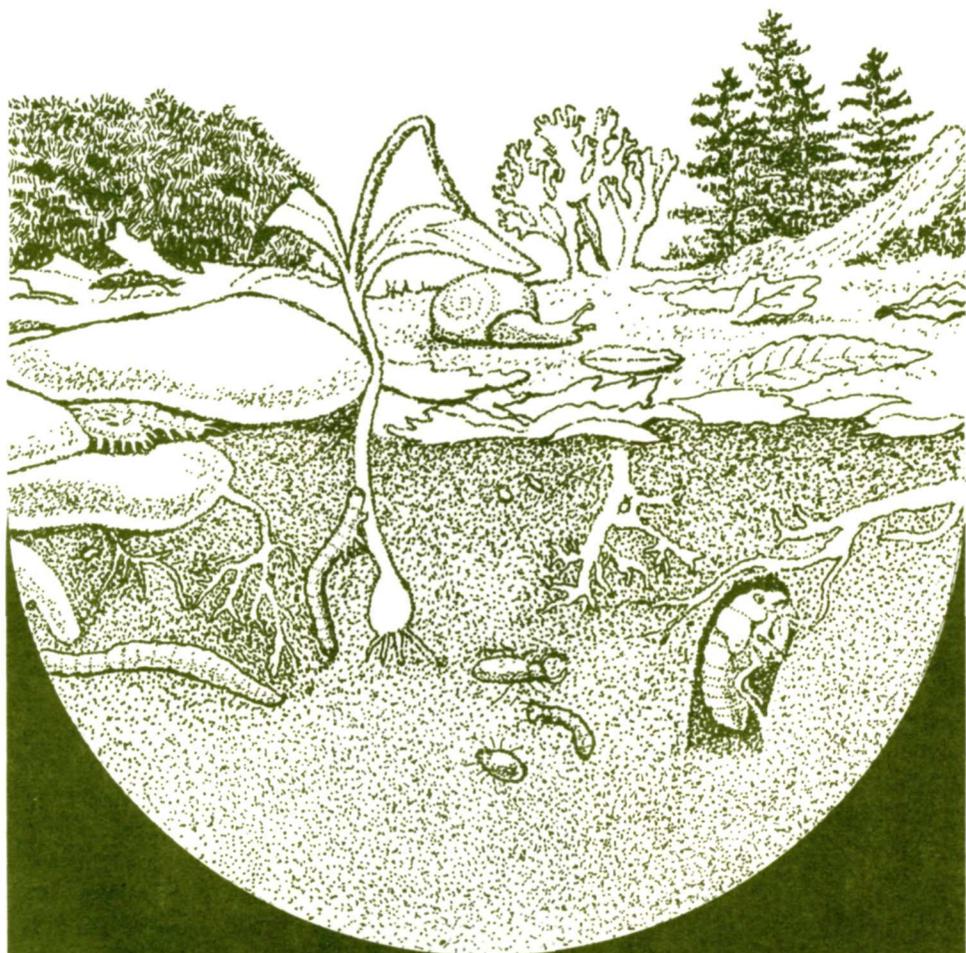
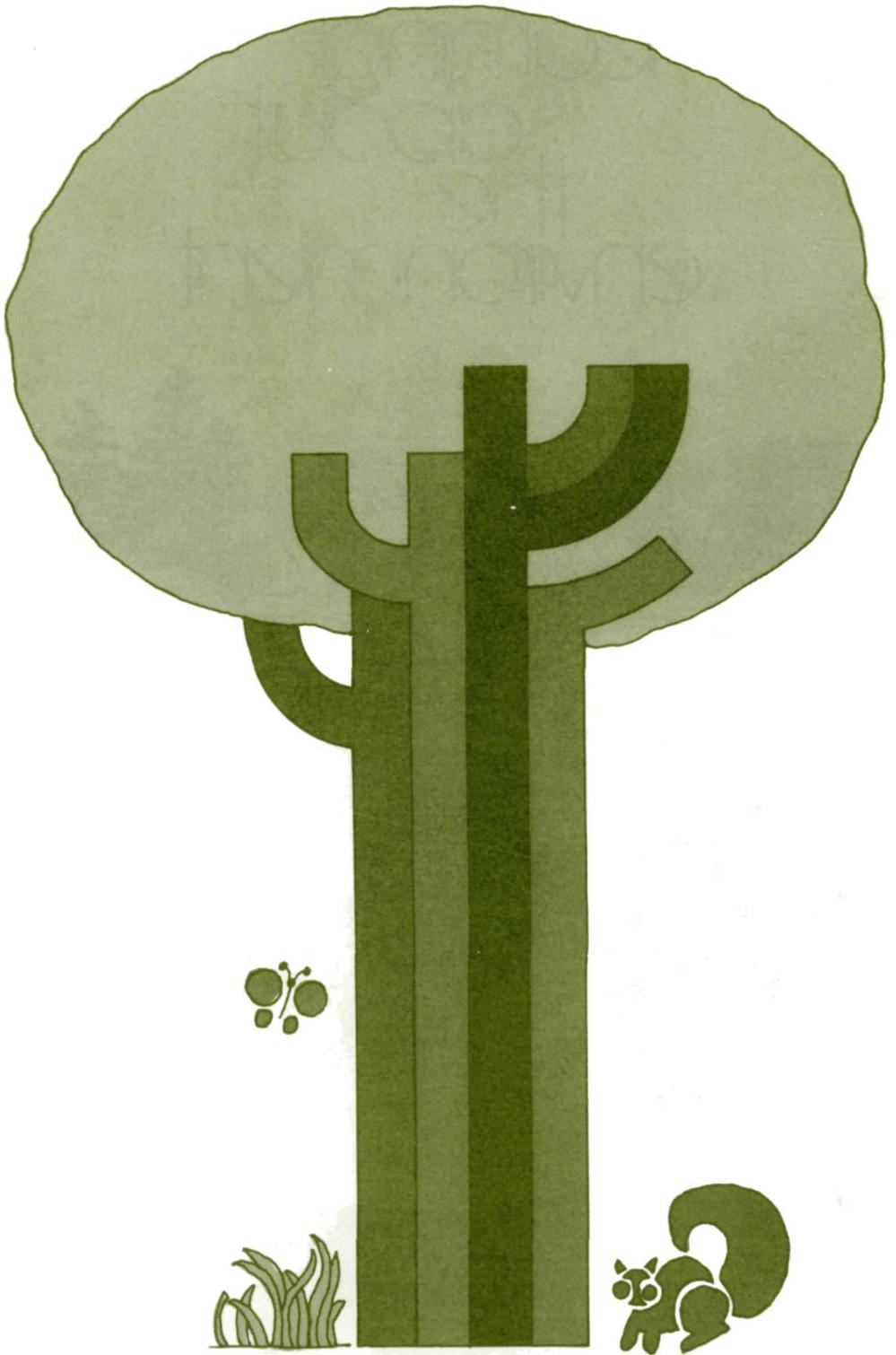


learning about the environment



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MAY 1979



ecology

Many young citizens are asking questions such as “What is ecology?” and “What is the Bureau of Land Management doing about the environment?”

This booklet seeks to answer them. It explains what is meant by ecology, the environment, conservation, and pollution. It discusses the relationship that plants and animals, including people, have with each other and with the environment. And it describes the different environments that BLM manages and how BLM works to protect and improve these environments.

Young people are also asking, “What can we do?” This booklet suggests a few things to study and a few things to do.

To begin to learn about ecology you can think about the piece of paper you are now holding. Where do you think this paper came from?

This paper, like most paper, came from the wood fibers of a tree. The tree was a member of a forest community of trees, shrubs, plants, grass, and animals. It is called a COMMUNITY because all these things live in the same area and have a relationship to each other.

A RELATIONSHIP is when something helps something else out. Bees use trees to make nests without hurting the trees. Moss and fungus also live on trees. A RELATIONSHIP can also be when something depends upon something else. Some insects eat leaves and some shady trees prevent smaller plants from getting sunlight.

These relationships in a community are all connected. For instance, leaf-covered branches of trees protect animals from enemies and smaller plants from too much sun, wind, or rain. Small plants on the ground are food for animals. Animals spread the seeds of trees and plants so that new trees and plants can grow. These connected relationships are called INTERRELATIONSHIPS or INTERACTIONS. When people use trees for homes or paper they too are part of the interrelationships in the community.

Can you think of other interactions between plants, animals, and people?

There are many more relationships which could be mentioned. The study of all these interrelationships is ECOLOGY—the science of the relationship between living things and their environment.



environment

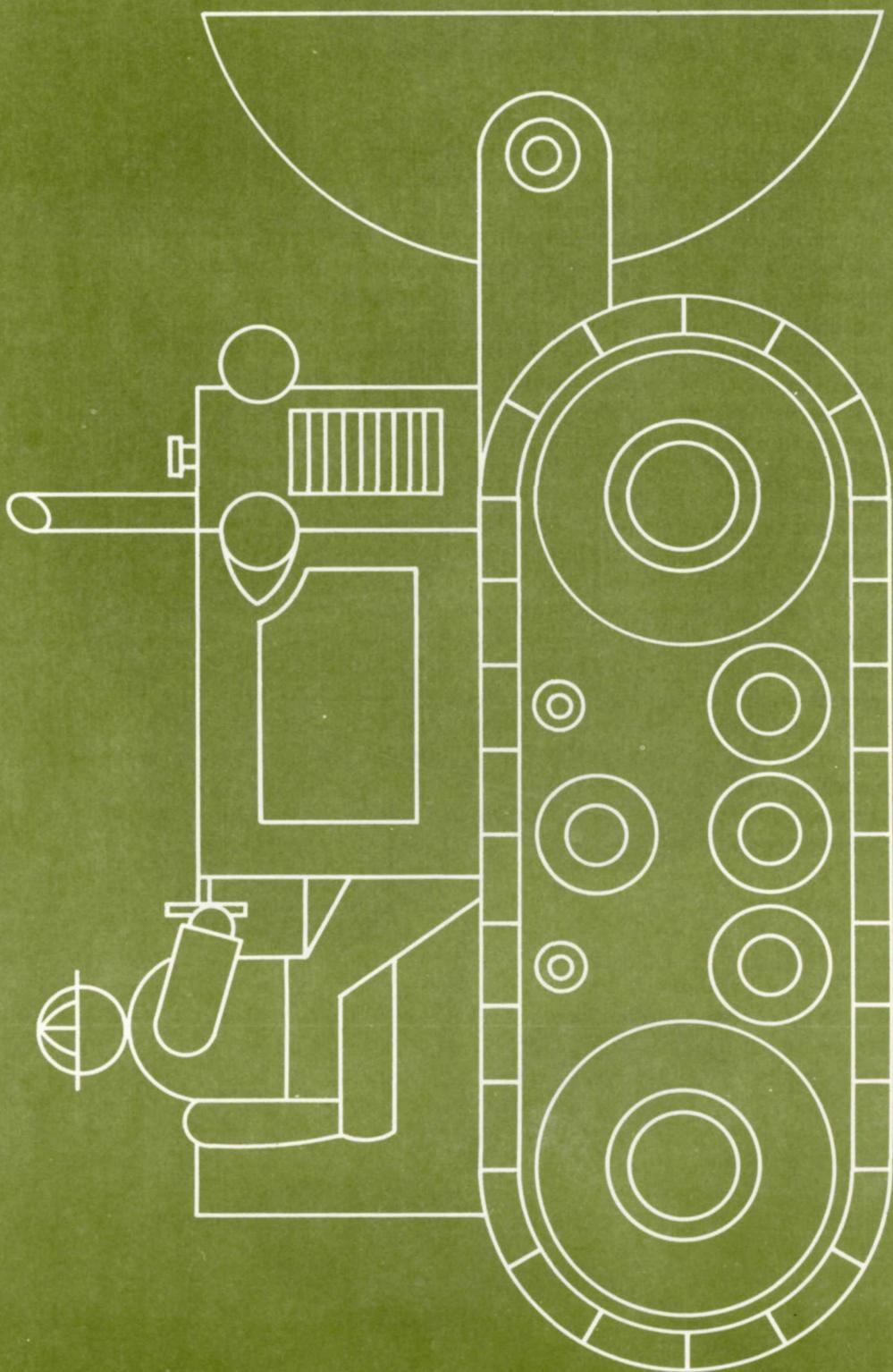
The ENVIRONMENT is everything around you. It can be living, like a forest, or non-living, like a rock mountain. An environment can be natural or it can be man-made.

There are many kinds of environments. There are cities, small towns, farms, oceans, lakes, deserts, grasslands, forests, and tundra, and even more.

Every environment contains its own combination of non-living things such as air, water, and soil, as well as living things such as birds, fish, insects, and plants. *Man-made environments, such as cities, have a combination of living things (people, birds, trees) and non-living things (cars, buildings). Every environment is affected by temperature, winds, rainfall and other factors which we call weather or climate.*

Many animals and plants are only found in one kind of environment. Man, however, can be found in almost all environments. He can even visit places where he needs special equipment to live—such as the moon!

Describe your own environments—the one you usually live in and the different ones you visit. Can you name the ECOLOGICAL interactions within these environments?



changes in the environment

No living thing can live alone. Every living thing depends upon and interacts with other living and non-living things in its environment. These interactions never stop; but they can be changed. Hurricanes, floods, and fires can change these interactions. By their actions, people can change interactions too.

Some things that people do cause no change or only a small change in an environment. For example, people can walk through the woods and just look. People can cut only a few trees from a large area and still not change most of the interrelationships.

Some things that people do cause a lot of change. The interactions of a whole environment can be changed by cutting down a forest to grow crops, build houses, or make paper.

Some things that people do almost replace the interactions of a natural community with man-made or artificial interactions. Most cities have some plants and animals. But cities are mostly buildings, sidewalks, roads, parking lots, and other man-made things.

A little change is not always good for the environment, and a lot of change is not always bad for the environment. People have the power to make choices about changing the environment.

When people make wise choices, then interrelationships in the environment stay healthy. This helps insure future supplies of things that people need. This wise use of the environment is often called CONSERVATION. Can you think of some examples of wise use of the environment?

When people make bad choices, environmental interrelationships are often harmed. People sometimes repair the harm, but if they don't, then substances which are harmful to living things may build up and result in POLLUTION. Can you think of some examples of pollution? What environmental interrelationships have been harmed?



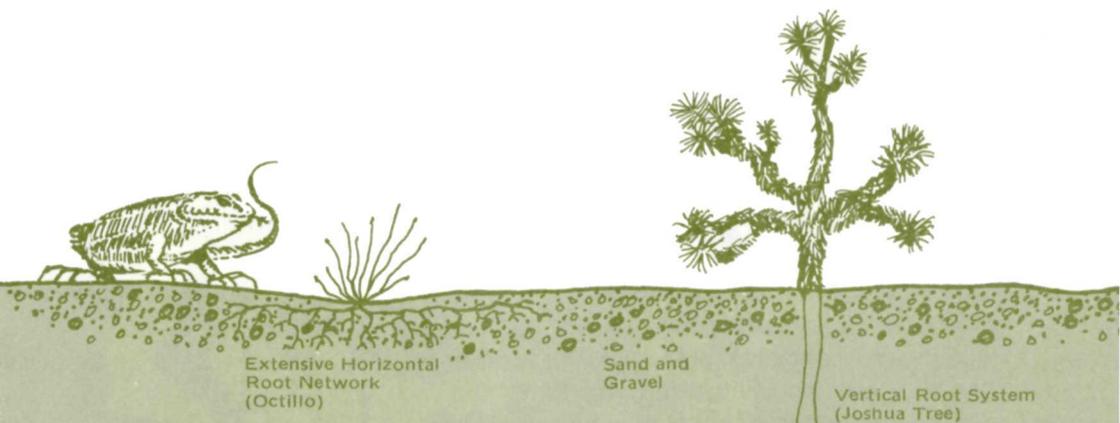
BLM and the environment

The Bureau of Land Management (BLM) works with many environments. BLM manages land in eleven Western states, including Alaska.

Some of the major kinds of environments on these lands are deserts, grasslands, forests, and tundra.

There are many possible uses for these lands. They are used for recreation, livestock grazing, timber production, and mining. They also provide homes for wildlife, water for people, and land for building towns and homes.

The job of BLM is to manage all these different environments. It must keep the natural resources in good condition so they can be used by people and all living things, now and in the future. BLM practices CONSERVATION and helps prevent POLLUTION.



deserts

A desert is land where there is very little rain or other water like streams and springs, and where there is very little food for animals. Life is hard in the desert, but many plants and animals have learned to live there. Some of the plants are sagebrush, small Joshua trees, and many kinds of cactus. Some of the animals are lizards, jack-rabbits, coyotes, wildcats, and birds. Many of the animals sleep during the hot day and look for food during the cool night. Some never drink water. They get all they need from the plants they eat.

Millions of people come to the desert for recreation. They may camp, or hike, or take pictures of desert flowers. They may just enjoy being outdoors. Some ride across the desert on vehicles like motorcycles and dune buggies. These machines are called off-road vehicles because they can leave the roads and can go through sand and climb hills.

Off-road vehicles are fun to ride, but they make ruts in the soil and they can destroy the plants they run over. Desert plants provide animals with food, water, and shelter. The plants also protect the soil and keep strong winds and rains from blowing and washing it away. If the plants are gone, the animals which depend upon these plants will also die.

BLM helps people find places where they can use off-road vehicles without doing serious damage.

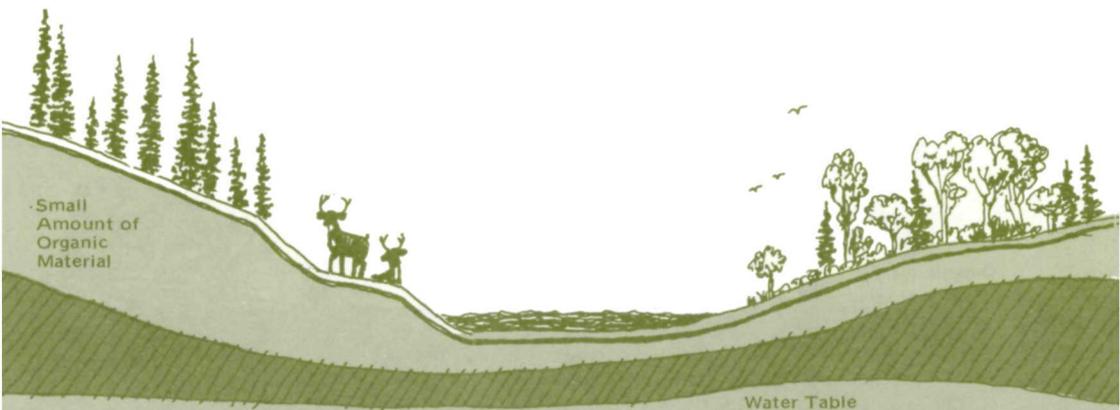


grasslands

Grasslands can be plains or hills with various mixtures of grasses, shrubs, and a few scattered trees. These lands provide food and shelter for a variety of wildlife such as deer, antelope, rabbits, coyotes, prairie dogs, sage grouse, and doves. Grasslands also provide food for cattle, sheep, and horses, including several thousand wild horses.

The amount and kinds of grass and other plants that grow each year depend a lot upon the amount of rain and snow that falls and the elevation of the land. If there is too little moisture, then there won't be as many green plants. Without the roots of the plants and grasses to hold the soil in place, the soil will blow or wash away. The loss of these plants also means the loss of food and shelter for animals.

BLM manages the grasslands for both the wildlife and the grazing livestock. To be sure there is enough grass and other plants to feed and shelter all the animals, BLM sees that the livestock are moved from one area to another, prevents erosion, and reseeds areas. If this is done the grass and plants in the used area will have a chance to grow strong again.

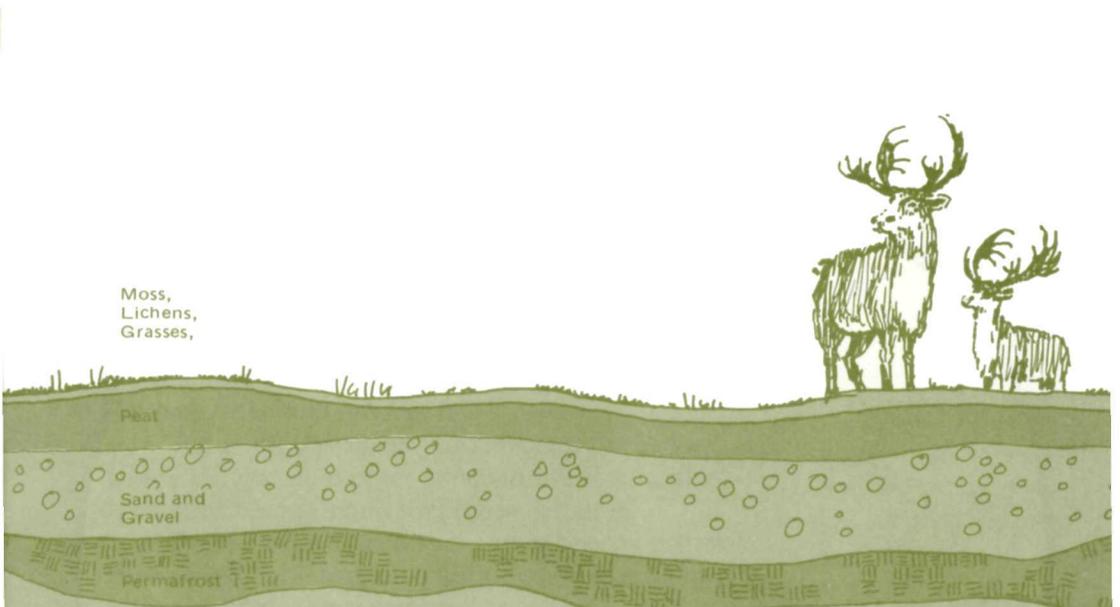


forests

Most of the forests managed by BLM are CONIFEROUS (needle-bearing or evergreen trees). These coniferous forests provide food and shelter for many animals as well as wood for houses and paper. The roots of the trees keep the soil in place. The trees are often close together and allow only shade-loving plants to grow under them.

Environmental forestry requires knowledge of plants, animals, and soils, as well as trees. The many interrelationships must be understood. If sun-loving plants and animals, like deer, are wanted, cutting of trees must leave openings in the forest. Large openings, however, will not be pleasing to the eye and may cause soil to wash away.

On some lands trees are cut for lumber. On other lands the forests are managed for recreation only. On some there is both. In each of its forest areas, BLM must protect the interactions among the plants, animals, and non-living things, protect the soil from washing away, and protect beautiful scenery from being ruined.



Moss,
Lichens,
Grasses,

Peat

Sand and
Gravel

Permafrost

tundra

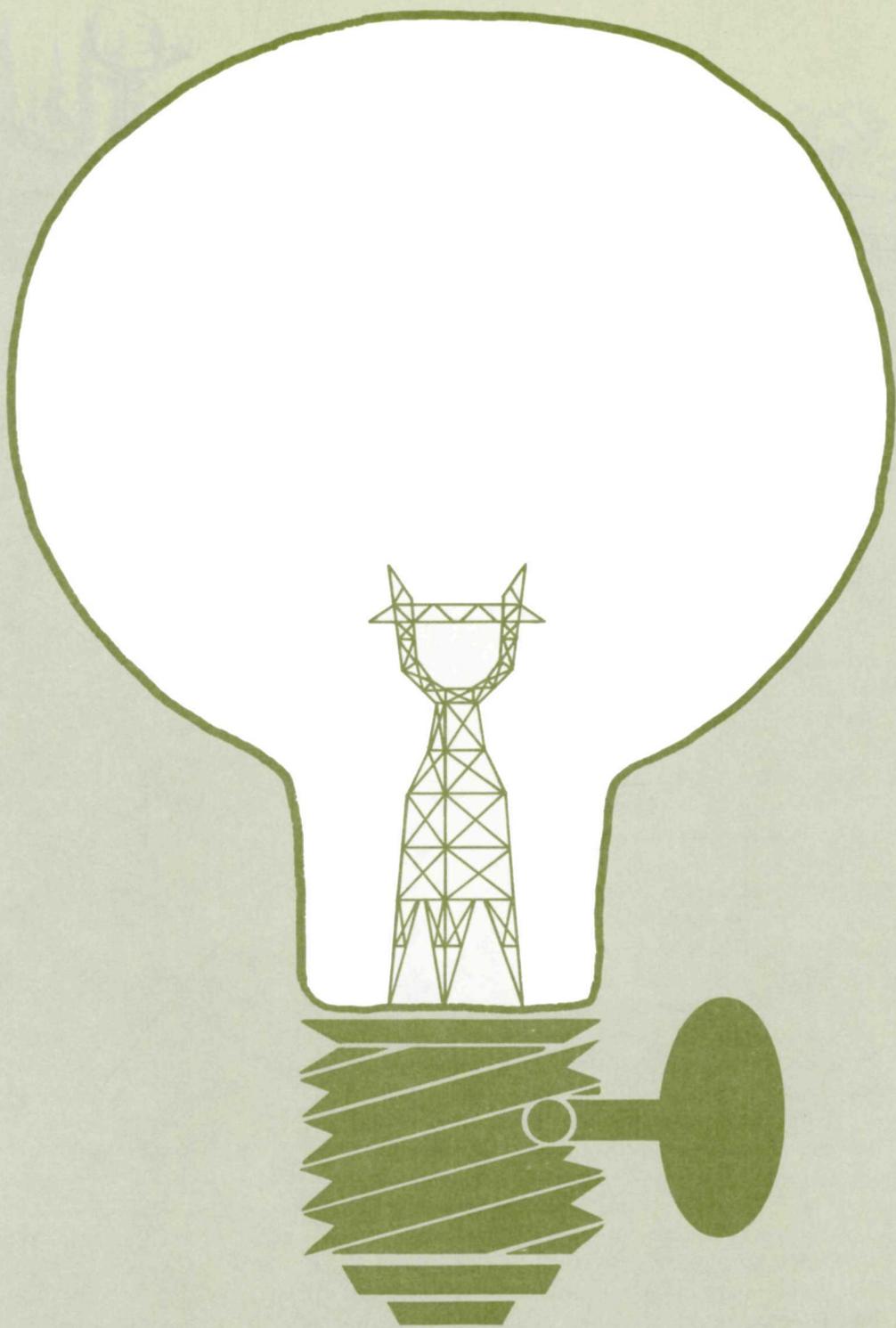
Tundra is found in the far north and at high altitudes. BLM manages tundra in Alaska. It is a flat, almost treeless area covered by mosses, lichens, grasses, and small shrubs. Tundra often appears as a gray-green plain or rolling hills with many lakes and ponds. In the fall the tundra colors change to reds and browns.

An important feature of some tundra is the permafrost layer. This is a layer of frozen water and soil which remains protected all year beneath the top layer of soil and plants.

The warm season in the north is very short so tiny plants of the tundra can only grow a little bit each year. The caribou, moose, bears, and other animals must also adjust to the seasons.

When people want to use the tundra to build roads, buildings, airports, or pipelines they must be very careful. If the tiny tundra plants are destroyed and the top layer of soil is removed, the permafrost may begin to melt and wash away. It would be a long time before the tiny new plants would grow back again and the many animals that depend on them would have to move to other areas or they could weaken and die.

Now Alaska faces a period of development. More and more people are moving to Alaska. These people will need roads, utility lines, pipelines, airports, houses, and new cities. BLM must meet the needs of the people as well as protect the fragile tundra and animals that depend upon it.



energy

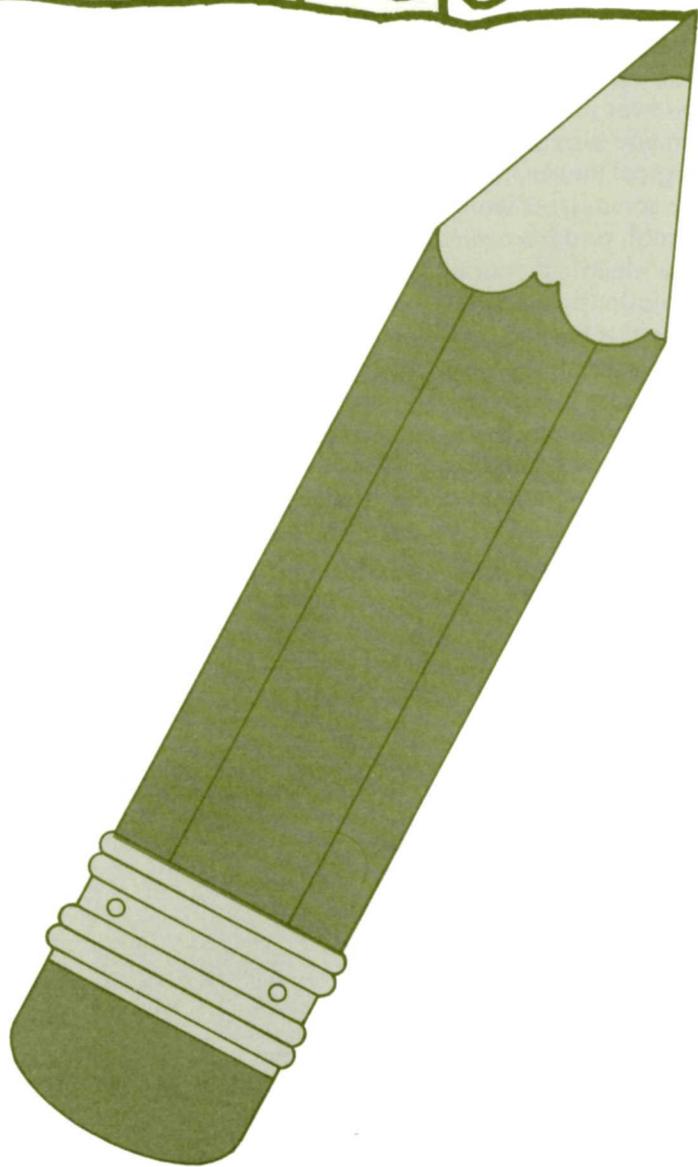
One of the major problems that BLM is facing is a problem that involves all the environments. If people continue to need more oil, gas, and coal for energy there will be more mining, more power plants, more transmission lines and more pipelines which affect BLM managed lands in deserts, grasslands, forests, and tundra.

The energy problem also involves the ocean, where oil, gas, and other minerals are found. BLM is responsible for managing these resources.

Do you ever think about where energy comes from? When you turn on a light do you ever think about ecological interactions?

Energy comes from water power, from burning oil, gas, or coal, and from nuclear power. How and where is your electricity made? Think about all the ecological relationships involved when a dam is built, when coal is burned, or when radioactive materials are present.

How is electricity carried from the power plant to your home? See if you can trace the electricity from your home back to a power plant. Can you find ways to help save electricity?



BLM needs you

The BLM must not only understand the ecological relationships in an area but also consider the needs and wishes of the people throughout the Nation. BLM needs to find out what is best for the environment as well as what is best for the people.

It is important that you let BLM know what you want. If you live near a BLM office go and tell them your ideas. Remember, however, that solutions to specific problems are easier than solutions to general problems.

It is easier to let the government know what you want if you know your government. Find out how your local, state, and Federal governments work so that you know where and how the decisions which affect you are made. When you find out how the decisions are made, then you will be better able to help solve a particular problem you may have.

You can also get to know the business, industrial, conservation and environmental groups, clubs, and organizations in your community. They will also help you learn about local environmental problems.



what to do now

Investigate an environmental problem or issue in your community. Choose one that you want to see solved because it is important to your life.

Identify the main issue

Find information—

- From newspapers.
- From government officials.
- From environmental organizations.
- From industrial officials.
- From people in the community.

Study all the sides of the problem—

- Those who agree with you.
- Those who disagree with you.
- Those who are not sure.
- Those who are experts in different fields.

Think about all the relationships involved—

- WHO and WHAT are being affected by the problem?
- WHO and WHAT will be affected by a solution?

Think of several ways to solve the problem—

- Can you do it by yourself?
- Who could help you?
- How can you get others to help you?
- Which solution would create the most change?
- Which solution would make the most people happy?
- Which solution would be the best for the environment?
- What would the different solutions cost and where would the money come from?

Try to solve the problem

Be prepared to tackle more environmental problems—

- Keep aware of the problems.
- Learn more about ecology.
- Be sensitive to relationships and interactions every day.
- Teach others what you have learned.



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

