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Module 10: Garden Ecology

Urban EcoLab

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Module 10 - Garden Ecology Outline

Center for Urban Resilience

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Urban EcoLab - Module 10

Garden Ecology

“The New California Garden” – Exploring Native and Edible Gardens and Their Pollinators

MODULE 10 OUTLINE:

Module Introduction: Establishing a native or edible garden at a school site is a natural and innovative way to teach students about plants and the animals that pollinate them. The goal of this Module is to present an opportunity for teachers to teach science topics that align with the CA-NGSS, using an outdoor, living laboratory, with myriad potential benefits including, but not limited to:

- Connecting students to nature
- Instilling in learners, a life-long passion for plants and animals
- Establishing an outdoor, living laboratory, for ongoing science investigations
- Teaching to the ‘naturalistic’ intelligence (MI - Gardner)
- Developing in learners an understanding of how a healthy ecosystem looks and functions
- Building for students, a strong foundation in field science
- Producing food
- Facilitating a connection to and sense of community
- Providing habitat for insects, pollinators, and other organisms
- Increasing biodiversity (build it and they will come!)
- Creating a natural space for reflection
- Connecting students to students – student collaboration

Notes:

- This Module is geared toward high school grades 9-12 but has been aligned to science standards for grades 4-12; lessons can be modified for the younger grades.
- Each lesson also includes adaptations and extensions for various learners including English language learners, students with special education needs, and gifted and talented learners.

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Building Background - Native and Edible Gardens and Their Pollinators:

Native and edible plants have many benefits to humans and the animals that pollinate or eat them, in various habitats:

- Native plant gardens generally require less watering, since they are more tolerant to local conditions and have built-in defenses to handle changes in water-resources and climate change. As an example, many native plant species in California are drought-tolerant, so can adapt to variable changes in precipitation.
- Native plants also enhance the local habitat by attracting diverse wildlife, including pollinators and seed dispersers such as insects, birds, bats, and small mammals, both generalists and specialists.
- Native and edible plants pass on their defenses to the organisms that eat them. As examples, some fruits contain anti-oxidant properties that local organisms can benefit from, including improved immune system health. Native milkweed passes on chemical defenses to the Monarch butterfly, for them to defend against predation.
- Native plant species are vital to the survival of specific organisms with which they have co-evolved.
- Native and edible plants as primary producers in food chains and food webs are a source of food for the generalist and specialist feeding organisms above them on the energy pyramid, including insects, small mammals, and meso-predators. If those organisms do not have a diverse array of native and edible plants, they would not survive, threatening all organisms in the web of life.

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Garden Ecology

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Lesson Resources:

Each Lesson will include a Lesson Plan, PowerPoint Presentation(s), and Lesson Curriculum Support Materials specific to each Lesson.

- Lesson 1: Assessing the Garden Site - Initial Biodiversity Inventory
- Lesson 2: Types of Gardens / ‘Garden Kits’
- Lesson 3: Creating a Vision for the Garden
- Lesson 4: Identifying and Securing Needed Resources
- Lesson 5: Preparing the Garden Site
- Lesson 6: Planting Day!
- Lesson 7: Garden Deliverables
- Lesson 8: Maintaining the Garden Site
- Lesson 9: Attracting Pollinators
- Lesson 10: Post-Planting Biodiversity Inventory

Module Resources:

- Native Plant Resources
- Edible Plant Resources
- Common Animals of Southern California
- Exemplar Gardens
- Birding Resources
- Migration Resources
- Reference Materials
- Reading Materials
- Key Terms
- Scientific Research Topics
- CA-NGSS Standards Alignment Chart
- Lesson Adaptations & Extended Learning Chart