Student Engagement in the Restoration of Calvin's Natural Places: Relationship Between CEAP, Service Learning, and Biology 111 & 243

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Objectives

- Teach restoration process
- Identify aggressive invasive plants
- Understand how invasive plants gain competitive advantage
- Improve the ecological quality of the Calvin campus
- Connect to and inform summer research
- Connect students to a practical sense of their community

Opportunity

1. Learning can be facilitated in many dimensions by active engagement of a real problem:
    a) Practicality
    b) Immediate application of theoretical understanding
    c) Relevance to “their campus” (connection to place)
    d) Preparation for home ownership
2. Students are highly motivated to be outdoors and active
3. Service learning contribution

Process

- In-class introduction about the problem and restoration process:
  1. Assess the scope of the problem
  2. Control the invasive in a target area
  3. Replace the invasive with desired species; restoring this places' natural ecology (biological interactions)
  4. Monitor an area over an extended period of time
- Ensure proper species identification at the work site
- Divide into "crews", individuals focused on specific tasks: cutting, treating, planting
- Work crews applied different concentrations of herbicide, extending a summer research project

Outcome

- Significant natural areas of the campus are improved by students actions
- Students awareness of key invasive plants is increased
- Experience is gained in ecological restoration process
- Contributions are made to service learning
- Information is produced that has potential to extend scientific knowledge about this specific problem

Problem: Invasive Species

- Many natural places on the Calvin campus are infested with invasive species. Among these, four plant species are particularly aggressive:
  - Common and Glossy Buckthorn
  - Garlic mustard
  - Purple loosestrife
- It requires a tremendous number of person hours to restore any particular area
- Live research questions need supporting data: what concentration of herbicide is required in various environmental situations to control the invasive species buckthorn


Common buckthorn


Glossy buckthorn


Garlic mustard

Biology 243









Biology 111