

Be AIS Aware Unit Summary

◆ Grade Level

Middle School

◆ Subject Areas

Life Science, Environmental Science, Ecology, Economics, and Human Impacts

◆ Key Topics

Aquatic invasive species, native species, non-native species, adaptations, economic impact, societal impact

◆ Duration

Lesson #1: 2 x 50 min
Lesson #2: 1 x 60 min
Lesson #3: 1 x 60 min
Lesson #4: 2 x 50 min
Lesson #5: 2 x 50 min
Lesson #6: 2 x 50 min
Lesson #7: 1 x 30 min (+20)

◆ Skills

- Gathering, organizing, interpreting, applying, reading, sharing information
- Collecting observations
- Identifying patterns
- Making predictions
- Drawing conclusions
- Comparing and Contrasting
- Researching
- Communicating
- Designing
- Composing

Overview

Students will be introduced to aquatic invasive species (AIS) that are potential threats to Montana waters. These lessons will explore pathways of introduction, methods of dispersal, potential environmental impacts, distribution of these organisms, as well as, adaptations that make these species invasive.

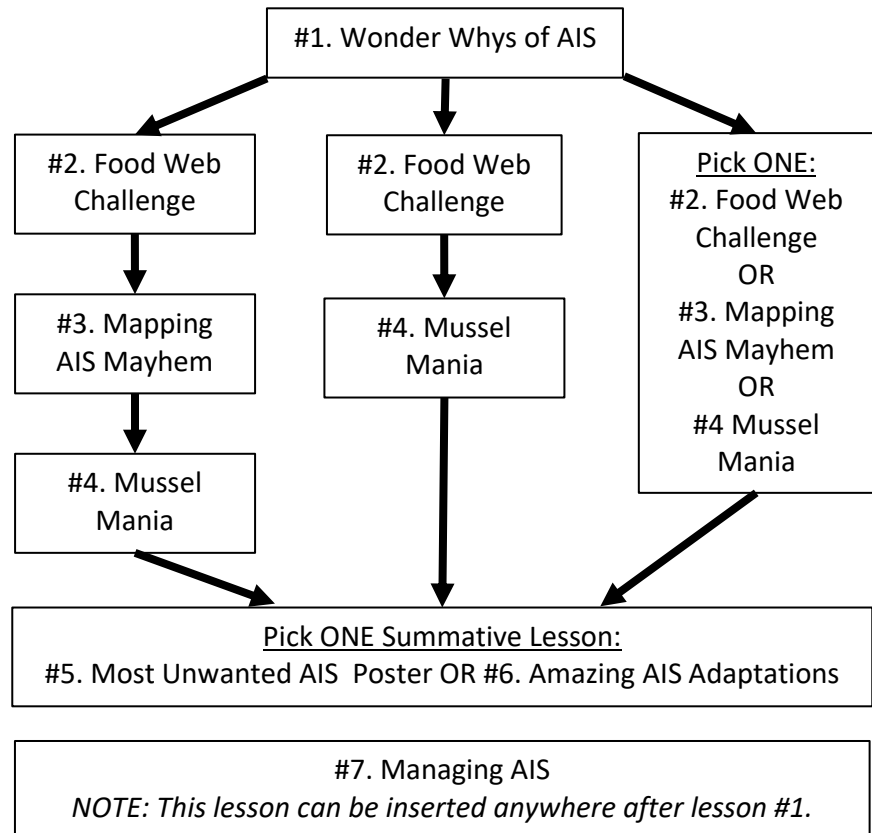


Unit Lessons

- #1. Wonder Whys of AIS
- #2. Food Web Challenge
- #3. Mapping AIS Mayhem
- #4. Mussel Mania
- #5. Most Unwanted AIS
- #6. Amazing AIS Adaptations
- #7. Managing AIS

Unit Sequence

Although each lesson can be taught independently, we recommend using one of the sequences below:



Online Source for AIS Unit Materials

All printable lesson materials are available on the associated thumb drive or on our website:

<https://flbs.umt.edu/newflbs/k12teachingmaterial>

Unit Materials List

*** Materials used in more than one lesson*

AIS Lesson	Materials provided in AIS teaching trunk	Materials provided by instructor
#1. Wonder Whys of AIS	<ul style="list-style-type: none"> • Teacher resources #1-10 (8 laminated sets) • Distribution maps #1-5 (4 laminated sets) • 6 N.W. Aquatic Species Guides • 8 AIS Threatening the Crown of the Continent Flipbooks • 8 AIS Pocket Guides • 10 Montana Reference maps ** • 2 Pressed flowering rush samples • 2 Pressed Eurasian milfoil samples 	<ul style="list-style-type: none"> • Copies of student worksheets #1-2
#2. Food Web Challenge	<ul style="list-style-type: none"> • Laminated food web cards (6 sets) 	<ul style="list-style-type: none"> • Copies of student worksheets #1-2 • Color pencils or markers • Glue/glue stick (1/group) • 2' x 3' Poster paper (1/group) • 4" x 6" lined index card or 8 ½" x 11" wide-ruled paper (1/group) • Optional: Computer/Chromebook
#3. Mapping AIS Mayhem	<ul style="list-style-type: none"> • 6 Columbia River Basin maps • 6 Flathead Lake Region maps • 6 Major U.S. watershed maps • 10 Montana Reference maps** 	<ul style="list-style-type: none"> • Copies of student worksheets #1-2 • One water bottle and two bowls of water
#4. Mussel Mania	<ul style="list-style-type: none"> • 8 Zebra mussel anatomy posters • Mussel anatomy cards (8 sets) • 3-4 Zebra vs. quagga resin mounts • 3-4 Zebra/quagga/Asian clam resin mounts • 6-8 Zebra and quagga shell size resin mounts • 3-D printed mussel shells (set of 20) • 8 Freshwater mussel life cycle posters • 8 Invasive mussel life cycle posters • 9 Mussels of Montana posters (1 large) 	<ul style="list-style-type: none"> • Copies of student worksheets #1-5 • Colored pencils
#5. Most Unwanted AIS	<ul style="list-style-type: none"> • Teacher resources #2-3 (12 laminated copies) 	<ul style="list-style-type: none"> • Copies of student worksheets #1-5 • Copies of teacher resource #1 • Computer/Chromebook and printer access for each student • Electronic poster: Individual access to presentation software • Hardcopy poster: 8 ½" x 11" assorted colored paper or construction paper, scissors, rulers, glue, and colored pencils



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AIS Lesson	Materials provided in AIS teaching trunk	Materials provided by instructor
#6. Amazing AIS Adaptations	• Laminated adaptation cards (22 animal and 14 plant/algae cards)	• Copies of student worksheets #1-8 • Colored pencils
#7. Managing AIS	• Student readings A-F (4 laminated sets)	• Copies of student worksheets #1-2

Unit Standards

Be AIS Aware Lesson		Wonder Whys of AIS	Food Web Challenge	Mapping AIS Mayhem	Mussel Mania	Most Unwanted AIS Poster	Amazing AIS Adaptations	Managing AIS
NGSS Standards	MS-LS2-2	✓					✓	
	MS-LS2-3		✓					
	MS-LS1-3				✓			
	MS-LS1-4				✓			
NGSS Crosscutting Concepts	Patterns	✓		✓			✓	
	Energy & Matter		✓					
	Cause & Effect		✓	✓	✓	✓		
	Stability & Change					✓		
NGSS Core Concepts	LS1A				✓			
	LS1.B				✓			
	LS2.B		✓					
	LS2.C					✓		
	LS4.B						✓	
	LS4.C					✓	✓	
NGSS Science & Engineering Practices	Constructing Explanations	✓		✓				
	Develop & Use Models		✓					
	Obtaining, Evaluating, & Communicating Information					✓		
	Engaging in Argument				✓			
MT Content Standards for English Language Arts & Literacy	WHST.6-8.4		✓	✓	✓	✓	✓	
	WHST.6-8.9	✓						✓
	SL.6-8.4							✓
MT Social Science Standards	Content Standard 1							✓



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