

TEACHER OVERVIEW

Invasive Plants
3rd — 5th Grade

Nature Vision Student Packet

The materials contained within have been created by Nature Vision, an environmental education nonprofit organization that brings programming to schools and local greenspaces for over 70,000 PreK-12th grade students each year in King and Snohomish Counties. This work from home curriculum materials packet is designed to foster an understanding of invasive plants. Packets can be completed either independently, or with the help of an adult caregiver. Each day of the week offers materials building on previous days learning, offering a variety of activities including art, writing, and field exploration.

These materials are provided to you by King County Noxious Weed Control Program. The program works throughout King County to prevent and reduce the economic, environmental, and social impacts of noxious weeds in King County, Washington. Their focus is to provide education and technical assistance to landowners and public agencies to help everyone find the best control options for noxious weeds on each site and to reduce the overall impact of noxious weeds throughout the county. Learn more by visiting: <https://kingcounty.gov/weeds>.

This unit supports NGSS Performance Expectations across various disciplines, as well as supporting K-12 Integrated Environmental and Sustainability Standards. These are listed at the bottom of this page. Teachers will be supplied with PDF formats of materials to be emailed to families, or teachers may print and send to students to complete at home.

In this packet, students will learn about noxious weeds, the harm they can do to our environment, and ways we can help control them in King County. First, they will expand and exercise their existing knowledge of plants native to the Pacific Northwest. This will provide a background for an investigation of invasive plants before learning what makes something a noxious weed. They will then explore how noxious weeds can spread from place to place before learning methods to prevent this spread. Finally, students will learn about the negative impacts noxious weeds can have on native species. Students will generate ideas for how they can use their knowledge to help counteract the spread of noxious weeds in King County.

If you have any further questions or concerns regarding this packet, please email our Office Coordinator at info@naturevision.org.

Grades 3-5

Supports NGSS Performance Expectations: 3-LS4-2, 3-LS4-3, 3-LS4-4, LS4.C, LS4.D, 4-LS1-1, LS1.A, 5-LS1-1, 5-ESS3-1, ESS3.C.

Grades 3-5
Day 1 - Native Plants
Day 2 - Invasive Plants and Noxious Weeds
Day 3 - Identifying and Stopping the Spread of Noxious Weeds
Day 4 - Ecosystem Impacts and Best Management Practices
Day 5 - Stewardship

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PARENT/CAREGIVER OVERVIEW

Invasive Plants

3rd — 5th Grade

Welcome to Nature Vision's student packet for home use. Nature Vision is an environmental education nonprofit organization that brings programming to schools and local greenspaces for over 70,000 PreK-12th grade students each year in King and Snohomish Counties. We are excited to be offering this version of our programming directly to students at home!

This packet is designed to be completed over the course of one week, with each day focusing on a different aspect of environmental science and stewardship. The majority of these materials can be completed independently, but we thought it would be important to provide background information for any adults who may be helping to complete or answer questions. We've included the basic learning objectives for each day along with some vocabulary.

These materials are provided to you by King County Noxious Weed Control Program. The program works throughout King County to prevent and reduce the economic, environmental and social impacts of noxious weeds in King County, Washington. Their focus is to provide education and technical assistance to landowners and public agencies to help everyone find the best control options for noxious weeds on each site and to reduce the overall impact of noxious weeds throughout the county. Learn more by visiting: <https://kingcounty.gov/weeds>.

Challenge yourself to post all the things you are doing with your friends and family to help control the spread of noxious weeds! Don't forget to use the hashtags #kingcountyweeds and #wainvasives and tag @kingcountyweeds @WAINvasiveSpeciesCouncil @PlayCleanGo @naturevisionorg in your post so we can see your work!

*Please contact info@naturevision.org with any questions or concerns
Stay connected with Nature Vision! Follow us for updates @naturevisionorg*



NOTE: Students may require support in reading directions and/or completing some tasks. While many activities in this packet are creatively oriented and open ended, you may consult the answer key located at the back of the packet for additional assistance or guidance.

Unless otherwise noted, images courtesy of KCNWCP (kingcounty.gov)

PARENT/CAREGIVER OVERVIEW: DAY 1

Native Plants

Background Information: Native plants are those which have existed in an area for a very long time, sometimes for longer than humans have inhabited those areas. Native plants exist as part of a complex ecosystem with many animals and plants sharing resources and working together.

Learning Objectives: Students will learn about native plants, their importance to an ecosystem, and be able to identify a native plant in their own community.

Main Activity: Native Habitat

- **Overview:** Students draw and describe an ecosystem, thinking about resources and the food chain
- **Parent/Caregiver Tasks:** None

Optional Activity: Native Plant Tour

- **Overview:** Students watch a video from Nature Vision showing some of the most common native plants in Magnuson Park
- **Parent/Caregiver Tasks:** Help the student safely access the internet

Optional Activity: Interview an Adult

- **Overview:** Students ask a family member about their own experiences with native plants
- **Parent/Caregiver Tasks:** Share their knowledge and cultural background or assist the student in reaching out to another family member

Optional Activity: Noxious Weed Stewardship Challenge

- **Overview:** Students complete a daily stewardship challenge related to noxious weeds
- **Parent/Caregiver Tasks:** Accompany the student outside if it is okay to go out, and help the student share their work on social media if possible



PARENT/CAREGIVER OVERVIEW: DAY 2

Invasive Plants and Noxious Weeds

Background Information: Many of the plants in our yards and gardens are non-native species, which were brought here by people and so are non-native. Some non-native plants, however, become invasive plants. Invasive plants are fast growing and fast seeding, so they are quick to overwhelm native plants and harm natural ecosystems. When an invasive plant has a strong negative effect on the environment, local agriculture, or people, government organizations label them “noxious weeds” and take action to stop them from spreading. Some noxious weeds are even poisonous and can hurt people and animals.

Learning Objectives: Students will learn about invasive plants and noxious weeds, how they are spread, why invasive plants are a problem, and identify one noxious weed in their community.

Main Activity: A Seed’s Journey

- **Overview:** Students tell the story of an invasive plant that’s traveled far from home, and explain how that plant begins to spread.
- **Parent/Caregiver Tasks:** None

Optional Activity: Build-a-Weed

- **Overview:** Students pick out adaptations (or traits) to design and draw their own noxious weed
- **Parent/Caregiver Tasks:** None

Optional Activity: Noxious Weed Stewardship Challenge

- **Overview:** Students complete a daily stewardship challenge related to noxious weeds
- **Parent/Caregiver Tasks:** Accompany the student outside if it is okay to go out and help the student share their work on social media if possible



PARENT/CAREGIVER OVERVIEW: DAY 3

Identifying and Stopping the Spread of Noxious Weeds

Background Information: A noxious weed is an invasive plant which the government has listed for control owing to its strong negative impacts on ecosystems, agriculture, and people. They can spread to new areas in a variety of ways. Some seeds can stick to clothing and be transported from place to place as we travel. Others might travel internationally with products shipped from place to place. Aquatic plants can be moved in the water carried on ships or as personal aquarium plants which are dumped into lakes by fish owners releasing their pets. Still others are transported for sale as garden plants or to be grown for food.

Learning Objectives: Students will be able to identify a few ways noxious weeds can travel into new environments. They will be able to name ways noxious weeds harm local flora and fauna, and identify some of the most common noxious weeds found in King County.

Main Activity: Spot the Weed

- **Overview:** Students will learn about several types of plants, some native and some noxious.
- **Parent/Caregiver Tasks:** None

Optional Activity: World Traveler Scavenger Hunt

- **Overview:** Your student will search their home for objects which have been shipped long distances to think about how noxious weeds might travel long distances
- **Parent/Caregiver Tasks:** None

Optional Activity: Plant Pressing

- **Overview:** Student will locate and preserve a plant to teach others about it
- **Parent/Caregiver Tasks:** Provide supervision of student if going outside and handling certain plants (NOTE: Gardening gloves are recommended while handling plants)

Optional Activity: Noxious Weed Stewardship Challenge

- **Overview:** Students complete a daily stewardship challenge related to noxious weeds
- **Parent/Caregiver Tasks:** Accompany the student outside if it is okay to go out and help the student share their work on social media



PARENT/CAREGIVER OVERVIEW: DAY 4

Ecosystem Impacts and Best Management Practices

Background Information: Once in a new environment, noxious weeds harm other local species in a variety of ways, including crowding out native plants, outcompeting native plants for water or sunlight, or using chemicals to keep nearby plants from growing (in a process called allelopathy). Some are even toxic to native plants and animals. Controlling or eradicating these noxious weeds is important to maintain healthy ecosystems. There are many community efforts throughout King County to remove noxious weeds following the best management practices of the Noxious Weed Control Program.

Learning Objectives: Students will understand the ecosystem impacts of noxious weeds and explore steps to remove noxious weeds in their own communities.

Main Activity: Nutrient Stretch Game

- **Overview:** Students use paper tokens to represent how plants collect resources and how noxious weeds outcompete native plants
- **Parent/Caregiver Tasks:** None

Optional Activity: See What Your Community is Doing

- **Overview:** Students will explore the King County Noxious Weeds blog to see what is being done to control noxious weeds right now
- **Parent/Caregiver Tasks:** Help students safely access the internet

Optional Activity: Noxious Weed Stewardship Challenge

- **Overview:** Students complete a daily stewardship challenge related to noxious weeds
- **Parent/Caregiver Tasks:** Accompany the student outside if it is okay to go out and help the student share their work on social media if possible



PARENT/CAREGIVER OVERVIEW: DAY 5

Stewardship

Background Information: Noxious weeds are a problem that humans created, so humans must be part of the solution. One of the most important things we can do to help control noxious weeds is to be vigilant and notice noxious weeds around us. We can also take other precautions like brushing hiking boots to avoid spreading seeds, and organizing community events to remove noxious weeds.

Learning Objectives: Students will form a plan to remove noxious weeds from an area. Students will understand the value of a community approach to noxious weed control.

Main Activity: Noxious Weed Work Party

- **Overview:** Students will read a passage and consider the best methods of removing noxious weeds, then think of a plan to remove noxious weeds on their own
- **Parent/Caregiver Tasks:** None

Optional Activity: Letter Writing

- **Overview:** Students will write a letter to an adult describing the importance of removing noxious weeds
- **Parent/Caregiver Tasks:** If possible, help students share their work on social media

Optional Activity: Additional Resources

- **Overview:** Students access websites providing further information from various noxious weeds resources
- **Parent/Caregiver Tasks:** Help students safely access the internet

Optional Activity: Noxious Weed Stewardship Challenge

- **Overview:** Students complete a daily stewardship challenge related to noxious weeds
- **Parent/Caregiver Tasks:** If possible, help the student share their work on social media



PARENT/CAREGIVER OVERVIEW: VOCABULARY

DAY 1

Biodiversity: How many types of animals, plants, and other living things are found in an ecosystem. Higher biodiversity means an ecosystem is healthy and strong

Ecosystem: An interconnected system of plants, animals, and inorganic parts (like water, soil nutrients, and sunlight)

Food Chain: How one living thing eats another to gain energy

Native Plant: Any type of plant which has lived in an area for a very long time, and was not transported there by people

DAY 2

Non-native plant: A plant which was introduced to an area by humans

Adaptation: A trait a living thing has that helps it survive

Invasive Plant: Any type of plant which was introduced to an area by humans, and also causes harm to ecosystems

Noxious Weed: An invasive plant which has such strong negative effects on the ecosystem, agriculture, or people that the government takes action to stop it from spreading

Nutrient: A chemical necessary for something to live, including nitrates, phosphates, and potassium

Opportunistic: Able to quickly spread into unused areas

Weed: A plant growing in a place where it is not wanted

DAY 3

Allelopathic: Plants that release chemicals into the soil to keep other nearby plants from growing

DAY 4

Best Management Practices: The most effective strategies for getting rid of noxious weeds

Herbicides: Chemicals that kill plants

DAY 5

Extinct: When all of the members of this species have died out in the wild

Stewardship: The duty we have to take care of the natural world around us; being a protector



DAY 1

Native Plants

This week we are learning about invasive plants. To understand what an invasive plant is, let's talk about the opposite first: **native plants**. Native plants are plants that have grown, lived, and evolved in the Pacific Northwest for thousands of years. These are the plants that have lived in the estuaries, forests, prairies, and wetlands that make up our region. Below are two examples of native plants in our region: salal and Camas Lily. Native plants like these grew here before humans brought other plants from other places. Native plants form the **ecosystems** that our local animals live in, from swallowtail butterflies to Orca whales.



SALAL



CAMAS LILY

Vocabulary

Biodiversity: How many types of animals, plants, and other living things are found in an ecosystem. Higher biodiversity means an ecosystem is healthy and strong

Ecosystem: An interconnected system of plants, animals, and inorganic parts (like water, soil nutrients, and sunlight)

Food Chain: How one living thing eats another to gain energy

Native Plant: Any type of plant which has lived in an area for a very long time, and was not transported there by people



Main Activity

Native Habitat

What makes a place a good home for plants and animals? What is providing food? Can lots of different kinds of animals live here?

Materials: Writing utensil

On the picture below, draw a place where plants and animals live, also called an **ecosystem**. Let's create an ecosystem with lots of **biodiversity**; a large number of different plants and animals.

See if you can add ten different plants and animals to the picture below. Then, answer the questions that follow about your drawing.



Now that you've created an ecosystem, let's describe it! Using complete sentences, make five connections between different plants and animals you've added to your ecosystem. For example, in a desert ecosystem, cactuses grow bright and vibrant flowers. Those flowers are eaten by crickets. Those crickets are eaten by rats. The rats become food for snakes.

What you've just described is a **food chain**. Living things get the energy they need to survive by eating other living things. Native plants are the beginning of most food chains, because they use energy from the sun to create the berries, leaves, seeds and roots that animals eat.

Look at the ecosystem you've drawn. What would happen if the plants were removed? Write how that would impact the animals that eat those plants and the animals that eat those animals.

Optional Activity

Native Plant Tour

Native plants are all around us, making the building blocks for ecosystems in our parks and in natural areas all around us.

Materials: Computer/phone/tablet, internet connection.

Odds are, you have seen a native plant before! They are all around us, especially in our local and national parks, and also in our school yards and gardens. Once a native plant is grown, it needs almost no fertilizing, watering or extra care, just the sunshine and rain. To learn more about some of our most common native plants, check out this video by Nature Vision! **With an adult**, follow the link below to take a virtual video walk through a local park or read through these description cards!

Video Link: <https://www.facebook.com/NatureVisionorg/videos/221585832442175/>



Western Red Cedars are common in the forests of the Pacific Northwest. They are one of the most typical features of a healthy forest.

Red Alder



Red Alders are a thin tree with grey outer bark. Their name comes from the red color of their wood and inner bark. They are the first trees to grow in parts of the forest that are disturbed by things like wildfires. Alder trees help to get the soil ready for other trees like Cedars and Douglas Firs.

Douglas Fir



Douglas Firs can grow to be 250 feet tall and live for over 500 years! These are the trees that brought many people from Europe and other parts of the world to the Pacific Northwest. They were logged in great numbers for their wood, like to create masts for sailing ships.

Oregon Grape



Oregon Grape is not a grape and does not only grow in Oregon, BUT it does produce fruit and grow all around the Pacific Northwest. Today you will often find Oregon Grape planted by people in public places like in and around schools, playgrounds, parks, and apartment buildings.

Salal



Salal grows in the understory of the forests and is commonly used in landscaping, just like Oregon Grape, where it is often planted near schools, playgrounds, hospitals, and apartment buildings.



Cattails



Cattails grow in wet soil near the edges of ponds where they help filter water and keep the pond clean.



Optional Activity

Noxious Weed Stewardship Challenge for Day 1

Plants and animals make their homes everywhere, including in some places we share with them. Let's find some plants that we share a habitat with!

Materials: Computer/phone/tablet, internet connection, (optional) camera or drawing utensils

A great way to learn about ecosystems is to observe the plants in your community. This might be at a park, in your own backyard, or even examining a bush you can see from your window. If you can, go outside with an adult. Compare this space to the ecosystem you drew earlier. Is this a good ecosystem? Why or why not? Do you see sources for food and water? Is there high biodiversity? Do you see lots of different living things, or mostly the same kinds?

Can you find any native plants? If so, take a photo or draw a picture of one you spot below and post it on social media with a parent/caregiver's permission. Don't forget to use the hashtags #kingcountyweeds and #wainvasives and tag @kingcountyweeds @WAINvasiveSpeciesCouncil @PlayCleanGo @naturevisionorg in your post so we can see your work!



DAY 2

Invasive Plants and Noxious Weeds

If a native plant is a plant that lived here before humans introduced other plants to our habitats, then a **non-native plant** is a plant that was brought here from far away. Humans have lots of reasons for bringing plants from elsewhere in the world. We want some plants to grow in our gardens or to use as food. Some of these plants were even brought here by mistake. The problem with some non-native plants isn't where they're from, but what they might do when they arrive here; non-native plants that harm an ecosystem are called **invasive plants**.

Invasive plants get to be a problem by spreading quickly into new places. One reason this might happen is because there might be nothing to eat an invasive plant. Plants in their native habitats usually have some insects or other animals that like to eat them, but without those herbivores, non-native plants can grow better in their new homes than the old! For example, in Europe, tansy ragwort gets eaten by cinnabar moths. When tansy ragwort moved to Washington, however, there were no cinnabar moths here, so ragwort could grow much better than native plants that still had their usual herbivores.

Other reasons an invasive plant might spread quickly is because their new place might have weather that is like their old home, so they grow quickly. Some invasive plants might have fast growing roots that take up a lot of water and soil **nutrients** faster than the native plants. They might sprout earlier in the spring than native plants, so their big leaves block the sunlight. Once grown up, these invasive plants often produce thousands of seeds to take over even more of the ecosystem.

Invasive plants are **opportunistic**, growing quickly into new openings. For instance, imagine that you had just spent all day clearing a patch of land to grow a garden. It rains for a few days so you can't go out to plant in the new land. When you come back, invasive plants have taken over! When this happens, we often refer to these plants as **weeds**, because they are growing in a place where they aren't wanted.



*"Sure Robin, they can't hurt us,
it's just a few little weeds!"*



More worrying still are **noxious weeds**, which are opportunistic, invasive plants that are so harmful to local ecosystems, crops, and people that the government has decided we need to act to help fight them. We call these plants “weeds” no matter where they are growing because they are plants that we don’t want growing anywhere in King County. Noxious weeds are plants that come in many different forms. But all of them spread quickly through ecosystems with adaptations like towering leaves that shade out everything else, roots that burrow through the soil very quickly, or the ability to produce thousands of seeds that spread on the wind. Some can even be very difficult to remove from an ecosystem once they've gotten there because of thorns or poisons. These noxious weeds destroy the food chains we thought about on Day 1 because animals in our ecosystems do not eat them.



Poison hemlock is a noxious weed that is dangerous to humans. Like the name suggests, every part of this plant is poisonous to eat!

Vocabulary

Non-native plant: A plant which was introduced to an area by humans

Adaptation: A trait a living thing has that helps it survive

Invasive Plant: Any type of plant which was introduced to an area by humans, and also causes harm to ecosystems

Noxious Weed: An invasive plant which has such strong negative effects on the ecosystem, agriculture, or people that the government takes action to stop it from spreading

Nutrient: A chemical necessary for something to live, including nitrates, phosphates, and potassium

Opportunistic: Able to quickly spread into unused areas

Weed: A plant growing in a place where it is not wanted

Optional Activity

Build-a-Weed

Let's find the adaptations that make invasive plants and noxious weeds such a problem.

Materials: Writing utensil, crayons/markers/colored pencils

Why are noxious weeds so tough on other plants and animals? The **adaptations**, or special traits, these plants have are what they needed to survive in the ecosystems they came from. The pictures below show some of the common adaptations that noxious weeds in Washington State can have. Label each picture with the adaptation you think it is showing you. Using these examples, draw an invasive plant growing out of the drawing of soil provided on the next page. How do the adaptations you've given your plant help it grow well in a new place? Will your invasive plant take over local ecosystems if people don't do something to help?



Himalayan blackberry stem



Bittersweet nightshade (Do these berries look tasty? Do you think they are safe to eat?)



Bull thistle





Giant knotweed (Imagine being a smaller plant underneath this knotweed. Do you have everything you need to grow?)



English ivy



Hairy willow-herb (imagine trying to pull this weed out of the soil. Is it easy?)

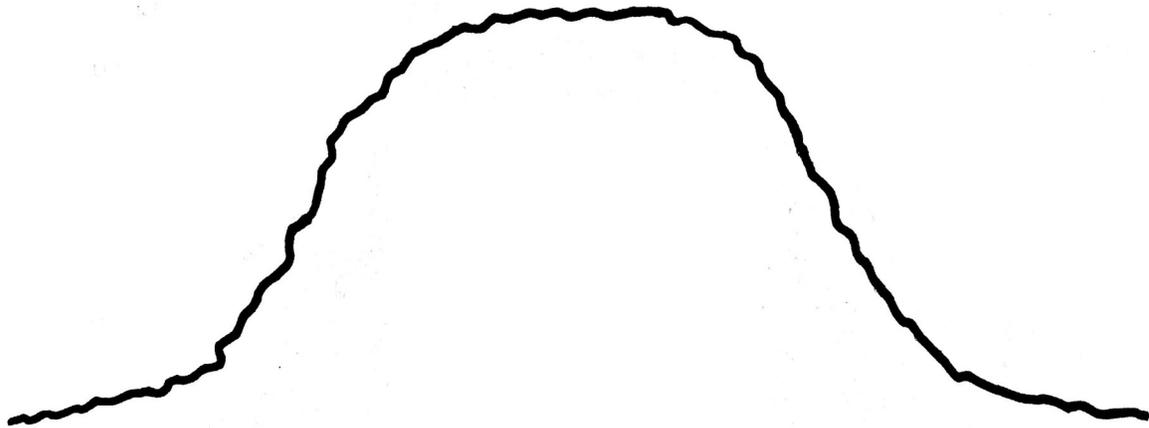


Milk thistle seeds



Brazilian elodea on a diver.

Draw your noxious weed growing out of the mound of soil below. Include some adaptations to help it grow better. Make sure to label each one! Think about how these adaptations will help the plant grow better than the native plants in the ecosystem.



Optional Activity

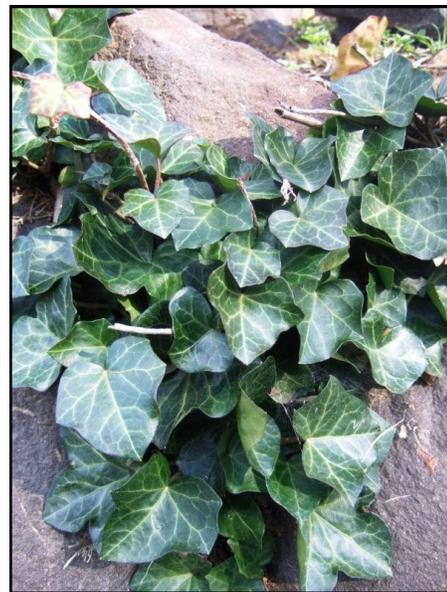
Noxious Weed Stewardship Challenge for Day 2

There are invasive plants in our communities. Finding them is the first step towards making a difference.

Materials: Computer/phone/tablet, internet connection

Now that you know about invasive plants and noxious weeds, can you find them in your neighborhood? Are they growing in your own backyard? Can you spot any from your window or doorway at home? Think about your schoolyard. Were any growing in your playground, or by any of the entrances to the school? Check out King County's Neighborhood Bullies pamphlet to learn about the most common invasive plants in King County ("Neighborhood Bullies" Pamphlet: <https://your.kingcounty.gov/dnrp/library/water-and-land/weeds/Brochures/Neighborhood-Bullies.pdf>). If you can't access the internet, feel free to check out the pamphlet excerpts as well as the information about other common noxious weeds on the following pages!

When you find some noxious weeds, don't forget to use the hashtags #kingcountyweeds and #wainvasives and tag @kingcountyweeds @WAINvasiveSpeciesCouncil @PlayCleanGo @naturevisionorg in your post so we can see your work!



English ivy is a vine that covers the ground and wraps around trees. It kills native shrubs and creates habitat for pest animals like mosquitos and rats. But this plant is the most dangerous when it wraps itself around a tree. The extra weight of the vines makes the unlucky tree more likely to fall in heavy wind, rain or snow storms. This plant was brought to the Pacific Northwest from England, where it is a popular garden plant because it stays green year-round. It can re-grow if the roots are left in the ground.



Think of the invasive vines of Himalayan blackberry as the “arch enemies” of native plants. They grow in arches over other, low growing plants, blocking out sunlight and creating patches of dead soil underneath. Their thorns make them hard for most animals to use as food or shelter. Although they are called “Himalayan”, these plants were brought here from Europe as a food source. Since then, they’ve spread all over the Pacific Northwest.

“Neighborhood Bullies” Pamphlet:

Invasive Weeds

 <p>Bittersweet Nightshade</p>	<p>Bittersweet Nightshade (<i>Solanum dulcamara</i>) Semi-woody, non-native vine with purple and yellow flowers and clusters of bright red berries that are poisonous to people but attractive to birds; it is often found along creeks where it can overwhelm other plants.</p>	
	<p>Butterfly Bush (<i>Buddleia davidii</i>) Tall, gangly ornamental from China with spikes of purple flowers and seeds that can move 40 miles in the wind; it is capable of replacing native vegetation along sandy shorelines and in forest openings.</p>	 <p>Butterfly Bush</p>
 <p>English Holly</p>	<p>English Holly (<i>Ilex aquifolium</i>) European tree with spiny evergreen leaves that spreads into forests with help from birds eating the berries; it crowds out native understory bushes and young conifers.</p>	
	<p>English Ivy (<i>Hedera helix</i>) Evergreen vine from Europe that can weigh 2,100 pounds and topple trees, blanket tree seedlings and understory plants, and form thick mats that collect garbage and rats.</p>	 <p>English Ivy</p>
 <p>Hedge Bindweed</p>	<p>Hedge Bindweed/Morning Glory (<i>Calystegia sepium</i>) Aggressive, climbing, non-native vine that winds its tendrils around stems of plants and trees or any convenient structure; it spreads by long-lived seeds and by deep roots that multiply from even small fragments.</p>	
	<p>Herb Robert (<i>Geranium robertianum</i>) A small shade-tolerant, European geranium—also known as Stinky Bob—with reddish, hairy stems and a strong odor; it spreads by ejecting sticky seeds 15 to 20 feet and can quickly dominate an area.</p>	 <p>Herb Robert</p>

Himalayan Blackberry



Himalayan Blackberry (*Rubus armeniacus*)

Prolific, fast-growing brambles from Central Europe that can overwhelm most other plants, crowding out even small trees and covering nearly every available hillside and vacant area with its imposing thorny thickets.



Knotweed (*Polygonum cuspidatum*, *Polygonum sachalinense*, and *Polygonum bohemicum*)

Massive, clump-forming, bamboo-like perennials from Asia that spread aggressively from stem and root fragments and crowd out native vegetation, degrade habitat, and increase erosion.



Japanese Knotweed

Old Man's Beard



Old Man's Beard (*Clematis vitalba*)

An aggressive deciduous, non-native vine, with woody stems up to 100 feet long that blankets entire groves of trees, and becomes festooned with masses of fluffy white seeds that spread in the wind.



Poison-hemlock (*Conium maculatum*)

Tall, non-native plant with stout, purple-spotted stems, parsley-like leaves and tons of small, umbrella-shaped flower clusters; often shows up in gardens, parks and roadsides and is deadly if eaten.



Poison-hemlock

Scotch Broom



Scotch Broom (*Cytisus scoparius*)

Yellow-flowered bush in the pea family from Scotland with very long-lived seeds that has spread widely into open areas and cleared forests throughout the region; it poses a fire hazard and invades grassy areas.



Yellow Archangel (*Lamlastrum galeobdolon*)

Fast-growing, tough European perennial ground cover with distinctive silvery-gray markings; it is very competitive in shady forests, spreads readily from yard waste piles, and crowds out understory plants.



Yellow Archangel

The following HIGH PRIORITY noxious weeds are regulated in Washington and control is required on all properties in King County.

Garlic Mustard



Garlic Mustard (*Alliaria petiolata*)

Shade tolerant, garlicky herb from Europe with small, white flowers that quickly takes over in woodlands, harms beneficial soil fungi, replaces native plants, and is extremely tenacious and difficult to eradicate.



Giant Hogweed (*Heracleum mantegazzianum*)

Imposing 15-foot tall plant from Russia with jagged leaves, huge flower clusters, and thick, purple-blotched stems that can create burns and blisters when handled; it has spread into parks, ravines, alleys and backyards.



Giant Hogweed

Policeman's Helmet



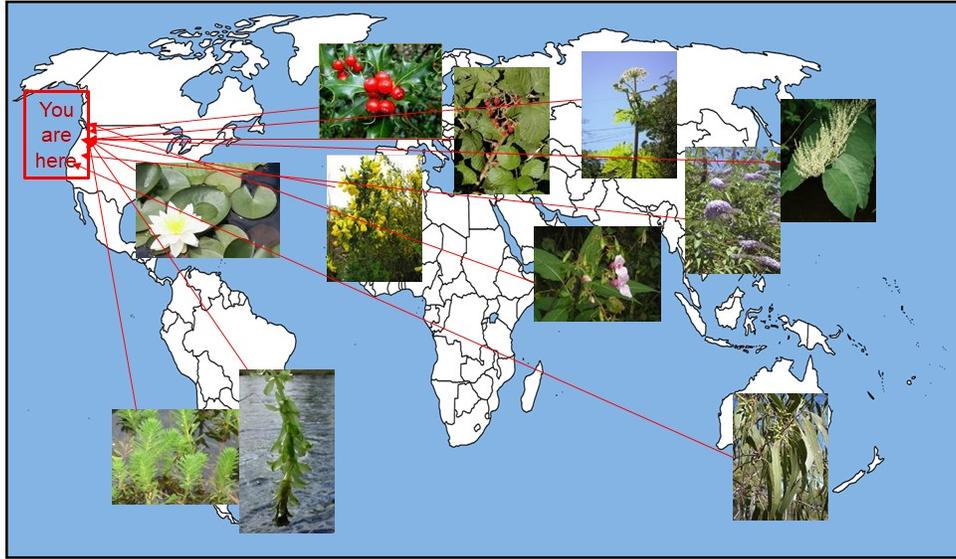
Policeman's Helmet (*Impatiens glandulifera*)

Up to ten feet tall, hollow-stemmed Asian annual with pinkish flowers that spreads quickly by shooting seeds 15 to 20 feet, grows in dense stands and quickly dominates gardens, parks, and wetlands.



DAY 3

Identifying and Stopping the Spread of Noxious Weeds



Now that we've thought about the difference between native plants, non-native plants, invasive plants, and noxious weeds, let's try to figure out how invasive species get into places they shouldn't be in so we can better prevent this from happening in the future.

Some plants move from place to place as people transport things across the world. For example, plants like tansy ragwort may have come to the Americas in bundles of hay used for animal food. Garlic mustard is a particularly nasty weed with small seeds which can hitch a ride from place to place stuck to hiking boots and other clothes. It isn't eaten by any of our wildlife and it quickly outgrows everything else.



Tansy ragwort



Garlic mustard



Sometimes people move plants around on purpose. Because of this, they escape from yards and gardens and become invasive plants! Brazilian elodea is a plant that looks very nice in fish tanks, but when some people empty their tanks into local bodies of water, the elodea can grow incredibly well and cause problems for other plants and animals in the lake. English ivy is a well-known plant which was brought to the Americas because it looks pretty in gardens, but its long vines allowed it to grow out of gardens into the wild. Finally, plants like Himalayan blackberry were brought here for their delicious berries but are now a problem across much of King County.



English ivy



Brazilian elodea



Himalayan blackberry

Vocabulary

Allelopathic: Plants that release chemicals into the soil to keep other nearby plants from growing.

Main Activity

Spot the Weed

There are many different plants in King County. Most of what we grow in our gardens are native or non-native plants, but very few are noxious weeds. Let's take a look at just a few of the plants below. They are from the two extremes, either native plants or noxious weeds.

Materials: Writing utensil

Take a look at the following plants. Read through their descriptions and decide whether these are native plants or noxious weeds. Circle the part of the description that makes you think that. Now look at the plants you think are noxious weeds. How do you think they travelled to King County? What actions can we take to prevent these plants from spreading more?



Salal: This plant has leathery leaves and fruits which were eaten fresh or dried by Native Americans.



Garlic mustard: This European food plant is allelopathic, meaning it releases chemicals to kill nearby plants.



English ivy: This climbing vine has waxy leaves. It can completely cover other plants and kill them by blocking sunlight. The weight of the vines can also make it easier for wind to knock branches down.



Sword fern: This large fern prefers growing in shady areas beneath towering Douglas Fir and Western Red Cedar Trees.





Bleeding heart: This delicate wildflower prefers moist forests and stream banks. It relies on ants to spread its seeds.



Purple loosestrife: Each of these purple flowered plants can produce up to 2 million tiny seeds each year. The stems grow so densely in wetlands that ducks and other animals can't make a home there.



Snowberry: This plant's tiny white berries are an important food source for quail, grouse, deer, and elk, but they are poisonous to people.



Osoberry: Also called "Indian Plum", these fruits form early in spring, making them important sources of nutrients for bears, raccoons, and other mammals.



Tansy ragwort: This plant lives in pastures and meadows, and can poison horses and cows. Its seeds can live in soil for 15 years, re-growing every spring even if it has been pulled.



Herb Robert: Also called "Stinky Bob", this smelly plant spreads quickly through woodland areas and keeps other plants from growing.



Optional Activity

World Traveler Scavenger Hunt

Invasive plants can travel the world with goods people ship from place to place. Can you find some things from around the world in your own home?

Materials: The power of observation!

Look around your home for things that aren't from the US. Check to see if the things in your home have labels that say "made in _____". Check labels and clothing tags. Look at the stickers on fresh fruits and vegetables, and the labels on cans. Where were they grown? If your favorite socks can travel across the whole world, think how easy it would be for a noxious weed to hitch a ride on a boat or plane going the same way!

Remember: most of the plants from around the world do not become invasive plants, and even fewer (less than 1%) have to be categorized as noxious weeds. In fact, foods like chocolate, bananas, rice, and potatoes all came from plants growing in other parts of the world!



There are different ecosystems all across our planet! We don't want every ecosystem to look the same.

Optional Activity

Plant Pressing

One important thing we can do to slow the spread of noxious weeds is to teach other people how to spot them so we can all work together to get rid of them.

Materials: A heavy book (hardcover is ideal), paper towels, gloves (recommended), a plant

With an adult's permission, head outside and see if you can find a noxious weed near where you live. If you are able, pull it up by the roots (gloves are recommended). Break off enough of the plant so you have some stem, leaves, and flowers if there are any. Throw the rest of the plant away (not in your compost pile where it could spread again!). Take your sample, sandwich it between two paper towels, then lay the leaves and paper towels flat between the pages of a book. Place something heavy on top of the book to weigh the cover down. Allow this to sit overnight (and potentially longer, if you are patient!). Attach a small piece of paper to your sample that includes its name, where you found it, and the date. Now you have a long lasting sample from a noxious weed you can show to others to teach them how to spot weeds on their own!

One way to share your plant would be using social media. If you do, don't forget to use the hashtags #kingcountyweeds and #wainvasives and tag @kingcountyweeds @WAINvasiveSpeciesCouncil @PlayCleanGo @naturevisionorg in your post so we can see your work!



An English ivy sample ready to be pressed and labeled

Optional Activity

Noxious Weed Stewardship Challenge for Day 3

Now that you're an expert in identifying some noxious weeds, it's time to share what you know so you can help others.

Materials: The "Spot the Weed" plant cards from the Main Activity for Day 3

Using your cards from the "Spot the Weed" activity on Day 3, challenge a member of your household to guess which plants are native and which are noxious weeds. Alternatively, with a adult's help, post a picture of one of your house plants or plants outside on social media and challenge people to comment if it is native or noxious (or neither).

Don't forget to use the hashtags #kingcountyweeds and #wainvasives and tag @kingcountyweeds @WAIInvasiveSpeciesCouncil @PlayCleanGo @naturevisionorg in your post so we can see your work!



DAY 4

Ecosystem Impacts and Best Management Practices

Now that we understand why noxious weeds are a problem and how they spread, it's time to look closer at how one noxious weed seed can impact an entire ecosystem.

One example of a noxious weed is garlic mustard. This plant was brought to the Pacific Northwest on purpose to use as a food source because of its garlic-like flavor. However, this plant quickly spread out of control. A single garlic mustard plant produces up to 1,000 seeds. These tiny seeds easily stick to an animal's fur, or to a hiker's shoes. Once the seed has fallen somewhere new, it sprouts earlier than native plants. Then, garlic mustard plants produce chemicals that damage the roots of the surrounding plants, making it harder for native plants to get the nutrients they need. Garlic mustard hurts other flowers, bushes, and shrubs. It can even slowly kill trees, and disrupt the growth of pollinating insects, and amphibians like salamanders.

With the trees, pollinators, and amphibians impacted, the whole forest ecosystem is affected. Unhealthy trees will not produce the sticks, leaves, and twigs required for birds to build their nests. Sick pollinators will not be able to pollinate as many flowers, leading to even fewer native plants growing in the following spring. The loss of animals like salamanders means fewer prey options for osprey and hawks. Lots of herbivores will be impacted too. Deer, elk and other grazing animals can't eat garlic mustard, and they'll have to travel to a new ecosystem to find food.

This doesn't have to be the future for the ecosystems of the Pacific Northwest, though!



A garlic mustard take over



For every noxious weed that humans bring to our region, King County Noxious Weed Control Program works with communities and scientists to create **Best Management Practices**. Best Management Practices is a long string of words for a simple idea; every noxious weed is different, and we need different strategies to remove them. For instance, English ivy has small, shallow roots and pulling it out by hand is an effective way to get rid of it. This strategy doesn't work as well for giant knotweed, whose roots can grow 7 feet into the soil! When pulling by hand isn't realistic, Best Management Practices may suggest a variety of tools, careful use of **herbicides**, or chemicals that kill plants, or even introducing animals that like to eat the plant. For example, big patches of Himalayan blackberry are no match for a group of hungry goats.



Goats eating Himalayan blackberry

As an example of what Best Management Practices should look like, here is some information from the King County Weeds blog post *Lets Pull Together* about removing English Ivy:

...you can pull ivy out with your bare hands! (Always wear gloves). Early spring is a great time to pull ivy since the soil is still nice and loose from winter rains. If ivy has climbed up your tree, you don't need to pull it all down right away. Make your tree a life ring! Go around the trunk and cut all of the ivy stems and then pull the lower ivy away from the tree, making about a 6 foot cleared ring around the base. The ivy needs to have roots in the ground to survive, so the upper ivy will die and dry out, making it much easier to pull down.

After pulling English ivy, be sure to put it either in the trash or a municipal compost bin. If you put it onto your compost pile, it can take root and grow again.

Vocabulary

Best Management Practices: The most effective strategies for getting rid of noxious weeds

Herbicides: Chemicals that kill plants

Main Activity

Nutrient Stretch Game

To help understand how noxious weeds outcompete native plants, let's explore how plants collect resources.

Materials: Printer, paper, and scissors OR small household items like coins or dry beans

In this game, you will act out the job of a plant gathering the resources it needs to survive. Remember, not every seed we plant grows up to be a Western Red Cedar tree. In this game, it is more important to challenge yourself and compare your results than to collect every single resource every time.

Print out the “sun”, “water”, and “nutrient” tokens on the pages below and carefully cut them into individual squares. You can also draw your own or find household items instead. With an adult, find an open space in your house where you can spread out without bumping into anything. Close your eyes and scatter your tokens like confetti. Remember, you will need to pick them all up on your own after the game.

Round 1

Stand in the center of the area you've created. *Careful not to step on any of your resources! You'll need them soon.* Plant your feet firmly on the ground. Bend your knees and bring your hands low to the floor. WITHOUT moving your feet, collect as many of the scattered tokens as you can reach.

Gather together all of the tokens you collected. How many water, sunlight and nutrient tokens were you able to collect? If you were a plant, do you think you'd have enough to survive? This round, you played as a native plant, and your hands represented your roots and leaves, gathering up the sunlight, water and nutrients you need.

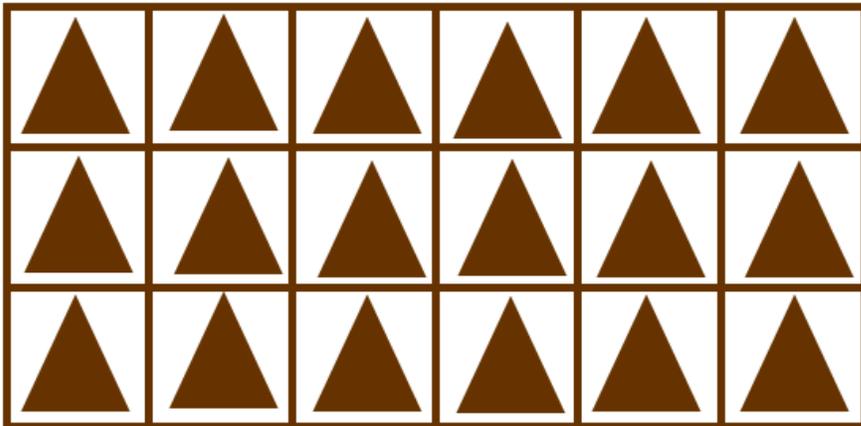
Round 2

Now, gather all of your resources and scatter them again. Stand in the center of the area you created. This round, you are playing an invasive plant and you have one big advantage. Instead of keeping both feet planted, this time you can use your right foot to move further around. This represents the fast-growing roots and leaves of invasive plants. Practice moving and reaching further WITHOUT moving your left foot. Now, collect as many of your scattered tokens as you can reach.

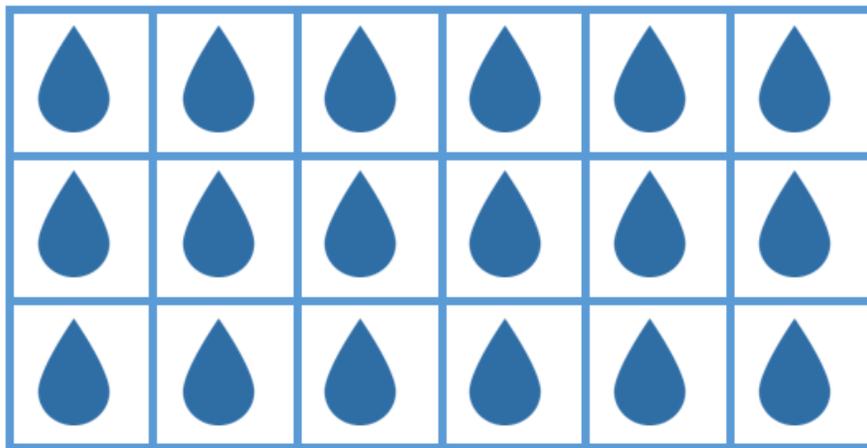
Gather together all of the tokens your collected. How many water, sunlight, and nutrient tokens were you able to collect? If you were a plant, do you think you'd have enough to survive? Or, did you even collect more than you needed? Imagine you were playing this game with some friends. If they had to keep both feet planted, but you could pivot around, would it be a fair game?



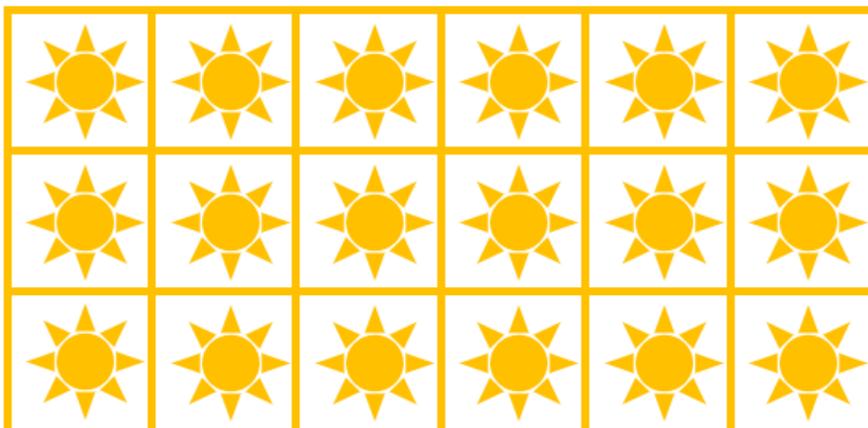
	HOW MANY RESOURCE TOKENS DID YOU GATHER? WRITE BELOW:			
	Sunlight	Water	Nutrient	Total
NATIVE	_____	_____	_____	_____
INVASIVE	_____	_____	_____	_____



Nutrient Tokens



Water Tokens



Sun Tokens

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Optional Activity

See What Your Community is Doing

People throughout King County are working together every day to fight noxious weeds. Let's see what they're up to!

Materials: Computer/phone/tablet, internet connection

With the help of an adult, go to kingcountyweeds.com to see what's going right now! See if there's an event you want to be involved with, or a story from your own neighborhood to read.



Optional Activity

Noxious Weed Stewardship Challenge for Day 4

Now that we know the impact noxious weeds have, let's make a positive change in our own communities.

Materials: Gloves, shovels, and other gardening equipment if appropriate

Look back at the noxious weed cards you used on Day 2. Have you seen any of these plants in your community? In local parks, or in dirt on the side of the road, around your school or even in your own backyard? Some of these plants are currently rare because King County and your neighbors work tirelessly to control them. Some of them are so common that we see them every day.

If you can, go outside with your parent or caregiver. Use gloves and a shovel to dig up Himalayan blackberry in your yard or in front of your apartment. Pluck stinky bob from the side of the trail in your favorite park. You have lots of options. Just make sure to carefully consider any plant you want to remove and get permission from an adult. Make sure you are not removing a native plant or a plant on private property! Ask an adult to help you identify! Ask yourself three questions.

- **Is it safe for me to pick this plant?** Remember: It doesn't have to be poisonous or thorny to be dangerous! Could the ivy you're pulling knock a tree branch down onto you?
- **Am I confident this is a noxious weed?** Check the King County Noxious Weed Control Program website if you're not sure!
- **Was this plant put here on purpose?** Lots of people still grow plants like English ivy in their yards. Remember, someone will learn a lot more from being told about the dangers of noxious weeds than being mad that their "perfect" garden was messed up.

If the answer to any of these questions is NO, *leave the plant alone for now*. Report it on the King County website if you can. Don't worry! There's still a lot you can do to help.



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If there aren't any invasive plants you can remove right now, you can still have a huge impact! In fact, preventing the spread of noxious weeds is sometimes more important than stopping them once they're here, especially with plants that are almost impossible to remove. Here is a pledge you can make to prevent the spread of noxious weeds:

I promise to root out noxious weeds by:

- Always checking my clothing, boots, and bicycle for "hitchhiking" seeds.
- Never dumping aquarium pets or plants in a stream or lake.
- Helping my household pick native plants to grow in our yard or garden.
- Teaching others about noxious weeds!

**ROOT OUT
NOXIOUS WEEDS
PLEDGE CARD**

SIGN YOUR NAME HERE:



**MAKE A PROMISE TO ROOT
OUT NOXIOUS WEEDS!**



After signing the pledge, cut it out and display it somewhere to help remind you and the others in your household how to help root out noxious weeds!

If you can, share the work you do around your community on social media! Don't forget to use the hashtags #kingcountyweeds and #wainvasives and tag @kingcountyweeds @WAInvasiveSpeciesCouncil @PlayCleanGo @naturevisionorg in your post so we can see your work!

DAY 5

Stewardship

This past week, we've thought quite a bit about noxious weeds. We've thought about what it means for a plant to be a noxious weed, and how noxious weeds can travel to places they shouldn't be. We've thought about what makes noxious weeds so harmful for ecosystems, and things we can do to reduce the spread of noxious weeds. Now it's time to ask the question "what can I do about noxious weeds?"

Noxious weeds are a problem primarily caused by humans, and they are a problem humans need to help solve. If we do nothing about noxious weeds, they will continue to grow and harm native species. The biodiversity of the natural places we love will go down, and the plants and animals we care about could even go **extinct!**

The good news is, there are many ways to get involved removing noxious weeds. From King County programs removing garlic mustard, to you and your neighbors pulling English ivy, all the way to just you and your friends reporting sightings of noxious weeds to King County. Every little bit helps control noxious weeds!



Vocabulary

Extinct: When all of the members of this species have died out in the wild

Stewardship: The duty we have to take care of the natural world around us; being a protector

Main Activity

Noxious Weed Work Party

Pulling weeds is always more fun in a group! Let's take a look at some people who have banded together to fight against English ivy and put our knowledge of handling noxious weeds to the test.

Materials: Writing utensil

Read through the following story, then answer the questions that follow:

Francis and her neighbors have a problem: English ivy has taken over most of the community park. With their city's permission, they decided to get together and remove the ivy vines from a hillside in the park. They met on a cool spring morning, bringing gardening gloves and a large tarp. Working together, they pulled up the ivy vines. Much of the ivy was growing up around trees. This ivy was growing too tall to reach, so they cut the vines connecting it to the soil and created a "life ring" around the trees instead. Most of the ivy they pulled up was pushed up into the forks of the trees above the neighbors' heads.

Some of the ivy was growing deep into the soil, so they snapped off the stems instead of digging out the roots. They loaded all of the ivy onto the tarp and carried it off in a truck to go in yard waste.



Pictures taken before, during, and after an English ivy clean-up party

1. What did Francis and her neighbors do well getting rid of the ivy? If you need help, look on page 35 for a summary of the Best Management Practices for English ivy.

2. What are some things Francis and her neighbors could have improved with their ivy removal project?

3. If you were to take on a project like this, where would you do it? What noxious weeds are there for you to remove? How would you best remove them?

Optional Activity

Letter Writing

Being a noxious weed warrior is tough work, and it's hard to do it alone. Sometimes efforts to remove noxious weeds work best when they are planned at a higher level. Let's write a letter letting people know why it's important to us that noxious weeds are removed.

Materials: Writing utensil, paper

Write a letter to an adult explaining why removing noxious weeds is important. Your letter can be to a neighbor, your school's principal, your city council, King County, or even your state legislator. Your letter should explain what noxious weeds are, how they can be harmful to the environment and your community, and how removing them is helpful. Bonus **stewardship** points if you send your letter! Thanks for being an awesome noxious weed warrior!



Optional Activity

Additional Resources

This past week we've learned all about different noxious weeds, and we've made a plan to help make a difference in our communities. If we keep these ideas in our head and share them with many others then we can keep making an impact even beyond this week. Thank you for all the work you've done this past week learning to be a "noxious weed warrior!"

If you are interested in finding out more information about noxious weeds and what people are doing in your area, there are lots of great resources you and an adult can check out on the internet.

Report noxious weeds you see near you here: <https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/infestation-form.aspx>

If you'd like to see what noxious weeds have been reported near you, there's a map on the King County Noxious Weed Control Program webpage here: <https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/maps.aspx>

If you'd like to know what kind of work is being done in your community, check out the KCNWCP Volunteer Information page here: <https://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/volunteer-information.aspx>

For a handy guide to some of the most common noxious weeds in King County, check out the KCNWCP Neighborhood Bullies Handout: <https://your.kingcounty.gov/dnrp/library/water-and-land/weeds/Brochures/Neighborhood-Bullies.pdf>



Optional Activity

Noxious Weed Stewardship Challenge for Day 5

One of the most important ways we can prevent the spread of noxious weeds is by teaching people how to spot them. This way, they can report the noxious weeds as soon as they see them! We're going to do an activity to help teach others about a noxious weed in your community.

Materials: Writing utensils, paper, any coloring supplies or art supplies you would like

Create a poster to hang in a window to help teach your neighbors about a noxious weed. There is a sample poster on the following page for inspiration!

Pick a noxious weed we have learned about in the past week. Put a picture or a drawing of the weed on your poster. Be sure to include a few facts about the weed such as how you can tell which plant it is, what makes it good at growing here, and why it's bad for other native plants. Be sure to also let people know what they should do if they find this plant! When you are done, hang this poster in a window facing out so your neighbors can see it if they walk by your window, and learn some new things about a noxious weed.

Another place to share your poster is online! Don't forget to use the hashtags #kingcountyweeds and #wainvasives and tag @kingcountyweeds @WAINvasiveSpeciesCouncil @PlayCleanGo @naturevisionorg in your post so we can see your work!



Root Out Noxious Weeds!



Help me pick

Tansy Ragwort

when you see it in our
neighborhood!



What is Tansy Ragwort?

Its daisy-like flowers are bright yellow with 13 petals. It has “ruffled” leaves.

Where does Tansy Ragwort grow?

It can be found in sunny spots like fields and the edges of roads

Why should we get rid of Tansy Ragwort?

This plant is poisonous to many animals! Removing it makes more space for helpful plants.

How do we get rid of Tansy Ragwort?

Dig up the plant by the roots and throw it in the trash.

More info can be found at the King County Noxious Weed Control Board website: <https://kingcounty.gov/weeds>



Answer Key

Day 2 Optional Activity: Build-a-Weed

Himalayan blackberry: Sharp thorns
Bittersweet nightshade: Berries are poisonous to people, though birds can still eat them
Bull thistle: Spines to protect seeds
Giant knotweed: Large leaves block sunlight for smaller plants
English ivy: Grows quickly to cover other plants
Milk thistle: Easily spreads seeds using the wind
Hairy willow-herb: Long, fast-growing roots make it hard to remove
Brazilian Elodea: Wraps around animals and gets moved to new places

Answer Key

Day 3 Main Activity: Spot the Weed

Native plants:

Salal
Sword Fern
Bleeding Heart
Osoberry
Snowberry

Noxious Weeds:

Garlic mustard: Allelopathic, small seeds can stick to clothes. Garlic mustard was brought to the Americas as a food for its flavor. Brushing clothes off can prevent spread of Garlic mustard.

English ivy: Grows quickly to cover other plants and can harbor pests like rats. English ivy was brought to the Americas as a garden plant. Pulling ivy up by the roots and throwing it in the garbage or municipal compost (not into a compost pile, as it can grow back) or storing it up in a tree where the roots can't get to the ground will keep it from spreading.

Purple loosestrife: Spreads quickly through lots of seeds and clogs wetlands. Seeds from purple loosestrife got carried on ships both accidentally and to be planted in gardens. King County uses special methods to try and control purple loosestrife. It can also be pulled out if you are able to remove all the roots.

Tansy ragwort: Can poison wildlife, horses, and other animals. Tansy ragwort arrived in the Americas in hay transported for animals. Try to pull up tansy ragwort (wear gloves) after it forms a shoot but before it flowers and makes seeds. Be extra careful to dispose of plants in the trash, not the compost.

Herb Robert: Spreads quickly and prevents other plants from growing. Herb Robert was used for gardens then escaped. Herb Robert is fairly easy to pull because the roots are shallow.



Answer Key

Day 5 Main Activity: Noxious Weed Work Party

1. What did Francis and her neighbors do well getting rid of the ivy?

Francis and her neighbors did a good job working together. They picked a good location and a good time to work and they brought the materials they needed. They used Best Management Practices like pulling up the ivy around the trees and cutting the connection between the upper stems and roots in the ground. They properly disposed of the ivy waste.

2. What are some things Francis and her neighbors could have improved with their ivy disposal project?

Francis and her neighbors should not have left any ivy roots in the ground, as the English ivy can regrow from those roots. They could potentially have planted a new native plant on the hillside to prevent erosion in the future.

3. If you were to take on a project like this, where would you do it? What noxious weeds are there for you to remove? How would you best remove them?

Student answers will vary. Here is one example:

If I took on a project like this, I would remove Himalayan blackberry from around the stream next to my school yard. I would get permission from the school principal and groundskeepers. I would pick a nice spring day and put up posters before hand to get lots of my fellow students involved. I'd see if my school has a gardening club or green team that could help out too!

To remove Himalayan blackberry, we'd need thick gloves and shovels. We'd use the gloves to pull the vines, and then work in pairs, using the shovels to dig up the root balls of the blackberry so they wouldn't grow back. Once we've got it all picked up, we'd put it into the yard waste, or make piles on tarps to make sure it can't spread again.

Maybe we'd even plant new native plants in the same spot!

