Return of the Natives Restoration Education Project
A project of the Watershed Institute, California State University Monterey Bay
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Non-Native Invaders and Weed Bingo

Activity Overview: Students will be introduced to non-native plants that exist in their restoration sites.
Objectives: Students will

- Observe and identify non-native and or invasive species
- Distinguish differences and similarities between plants visually and texturally, etc.

Subjects: Science, Language Arts and Math
Grades: K through 12
Activity Time: Part 1: 50 minutes Part 2: 30 minutes
Materials: Plant species representations, work sheets, pencils, crayons, colored pencils, clipboards, weed bingo worksheet (.jpg), and hula-hoops. Weed abatement tools if necessary.
Source: In part from, "Invasion of Non-Native Plants", Earth Partnership for Schools: K-12 Curriculum Guide, University of Wisconsin – Madison Arboretum, http://uwarboretum.org/education/eps/

Background
Non-native plants, also called exotics, non-indigenous species or aliens, are found everywhere in the United States today. These non-native species are plants that are not originally from the particular geographic area they now occupy. They may come from as far away as Asia or Europe, or as near as the next state. Or in the case of the invasive ice plant, South Africa. Non-native plants are often free from natural controls such as disease and insect predators from their place of origin. This allows many exotics to grow out of control and crowd out native species. They do this by taking away space, out competing for nutrients, water and sunlight and disrupting ecological processes. Some of these non-native plants (and animals) can overtake an entire ecosystem. Alien species are one of the leading threats to native plants, animals, ecosystems and waterways.

Not all non-native plants are troublesome; some are very useful such as wheat. Europeans first brought wheat to North America in the early 17th century; it now thrives all over the world. It has fed and employed billions of people over many centuries and has contributed to the world's agricultural diversity. Of the 4,000 the exotic plants and 2,300 non-native animals only a few cause problems like purple loosestrife and zebra

mussels. It is these non-native, invasive species that invade natural areas by spreading rapidly that are causing serious concern. (There are native invasive species that can be very aggressive in a natural area, too. They are usually adapted to disturbed site and can easily dominate an area.)

Managing non-native or native species that are invading a restoration or planting project is part of the restoration process. This activity will give students the ability to learn the identity of the species potentially causing concern. Knowing the plants help to identify species for removal and develop informed management decisions. After learning the identity of plants invading the planting, the next steps include determining the degree of concern from any particular invader and determining appropriate control methods. In the long run, early detection and control saves countless, frustrating hours of battling weedy, invasive species.

Procedure

Students will begin by becoming an identification expert on a particular non-native plant. They will then take that information out into the field where they will help identify and remove the species from their restoration site.

Part 1: Become a Non-native Plant Expert

1. Divide students into groups and give each group a bag with specimens of several non- native plants.
2. Each student begins by choosing a plant and individually writes a description of the plant (i.e. appearance, texture, etc.) and then draws a picture identifying the characteristics described.
3. Next, as a group, have students come up with names for their mystery non-native plants in their bags.
4. Each group can go around and share the characteristics or their plant, drawings and the name.
5. Research the common and scientific names or give the students this information.

Extensions

- Students can research how and why there plants were brought to North America and/or interesting facts about each plant.
- Mark on a classroom world map where each non-native species came from originally.
- Mix up the drawings based on the observed characteristics and match them to one another.
- Add in Non-natives at different stages of their life cycle to identify all year round
- Research which plants are most invasive or problem plants in restoration sites.

Part 2: Weed Bingo and Removal

1. At your restoration site, divide students back into their original groups and give each group a hula-hoop, clip board, pencil and weed bingo worksheet.
2. In their groups, have a student stand with their back to the restoration site and toss the hula-hoop behind them for a random sample.

3. Have student find their weed on the bingo sheet. Within their plot, if they can find three weeds in a row or diagonal they have bingo!
4. Bring the group back together for a discussion on what they found and come up with a management strategy for the site.

Extensions

- Have weed experts pull out their weed!
- Design an experiment to see which weeds grow the fastest, come up first in their plots, what natives survive in weedy plots etc.
- Collect data for graphing
    - Native vs. non-native plants
    - Types of weeds, types of natives or both

- **NOTE – The weed bingo worksheet is best printed in color on legal size paper.**

WEED BINGO

Within your plot, can you make bingo by finding three of these weeds in a row or diagonal?

 wild mustard	 fennel	 italian thistle
 mallow	 poison hemlock	 yellow star thistle
 wild radish	 ice plant	 pampas grass
 ripgut brome	 wild oats	 bull thistle