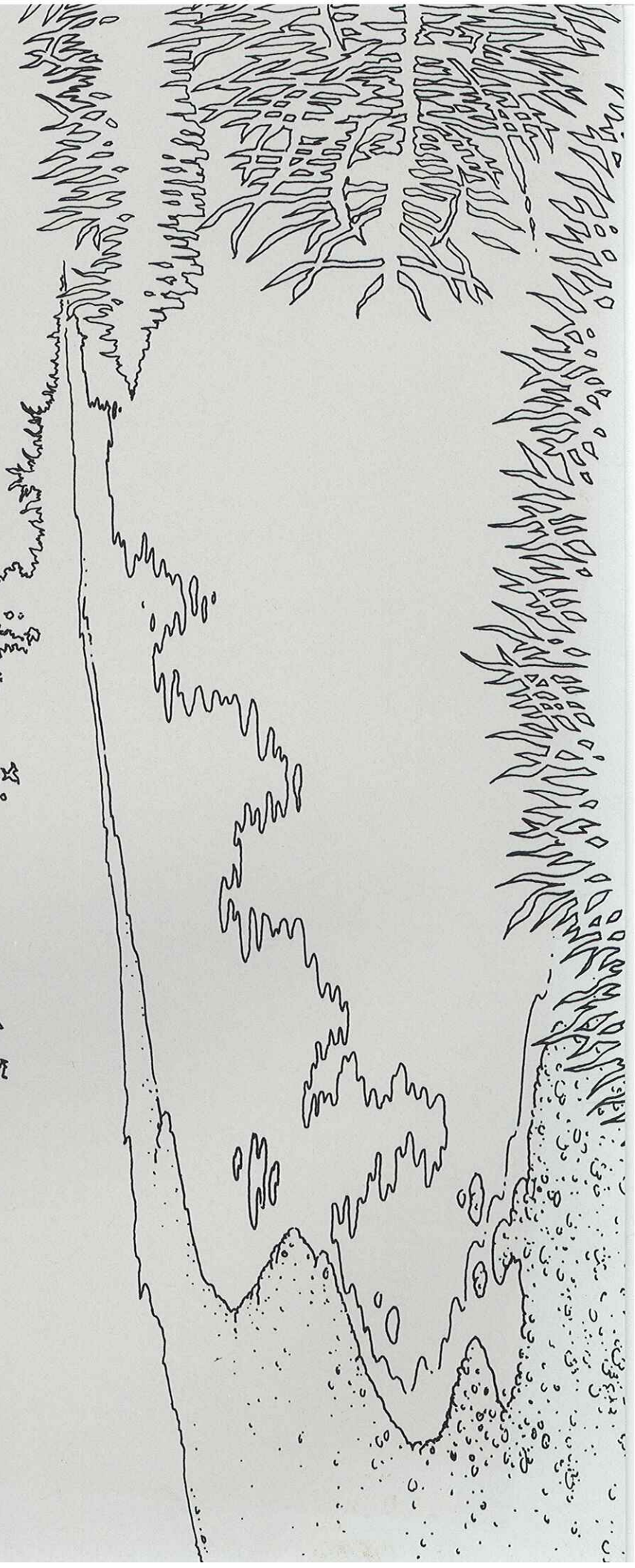
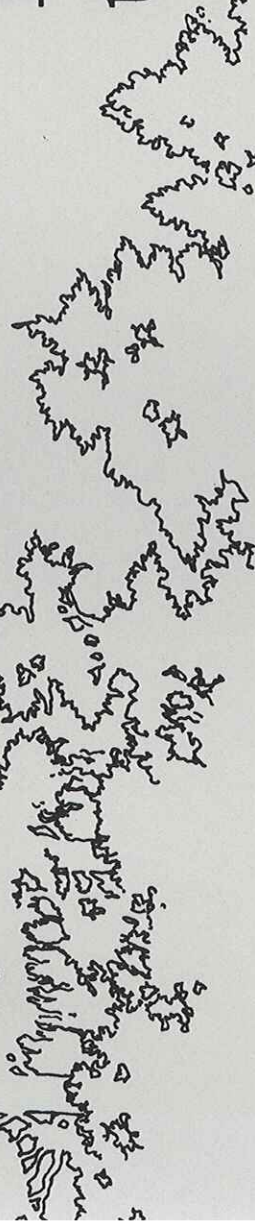
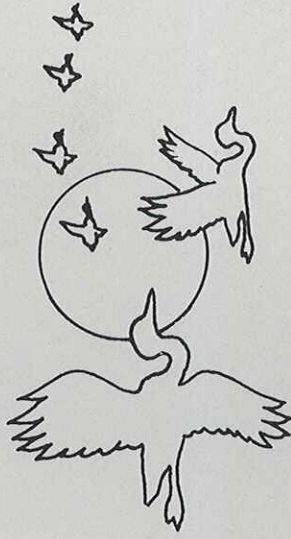
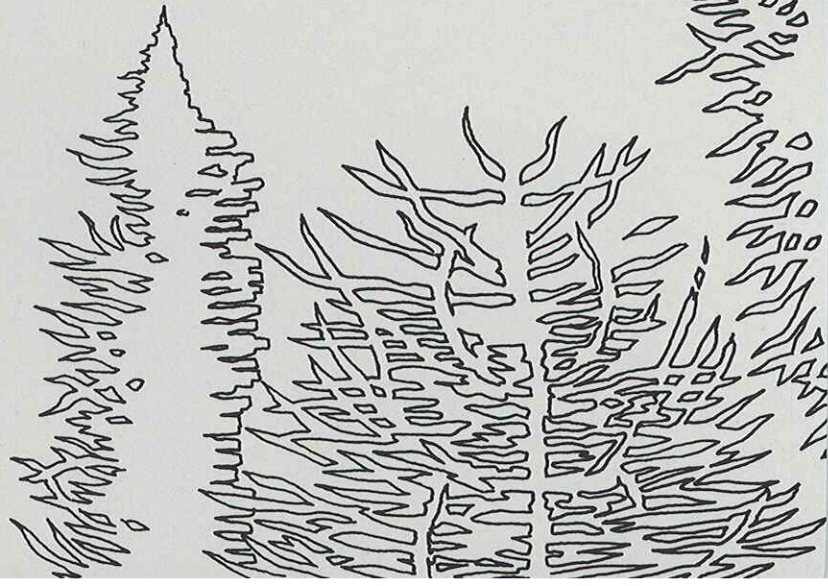
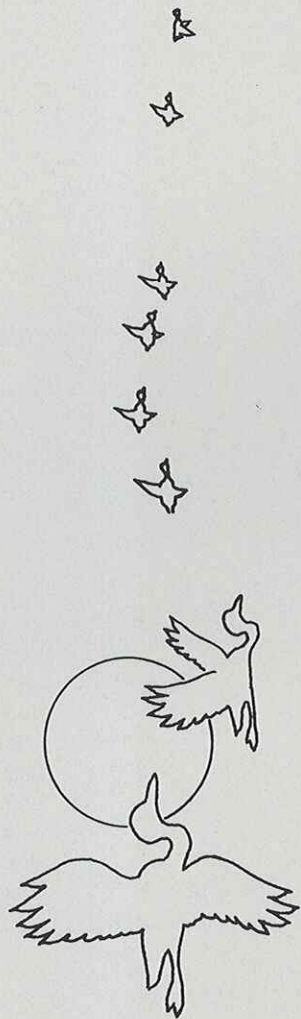


The Young Scientist's Introduction to Wetlands





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**US Army Corps
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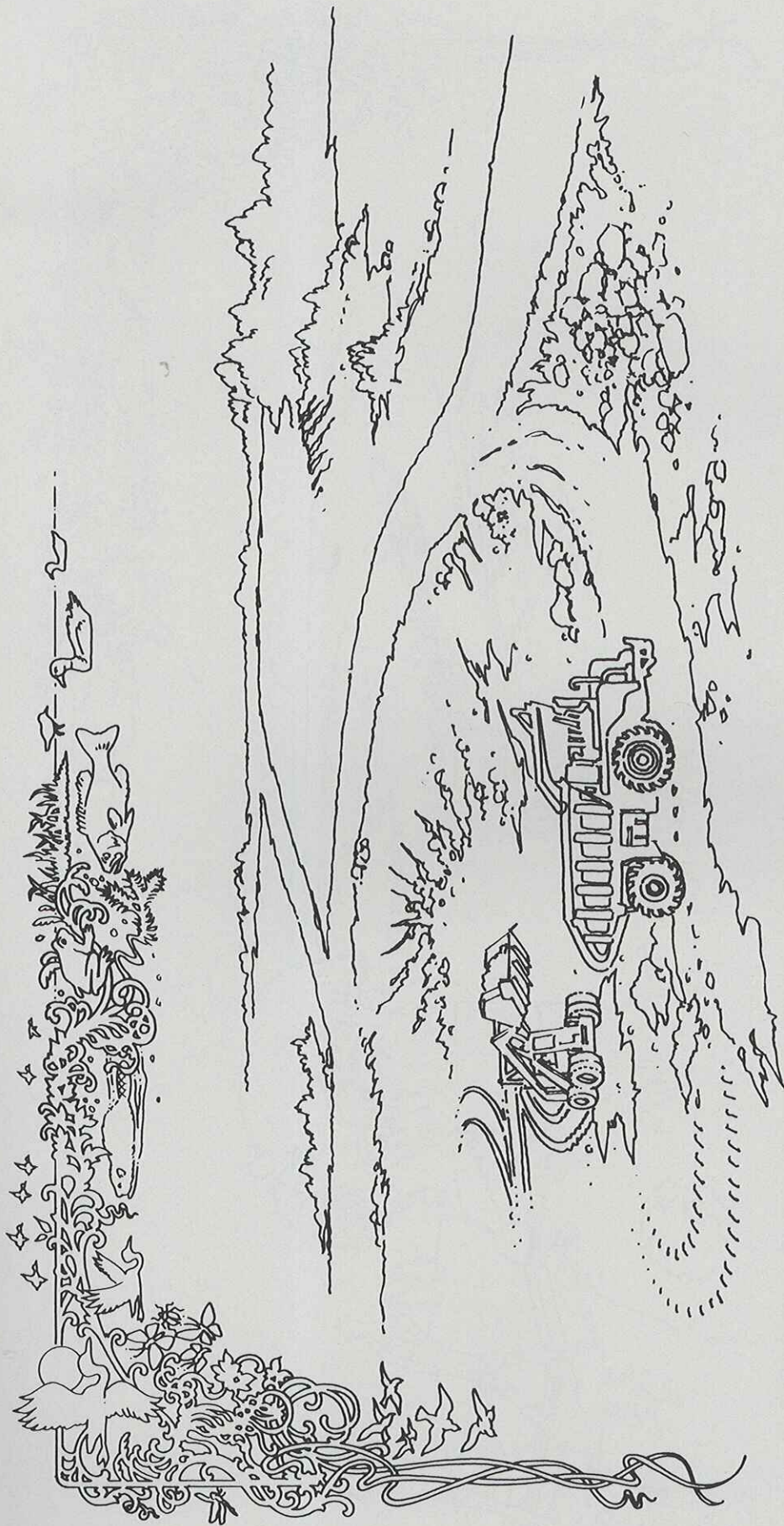
Water is one of our most important resources, perhaps even the most important one.

We need water for drinking, cooking, cleaning, growing crops, and keeping our pets and livestock in good health. We make use of water by transporting our goods on oceans, lakes, and rivers, and by raising catfish in ponds. Finally, we know how to have fun with water, by swimming in it, fishing from it, and waterskiing on it, for example.

With water being so important for people, it is easy to understand that our representatives in

Government have passed rules and regulations to make sure that our water stays in very good condition.

One of these rules is the Clean Water Act. A part of this Clean Water Act, Section 404, spells out the regulation that deals with anyone who is interested in depositing dredged or fill material into "waters of the United States, including wetlands." The regulation states that such an activity can only happen with permission. The United States Army Corps of Engineers has the responsibility to give such permits.

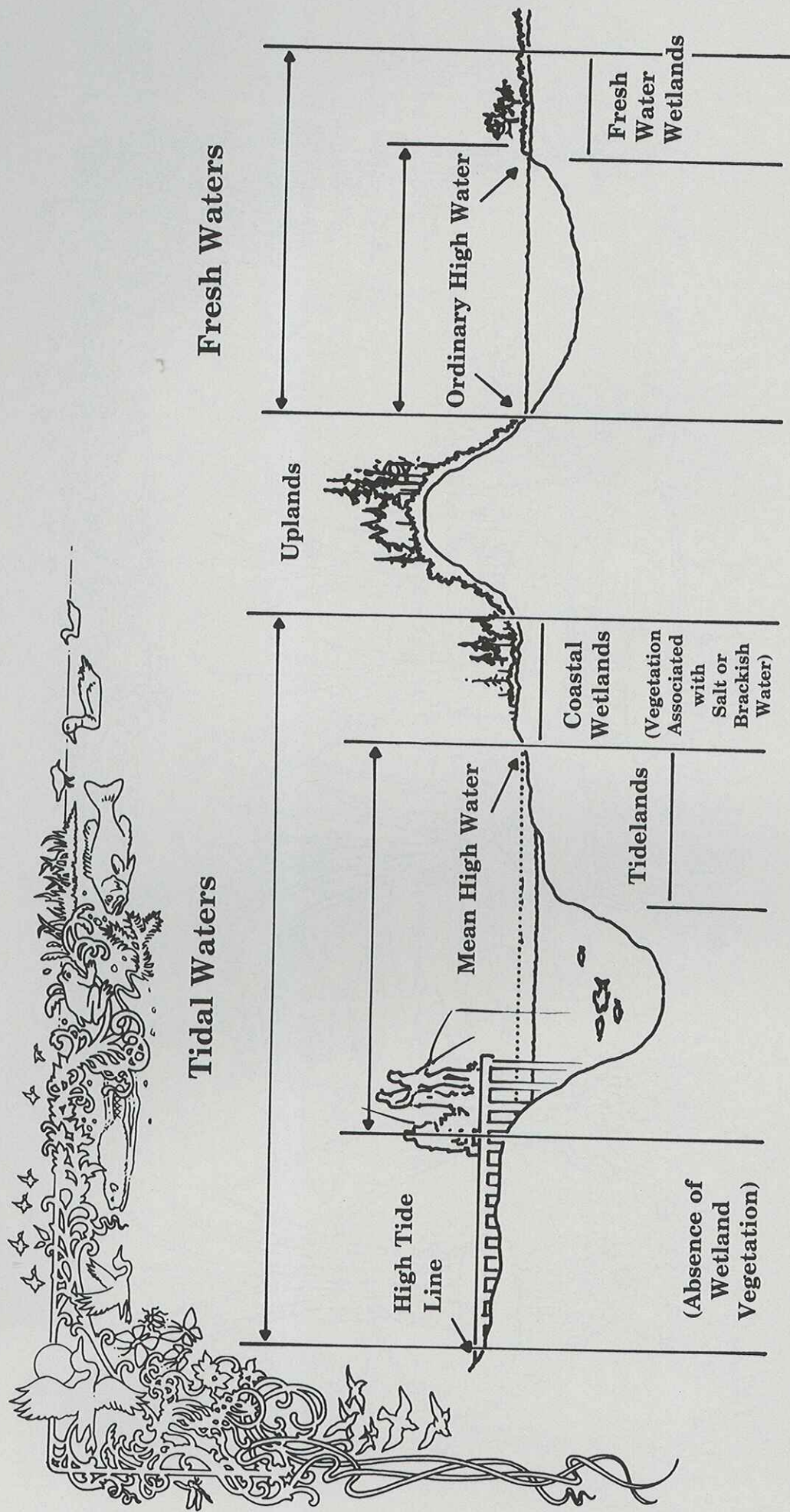


Here are some activities that need a Corps permit if they happen in a wetland area:

Filling in an area with various fill materials; constructing levees, dikes or dams, and most roads; mechanized clearing of land...

The list could go on. It is important to realize that anything being done to the landscape in an area

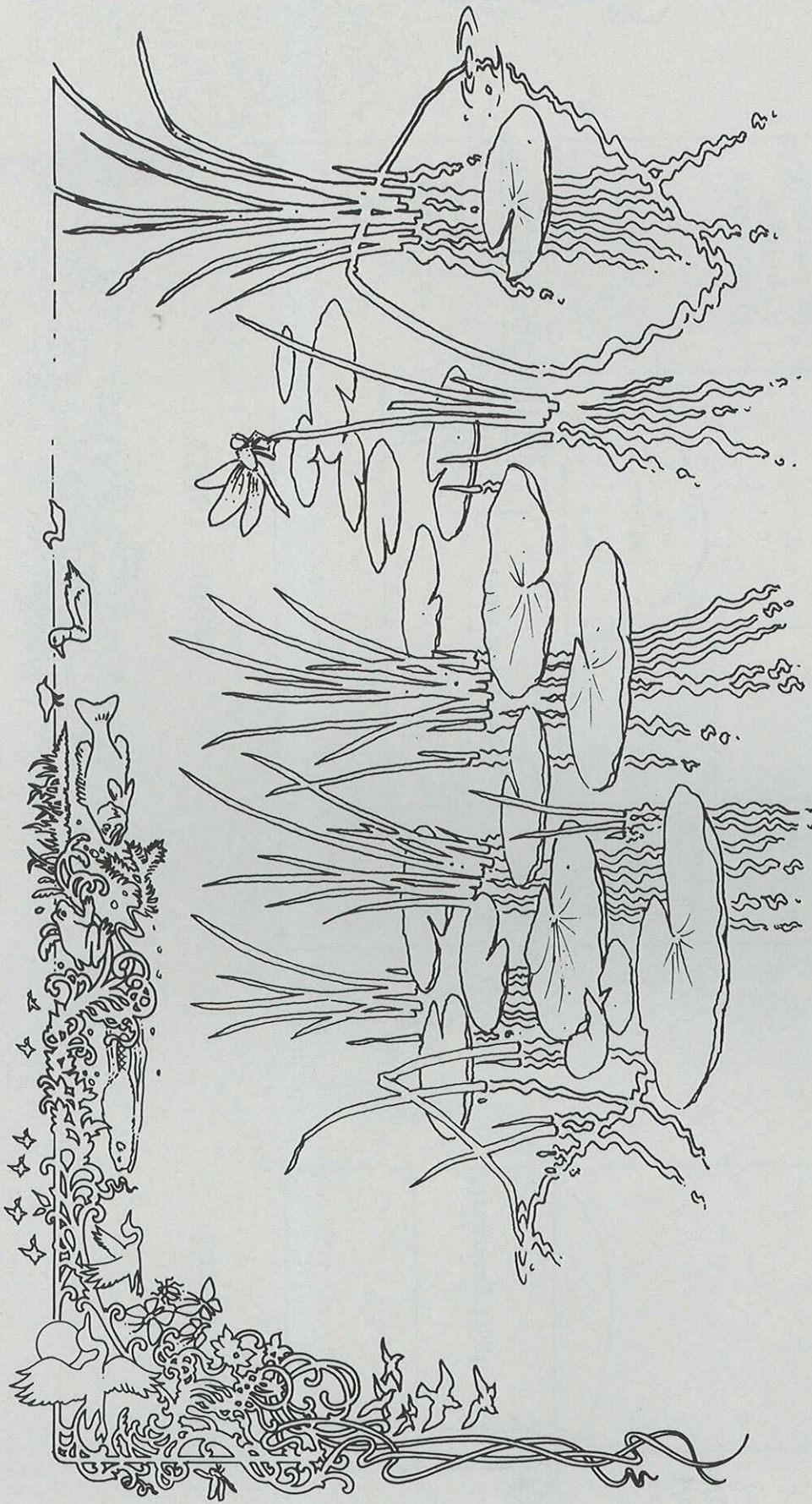
that may be a wetland should be evaluated by an expert to see if it needs to have a permit. This is necessary because wetlands are very, very important to our planet's ecosystem. This means that in the food chain for plants and animals (including humans), wetlands have an important job.



What is a wetland?

Wetlands are areas that connect deep water and land. There are many different types of wetlands. Some are full of salt water from the oceans. In some coastal areas, the wetlands may be fed by both, fresh and salt water. Most coastal wetlands are affected by tides. Inland, wetlands are fed with freshwater. The plants that survive in

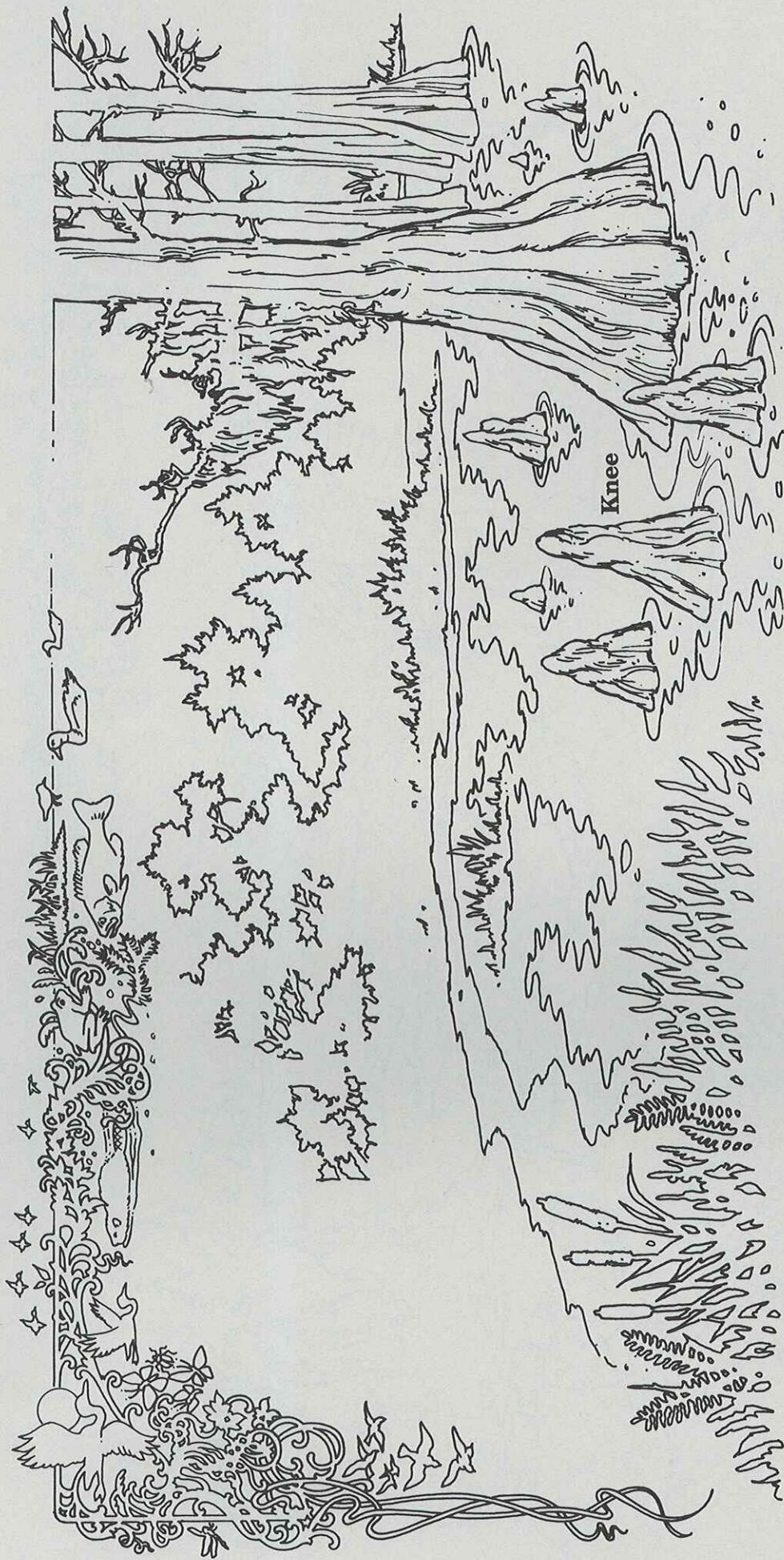
the various wetlands are suitable for the type of water that feeds the wetland. Likewise, the animals that live in a particular wetland are suited to the water and the vegetation. One other important factor for the survival of vegetation and wildlife in a wetland is how much water is available throughout the seasons of the year.



Wetland plants

Emergent plants can live partially covered by water. These kinds of plants are important to wetlands that are affected by tides. Black rush, pickleweed and spartina are some common emergent plants of salt marshes. Salt marshes can be found along the Atlantic, Pacific, and Gulf of Mexico coasts of the United States, including Alaska and Hawaii.

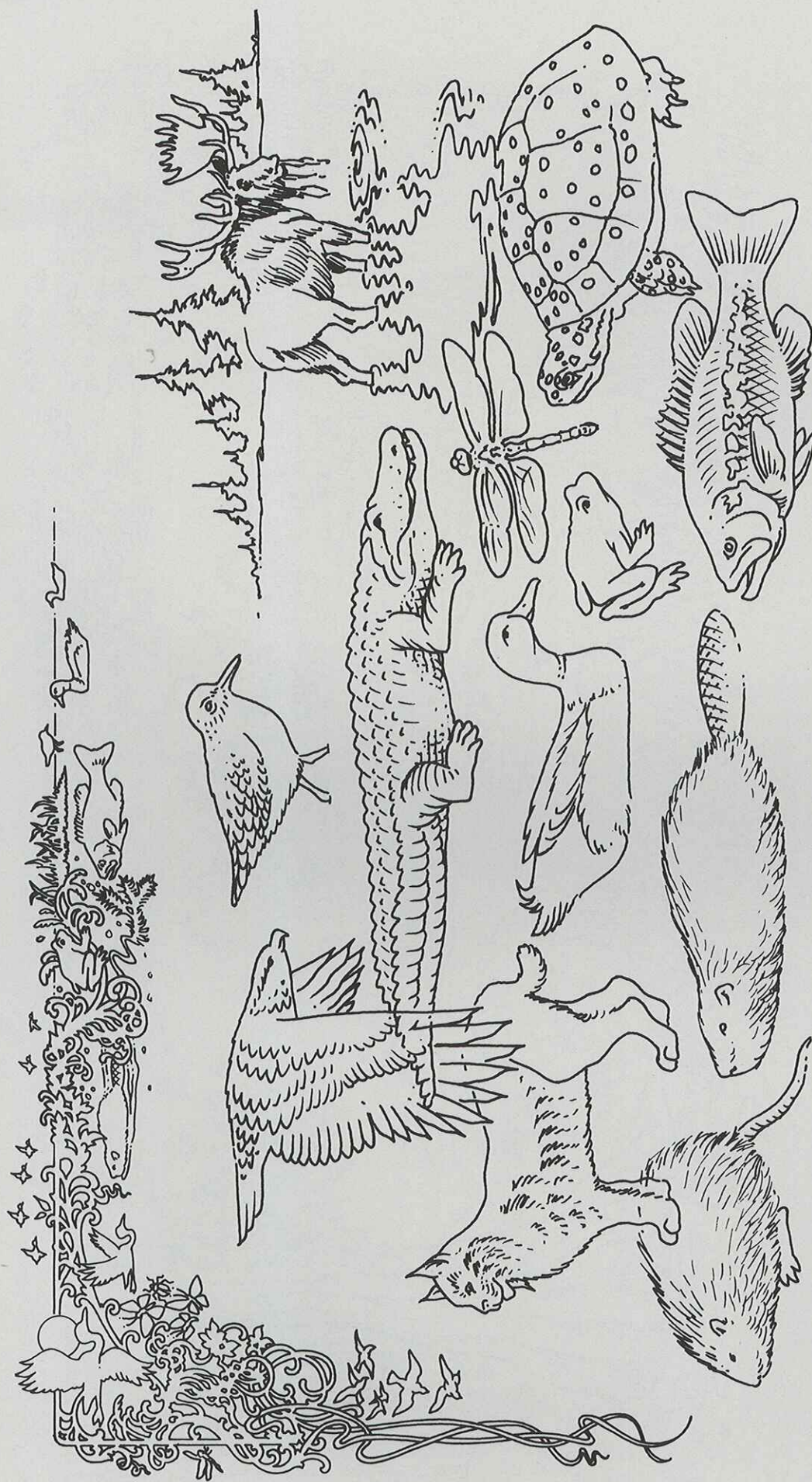
A special plant found in Florida and Puerto Rico saltwater wetlands is the mangrove tree. These trees have stilt-like roots, and grow long seed-pods that hang over the water. When they fall off later on, the pointed pods plant themselves in soft mud under the tree. If the area is flooded, the pods float away and attach to a new place to grow up.



Another unusual tree is the bald cypress, found in southern forested wetlands. A popular story claims that cypress grow "knees" to bring oxygen to the root system. But these knees are very dense wood and cannot transport oxygen. Scientists are trying to find out why cypress grow knees, but to this day they do not know the reason. Look for the knees the next time you see a cypress tree.

Willows are important wetland plants. They are widespread throughout the United States, even in the desert Southwest, where they grow next to lakes and rivers.

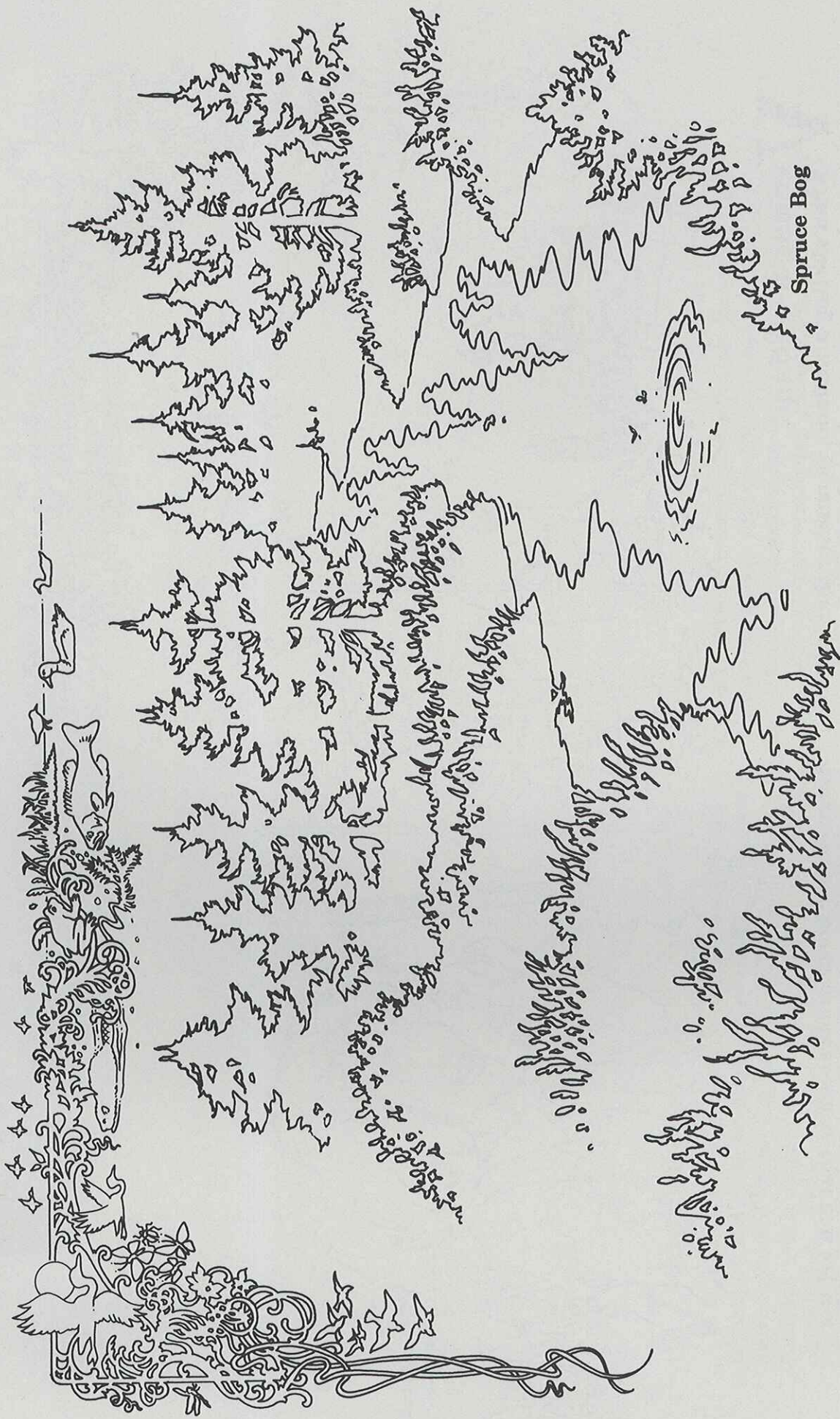
Besides trees, freshwater wetlands plants include many colored windflowers; ferns and grasses; shrubs, some bearing berries; and mushrooms. You may have seen cattail plants. They grow in freshwater wetlands.



Wetland animals

Wetlands serve as nurseries for fishes. Many birds, especially waterfowl, build nests and raise their young in wetlands. Migratory birds depend on food from the wetlands that lie on the way of their route, and in the south, many birds winter in the wetlands. Amphibians and reptiles make wetlands their homes. Salamanders, frogs and toads, turtles, alligators, and snakes live in

wetlands. Insects and spiders, butterflies and moths, along with mammals from the tiny mouse to the ferocious bobcat or the gigantic moose—all these creatures are supported by the different wetlands. Here is a list of the animals shown above: alligator, bobcat, spotted turtle, moose, frog, dragonfly, beaver, muskrat, duck, eagle, sandpiper, bass. Can you find them?



Names for different wetlands
 Marsh, swamp, floodplain forest, bog, fen, slough, wet meadow, prairie pothole—each of these names may apply to a wetland depending on where the wetland is located, what grows in it, or how it

gets its water. Of course there are many other names and descriptive terms. There are many things to learn about wetlands.

Spruce Bog

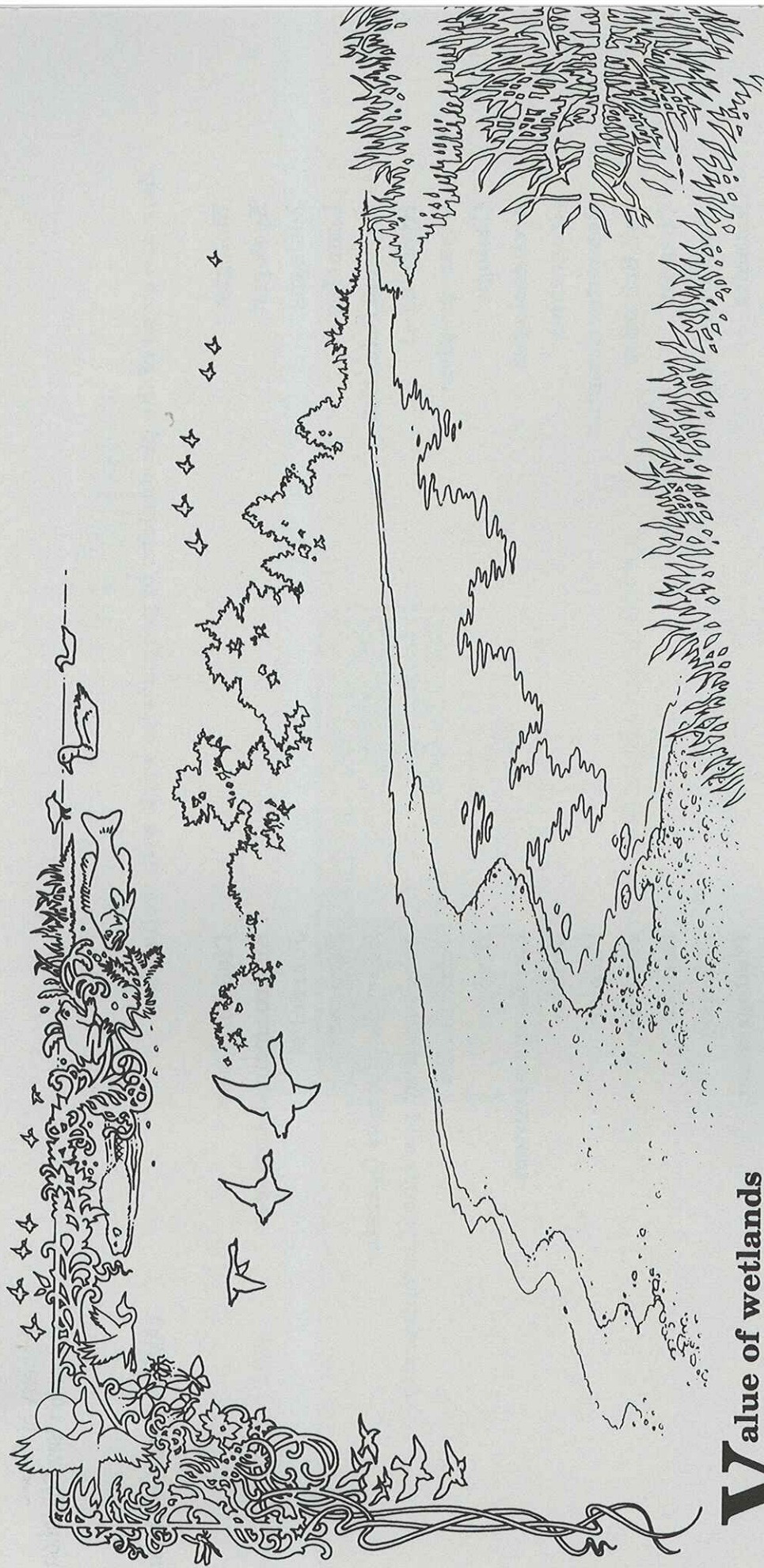


Visiting a wetland

When visiting a wetland, remember that it is a very complex ecosystem, where the existence of water, animals and plants is intertwined. It is a good idea to have a few simple rules when visiting a wetland.

Never remove any plants or animals from the wetland. Watch out for all living things there.

Wear rubber boots or other shoes that can get wet or muddy. Stay on marked trails or access walks. Bring binoculars, note pad (to draw leaf samples, draw insects, or write down a bird's colors), and mosquito repellent. Be very quiet and listen for the bird songs. Do not leave anything in the wetland.



V alue of wetlands

Although we cannot yet understand the full impact of wetlands on our quality of life, scientists and engineers of the Corps are busily working to find out much more about the functions and values of wetlands. They already know that wetlands help control floodwater and can filter pollutants.

They know that wetlands provide habitat for waterfowl and other wildlife, lend support for fisheries, and are sanctuaries for rare and endangered species. Most of you already have

experienced the aesthetic value, knowing that wetlands are places where people can enjoy recreational activities such as fishing, boating, hunting, bird watching, picnicking, just to name a few.

To make sure that we can enjoy these activities, along with a supply of clean water for our day-to-day activities, we must all take very good care of our wetlands.

Here are some of the professions of people who work with wetlands:

Biologist
Ecologist
Zoologist
Limnologist
Physical Scientist
Hydrologist
Oceanographer
Geologist
Archaeologist
Geographer
Computer Scientist
Soil Scientist
Chemist
Plant Physiologist
Botanist
Hydraulic Engineer
Structural Engineer
Agricultural Engineer

Civil Engineer
Environmental Engineer
Journalist
Gardener
Heavy Equipment Operator
Teachers from pre-school to university
Veterinarian
Dredger
Landscape Architect
Builder
Farmer
Forester
Ranger
Attorney
Photographer
Laboratory Technician
Legal Assistant
and many, many more....

A reference book for wetlands: Niering, William A. (1985), *The Audubon Society Nature Guides: Wetlands*.
Alfred A. Knopf, New York.

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