



JUST DUCKY

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How Should We Care For Our Lakes and Ponds

My class will



- ▶ investigate this problem (Why are people still feeding waterfowl?)
- ▶ study the environmental impact of feeding waterfowl on the habitat of lakes and ponds
- ▶ understand and demonstrate how citizens can participate in solving community problems.
- ▶ We will do this through ...

Project Citizen

PROJECT CITIZEN ...Introduces and trains students in the methods and procedures used in our political process.

Students to:

- learn how to monitor and influence public policy in their communities
- develop concrete skills and the foundation needed to become responsible participating citizens
- develop effective, creative communication skills
- develop more positive self-concepts and confidence in exercising the rights and responsibilities of citizenship.

Project citizen begins with educating students about a topic.
Our topic will be about feeding waterfowl.

To build background knowledge the class would read A River Ran Wild by Lynne Cherry. Before reading students would make a knowledge chart listing the characteristics of a healthy fresh water body. After reading students will fill in new knowledge learned from the selection.

- ▶ Learn what is a watershed and about our community's watershed and our conservation issues. Learn about water in your vicinity. Find out where it is located, how people use it, where rainfall flows, and what sources of pollution exist that might affect water quality. Make a map of your watershed, to get the big picture.
- ▶ Understand that they can make a difference in real world problems like Marion Stoddart in A River Ran Wild.
- ▶ This will lead us to a discussion about local environmental problems with our fresh water lakes and ponds.

Working in cooperative teams, the class learns to interact with their government through a five step process that includes:

1. identifying a public policy problem in their community
2. gathering and evaluating information on the problem
3. examining and evaluating solutions
4. selecting or developing a proposed public policy
5. developing an action plan that lets them become active environmental stewards

Feeding Waterfowl is banned in Rhode Island

- ▶ As a result of the harm that hand feeding wild waterfowl causes to both the waterfowl and the environment, DEM banned the feeding of wild waterfowl statewide in 2003. Why are these people still feeding the waterfowl?



1. PROBLEM –Throughout Rhode Island, even though DEM has banned the feeding of waterfowl, people are either choosing to ignore the ban or they aren't aware of the ban even though many lakes and ponds have visible signage.



2. Investigate the Topic – Students will investigate the harmful effects of feeding waterfowl to the environment and the waterfowl.

They will research the nutritious foods that waterfowl should eat.

▶ Omnivorous forages –

diet small fish, crustaceans, water plants, bugs, seeds and grains that are indigenous to their environment

These foods rich in nutrients needed by the birds unlike the low protein food brought by visitors

Foraging keeps waterfowl from becoming fat and lazy



Effects on water quality



- ▶ Birds possess fast metabolism – ingest and egests large quantities of organic material. In a study by Geza, Gere and Ardrkovecs effects on eutrophication vary. In the beginning of life they reduce the trophic level of fresh water as adults the contribute to the eutrophication process.
- ▶ Important idea –need to put at 5th grade level Students research trophic, mesotrophic and eutrophic lakes. Find and print pictures to make posters with listed characteristics of both. Understand that eutrophic lakes are more susceptible to algae bloom which can harm the lakes inhabitants.

Causes of algae bloom –students learn what it is and its causes

- ▶ Living things in and around lake interconnected – any imbalance of one element can affect another and a third, etc.
- ▶ Artificially fed waterfowl increases the population which increases waste (in form of feces and uneaten food) entering the lake – impacting water quality.
- ▶ Make connection just like humans aquatic plants and algae need nutrients. Phosphorus is needed for most of these to grow. It is limiting nutrient (teach) the amount of phosphorus determines or limits aquatic plant and algae productivity. Slight increases (ppb) can cause tremendous increases in growth.

Information for teacher for better understanding

- ▶ In an article Moore Et Al. "Potential Effects of Canada Geese and Climate Change on Phosphorus Inputs." *Limnology and Lake Management* (1998) scientists studied the effects of Canada Geese and climate change on phosphorus. Total Phosphorus (TP) to a small lake (0.4 km sq) in suburban area of Boston was compared during drought (Fall 95) and normal rainfall (Fall 94).
- ▶ Findings (Fall 94) watershed supplied 18 times more TP than geese
- ▶ (Fall 95) TP from geese exceeded that from watershed by more than 7 times
- ▶ Differences caused by variation in stream flow
- ▶ New England rainfall projected to decline by about 30% with greatest reductions of about 60% in the Fall when geese most abundant
- ▶ Also with climate change ice coverage less likely to form – geese more likely to stay
- ▶ Warmer and drier conditions exacerbate the effect of geese on water quality

Students investigate how does algae bloom effect the life in a lake?

- ▶ Algal bloom – any excess of algal biomass
- ▶ Late Summer and Fall nutrients stored at the bottom of lake mix with the water column generating a fresh supply of nutrients. This allow algal populations to flourish just when migrating birds are arriving. Possibly effecting the delicate balance of phosphorus.
- ▶ High levels of algae prevent sunlight from reaching rooted aquatic plants. This either limits growth or causes them to die.
- ▶ The more algae, the more dead algae to decompose. Decomposition by bacteria causes depletion of dissolved oxygen. Anoxia (complete lack of oxygen) causes fish kills.
- ▶ High levels of algae may raise pH of water bodies. Fluctuating pH stresses aquatic life. (Fish do better with pH of 6.4–8.2)

The class' responsibility as citizens is to stop the feeding of waterfowl

After completing the research students will be more knowledgeable about how their actions (feeding waterfowl) effect the habitat of our fresh water lakes and ponds and why it is important to take action.



3. Examine alternative policies enhance the ban.

1. Increase the fine for a first time offense from \$100 to \$200
2. Educate the community about the harmful effects to the local lakes and ponds when the waterfowl are artificially fed.

Proposing a Policy



- Work together as a class to design a campaign that promotes community awareness of the importance of clean lakes in Coventry
 - use what was learned to create speeches, posters and brochures to educate the students and their parents about the harmful effect of feeding waterfowl
- Invite town council members to hear presentations – get them to understand educating citizens is the way to decrease this problem
- Create a list of alternative activities to feeding waterfowl –
 - create a photo album of the waterfowl and identify and label pictures using a field guide
 - make a creature card booklet and add to it every time you visit that lake (draw a picture while your visiting then use field guides to identify the type of creature, what it eats and how it moves
 - keep a tally of the number of waterfowl seen on each visit – graph it by days or seasons

BIBLIOGRAPHY

- ▶ Give Water a Hand
<http://www.uwex.edu/erc/gwah/>
This site is devoted to informing young people about the part they can take in protecting bodies of water. Download action plans and more.

Conservation Information Technology Center: Know Your Watershed
<http://www.ctic.purdue.edu/KYW/Brochures/GetToKnow.html>
This site provides information on what a watershed is, why watersheds are important, types of pollution that affect watersheds, and how to get to know your local watershed.
- ▶ General Code for feeding migratory birds (different municipalities)
C:\Users\Linda\Desktop\General Code feeding migratory waterfowl;migratory birds;waterfowl;nuisances;birds;geese;ducks; swans; codifiers;municipal codification;ordinance codification.mht
- ▶ Geza, Gere, and Ardrkovis. "Feeding of the Ducks and Their Effects on Water Quality." *Hydrobiologia* 279 (2007). Web. 112 Feb. 2011.

- C&G 2 (5–6) –2
- ▶ Students demonstrate an understanding of the democratic values and principles underlying the U.S. government by...c. exhibiting and explaining what it means to be a responsible citizen in the community
- ▶ C&G 3 (5–6) –1
- ▶ Students demonstrate an understanding of citizens' rights and responsibilities by...c. identifying a citizen's responsibilities in a democratic society (personal, economic, legal, and civic)
- ▶ &G 4 (5–6) –3
- ▶ Students participate in a civil society by.... c.taking responsibility for one's own actions (anticipating and accepting consequences)