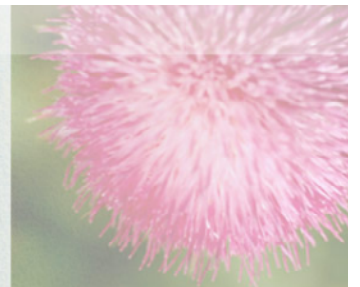




Other studies, such as bird surveys, are done at the same time and at the same place each year. This researcher catches birds as they migrate between their wintering grounds and their summer breeding grounds. They place bands on the birds' legs **with information on where and when the birds were captured.**



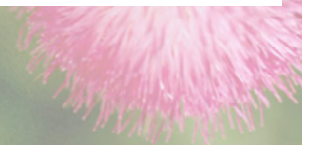
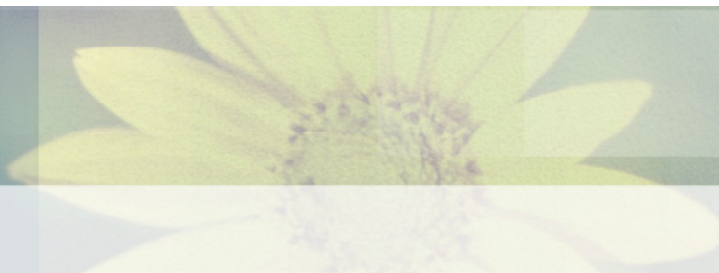


Baseline data can also be used to **predict changes in the environment.**

For example, if someone wants to drain a wetland to put in a shopping mall, scientists can refer to studies from that area, or from a similar area, **to predict the effects.**

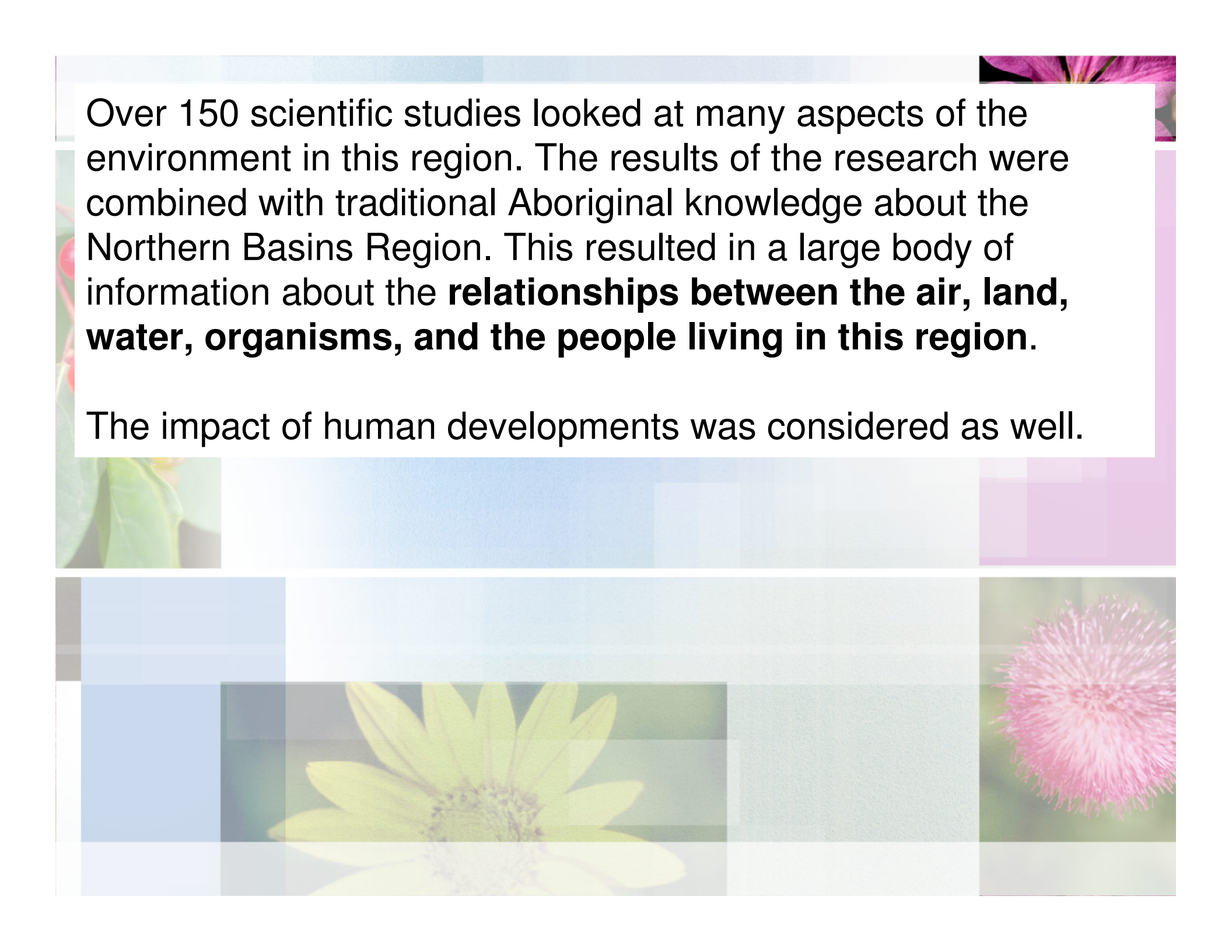
This also means that a plan could be developed to minimize the impacts or perhaps if the changes are determined to be too serious - **the development could be stopped.**

A report that outlines how an activity will affect the environment is called an **Environmental Impact Assessment.**



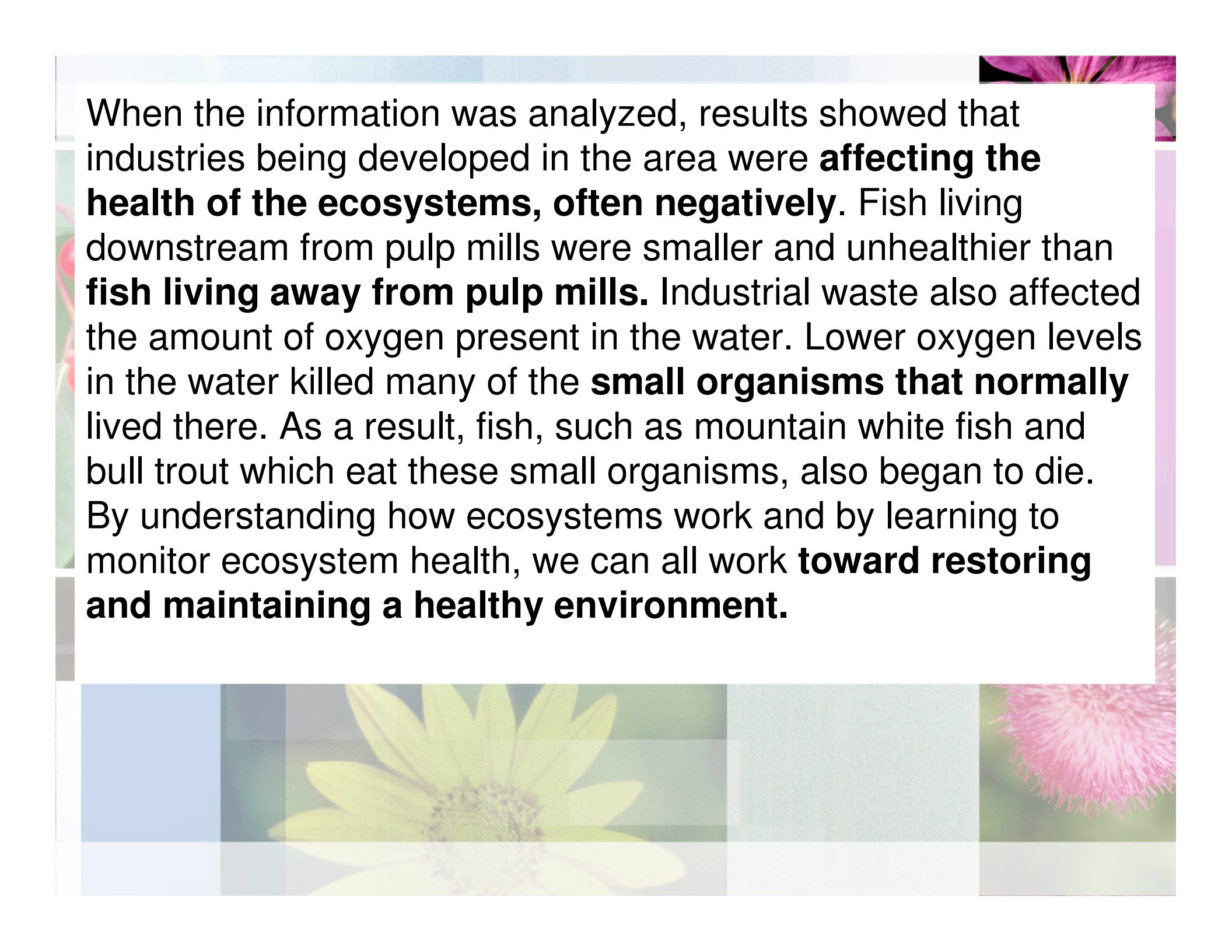
Using Science in Real Ecosystems

The Northern River Basins region, made up of the Peace, Athabasca, and Slave River basins, covers a vast territory. Many Aboriginal people living in the Northern Basins region depend upon the land for food, clothing, medicines, and other natural resources. Their lifestyle is threatened by **the economic development of the area's natural resources**. To monitor and assess the impact of development in the area, a huge scientific project, called the Northern River Basins Study, began in **1991**. Its goal was to learn how **developments in the area were affecting the ecosystems**.

The background of the slide features a grid of squares in various shades of blue, green, and purple. Several floral images are overlaid on this grid: a pink flower in the top right corner, a green leaf in the middle left, a yellow flower in the bottom center, and a pink thistle-like flower in the bottom right.

Over 150 scientific studies looked at many aspects of the environment in this region. The results of the research were combined with traditional Aboriginal knowledge about the Northern Basins Region. This resulted in a large body of information about the **relationships between the air, land, water, organisms, and the people living in this region.**

The impact of human developments was considered as well.

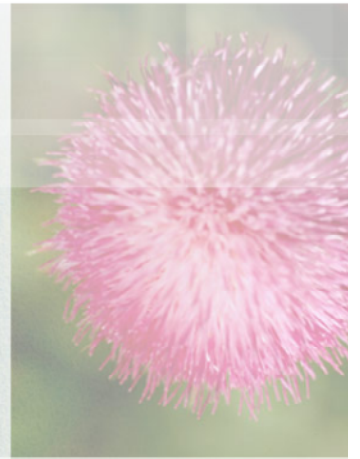
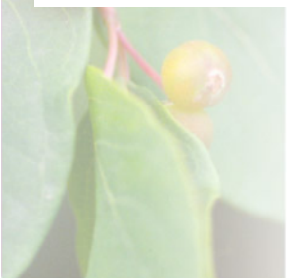
The background features a grid of colored squares in shades of blue, green, and purple. Overlaid on this grid are several floral images: a pink flower in the top right, a yellow flower in the bottom center, and a pink flower in the bottom right.

When the information was analyzed, results showed that industries being developed in the area were **affecting the health of the ecosystems, often negatively**. Fish living downstream from pulp mills were smaller and unhealthier than **fish living away from pulp mills**. Industrial waste also affected the amount of oxygen present in the water. Lower oxygen levels in the water killed many of the **small organisms that normally** lived there. As a result, fish, such as mountain white fish and bull trout which eat these small organisms, also began to die. By understanding how ecosystems work and by learning to monitor ecosystem health, we can all work **toward restoring and maintaining a healthy environment**.

Topic 7 Review

1. Explain how long-term monitoring can be used to help protect natural ecosystems.

Continuous monitoring gives us the scientific data we need to make **informed decisions about how we affect the environment over time.**



2. What are the four types of ecosystem monitoring? Give an example of something that would be measured or monitored for each type.

Physical Monitoring - uses satellites to track changes in the landscape over time.

For example, satellite maps can show the changes to the land that occur due to construction of cities or deforestation.

Environmental monitoring - tracks changes in climate, temperature, and weather patterns.

High and low temperatures –precipitation

Chemical Monitoring - assesses the **quality of air, soil and water** - scientists test air and water samples

Biological Monitoring - tracks the changes in **organisms or populations of organisms**

3. Describe a Canadian monitoring program that volunteers (including you!) could become involved in.

Volunteer Amphibian Counting
Ducks unlimited

4. Explain what is meant by baseline data.

Baseline data gives scientists **a starting point to compare changes in the environment.**