

# "Natural Connections" Teaching Guide

## Ideas for Discussion and Discovery In and Out of the Classroom

*"Natural Connections"—a television program exploring how nature and human nature are intertwined and how our everyday decisions on how we live impact where we live.*



*Everywhere on earth, life exists in a great variety of fascinating and exquisite forms. This biological diversity, or biodiversity for short, encompasses the world's millions of living species and all the habitats in which they live. And because these habitats ultimately sustain humans as well, the current loss of biodiversity is quickly becoming one of the world's most pressing concerns.*

**Natural Connections airs on**

**KOMO  October 15th at 8 PM**



**KING COUNTY**

**Department of Natural Resources**

The King County Department of Natural Resources, KOMO ABC 4, and the Local Hazardous Waste Management Program are pleased to present this important show about the earth's natural connections and how they are affected by our individual actions. Our goal is that students who watch this show will gain an understanding of the interconnectedness of life on our planet and how important their role is in maintaining the delicate balance among the species. Simple choices can affect the future of our planet and will determine the direction that life in our local and global environment will take.

We live in a beautiful and bountiful environment, abundant with natural resources in Puget Sound, in its valleys, forests, mountains, and waterways. The choices we make now will determine whether we manage these wisely and protect them for the future. "Natural Connections" doesn't dictate what each of us should do, but seeks to educate and to provoke discussion. We hope that you and your students will take the ideas presented in this program, discuss and debate them, and do further research. The choices we all make for the future must be done with knowledge and insight.

Presented inside are some discussion questions and suggested research activities ranging from quick and easy to more complex. Much of the information necessary to complete these projects is available on King County's own website at [www.metrokc.gov/dnr](http://www.metrokc.gov/dnr). These activities ask students to think critically, research, write, and present their findings--skills required by the Essential Academic Learning Requirements. Also enclosed as an insert is a quiz that can be photocopied and distributed to students. We hope you will find these activities useful.

Pam Bissonnette, Director  
King County Department of Natural Resources

## Background

*Natural Connections* brings up many issues related to our natural environment and how the human species is affecting it. Among these issues is a focus on **biodiversity**.

Why does biodiversity matter? We depend on a wide variety of wild plants and animals for our food, medicine, and basic environmental elements such as clean and healthy water, air, and soils. In addition, genetic material contributed from wild varieties results in new strains of plants that are more nutritious, more resistant to disease and pests, and better able to withstand drought and climate change. Many medicines used to treat human diseases such as cancer are derived from wild plants. Maintaining biodiversity also helps keep ecosystems intact. Healthy and diverse ecosystems help purify, store, and recycle water; produce oxygen and absorb carbon dioxide; and build and sustain soils needed for agriculture.

In *Natural Connections*, scientists present a list of human factors that are destroying biodiversity. Using the acronym “HIPPO” for shorthand, they discuss **H**abitat Destruction, **I**ntroduced Species, **P**ollution, **P**opulation Growth, and **O**ver-Consumption. Examples of these factors can be found in the Puget Sound area:

**Habitat Destruction:** With the growth of the region, more forest and other lands have been transformed into housing developments and commercial and industrial uses. As a result, less land is available for native animals and plants. One of the main factors that threaten the survival of salmon is habitat destruction. King County’s Smart Growth initiative of encouraging growth in urban areas is one way to slow down the loss of habitat.

**Introduced Species:** Prime examples of introduced species that are creating problems in the Puget Sound area are the noxious weeds Purple Loosestrife, Hydrilla, and Spartina. All these crowd out native plants and endanger wildlife that depend on them. Hydrilla, the most problematic aquatic plant in the U.S., forms extensive surface mats that destroy freshwater fish habitat and recreation areas.

**Pollution:** While environmental regulations have improved water quality of local lakes and streams, pollution from homes, roads, businesses, and farms continue to affect the salmon and other wildlife in our waterways. Pesticides, oils, and heavy metals are examples of waste products that enter our waters as surface runoff and pollute habitat. Creating less garbage and using less hazardous products are examples of ways to produce less pollution.

**Population Growth:** The population of King County grew 31% between 1980 and 1998, an increase of almost 400,000 people. Increased growth intensifies impacts on resources, affecting our natural environment and congesting our roadways. Water supply, sewage treatment, and solid waste disposal for the increasing population are key issues that King County is planning for now.

**Over-Consumption:** As the population grows, more resources and materials are consumed. Americans make up 5% of the world’s population, yet consume 25% of the world’s resources. The average person in the U.S. consumes 121 lbs. of natural resources per day. Source reduction or using less in the first place is a key strategy that King County encourages through its solid waste education programs.

## Discussion Guide

Prior to the show, discuss with students their perceptions of the environment. What are some of the key issues in their experience that are affecting it both globally and locally? Ask the students to keep these in mind as they watch the show and to jot down the most important things they learned from it. Ask them to identify three things that they know about in their community that specifically relate to what they learned. Use the following discussion questions as a guide.

## Preshow Questions

- What do you think are the major issues that are affecting our local environment? What about the global environment?
- How does our view of the natural environment affect the way we behave? Has this changed through history? Through different cultural situations/beliefs?
- What do you think the earth will be like in the future?
- Using that vision, what might happen that could change that outcome?

## Postshow Questions

- Now that you have watched the show, have your ideas changed about what the most pressing issues are? What is your vision for the future now?
- What actions could you personally take that will change that future? Are you likely to take these steps?

- What do you need to learn more about?
- In the show, Bob Paine talked about starfish and how they act as a “keystone species.” What did he mean? Can you think of any other examples? (Sea otters, for one.) How would you find out?
- The show used the acronym HIPPO. Do you remember what this stood for? What are some examples of each of these factors? Can you think of any examples in your own community? What choices do we have to stop these from happening? Is it important? Is it possible?
- What did you think of the show? Do you think it was an accurate portrayal of the way things are? If yes, what convinced you? If no, what did you question?

## Discovery Quest

The following is a collection of suggested **discovery quests** that your students can take to learn more about the topics in the Natural Connections program as well as about their local environment. Students can select from the following as individuals or groups. Before starting, brainstorm with students on how to assess the projects.

### Biodiversity.

- ❖ Write a poem or create an illustration about the connectedness of species on earth and where humans fit in.
- ❖ Create a poster showing one or more endangered species and the cause of its shrinking population. Identify which species live in Washington State and what can be done to protect them.
- ❖ Design a commercial describing a local insect, reptile, fish, or other animal and why it needs to be preserved.
- ❖ Find out what conservation issues your community is currently engaged in. Write a summary describing one of these issues.

### The factors that threaten diversity.

- ❖ List commonly used household products that affect the environment and safer alternatives to them.
- ❖ Research an introduced species and present how it has affected a habitat.
- ❖ Identify one or more activities in your community that affects, both positively and negatively, the watershed you live in. Present what you have learned.
- ❖ Design a diagram showing how human consumption affects habitat loss. Conversely, design a picture showing how reducing human consumption can protect habitats.
- ❖ Create a map of your community. Identify sensitive areas such as streams, wetlands, lakes, and forests. List possible sources of pollution.

### Keystone species and how humans fit into the picture.

- ❖ Identify a keystone species in your community. Find out if it is endangered.
- ❖ Write an essay on how people can benefit from preserving natural habitats (wetlands, forests, streams).
- ❖ Create a diagram that shows a web of connectedness. Beginning with a particular creature, map out all the other species it affects to show the links of one species to many others.

### Healthy forests and how individual actions can make a difference.

- ❖ Create a poster showing five benefits of forest ecosystems to people. Include positive actions a student can take to conserve forest ecosystems and biodiversity.
- ❖ Identify native or other plants that are drought and disease resistant that thrive in our area. Share the information with others.

### Stepping lightly on the Earth.

- ❖ Create a brochure, poster, skit, or video on simple steps to help conserve and protect biodiversity. Choose to present several ideas or focus on one idea.
- ❖ Research a local organization that provides education and volunteer opportunities on environmental issues. Interview a member and find out what he/she does and how students can participate. Present the information to the class.
- ❖ Organize a debate in your grade level on environmental topics. Topics could include endangered species, water quality, recycling, consumption, biodiversity and environmental alternatives to harmful practices.

# For More Information

A partial list of references related to the topics presented in Natural Connections

## Books

A Sand County Almanac by Aldo Leopold  
Biodiversity by Dorothy Hinshaw Patent  
Consumer's Guide to Effective Environmental Choices by Michael Brower and Warren Leon  
The Diversity of Life by E.O. Wilson  
Gaia: An Atlas of Planet Management edited by Norman Myers  
Silent Spring by Rachel Carson  
Stuff, the Secret Lives of Everyday Things by John C. Ryan and Alan Thein Durning  
Use Less Stuff: Environmental Solutions for Who We Really Are by Robert Lilienfeld and William Rathje  
Watersheds: A Practical Handbook for Healthy Water by Clive Dobson and Gregor Gilpin Beck

## Organizations

King County Department of Natural Resources (206) 296-6500  
King County Solid Waste Division (206) 296-6542  
Local Hazardous Waste Management Program of  
King County (206) 263-3051  
Adopt a Stream Foundation (425) 771-6671  
People for Puget Sound (206) 382-7007  
Salmon Information Clearinghouse 1-877-SALMON9  
Washington Toxics Coalition (206) 632-1545  
YMCA Earth Corps Program (206) 382-5013

## Websites

Biodiversity Conservation Network [www.bcnet.org](http://www.bcnet.org)  
Conservation International [www.conservation.org](http://www.conservation.org)  
Discovery Channel online [www.discovery.com](http://www.discovery.com)  
Envirolink's Endangered Species Act On-line Resource Guide  
[www.envirolink.org](http://www.envirolink.org)  
Environmental Education Links on the Net [www.eelink.net](http://www.eelink.net)  
Environmental Protection Agency [www.epa.gov/students/index.html](http://www.epa.gov/students/index.html)  
Global Action Organization [www.enviro-info.org](http://www.enviro-info.org)  
Horizons Solutions [www.solutions-site.org](http://www.solutions-site.org)  
King County Department of Natural Resources [www.kcmetro.gov](http://www.kcmetro.gov)  
National Wildlife Federation [www.nwf.org](http://www.nwf.org)  
Northwest Bioregional Information [www.ecotrust.org](http://www.ecotrust.org)  
Salmon Information Clearinghouse [www.salmon.gen.wa.us](http://www.salmon.gen.wa.us)  
Union of Concerned Scientists [www.ucsusa.org](http://www.ucsusa.org)

**FOUR** smart things you can do to protect **BIO**diversity

**1- Reduce consumption of material goods by reusing, recycling and avoiding disposable products.**

This will use fewer natural resources and protect habitat.

**2- Use earth friendly products for taking care of your home and garden.** This will create less pollution.

**3-Ride the bus, a bike, or carpool. If you do use a car, keep it in good repair.**

This will save resources and reduce pollution.

**4- Conserve both water and electricity by turning things off and using full loads when washing clothes and dishes.**

This will save resources and reduce pollution.