Lesson: 73: Introduced Species

Teacher:	Kaylan Duthie
Unit Theme/Course:	SEPUP Ecology
Date:	Feb 11th & 12th
Timing:	3-4 days

Challenge Question:

What effect can an introduced species have on an environment?

What, if anything, should be done to control introduced species?

Overview:

Students will get a brief introduction to introduced species in Washington State. They will then work on a structured research project to investigate one of 8 invasive species, including information about the species, the introduction of the species, the consequences of its introduction, and its potential future impact. In a later lesson, students will present their information to the class.

Learning Objectives [cognitive, academic, language, socio-cultural]	Assessment Criteria
Introducing a species into a new environment can have intended and unintended consequences for ecosystems and people.	Student completes the Effects on Ecosystems box on the worksheet, describing the impact of the species on the environment and other species. Student completes the Effects on People box on the worksheet, identifying uses and consequences.
Populations of organisms can be categorized by the function they serve in an ecosystem	Student correctly fills out the Food Web box with the organism's position on the key information sheet.
Making decisions about complex issued often involves trade-offs – giving up one thing to gain another	Student completes the issues for the future box, identifying options for controlling the growth/spread as well as the trade-offs of the various options.

Standard/EALR:

6-8 INQC Investigate	Collecting, analyzing, and displaying data are essential aspects of all *investigations*.	*Communicate* results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative. *a Recognize and interpret *patterns* – as well as *variations* from previously learned or observed *patterns* – in data, diagrams, symbols, and words.*a Use statistical procedures (e.g., median, mean, or mode) to analyze data and make *inferences* about *relationships*.
6-8 LS2E	*Investigation*s of *environmental* issues should uncover *factors* causing the problem and relevant scientific *concepts* and findings that may inform an *analysis* of different ways to address the issue.	*Investigate* a local *environmental* issue by defining the problem, researching possible causative *factors*, understanding the underlying *science*, and evaluating the benefits and risks of alternative *solutions*. Identify resource uses that reduce the capacity of *ecosystems* to support various *populations* (e.g., use of pesticides, construction).

Preparation Time:

- 1 hr to make copies, identify NW introduced species, make flipchart

Materials:

- COWs
- Nile Perch Exemplar
- Key Information sheet for students
- Organism names to draw out of bucket

Instructional Sequence:

Set-up:

1. Journal Stamp Check
    a. Collect journals (borrow over weekend)
2. Set-up the binders for the students
    a. Label dividers
    b. New stamp sheets
    c. Add in activity 48
3. Before students work on the research, they must finish entry #48

Day 1

1. Read the introduction with the students.
    a. Ask if they know of any introduced species in Washington
2. Take students outside to look at the area behind the greenhouse
    a. Ask students what kinds of plants they see
    b. Which are native? Which do they think were brought here by others/introduced?
    c. Point out the blackberries → these are introduced
        i. What do you think it would look like w/out the blackberries?
        ii. What do you think it looked like before people settled here?
    d. This is the hillside where we will be planting our native plant starters
3. Come back inside and explain research project
    a. Explain that they will be doing a research project on an introduced NW species
    b. They will have access to computers for today and tomorrow to do research
    c. Will be working in pairs at lab groups
        i. If there is a three-person group, offer the option of doing it solo. If they don't want it, ask for a volunteer from class to do a solo project and then match up the other person.
4. Go over the Nile perch exemplar
    a. Show on overhead.
    b. Might not know all of the words, but will be learning as we go
5. Expectations for their research
    a. Work in teams to fill out 1 worksheet per person (in case someone is gone one day)
    b. Do not copy directly from a resource (write down key phrases or reword)
    c. Write down where you got your information from
    d. Will be assessed using GI sheet for the project, as well as UC
6. Assign an organism for each group
    a. 2 groups in the class will do each organism.
    b. All of the organisms will be placed into a bucket, and each team will draw the name of the organism they will be researching
    c. There will be 2 minutes for swapping
7. Have students begin research

Day 2

1. Vocabulary
    a. Ecologist
    b. Introduced Species
2. Explain the PowerPoint presentation
    a. Go over guidelines for creating a readable presentation
    b. Go over PowerPoint grading rubric
3. Continue research
4. Check and see that students are filling out the sheets correctly
5. Ask:

a. What actions, if any, can be taken to control its growth and spread?
b. What are the trade-offs involved with each action (including the option of doing nothing)?

Days 3-4

- Time in computer lab for students to gather information and work on presentation

Assessments

- Students will be assessed on their ability to work as a team using the GI Rubric
- Students will be assessed on the completion of their introduced species worksheets
- Students will be assessed at the end of the unit on a final presentation for this activity.

Period 2

Introduced Species	Students
Bullfrog	
Scotchbroom	
Himalayan Blackberry	
English Ivy	
European Red Slug	
Nutria	
Eurasian Milfoil	
European Green Crab	
Japanese Knotweed	
Dandelion	
Citrus Longhorn Beetle	
Oyster Drill	
Norwegian Rat	
Gypsy Moth	
Pacific Oyster	
Starling	

Period 4

Introduced Species	Students
Bullfrog	
Scotchbroom	
Himalayan Blackberry	
English Ivy	
European Red Slug	
Nutria	
Eurasian Milfoil	
European Green Crab	
Japanese Knotweed	
Dandelion	
Citrus Longhorn Beetle	
Oyster Drill	
Norwegian Rat	
Gypsy Moth	
Pacific Oyster	
Starling	

Period 3

Introduced Species	Students
Bullfrog	
Scotchbroom	
Himalayan Blackberry	
English Ivy	
European Red Slug	
Nutria	
Eurasian Milfoil	
European Green Crab	
Japanese Knotweed	
Dandelion	
Citrus Longhorn Beetle	
Oyster Drill	
Norwegian Rat	
Gypsy Moth	
Pacific Oyster	
Starling	

Period 6

Introduced Species	Students
Bullfrog	
Scotchbroom	
Himalayan Blackberry	
English Ivy	
European Red Slug	
Nutria	
Eurasian Milfoil	
European Green Crab	
Japanese Knotweed	
Dandelion	
Citrus Longhorn Beetle	
Oyster Drill	
Norwegian Rat	
Gypsy Moth	
Pacific Oyster	
Starling	