

# THE NATURAL SCENE

## COULEE DAM

National Recreation Area • Washington

*Geology.* Volcanism, glaciation, and water erosion have written the geologic story of this area. When you have learned the signs and symbols, you will be able to read this story from the landscape.

Columnar, jointed lava rock, the effects of glacier ice, scouring water, and time—these you must recognize first. All about you in the cliff faces you can see the lava rock. Notice how it has fractured into perpendicular columns, and observe the layer-cake effect of thick and thin lava flows, most of which are horizontal or nearly so. There are places where you can see patches of cream-colored rock flour, ground fine from solid rock by the weight of a moving mass of ice more than 1,000 feet thick.

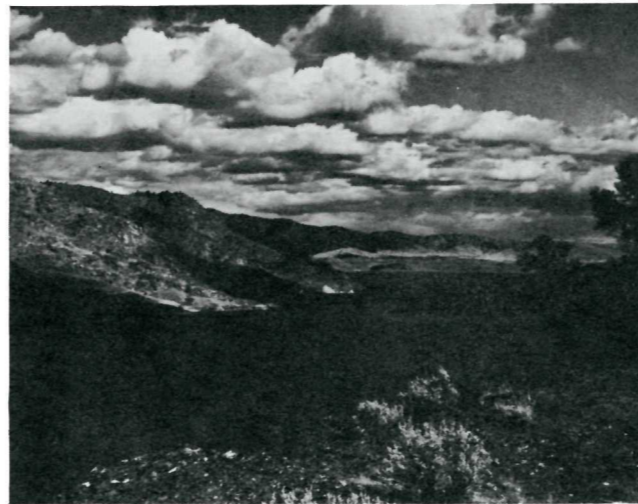
The scouring power of water is demonstrated in the river gorge and suggested by the thundering force of the Columbia at the Grand Coulee Dam spillway. Water, carrying sand and gravel as abrasives, carved the gorge. For thousands of years the river has been cutting through lava rock, lake sediments, and granite.

The lava was molten rock deep beneath the earth's crust that squeezed through cracks in the crust onto the surface. This happened many millions of years ago and, repeated periodically, built up the great sequence of lava flows that comprises the Columbia Plateau.

Some of the thin layers you see in the cliff faces are not lava, but hardened lake deposits—a mixture of silt, sand, and volcanic dust and ash. Volcanoes spewed into the air clouds of such dust and ash (hot powdered rock). Some of the ash fell in lakes and settled to the bottom; some fell on the slopes of the volcanoes that had belched it forth. Then, over eons, pelting rains washed the ash down over the lava plains.

In this immediate region, the lava flows spilled over into the old bed of the Columbia River. As the lava built up, it forced the river to flow at higher and higher levels over, and more or less along the curving edge of, the lava flows. Thus did the river make its big westward bend. This "detour" was to become the permanent bed of the river—but only after it was temporarily abandoned two or three times when great glaciers intervened.

The ice sheets moved southwesterly from Canada, and pushed up to the front of the lava plateau blocking the river. A glacial lake was created behind the ice dam, covering much of the same area that Roosevelt Lake does now.



Meanwhile, pressures within the earth's crust had folded the lava plateau and had created steps in the formerly almost flat beds of rock. The river water filled the glacial lake even higher. When it reached the height of the plateau it overflowed and began to carve a new river channel.

The tremendous power of the water thundering down the slopes of the folds in the plateau cut rapidly into the columnar jointed lava beds and the even softer compacted lake sediments. With catastrophic rapidity in geologic history, the upper cataract cut back 27 miles to the preglacial Columbia River valley. In the process this great upper cataract destroyed itself. However, the lower cataract remains today as Dry Falls.

During their active lives, however, the cataracts excavated more than 11 cubic miles of rock—more than 600 times the bulk of Grand Coulee Dam.

*Climate.* Just as geology determined the site of the dam, so climate determined the need for it. Because in the Big Bend of the Columbia River the climate is dry but the soil consists of fertile lake sediments, the Bureau of Reclamation constructed Grand Coulee Dam for irrigation purposes. But why is the climate dry today, when during its geologic yesterdays this same area was pelted with rains and blanketed with snows? It is because the Cascades now rise from 6,000 to 9,500 feet between this Columbia Plateau and the Pacific Ocean.

Ages ago, the Cascades did not exist, and the prevailing winds off the Pacific drove moisture-laden clouds across the then flat area of western Washington and dumped rain and snow on the region around Roosevelt Lake. The great Cascade Range was built over a long period by the accumulation of lava and the uplifting of the earth's crust. The higher the land mass rose, the more it cut off the "wet winds" from the Pacific, so that the rains fell on the west slopes of the mountains but left the east slopes and the expanse of the Columbia Plateau increasingly dry. Most of the water for Roosevelt Lake is provided by melt from glaciers of the Canadian mountains.

The amounts of rain and snow, of sunshine, and of wind determine the plantlife that can exist on the soils of the National Recreation Area.

Whether you drive up to Kettle Falls or make the trip by boat, you will notice the change in vegetation. The shores of the western arm of the lake are drier, and the plants somewhat desertlike, with sparse tree cover. But as you round the elbow of the lake and turn north, the trees are more numerous and of a greater variety. This is because the area receives more moisture. Not only does more fall, but what moisture there is remains longer because the north arm is protected from drying winds—on the west by the low Kettle River Range and on the east by the Huckleberry Mountains.



### PLANT AND ANIMAL LIFE

*Plants.* The Grand Coulee region has been of interest to botanists since the early 1800's. David Douglas, a Scottish naturalist, visited the region in 1826, and discovered many new species, including the now well-known ponderosa pine, which he found on the Spokane River. To date, over 400 species have been identified in the area.

Because of the difference in rainfall between the southern and northern parts of the area, and the aquatic environment offered by Roosevelt Lake, this region displays highly varied plantlife. Sagebrush typifies the arid southern region, whereas forests of pine and fir, cottonwood and aspen, grow in the northern section. Wildflowers begin to bloom in May on the lava flows and lake terraces to the south, then slowly the procession moves northward as the snow melts.

*Animals.* Marmots are numerous in the talus slopes of lava cliffs, American elk can occasionally be seen near the Canadian border, and deer are common. Along the lake shore, beaver and otter play and build their homes—but are seldom seen. Coyotes assiduously seek out the rabbits, ground squirrels, and mice upon which they feed. Porcupine are common, and at night can be seen waddling along the roads. Campers in the area are sometimes visited by the striped skunk, and almost every night bats fly erratically about, catching insects that have been attracted by the campers' lights.

Located on a major flyway, Roosevelt Lake has a great variety of waterfowl. Canada geese, mallards, and great blue herons are among the most common. On the shore, killdeers and sandpipers dip along, searching for food. Occasionally, an avocet can be seen.



Upland birds are common; Chukars have been introduced into the area; California quail are common around the campgrounds to the south; and to the north, blue grouse can be found among Douglas-fir and thick, second-growth forest.

Construction of the Grand Coulee Dam interrupted the salmon migration to the upper reaches of the Columbia River. Rainbow, Kamloops, and Dolly Varden trout have now replaced the salmon.



*Coulee Dam National Recreation Area tempts the vacationer with many outdoor activities, from water skiing, boating, and swimming to the quiet joys of camping in still coves. The area is equally famous for things to see—the immense dam, long views across blue water and rolling hills, streams rushing over boulder-filled beds, a fascinating geology, and a variety of plants and animals. And while enjoying these things, think of those who came in times past—Indians, trappers, soldiers, and settlers—for the National Recreation Area has a story to tell as well as outdoor pleasures to offer.*



### PLAY IT SAFE

The National Park Service does not have adequate staff to patrol 660 miles of lakeshore and many miles of road, or to provide lifeguards at the many swimming areas. Regulations are few, but we urge you to remember throughout your visit to play safe.

*Fires* may be built only in fireplaces.

*Wood* for campfires and cooking may be obtained from the lakeshore and from dead, downed trees only.

*Pets* are not allowed on beaches, in eating places, or in public buildings.

*Litter.* Use trash cans for all refuse at developed areas. Anywhere else along the lake or on the water keep trash in the litter bag in your car or boat until you can deposit it in a trash can.

### ADMINISTRATION

Coulee Dam National Recreation Area is administered by the National Park Service under an agreement with two other agencies of the Department of the Interior—the Bureau of Reclamation and the Bureau of Indian Affairs.

The National Park System, of which Coulee Dam is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of the people.

A superintendent, whose address is Box 37, Coulee Dam, Wash. 99116, is in immediate charge of the recreation area.

THE DEPARTMENT OF THE INTERIOR—the Nation's principal natural resources agency—bears a special obligation to assure that our expendable resources are conserved, that our renewable resources are managed to produce optimum benefits, and that all resources contribute their full measure to the progress and prosperity of the United States, now and in the future.



U.S. DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE



REVISED 1966

U.S. GOVERNMENT PRINTING OFFICE : 1966 O-217-085

For sale by the Superintendent of Documents, U.S. Government Printing Office  
Washington, D.C., 20402 - Price 15 cents

### THE INDIANS

On the north and west sides of Roosevelt Lake stretch the lands of the Colville Indian Reservation—almost 1,700 square miles of mountains and valleys, forests and meadows, lakes and streams. Enrolled here are the 11 bands of the Colville Confederated Tribes, numbering some 4,300. They govern themselves under the general supervision of the Bureau of Indian Affairs. The fees you pay to fish and hunt on the reservation are used for improving the wildlife resources of the Indian reservation.

The Colville Reservation was established in 1872. Several thousand members of 10 tribes that inhabited the northeast quarter of Washington were gathered there. After the Nez Perce defeat in 1877, they and their valiant leader, Chief Joseph, were deported to the Indian Territory (Oklahoma). Public sentiment finally forced the Government to permit their return to the Northwest; but instead of being allowed to reoccupy their home valley south of the Snake River, they were resettled in the Colville Reservation. Some of Chief Joseph's descendants live there today.

The agreement between the National Park Service and the Bureaus of Reclamation and of Indian Affairs gives the Indians of the Colville Confederated Tribes free access to Roosevelt Lake and its shores.

The Spokane Indian Reservation extends along the north shore of the Spokane River arm of Roosevelt Lake. About 1,250 Upper and Lower Spokane Indians live there on about 220 square miles. They also govern themselves; and their rights to the lake are the same as those of the Indians of the Colville Reservation. The Spokane Indian Reservation was established in 1881.

The early Indians of eastern Washington had a hunting and fishing culture and were semi-nomadic—moving from place to place within the region in search of food. They had a tribal government with chieftainships that were only nominally hereditary. Thirteen separate tribes, each with a number of autonomous bands identified by their winter camping sites, ranged the area. All the tribes were Salishan stock and spoke the same language.

### MEN FROM THE EAST

The first effective penetration of the areas of northeast Washington bordering Roosevelt Lake was by fur trappers of the Canada-based North West Company. This company, between 1807 and 1821 held a virtual monopoly of fur trapping and Indian trade in the Columbia Basin.

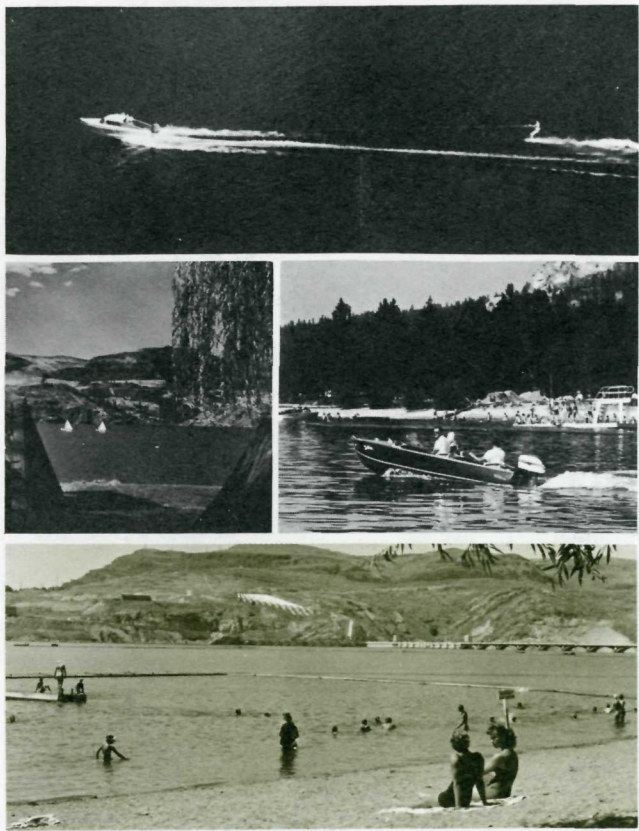
During the next 25 years, American fur traders, missionaries, and settlers continued to infiltrate the region and consolidated America's claim. By the treaty of 1846 Great Britain recognized American sovereignty of this territory.

Several thousand settlers arrived, and the gold rush of 1855-56 at Colville brought more. The settlers tried to wrest the land from the Indians, causing sporadic hostilities. The disputes were partly resolved when the Colville and Spokane Indian Reservations were established.

Continued threats of trouble with the Indians led the Federal Government to establish Fort Spokane in 1880 to keep peace between the Indians and the settlers. The fort was abandoned in 1899, but four of the old buildings still remain near the shore of the Spokane River arm of Roosevelt Lake.

In the first decade of the 20th century large numbers of homesteaders moved into the Big Bend area of the Columbia River basin. Dry-farming of cereal grains was the lure, but it was soon apparent that permanent agricultural development of the region called for an irrigation plan. It was determined that a high dam on the Columbia River at the head of the upper Grand Coulee could provide water for the irrigable lands 50 miles to the south. In the 1930's the cooperative efforts of many Federal, State, local, and private organizations were involved in the plan for a giant project. It was launched officially when Congress passed the Columbia Basin Project Act of 1943.

Construction was assigned to the Bureau of Reclamation. The Grand Coulee Dam and related projects were designed to provide for power generation, flood control, navigation, and recreation. In addition, this dam, completed in 1941, can provide irrigation water for over 1 million acres of normally semiarid lands in the Columbia Basin.



### THINGS TO DO AND SEE

**Tour Center.** Powerhouse tours and spillway programs are services of the Bureau of Reclamation, which operates Grand Coulee Dam. Tours are free and self-guiding. Usually beginning on Memorial Day, and continuing until Labor Day, the Bureau presents a program from sundown until late at night. Lights play in 120 different color combinations upon the water cascading down the face of the giant dam.

**Reception Center.** For an understanding of the entire Columbia Basin project, visit the reception center on top of the west end of the dam. Exhibits and a relief map explain the purposes of this tremendous project.

**Views of the Dam.** An excellent place to see the dam and get an impression of the immensity of Roosevelt Lake is at the high lookout point by the canal headworks above the west end of the dam. It is about 2 miles from the town of Coulee Dam and about one-half mile from Grand Coulee. At this point you see the dam from above—on one side, its great expanse of concrete, and on the other, the immensity of the blue waters of the lake.

About 2½ miles from the canal headworks is Crown Point, where you can enjoy an excellent view of the spillway. This is a fine vantage point for photography and for the best impression of the dam's tremendous bulk. To reach Crown Point, drive past the left switchyard at the canal headworks, and turn right onto the main highway.

**Franklin D. Roosevelt Lake.** A product of the Upper Coulee Dam, it has 660 miles of shoreline and miles of navigable waters from the dam to the Canadian border.

Recreation facilities have been developed on 35 selected spots along the shores of the lake within the National Recreation Area. Provided for your convenience are roads and parking areas, camp and picnic sites, swimming beaches, bathhouses, lawns, shade trees, and boat-launching ramps, docks, and other marina facilities.

Not all of the 35 areas are equally developed. Some of the more primitive can be reached only by boat.

**Swimming** is one of the principal recreation activities. There are 13 developed beaches along the lakeshore. You are urged to use caution; swim within boomed areas and avoid boats.

The developed beaches are of natural lake sand derived from glacial deposits. The beaches differ in the degree of slope into the water—at some, 5-foot depth is reached 30 feet from shore; at others not until almost 100 feet.

**Boating.** Roosevelt Lake is navigable; operators of motorboats and sailboats must comply with Federal and State laws pertaining to registration and operation. There is no restriction on size of boats on the lake. You are urged to use common sense and to exercise care in speedboating to protect yourself and others, particularly when you are near swimmers, water skiers, and smaller boats. Approach log rafts with caution; cables extend between the rafts and tugboats. The lake is excellent for sailboating, since a wind usually blows on the lake from the surrounding hills.

**Water skiing** is growing in popularity. For the protection and safety of all, make sure that TWO PEOPLE ARE IN THE BOAT pulling the skier—one to operate the boat and one to watch the skier.

**Hunting** is permitted within the recreation area, on the Colville and Spokane Indian Reservations, and in the surrounding country. Among the game birds are pheasant, chukar, and mourning dove; also, Canada geese, brant, mallards, canvasbacks, redheads, and wood ducks on either Roosevelt Lake or Banks Lake, or on the ponds and streams of the Indian reservations.

**Fishing** in Roosevelt Lake is improving each year. Kamloops, Dolly Varden, and rainbow trout can be caught. The first named is a hatchery breed of trout which is "at home" in the cold, deep waters of the lake. The best fishing spots are at the mouths of the many creeks entering the lake. Fishing is also good along the creeks and in Banks Lake—especially for bass, pike, sunfish, and rainbows.

Washington State hunting and fishing laws apply within the recreation area and State licenses are required. Hunting and fishing on the Colville and Spokane Indian Reservations require additional licenses available at most sporting goods stores in nearby towns.

**Illustrated programs** are given at various campgrounds in summer. See posted schedules for places, times, and topics.

**Scenic Drives.** A drive from Grand Coulee Dam to Kettle Falls has many scenic views of the lake and the countryside. From the dam you drive southeast about 22 miles, then east and north for 28 miles to Fort Spokane; from there it is about 60 miles along the east side of the lake to Kettle Falls.

Stores at Hunters sell refreshments and light foods. Fifteen miles farther is the Gifford Ferry to Inchelium. You can break your trip there, cross the lake, and go north on the west side.

Another scenic drive is along the San Poil River from Keller Ferry to Republic. The winding, rushing river gurgles over stones and between brushy banks. You will find many spots for fishing, picnicking, or just sitting quietly with a pair of binoculars to take in the birdlife.

**Banks Lake** is the great storage reservoir hemmed in east and west by the long rock walls of the Upper Grand Coulee, and on the north and south by the manmade earth walls. ("Coulee" is a French-Canadian word for "canyon.") The Upper Grand Coulee extends from Grand Coulee Dam to Dry Falls. The Lower Grand Coulee extends from Dry Falls to the town of Soap Lake.

Don't miss the scenic drive down the east shore of Banks Lake. It is 30 miles from Coulee Dam to the south dam, but some of the lake's most beautiful scenery is only 10 miles away. As you drive along this stretch of road you will see acres of wild grass, the blue waters of the lake, and monumental Steamboat Rock. A little farther on, the road edges the sparkling lake at the bottom of 800-foot cliffs of the east escarpment.

If you have time to go to the south dam at Coulee City, we urge you to drive the extra 4 miles to the overlook at Dry Falls State Park and see the 400-foot sheer rock wall over which the glacial meltwater plunged. A short recorded talk, telling the geological story of Dry Falls, is given periodically in summer.

### WHEN TO VISIT THE AREA

The recreation area has a season of roughly 5 to 6 months, from May into November. Roosevelt Lake and some of the facilities are accessible from December to April.

Roosevelt Lake, like all large bodies of water, tends to prevent great differences between day and night temperatures of adjacent areas; in spring, summer, and autumn the daily variation is seldom more than 25 degrees. But there is a noticeable difference in the weather between the west and north arms of the lake.

The west arm is usually quite warm and sunny from late June through Labor Day. Temperatures during the day may hit 100°. In winter and spring there are occasional foggy and cloudy days. The north arm, protected on east and west by mountain ranges, tends to have clear, moderate days, and somewhat cooler nights from May to November.

The lake reaches maximum level in late June or early July, and remains full, with water pouring over the spillway, throughout the season. The lake-water temperatures are highest during July and August; the shallow water at the beaches is always warmer than deep water.

From May through October, the sun shines 83 percent of the daylight hours. Temperatures from June through August range from 75° to 90° during the day, and between 50° and 60° at night. In May, September, and October it is somewhat colder.

Roosevelt Lake nearly always has a good sailing breeze. There are plenty of quiet coves along the shores and sheltered spots on the banks for sunbathers.

### NEARBY ACCOMMODATIONS AND SERVICES

If you approach Roosevelt Lake from the south, west, or east, you will find sleeping accommodations, restaurants, grocery and other stores, and gas stations in the Grand Coulee Dam area and at nearby towns. If you drive from Spokane or Canada and plan to visit the north arm, there are similar services at Colville, Kettle Falls, and Northport. There are no nearby accommodations on the north and west sides of Roosevelt Lake—the territory of the Colville Indian Reservation.

Okanogan Valley Bus Lines provides daily service from Spokane to Coulee Dam, and has buses for charter. Greyhound buses run from Spokane to Kettle Falls and return twice daily.

### FACILITIES CHART

(Revised 5-68)

AREA	FACILITY						
	CAMPING	PICNICKING	BOAT RAMP	BOAT FUEL	BOAT DOCK	BOAT ONLY	WATER
• 2 SPRING CANYON	X	X	X	X	X	X	X
4 PLUM POINT	X	X	X	X	X	X	X
5 SANPOIL BAY	X	X	X	X	X	X	X
6 KELLER FERRY	X	X	X	X	X	X	X
7 JONES BAY	X	X	X	X	X	X	X
9 HAWK CREEK	X	X	X	X	X	X	X
• 10 FT. SPOKANE	X	X	X	X	X	X	X
11 DETILLION	X	X	X	X	X	X	X
• 12 PORCUPINE BAY	X	X	X	X	X	X	X
13 PITNEY POINT	X	X	X	X	X	X	X
14 LITTLE FALLS	X	X	X	X	X	X	X
a. 15 THREEMILE	X	X	X	X	X	X	X
18 HUNTERS PARK	X	X	X	X	X	X	X
20 GIFFORD	X	X	X	X	X	X	X
21 CLOVER LEAF	X	X	X	X	X	X	X
22 DAISY	X	X	X	X	X	X	X
b. 23 BARNABY ISLAND	X	X	X	X	X	X	X
24 BRADBURY	X	X	X	X	X	X	X
25 HAAG COVE	X	X	X	X	X	X	X
27 SHERMAN CREEK	X	X	X	X	X	X	X
• 28 KETTLE FALLS	X	X	X	X	X	X	X
30 MARCUS ISLAND	X	X	X	X	X	X	X
31 KAMLOOPS ISLAND	X	X	X	X	X	X	X
c. 32 BOYDS	X	X	X	X	X	X	X
• 33 EVANS	X	X	X	X	X	X	X
34 SNAG COVE	X	X	X	X	X	X	X
35 NORTH GORGE	X	X	X	X	X	X	X

ALL AREAS ARE ACCESSIBLE BY BOAT

\* Fee charged to enter campground unless you hold a Federal Recreation Area Entrance Permit.

- a. Located 3 miles south of Sixmile Creek.
- b. Located ½-mile north of Barnaby Creek.
- c. Located ½-mile east of Boyds.

\* Fee charged to enter campground unless you hold a Federal Recreation Area Entrance Permit.

