land Cover Changes in Chicago Wilderness,” which focuses on pre- and post-settlement changes in land use in Chicago Wilderness, placing habitat loss as the primary reason for decline in species. This theme can be further developed into a discussion of overpopulation, human needs versus wildlife needs, and urban sprawl. Site and schoolyard searches for mammals and mammal tracks and signs in “Track It Down” continue to build student skills in recognizing the absence or presence of diversity. The on-site activity, “A Splitting Headache,” explores the issue of habitat fragmentation and the ability of invasive or exotic species to proliferate in the remaining islands. The theme of impact from humans and exotic species impact is further developed in “Not all Green is Good”. The Chicago Wilderness *Atlas of Biodiversity* is used in a diversity scavenger hunt to acquaint students with the diversity of species and habitat still present in Chicago Wilderness.

Spring Session

In Level III Spring, students investigate and debate diversity decline by categorizing decline source examples in “A HIPPO of a Problem”. Students are provided with a problem, and must decide what factors are contributing to the problem. The problems will have multiple causes, and students will be invited to debate possible creative solutions. In spring “A Watchful Eye” also develops further the recognition of absence or presence of diversity through comparative bird study. The restoration work is placed into quantitative context with “Trial by Fire,” which focuses on the tools of Integrated Habitat Management. The final activity is the design of a diversity garden for the schoolyard. Students develop and implement a landscape plan, coordinating the plan with appropriate school staff and/or other participating classrooms. Students also investigate values of diversity through time in “Time to Reconsider and the Spice of Life.” Given a set of historic episodes, students must decide what time frame and what values (such as economic, aesthetic, and religious) each episode reflects. Students share their results and discuss their conclusions with other class teams. They also discuss various reasons that have been proposed for preserving biodiversity.

Outcomes for Level III:

As a result of their completion of Mighty Acorns Level III, students will be able to:

1. List and describe three land-cover changes in the Chicago area, the reason for the change, and the resulting impact on biological diversity.
2. Describe the positive impact of their stewardship actions and understand the role each season’s work has played in restoring and/or increasing biological diversity at their work site.
3. Identify and characterize distinguishing features of local plant, insect, bird, and mammal species, and qualitatively assess the habitat in which they were observed (schoolyard versus natural area).
4. Describe at least two habitat-restoration tools/methods that are used to improve native species composition, and describe how that tool/method accomplishes the desired changes.
5. Explain the importance of conserving biological diversity, controlling invasive species, and preserving our biological heritage.
6. Predict the qualitative impacts to Chicago Wilderness biodiversity should current trends affecting decline continue.