A SURVEY OF THE RECREATIONAL RESOURCES OF THE COLORADO RIVER BASIN

UNITED STATES DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, *Secretary*

NATIONAL PARK SERVICE
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ILLUSTRATIONS

Credit for illustrations goes to the following individuals, as indicated: *Grant,* Figures 1, 2, 4, 7, 11, 13, 20, 21, 22, 23, 26, 27, 33, 50, 59, 64, 66, 73, 76, 78, 79, 85, 87, 88, 89, 90, 91, 92, 93, 94, 96, 102, 103, 108, 109, 114, and 115; *Belknap,* 8, 17, 67, and 68; *Dodge,* 5 and 14; *Humberger,* 110 and 116; *Olcott,* 57 and 71; *Haury,* 34; *Kolb,* 24; *Kearney,* 65; *Standley,* 113; *Sumner,* 56; and *Young,* 55.

MAPS

INTRODUCTION

Section 2 (d) of the Boulder Canyon Project Adjustment Act of July 19, 1940, provides authority for financing conservation investigations and studies in connection with the work of the Bureau of Reclamation within the Colorado River Basin.

The Bureau of Reclamation, in November 1940, under the authority of the Adjustment Act, requested the National Park Service to identify the scenic, scientific and recreational resources of the Colorado Basin, as a part of a comprehensive plan for the utilization of the water resources of the region.

Since its establishment in 1917, the National Park Service has been concerned with these resources. At the present time it administers several areas directly affected by the developments planned by the Bureau of Reclamation.

On January 27, 1941, the Secretary of the Interior approved the inclusion of a basin-wide recreational survey as a part of the studies and investigations to be continued and extended under his direction for the formulation of a comprehensive plan of utilization of the waters of the entire Colorado River System. The Secretary also appointed Frederick Law Olmsted, distinguished landscape architect, with wide experience in regional and site planning, as consultant for the survey.

The principal purpose of the survey was to obtain the facts essential to the establishment of Departmental policies regarding classification, development and administration of possible water-control projects and areas within the basin, giving due regard to recreational possibilities and the presentation of scenery and other natural features.

The survey also embraced the study of recreational resources of large portions of the basin which are not administered by the Department. Information thus gained will be helpful to the Bureau of Reclamation in avoiding needless sacrifices of existing and potential recreational values, and in utilizing opportunities to obtain recreational benefits as an incident to the development of water resources.

Another purpose of the survey was to identify and evaluate such areas as might be of outstanding national importance, so that measures may be taken to maintain them in a high state of preservation for public enjoyment. This study was not exhaustive. An attempt to enumerate and evaluate all types of recreational resources, both existing and potential, throughout the entire basin, would have been a huge undertaking beyond the scope of the survey.

The National Park Service first focused its attention on areas in which the most pressing problems occur, namely, Dinosaur National Monument, the Grand Canyon area, and the Canyon Lands of southeastern Utah. The work was done by the Branch of Lands (now the Land and Recreational Planning Division) of the Service, headed by Conrad L. Wirth, with Mr. Olmsted as consultant. Field headquarters of the survey were established in the National Park Service Region Three Office in Santa Fe, N. Mex. with one member of the field staff assigned to the Region Two Office in Omaha, Nebr., to cover problems falling within that region. Frequent consultation with Bureau of Reclamation officials was the rule. Valuable assistance was given by the Grazing Service (now included in the Bureau of Land Management), the Fish and Wildlife Service, the Bureau of Indian Affairs, and the Geological Survey, as well as many other Federal and State agencies and private individuals. Appreciation is expressed to Dr. Herbert E. Gregory and Edwin D. McKee for their collaboration in the preparation of the chapter on the geology of the

basin, and to Dr. Emil W. Haury, Dr. Gordon C. Baldwin, and Dr. Jesse L. Nusbaum for their collaboration in the preparation of the chapter, Prehistory of Man. Appreciation is also expressed to the many individuals listed on page 223, who generously contributed their time and special knowledge in checking various portions of the life zone map and the biological information presented in the text.

Although the report is dated June 1946, a few minor revisions in the original draft have been made subsequently in order to include later information, such as revised height of proposed dams and the redesignation of Boulder Dam as Hoover Dam and Boulder Dam Recreational Area as Lake Mead Recreational Area.

NEWTON B. DRURY, *Director,*
National Park Service.

SUMMARY

The Colorado River Basin is one of the outstanding recreational regions in the United States because of its great variety of natural scenery, climatic conditions, areas and objects of scientific interest, abundant evidence of prehistoric occupation, and present Indian, Spanish, and Anglo cultures. Here one may enjoy a large amount of sunshine and find perfect climates and settings for various types of outdoor recreation the year around. The basin embraces latitudes from Mexico almost to Yellowstone National Park and altitudes ranging from 248 feet below sea level to 14,431 feet above sea level. All of the life zones of the United States are present except the Tropical Life Zone of southern Florida.

Geologic features.—An unusual feature of the basin is the peculiar alinement and local setting of the drainage channels, glaringly out of accord with the topography, exemplified by the mile-deep Grand Canyon through the Kaibab Plateau and Split Mountain Canyon. The central part of the Colorado Basin is unique in geologic history. topographic form, and scenic grandeur. Within it are displayed the oldest and youngest rocks exposed on the North American Continent. Major subdivisions of the geologic time scale are represented in orderly succession.

The Uinta Mountains and Uinta Basin are unique in the United States in that they trend east-west in contrast with the general north-south alinement of similar features elsewhere. The Uinta Basin is a famous source of fossils, and derives additional interest from its scattered outcrops of solid hydrocarbons, including rare forms, some of them unique and little understood. The outstanding features of the Colorado Plateau are the widespread Triassic, Jurassic, and Cretaceous strata in approximately horizontal position; the gigantic cliffs of different geological ages and marked by distinctive colors; and the multitude of canyons that carry the perennial, intermittent, and ephemeral run-off. In places, the surface has been roughened by folding, faulting, the building of volcanoes, and the intrusion of igneous rocks.

Bordering the Colorado Plateau on the east is a belt of tangled topography developed on rocks complex in structure, composition and relationships. The landscape is characteristic of the Rocky Mountains rather than the plateau country.

The Prescott, Ariz., area is significant in that great ore bodies have been brought up by faulting. Many mines have been developed in this region. The asbestos deposits that appear as conspicuous white lines from a distance are an outstanding geologic feature of the Sierra Ancha Mountains in central Arizona. Similar asbestos deposits are found in the Salt River Canyon.

The Verde Hot Springs, Soda Springs, fossil trackways of prehistoric mammals, salt deposits, prehistoric salt mines, and lake deposits with mollusks are important features of the Verde Valley.

The San Francisco Mountains, the White Mountains, and, to a lesser extent, the Mount Trumbull region are areas of geologically recent volcanic activity which have so modified both the appearance and character of the country as to merit special attention.

The lower portion of the basin, below the great plateau region, is totally different from that to the north. Rugged mountain ranges rise out of broad, flat valleys like islands in the sea. The mountains contain rocks of many geologic ages and their structural histories are complex.

The delta of the Colorado River is formed in, and is controlled by, one of the most remarkable and unique structural troughs in the earth's surface. It is a depression comparable to the trough of the Dead Sea and Jordan Valley in Palestine.

Events representing the history of the earth undoubtedly are more closely and simply illustrated by the record of the rocks in the Colorado Plateau than anywhere else in the world. In order that this history may be skillfully presented to visitors, emphasis must be placed on original materials. Facts must be dealt with and presented in a way that will guide people's thoughts toward a realization of the principles. The task is to lead people to the best

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possible illustrations through the skillful development of roads and trails and to make available data necessary to a correct interpretation and correlation of facts.

Plants and animals.—Plants and animals are dependent upon one another in a manner so complex and far reaching that they cannot be fully enjoyed or protected separately. Without plants there can be no cool, clear trout streams; no shady camping spots; no fertile, humus-bearing soil; no food for other forms of life. Recreational enjoyment of plants ranges from subconscious appreciation of their beauty and shade to active interest and wonderment at the marvelous diversity of plant forms which results from their adaptation to extremes of climate and environment. The recreational value of animals is indicated by the fact that by 1945, in spite of wartime restrictions, 20 million anglers and hunters spent 2 billion dollars per year in pursuit of their sport. But fishing and hunting are only two of the many recreational values of wildlife.

Originally the basin had a much greater wealth of vegetation and wildlife than at present. Many desert watercourses that present generations are accustomed to think of as dry washes or as intermittent streams once flowed the year around. The more luxuriant vegetation of those days checked the runoff from the storms more efficiently than it is checked at present. After 1870, cattle increased greatly in the desert regions and the forage thinned and disappeared. Trampling hoofs stripped the thin protecting layer of decaying plant materials from the surface of the soil and as a result plant growth changed or disappeared and animal life was starved out. Animal life in the mountains has undergone a corresponding decrease as a result of direct persecution, as well as from forage and habitat depletion.

Another cause of depletion of wildlife has been the occupancy of most of the choice, fertile regions by cities and farms. Elk, deer, beaver, turkeys, and many wild creatures, today considered to be almost exclusively mountain dwellers, originally had their centers of abundance, particularly during the winters, in the lower hills and adjacent valleys.

The decline of wildlife reached a low in the late 1920's. Since then, vigorous conservation efforts have partially restored some species. The viewpoint that wildlife is a direct product of the land, to be increased by restoring the appropriate environment and growing conditions, and, where desired, to be harvested according to a definite plan, with a definite financial return like any other crop, was first emphasized during the early 1930's. This concept had wide appeal and has enlisted support for conservation efforts. Restoration has commenced but lags behind knowledge. Today millions of tons of soil continue to wash away needlessly. In the Southwest proper, grazing capacity has long since been exceeded and vegetation is far from adequate to protect the surface against erosive forces.

Grazing is a major basin industry that needs stabilization.

The problem of determining the proper uses of the Colorado River Basin is largely one of conserving its basic soil and water. In general, the present economic use pattern seems well adapted to the land. The principal need is to replace destructive methods by up-to-date ones with respect to existing land uses. The public is uninformed regarding basic conservation issues largely because conservation education has lacked focus. More support is needed for conservation education.

Archeologic features.—The Colorado River Basin contains abundant evidence of prehistoric occupation and use by man. Exploring the ruins and learning the dramatic story of these early people is one of the important recreational activities in the basin. The evidence of prehistoric settlement and use of the lands and waters constitute a resource of recreational and historical significance of unique and irreplaceable value to the Nation.

A considerable part of the archeological wealth of the Southwest is concentrated in valleys adjacent to adequate water supply and tillable fields. The construction of dams and flooding of river valleys will destroy thousands of these prehistoric and historic ruins. To offset this potential loss, there is a definite and immediate need for a well-planned and coordinated archeological program that will include specific recovery measures. The program should include (1) a careful archeological survey of each dam and reservoir site; (2) excavation of important archeological sites; and (3) thorough laboratory study and adequate publication of the scientific data.

Factors determining the recreational values of reservoirs.—In the arid portions of the basin, the

the few the thrills of boating down the untamed river and reduce the apparent depths of the river canyons, they would be confined in the canyon of the Colorado and Green Rivers and have little, if any, effect on the great recreational resources of the region. Instead, the reservoirs would provide a means of access for many to see the wonders of the canyons.

The area is large enough and varied enough to permit the continued use and development of its resources—water power, minerals, forage, and recreation. Except in certain limited sections where a single use is essential to obtain the greatest benefits, these resources can be developed and used simultaneously.

The most important recreational sections of the Canyon Lands of southeastern Utah are the Grays Pasture–Junction Butte area, the Elk Ridge–Needles area, the Lands End area, the Hole in Rock area, the Hite area, the Wahweap area, the Goosenecks of the San Juan River, the Arch Canyon area, and Fisher Towers. Certain parts of these areas which contain known features of national importance should be withdrawn to afford them proper protection.

Dinosaur National Monument.—This monument was established in 1915 to preserve a rich deposit of fossilized dinosaur bones. In 1938, it was extended to include other resources of scientific interest found in the adjoining canyons of the Green and Yampa Rivers. Functionally, the monument now consists of the Quarry Unit, comprising three or four thousand acres, and the Canyon Unit, consisting of about 206,000 acres.

Two dam sites for utilizing the water resources of the Green and Yampa Rivers—the Echo Park and Split Mountain—are located in the monument. Construction of dams at these sites would adversely alter the dominant geological and wilderness qualities and the relatively minor archeological and wildlife values of the Canyon Unit so that it would no longer possess national monument qualifications. The Echo Park project would not affect the Quarry Unit. At the time this report was prepared, data were not available to determine whether the proposed pressure tunnel from Split Mountain Dam to a power plant on the Green River would affect the Quarry Unit.

The policy of the National Park Service, as the administrative agency now responsible for Dinosa National Monument, is to make the protecti of the natural and archeological values of the ar the controlling factor in administering it. Befo authorization is given to develop the water r sources of the monument and to recognize wat use as the principal consideration in the administ tion of the Canyon Unit, it should be clearly shov (1) that the economic and social values of su development will exceed the costs of produci them; (2) that it would be more economical develop the water resources of the monume rather than some other resources available for t same purpose within practicable reach; and (that it would be of greater benefit to the wh Nation to develop the area for water storage a power than to retain the monument in a natu state for the enjoyment of all the people.

Conservation of recreational resources—The C orado River Basin lies directly across all lines travel between the rapidly increasing populati of California and the densely populated eastern h of the United States. In the past the basin was t large extent considered just a vast space that had be crossed on the way to California. Now, with t Pacific Coast more fully developed, people seeki undeveloped, uncrowded areas are beginning to d cover the basin. It is time for immediate acti which will assure the preservation of its many a varied recreational features. It is also time to d velop facilities which will enable people to see a enjoy the region. There are natural limitations the amount of land that can be placed under cul vation. There is a limit, already reached in m sections, on the number of domestic animals t can be grazed. But the possibilities for the develo ment of the recreational use of the basin are alm unlimited.

Some of the more important areas that should preserved and made available for recreation a the western slope of the Wind River Range Wyoming; the San Juan–San Miguel–Uncompa gre Mountain area, White River Plateau, the E Mountain area, and the Park Range in Colorad the Uinta Mountains, the Aquarius Plateau–Bo der Mountain area, Monument Valley, and t Canyon Lands of southeastern Utah; the Gila pri itive area and Manuelito area in New Mexico; M teor Crater, Fort Bowie, the Blue Range ar

Mount Baldy–White Mountains area, the San Francisan volcanic field, the Mogollon Rim area, Travertine Bridge, and the Kofa Mountains in Arizona; and Palm Canyon in California. Nationally significant archeological sites that should be permanently preserved are Poncho House in Utah; and Kinishba Ruins, Clear Creek Ruins, Chaves Pass Ruins, and Awatovi in Arizona.

To preserve the great areas of open country free of scattered reminders of city life and to maintain and stimulate the economic life of existing communities, it is recommended that facilities for the accommodation of travelers and vacationists be concentrated near existing towns and villages. Many towns are now focal points for recreational use of the surrounding country. This condition should be encouraged and developed.

While it will be necessary, in developing the resources of the basin, to construct new roads and improve existing ones and to construct other facilities, it must not be forgotten that among the basin's greatest recreational assets are the large areas in which there are no roads or other developments. Some roadless areas have been established, others are needed.