

FROZEN LAKE STUDY

LESSON PLAN



WOLF RIDGESM
ENVIRONMENTAL LEARNING CENTER

FROZEN LAKE STUDY



CLASS DESCRIPTION: An Aquatic Ecology Class

Students will examine the ecosystem of Wolf Lake under the ice. Working in groups, they will explore the lake through holes drilled in the ice, from inside ice houses, and by sampling the ice itself. Studies will include ice depth and structure, lake bottom structure, plankton sampling, and catch and release ice fishing opportunities. One adult monitor from the school must attend the class to assist with activity management.

Total time: 3 hours (two hours outdoors)

Audience: 6-20 students, 4th grade through adult

Activity level: Moderate

Travel: 1 1/2 mile

Total uphill travel: 250 feet

GUIDING QUESTION

In what ways is Wolf Lake alive in winter, even if it's hidden by ice and snow?

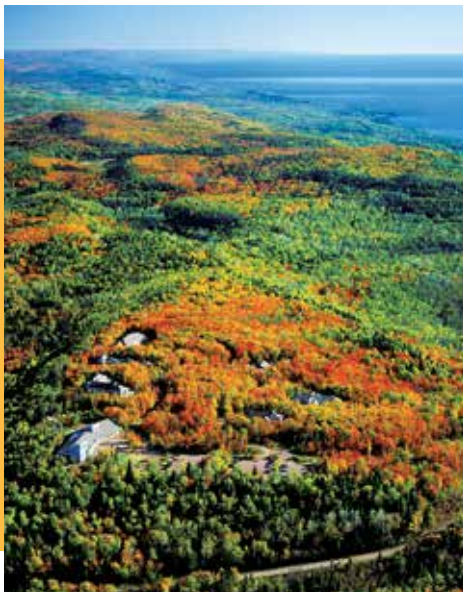
CONCEPTS

1. Frozen lakes are part of northern Minnesota culture through ice fishing, recreation, or historical ice cutting.
2. A lake that is frozen over is alive, even if hidden by ice and snow.
3. Collecting data and making observations and comparisons are processes of knowing.

OUTCOMES

Upon completion of the Frozen Lake Study class students will be able to:

- Understand and evaluate safe lake ice conditions.
- Use a sonar and interpret its readings.
- Determine the "livability" of the underwater environment in winter.
- Examine a block of ice and interpret its history.
- Understand where plankton belong in a food pyramid.



Our mission is to develop a citizenry that has the knowledge, skills, motivation and commitment to act together for a quality environment.

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Wolf Ridge Environmental Learning Center and the USDA are equal opportunity providers and employers.



Equipment

Classroom Equipment

- microprojector
- water clarity poster
- DNR Ice Safety poster
- Fish of Great Lakes poster
- fish camera

Equipment for each group of 4

- sonar
- mealworms
- plankton bottle
- student data sheet
- thermometer
- plankton net
- eggshells

At dark houses

- ice saw and tongs
- chisels and dippers
- 3 jigging poles
- 3 tip-ups
- fish decoys
- ice depth measurer

Appendices

- Glossary
- Additional Information
- References
- Sources
- Data Sheet
- Spiral Learning Sheet
- Planning Outline

Set-up (15 min.)

- Classroom/class prep description
- Safety Management

I. What do you expect? (15 min.)

II. Travel to Wolf Lake (25 min.)

III. How can we study the lake? (15 min.)

- A. Ice Safety
- B. Tool Introduction
 1. Clearing Hole
 2. Ice Depth
 3. Temperature
 4. Sonar Survey
 5. Tip-up Activity

IV. In what ways is Wolf Lake alive? (80 min.)

- A. Ice Hole Activities
- B. Dark House Activities
 1. Fish Decoys
 2. Sonar Survey
 3. Temperature
 4. Plankton Samples
- C. Ice Fishing
- D. Ice Cutting
 1. Cultural Perspective
 2. Physics of Ice

V. What is our story of the lake? (Travel back to Wolf Ridge - 25 min.)

VI. What did we notice? (20 min.)

- A. Plankton Viewing
 1. Food Pyramid
- B. Updates to Paint the Picture
- C. Continued Exploration

Clean-up (10 min.)