

Invasive Investigators

Time Frame: 2 periods; about 80 minutes

Grade: 9th-12th

Class Size: 20-30 students

Setting: Indoors

Staff: 1 (2 helps)

Use: In-class

NYS Learning Standards:

MST-Section 1: Analysis, Inquiry, and Design

Students will: use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

- *Key Idea 1:* The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.

MST-Section 4: Living Environment

Students will: understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science

- *Key Idea 1:* Living things are both similar to and different from each other and nonliving things.
- *Key Idea 6:* Plants and animals depend on each other and their physical environment.

Objectives:

- ✓ Students will be able to identify at least 2 lakes and rivers found in NYS
- ✓ Students will be able to describe in their own words what invasive species are found in NYS, by what vector, and in what area of NYS
- ✓ Students will be able to compare and contrast the vectors/methods in which invasive species are introduced into an environment
- ✓ Students will be able to put into action prevention methods to stop the spread of invasive species

Motivation: Board game similar to Clue

Materials: Invasive PowerPoint presentation, computer, projector/screen, cords, Invasive Investigators game (pieces, board, cards, etc), *Eurasian Watermilfoil worksheet*, *Most Wanted Posters* for each invasive species found in the game.

Pre-Lesson Procedures:

1. Set up projector; have presentation ready.
2. Set up game on side table. Be sure to place the invasive species with the correct vector and location.

Lesson Procedures:

Welcome/Intro (1-2 minutes)

1. Introduce yourself and the I FISH NY program.

2. Introduce the day's activities:
 - a. PowerPoint about invasive species (first half of lesson)
 - b. Game/activity (second half of lesson)

Invasive PowerPoint-Part 1 (30-40 minutes)

1. Slide 1: Definition of invasive species. Exotic and invasive species are most common. Have students take notes for slides 1-3 and just record each name as an example for slides 4-5.
2. Slide 2: Vectors; review each vector
3. Slide 3: Impacts; discuss two slides; what can happen due to invasive species; impacts are same for each invasive species
4. Slide 4: Round goby examples. See notes section in PowerPoint for more information.
5. Slide 5: Purple Loosestrife. Also see notes section for more information. Talk about how "pretty" the flower is and why it is planted.
 - a. Explain that the group is going to play a game similar to Clue.
 - b. Ask students familiar with the game of Clue to take turns explaining the game concept to the group.
6. Slide 6: Invasive Investigators of NYS
 - a. Object of game is to solve a mystery
 - b. Do that by asking questions
 - c. Use slide and review game procedures
 - d. Divide students into groups of 5-6
 - e. Distribute boards and materials
7. Slide 7: Directions-Part 1; follow slide prompts
8. Slide 8-13: Players; introduce players
 - a. Only say what is on slide; name, type, and where originally from
9. Slide 14: Vectors; review again
 - a. The other small pieces are the vectors or weapons; how the invasive got to where it is in NYS
10. Slide 15: Directions-Part 2; follow slide prompts
 - a. To familiarize students with the game, engage in a few practice rounds
 - b. Before guessing what is in confidential, check with you to find out if correct
 - i. By checking with you first, you can put a stop to random guessing to end the game quickly.
11. Slide 16: Key; keep up while playing if kids need to check players and vectors

Game (20-30 minutes)

1. Have kids play game. Circulate among students, offering help where needed. Ask teacher to help as well.
2. When students have finished, tell them to read the answer card in the envelope.
3. When all groups have finished, one member of each group must stand and discuss his or her group's invasive without referring to the information printed on the card. Students need to share:
 - a. Invasive species name
 - b. Where found in NYS now
 - c. Vector used to get there
 - d. 1-2 impacts of invasive

4. Have students help clean up boards.

Invasive PowerPoint-Part 2 (2-5 minutes)

1. After share, show slide 17: what they can do to help.
 - a. Importance of not releasing plants or animals in wild.
 - b. Give examples: Pacu in Lake Ronkonkoma, king snakes found in local woods, Northern Snakeheads in NYC and Westchester area, etc.

Closure (1-2 minutes)

1. Appraisals. Tell students that, when on the fishing trip, they will look for different invasive species using a field guide.
 - a. Say: Great job.
 - b. Option: On the fishing trip, we will have a chance to find some local invasive species as well as go fishing. At the fishing site, we will spend more time learning fishing techniques and skills.

Post-Activity/ Assessment

1. After I FISH NY presentation, distribute *Eurasian Watermilfol worksheet* and/or *Most Wanted Poster* for students to complete. Review answers together.

Adapted from: Nim Lee (NYSG) and Sarah Bruner (NYSDEC); Invasive Investigators lesson plan