

Personal Statement

All people have opportunities to go through experiences that help them become better people. It's whether to choose to embrace those experiences or pass them by. Isle Royal was just that for me. Just signing up was a bit of a leap of faith! Unquestionably, part of the reason was based on the idea of adventure and a sense of mystery the Island held for me.

Isle Royal allows oneself to disembark from their everyday lives and enter a realm that for most is entirely incomprehensible. The simplistic word used to describe this is "Wilderness". For some of us, being part of the "Wilderness" is a religious experience. For me it can only be described as food for the soul that rejuvenates and replenishes positive energy. It is analogous to the warmth of the sun which allows the sap to flow in the spring, bringing forth new leaves and growth. The "Wilderness" provides the medium for thoughts and ideas to not just sprout, but flourish and interact with others. It's what helps me to wake up smiling each day ready to experience and participate in the joys the world has to offer.

That being said, Isle Royal brought forth a flood of thoughts about what good learning and good teaching looked like. In the day in age when districts tend to focus on the "bottom line" of student test scores hence focusing strictly on content while neglecting a student experiences in the classroom and world outside, it became grossly obvious that I need to make a conscious effort to provide students with experiences that are in equal proportion to student achievement. When fellow science teachers and professionals are asked their most positive memories of school, the responses are always based on experiences that "hooked" them into their area of interest. Therefore, our goal should always be driven by rich experiences that make connections providing a springboard for future thought.

The Isle Royal experience has helped to remind and motivate me to become more of an advocate of the whole student and not just the academic portion. I hope to continue this idea of well roundedness throughout the school year and beyond. I plan on doing this not by a "sacred cow" unit, but rather by individual lessons that are incorporated into existing units. The hope is to take current units and make them more relative, accessible, and meaningful to the students by providing better lesson experiences that make more connections to the student's everyday lives.

Lesson 1

Subject: Ecosystems

Topic: Ecological Relationships

Michigan Benchmarks Covered:

Science: Strand III (Life Science), Content Standard 5 “Ecosystems”,
Benchmark 1 and 6

Social Studies: Strand II (Geographic Perspective), Content Standard 2,
Benchmark 5

Goal: To describe common patterns of relationships among populations.

Objectives: TLW understand the make-up of parasitic, competitive, mutually beneficial, and predator-prey relationships.

TLW identify parasitic, competitive, mutually beneficial, and predator-prey relationships using real world examples.

TLW analyze an ecological relationship they have with an organism, identifying what type of relationship it is and why.

Audience: Grades 5-7, small groups or individual

Materials:

- Each Student - 1 copy of “Relationships in Ecosystems” diagram
- Each Group or Individual
 - 1 copy of both pages of “Interdependence of Organisms” (BELOW)
 - 4 pieces of scrap paper
 - 1 glue stick
 - 1 pair of scissors

Length: 50-90 minutes depending on needs of students and comfort level of teacher with content.

Content Background:

Relationships exist between all living organisms. Some are direct, others are indirect. Parasitic relationships exist when one organism benefits from the relationship while the other suffers or has a negative effect. An example of this is shown between Sea Lampreys and Lake Trout. Competitive Relationships often occur without the organisms realizing it. This often times occurs over food. Squirrels and chipmunks show us competition over food. Some organisms help each other out. Many insects and flowering plants benefit from each other.

Probably the most popular relationship is that of the predator – prey relationship. This is simply one organism providing food for the other organism by being eaten. A lion preying on a zebra exhibits this relationship. Knowing the relationships that exist in an ecosystem helps us better understand how populations are affected by these relationships.

Methods and Procedures:

1. “Relationships in Ecosystems” diagram
 - a. Help students fill in the “Relationships in Ecosystems” diagram using the background information and as many pictorial examples as possible making sure to provide examples that are identifiable in the area or region the students are from. This provides them with prior knowledge which they can apply the new information to.
2. Apply new information of relationships to real life examples.
 - a. In groups of 2, students should title each piece of scrap paper with a different relationship from the “Relationships in Ecosystems” diagram.
 - b. Using the 2 “Interdependence of Organisms” pages, students should cut apart each example, keeping together the entire example.
 - c. Students then discuss what type of relationship each example is and glue it on the scrap page which corresponds with the correct relationship.
 - d. When completed, groups compare results with other groups and make adjustments where needed.
3. Wrap Up – Teacher picks two of each relationship to discuss with students about why each relationship is placed into its category. Students asked for any they are unsure of.

Assessment: In groups, students share an organism they have a relationship with and identify the type of relationship and the role they and the organism play in the relationship.

Extensions:

- Students use internet or other resources to identify more examples of relationships between organisms.
- Students draw a cartoon depicting a relationship between organisms.
- Students develop a jingle or lyrics to a song describing each of the relationships identified between organisms in an ecosystem.

INTERDEPENDENCE OF ORGANISMS (For Lesson 1)

Pets and owners	<i>Pet</i> – food, water, shelter, love <i>Owner</i> – companionship
Sea Lamprey and Lake Trout	<i>Sea lamprey</i> – bloodsucking primitive fish that attaches itself to body of trout for food (takes the trout’s blood).
Zebra Mussels competing with native mussels	Taking the Great Lakes by storm since invading in 1986, the zebra mussel is a pest organism. These small (2-3 cm long) bivalve (sea shell) creatures attach themselves to each other, other organisms and manmade objects. They have drastically reduced the populations of all native mussels in western Lake Erie, clogged water intake pipes, and eliminated many small organisms in the Great Lakes and rivers as they easily attach to boat bottoms and go along for the ride. They are foreign invaders of the worst kind. Nothing in the great Lakes naturally preys on them. They have no natural control.
Whale and Barnacle	<i>Whale</i> – gets nothing <i>Barnacle</i> – tiny, crust looking animals that attach to whale to get a free ride that increase3s chance of finding food.
Egret and Cow	<i>Cow</i> – gets nothing <i>Egret</i> – as the cow grazes in the field it stirs up insects that the egret catches for food. “Fast Food!”
Mosquitoes and Animals	<i>Mosquito</i> – blood sucking insect (generally female) that needs blood for egg production and survival: can spread disease (malaria for people, heartworm for dogs), ruin a family outing, and cause much discomfort.
Squirrel and Chipmunks	Food (nuts)
Cardinal and Sparrow	Food (seeds)
Ratel and honey Guide Bird	<i>Ratel</i> – furry mammal in Africa that follows honey guide bird to bees’ nest and breaks it open, eats honey and beeswax. <i>Honey guide bird</i> – locates bees’ nest and chirps loudly for ratel to follow: can’t break open bees’ nest but will feed on honey and wax after ratel has done it.
Hérons and Poisonous snakes	<i>Poisonous snake</i> – lives at base of tree where heron is nesting, feeds on scraps of food from herons, keeps predators away from egges and nestlings. <i>Heron</i> – nest protected from predators (raccoons and others) by snake.

INTERDEPENDENCE OF ORGANISMS (continued)

Cowbird and robin	<i>Cowbird</i> – female cowbird will lay her eggs in the nest of another bird and leave; the robin female will incubate all eggs by sitting on nest. Then the eggs hatch, the cowbird hatchlings are larger than the robin hatchlings. They get food, attention, and nest space. Robin nestlings will die; cowbird nestlings survive.
Tall tree and Smaller Tree	Sun (light for food making – photosynthesis)
Zebra and Gazelle and Lion	Water
Ground Hogs and Fox	Shelter (burrow in ground)
Honey Bees and Flowering Plants	<i>Honey bees</i> – visit flowers to get food (nectar). <i>Flowers</i> – pollen (yellow grains) stick to bees' bodies and is taken from flower to flower; helps in fruit productions.
Birds and Plants	<i>Birds</i> – eat fruits of flowering plants for energy. <i>Plants</i> – seeds of fruit are dispersed in waste of birds; plants are then scattered not concentrated in just one area.
Gypsy Moths and Trees	The gypsy moth, specifically the larvae, is one of the most destructive insect pests to invade the U.S. Introduced 100 years ago, it is a threat to the health of our forests, trees, and shrubs. After wintering in the egg stage in tan-colored masses, the larvae emerge. They are only 1/8" long and they climb to the tops of trees. They are not picky – over 500 species of trees and shrubs have been invaded. They feed voraciously until they reach a length of 3 inches. Oak leaves are their favorite diet. The trees they feed on are weakened and become more susceptible to other stresses such as drought, diseases and other insects. By late June or early July the larvae are finished feeding. After two weeks in the pupa stage the adults emerge; they do not feed! Insecticides are often sprayed from airplanes in late spring to destroy the larvae.
Rabbit and Gardener	Food (garden vegetables and flowers)
Weeds and Garden Plants	Living space, nutrients, water sunlight

Lesson 2

Subject: Ecosystems

Topic: Ecological Relationships

Michigan Benchmarks Covered:

Science: Strand III (Life Science), Content Standard 5 “Ecosystems”, Benchmark 1, 2

Social Studies: Strand II (Geographic Perspective), Content Standard 2, Benchmark 1, 2, 3

Technology: Technology Productivity Tools, Benchmark 2, 3
Technology Communications Tools 2

English: Writing Genre.06.02

Goal: All students will explain how parts of an ecosystem are related and how they interact.

Objectives: TLW identify and describe ecological relationships within a given ecosystem.

TLW identify and describe how organisms acquire energy directly or indirectly from sunlight

TLW demonstrate the ability to use Microsoft Publisher

Audience: Grades 5-7

Materials:

- “Canadian Food Web” to use as an overhead
- “Ecosystem web links” for students to link to when on internet (below)
- Each Student
 - 1 copy of “Isle Royal Web Project” (below)
 - 1 copy of “Type III Isle Royale Food Web” (below)
 - 1 computer with access to the internet and with the program “Microsoft Publisher” available

Length: 3-4 days

Content Background:

A Food web is a way of showing all the relationships between organisms at one time. By doing this we are able to see how energy is transferred from one organism to another as well as how different relationships might impact populations of organisms in the food web either directly or indirectly. Isle Royal has a unique situation because it is an island. Island ecosystems tend to be speedy, separate and simple. Because of this, it makes Isle Royal a unique place to observe ecology.

Methods and Procedures:

1. Review with students the components of a food web using the “Canadian Food Web” as an example. Be sure to Review: Producer Consumer Decomposer Herbivore
Carnivore Omnivore Predator/Prey Parasitism
Mutualism Competitive Food Web Energy
Food Chain

Discuss how energy in a food web flows from one organism to another.

2. Assign Isle Royale Food Web Project
 - a. Hand out “Isle Royale Web Project” to each student and go over expectations. Refer back to Canadian food web when necessary. A deadline will need to be set to keep things moving in a timely manner. Generally 3 – 4 days is sufficient.
 - b. Demonstrate to students how to use Microsoft Publisher, being sure to include
 1. how to import pictures
 2. resizing and moving pictures
 3. making, moving, and resizing arrows to show flow of energy
 4. making moving and resizing text boxes

* While this project is going on, much help will initially be needed by teacher to get students started. Fortunately the learning curve is fast!

Assessment: Using the Isle Royale Web they made, students complete the Type III writing. (See attachment)

Extensions:

- Students research the Wolf /Moose relationship on Isle Royal using the yearly reports available online.
- Students use the web they created and make a 3-D version of it.
- Students make a web based on the organisms found in the immediate area where they live.

Ecosystem Web Links

<http://www.isle.royale.national-park.com/sights.htm#orchid>

http://www.nps.gov/isro/NR_Profile_Internal/NR_pages/Natural_Resources_index.htm

Sun web sites:

<http://www.seds.org/nineplanets/nineplanets/sol.html>

<http://www.hao.ucar.edu/public/slides/slides.html>

<http://umbra.gsfc.nasa.gov/images/latest.html>

Isle Royale Web Project

Goal: Make a food web of Isle Royale showing the following components:

1. The Sun and Four Producers
2. Three Consumers
3. At least one Decomposer
4. One example of each relationship we have discussed must be labeled. (Predator/Prey, Parasitism, Mutualism, and Competitive)
5. One example of Herbivore, Carnivore, and Omnivore must be labeled.
6. The names of each organism must be labeled.

You will be using the computer program “Microsoft Publisher” to accomplish this task.

To find pictures of each organism, you will be downloading pictures of them from the internet. To help you with this, a link page has been created for you to help locate pictures and determine what organisms exist on Isle Royal.

Type 3 TITLE: Isle Royale Flow of Energy

Name _____

FCA: Describe one path that energy might flow through your Isle Royale food web 4 pts.

FCA: Name and explain one relationship your Isle Royale food Web 3 pts.

FCA: Terms: **consumer**, **producer** and **decomposer** used correctly in the writing 3 pts.

* _____

* _____

* _____

* _____

* _____

* _____

* _____

* _____

* _____

* _____

* _____

*

*

*

*

*

*

*

*

*

*

*

*

Lesson 3

Subject: Ecosystems

Topic: Ecological Relationships

Michigan Benchmarks Covered:

Science: Strand III (Life Science), Content Standard 5 “Ecosystems”, Benchmark 1, 2, 3

Social Studies: Strand II (Geographic Perspective), Content Standard 2, Benchmark 4, 5

Technology: Technology Productivity Tools, Benchmark 2

English: Writing Process.06.01

Goal: Investigate and explain how communities of living things change over a period of time.

Objectives: TLW know the qualifications for a non-native species.

TLW describe several non-native species threatening the Great Lakes region.

TLW predict the effects a non-native species may have on a native species within an ecosystem

Audience: Grades 5-7

Materials:

- Pictures and samples of invasive species throughout room
- Each Student
 - 1 copy of “Nab the Invader” instruction page
 - 1 computer with access to the internet
 - 1 copy of the RAFT activity

Length: 2 days

Content Background:

Invasive species can have a devastating effect on local ecosystems. Most people do not even realize they are here until it is too late. It is up to us to educate ourselves on potential invasions of species in order to keep our native ecosystems intact and functioning healthy. In order to do this we must be aware of the threats these non-native species pose to local ecosystems.

Methods and Procedures:

1. With examples around the room, ask students what they all have in common. Inform them that non of the species present originated here in Michigan.
2. Pass out the copy of “Nab the Invader” instruction page to the students and inform students they will be researching non-native species today and this will be done using the internet website:

[Nab the Invader](#)

3. Help students get on the Nab the Invader website and work through the instruction page.
4. When done ask students what their favorite Invader was and why. Have them share this with a partner.

Assessment: Pass out the copy of the RAFT activity to each student. Lead the students in a discussion of the 5 components of A-RAFT. Discuss with students how different roles will specifically affect the writer’s attitude and viewpoint. Have students select one item from each of the columns as a framework for their editorial writing. Discuss answer plan with students supplying a possible example. (See attachment)

Extensions:

- Students turn their RAFT activity into a cartoon or play version.
- Students research a non-native species that has not entered the Great Lakes yet, but is on its way.
- Students write about a personal encounter with a non-native species in their area.

Nab the Invader Activity

- Click on the site [Nab the Invader](http://www.sgnis.org/kids/) <http://www.sgnis.org/kids/>
- Click on meet the suspects.
- Read about each suspect then click the back button until you return to the 1st page. Click BOOK 'EM
- Take the quiz.
- When you have passed the quiz raise your hands and I will check it off the list for you! You may print ONE copy of the certificate for any ONE invader!!!
- Continue until all 10 INVADERS ARE “BOOKED”

Invasive Species A-RAFT

- A = Attitude of the writer. How does the writer feel about the subject?
- R = Role of the writer. What is my role as the writer?
- A = Audience to whom the writing is directed. For whom am I writing?
- F = Format for writing. What form should I use? (editorial, formal letter)
- T= Topic about which the writing will be done. What topic will I write about?

A = Attitude	R = Role	A = Audience	F = Format	T = Topic
<ul style="list-style-type: none"> • Pleased • Optimistic • Concerned • Angry • Sad • Scared 	<ul style="list-style-type: none"> • Sea Lamprey • Spiny Water Flea • Lake Trout • Otter • Eagle • Fisherman • Moose 	<ul style="list-style-type: none"> • Isle Royale Park Service • Scientific Researchers on Isle Royale • Summer Tourists 	<ul style="list-style-type: none"> • Letter • Newspaper Article • Town Hall Meeting 	<ul style="list-style-type: none"> • Decision to expand the number of campsites and boating facilities on Isle Royale to accommodate more tourists during the summer.

ANSWER PLAN: What to do

1. Briefly introduce the issue and your position on the issue. Make your role and position obvious to the reader.
2. Clearly and concisely state the main argument that supports your viewpoint.
3. Use accurate and relevant information to support your viewpoint.
4. Conclude by trying to persuade our reader to accept your viewpoint.

Resources List

- Brown, J. & Stephens, E. (2005) A handbook of content literacy strategies. Norwood, MA: Christopher-Gordon Publishers, Inc.
- Kent County Collaborative Core Curriculum. (2002). Kent County Intermediate School District.
- Five Types of Writing. Collins Education Associates.
- Parratt, S. (2002). National Parks Service: Isle Royale.
http://www.nps.gov/isro/NR_Profile_Internal/NR_pages/Natural_Resources_index.htm
- Uhler, W. (2002). Isle Royale National Park.
<http://www.isle.royale.national-park.com/sights.htm#orchid>
- Nab the Aquatic Invader. Sea grant nonindigenous species site. <http://www.sgnis.org/kids/>