

Friends or Foes?



Learning Objectives

Students will:

- Understand the difference between native, non-native, naturalized and invasive species.
- Identify a variety of native and non-native species that live in their area.
- Recognize the fundamental characteristics of invasive species.
- Research and prepare for a debate on an invasive species issue.
- Argue a case logically by using facts and evidence to refute or back up claims.



Method

Students compare and classify native and non-native species, then participate in a classroom debate about the differences between them, their positive and negative effects, and whether their populations should be conserved or controlled.



Materials

- Images of native, non-native and invasive species that inhabit your area
- Access to research resources, article and media concerning invasive species
- Debating Guidelines (enclosed)

Background

The growing invasion of our lands and waters by invasive species is an ecological emergency, second only to habitat destruction in endangering native animals and plants. Yet, biologists cannot always agree on what is native or non-native, and whether action should be taken to control or eradicate certain species populations.

Most experts do agree, however, that non-native species are animals and plants that have been introduced or have spread into an environment outside their normal geographic range – whether intentionally, accidentally, or as the result of climate change.

Native species, on the other hand, naturally occur in the ecosystem where they live. They have evolved over millions of years in association with other animals and plants in a delicately balanced food web.

Many thousands of non-native species now inhabit Canada. Some of them, like the ring-necked pheasant, honeybee, and brown trout from Eurasia, actually boost the web of life and are usually regarded as "naturalized" species. Others, such as the European starling, zebra mussel, and purple loosestrife, cause huge ecological and economic harm and are considered not only non-native but also invasive.

For additional resources visit:

CanadianWildlifeFederation.ca/Education

Activity – Part I

1. Facilitate a class discussion using key points in the "background" section of this activity.
2. Work with the students to define key words like native, non-native, naturalized, and invasive.
3. Share pictures of local native, non-native and invasive species.
4. Guide students towards:
 - Identifying each plant or animal.
 - Voting on whether it is native or non-native.
5. After discussing the results of the voting and revealing the answers, ask the class:
 - Did the results surprise you?
 - Are there species you thought were native that it turns out were introduced?
6. Next discuss the similarities and differences between native and non-native species.
 - How can we tell them apart?
 - Are there characteristics that differ between native and non-native species? For example, conservation biologists have observed that, compared to native species, many non-native animals and plants are much less likely to survive in Canada. However, non-native species that do adapt well to their new environment often:
 - Reproduce much faster
 - Have fewer predators
 - Are more competitive
 - Do more harm than good in their adopted habitats.
7. Looking back at your list of local native and non-native species, ask students whether they think any may also be classified as invasive (ecologically harmful).
8. Discuss how non-native species can be both harmful and helpful and have students brainstorm the positive and negative effects of their local non-native species. For example:
 - Domestic cats can help control mouse populations and provide companionship, but also prey on native species, such as songbirds.
 - Zebra mussels filter water, but also clog pipes and reduce the amount of plankton available as food for native species.
 - Purple loosestrife provides nectar for some pollinators, but also competes with native wetland plants and impacts aquatic habitat.

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Activity – Part II

1. Tell students that they will now take part in a debate about native, non-native and invasive species. The debate will allow students to:
 - Explore the concepts discussed so far in greater depth.
 - Communicate opposing ideas about the subject.
 - Practise their ability to express their ideas and to back them with evidence – rather than conjecture or opinion – under direct challenge.
2. Divide the class into teams of five students. Determine which groups will argue for the positive impacts of non-native species and which will argue against the negative.
3. Give every team a copy of the **Debating Guidelines**. Teams must:
 - Read through the rules and speaking schedule to follow during the debate.
 - Divide the roles defined in the handout amongst themselves.
4. Now, it's up to each team to prepare for the challenges that lie ahead. Before the debates take place, the teams should research their positions (affirmative or negative) and develop the following:
 - Opening arguments
 - Questions and answers for cross-examination
 - Counterarguments for rebuttal
 - Closing statements
5. Remind teams to work together as they prepare so that all members are familiar with the key issues and aware of holes in their arguments that the opposing team may exploit.
6. When the teams are prepared, it is time for debates to take place. Teams debating both sides will take turns arguing for their positions.
7. After each debate, encourage students to discuss their reactions, including what they learned, observations they made, and questions that may have arisen while observing or participating.

Extensions

- Students can also be assigned to help conduct the debate by taking on the roles of moderator, timekeeper, and scorers.
- You can also involve them in creating a rubric with the purpose of gauging each team's performance and determining the winner of the debate. A rubric will focus the scorers' attention on key criteria, such as teamwork, organization and clarity, use of logical arguments, use of evidence to back up claims, use of rebuttals and closing arguments, and overall presentation, during the debate.

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Debating Guidelines

- The debate is about the positive and negative impacts on non-native species. It has two sides: affirmative and negative.
- Each member of the class belongs to a team. Everyone on your team has one or more of the following roles:
 - **Lead debater** - presents opening arguments.
 - **Questioner** - cross-examines the answerer on the opposite team.
 - **Answerer** – responds to questions raised by the questioner on the opposite team.
 - **Rebutter** - counters arguments made by the answerer on the opposite team.
 - **Closer** - refers to new issues raised during the debate, sums up their team’s position, and presents closing arguments.
- Your entire team will be scored as a whole, so be sure that all members work together and have ample background on the issues and the positions you will take.
- Refrain from interrupting the opposing positions during the debate.
- All team members should pay close attention to affirmative and negative arguments.
- Only one team will win, based upon the scorers' evaluation of each member's performance during the debate.
- Any students helping administer the debate can take on the following roles:
 - **Moderator** - introduces each speaker sequentially.
 - **Timekeeper** - keeps careful track of the time, letting participants know when they have one minute left to speak and when their time is up.
 - **Scorers** - evaluate each team's performance in the opening arguments, cross-examination, and closing arguments in response to a rubric.

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