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Aquatic Habitats

Fish live in aquatic habitats, which meet their basic needs.

What Will the Students Learn?

Through immersion in their local aquatic habitat, students begin to gain a greater awareness of their environment, develop the ability to understand natural systems (or sets of interactions), and discover their place within those systems.

Chapter Concepts



Looking Closely at Habitat Elements and Structure

Lesson 1: 1—Design a Habitat

Lesson 1: 4—Water Habitat Site Study

Lesson 1: 5—Habitat Hideout

As students “get in the habitat” and investigate a pond, lake, stream, or river, they’ll begin to view habitat as the home of many different types of organisms, including fish. A habitat provides the basic needs of food, water, cover or shelter, and space for organisms.

Numerous organisms can be observed in or on the water and near the shores of local lakes, ponds, rivers, or streams. You might see cattails, lily pads, algae, turtles, birds, fish, snails, dragonflies, water striders, frogs, crayfish, snakes, and other plants and animals. Some living things in the water, such as some plankton and bacteria, are too small to see with the unaided eye.

Each species, including fish, requires a specific type of habitat to supply its basic needs for food, cover, space, and water quality. Learning about the habitat needs of different fish species yields clues about the types of fish that might be swimming in the vegetation under the fishing pier at your neighborhood lake.

Food Chains

Lesson 1: 2—Food Chain Tag

Organisms need food energy to carry out their daily activities. Food energy is transferred from one organism to another through a food chain. A food chain illustrates how producers, prey, predators, and

decomposers are inextricably connected, relying upon each other and upon their habitat for survival. Food chains interconnect, creating a food web. By exploring the relationships between aquatic predators and prey, students learn how predation in a lake actually encourages the success of fish populations and contributes to ecosystem balance.

We enjoy an abundant fisheries resource in Minnesota, but is it possible to have too much of a good thing with a large number of fish in a lake, river, or stream? A water habitat provides a limited

quantity of food, space, and cover. A habitat’s carrying capacity for a fish species is determined by the maximum number of individuals that a given environment can support without detrimental effects on fish or other components of the ecosystem.

“The catalyst that converts any physical location—any environment, if you will—into a place is the process of experiencing it deeply. A place is a piece of the whole environment that has been claimed by feelings.”

—Alan Gussow

Bacteria, plankton, plants, and animals (including people) perform vital roles in food chains as producers, consumers, and decomposers. Balance within an ecosystem depends on the quality of all of its parts. Disrupting one part of a habitat or removing a single member of a food chain can impact an entire food web.

“For if one link in nature’s chain might be lost, another might be lost, until the whole of things will vanish by piecemeal.”

—Thomas Jefferson



“Wonder is the beginning of wisdom.”
—Greek proverb

Migration

Lesson 1: 3—Run For Your Life Cycle

Many fish annually migrate from one aquatic habitat to another to feed, or to complete life cycles and breeding cycles. The northern pike is an example of a Minnesota freshwater fish that migrates during its life cycle. These fish deposit eggs that hatch in shallow water or wetlands. The young fish travel to the deeper water of lakes and rivers to mature, returning to the shallow water area to spawn. Many natural and human-induced factors along this migration route can challenge or threaten northern pike survival.

Life Cycles

Lesson 1: 3—Run For Your Life Cycle

Lesson 1: 6—From Frozen to Fascinating

An organism’s life cycle is a progression through a series of developmental stages throughout its lifespan. Each developmental stage is typically timed to take advantage of seasonal conditions, or to address seasonal challenges in an attempt to ensure successful growth and reproduction.

Seasonal Cycles and Adaptations

Lesson 1: 6—From Frozen to Fascinating

Minnesota winters present special challenges for fish and other organisms. Many months of cold temperatures, snow, and ice cause shortages of food, sunlight, and dissolved oxygen. Even the most minute aquatic organisms have special adaptations for surviving Minnesota’s dramatic seasonal climate changes. Springtime brings increased sunlight and higher temperatures triggering some tiny aquatic plants and animals to emerge from the state of dormancy that enables them to survive our cold, dark winters.

The Human Connection

All Lessons

People exist and function within natural environments that provide places to live and resources to meet our needs for food, clothing, water, building materials, and other necessities. For these reasons, it’s important for students to gain an awareness of and begin to understand the relationships between the living and non-living parts of the natural environment—as well as the human-constructed parts of the environment—by spending time establishing connections, experiencing, and exploring the environment in which they live.

The concepts of food webs, seasonal cycles, life cycles, and migration illustrate a myriad of interdependencies. These concepts also show us that aquatic habitats are dynamic places of constant change. As human populations, resource demands, and human impact on the environment intensify, the process of change accelerates. Many of these changes occur faster than natural systems can adapt to or accommodate them, and environmental systems and cycles can be disrupted, impaired, or destroyed. Students who spend time exploring and observing natural environments learn that, over time, people’s activities can have positive or negative consequences and that, indeed, everything is connected.

Exploring and learning about the habitats where fish live is an important step in increasing future angling success and helps students see how they, too, are connected to aquatic habitats.

“If there is magic on this planet, it is contained in water.”

—Loren Eiseley