

FISHING AT LAKE POWELL

Lake Powell is a fantastic fishery or frustrating puzzle depending on where you happen to be on any given day. Fishing can be great or awful in adjacent coves of the same canyon. This is some of the mystique that matches the scenic grandeur of this great lake and keeps people coming back in increasing numbers year after year.

The fishing has been good more often than bad over the past 25 years. The fish species have changed with the passage of time but there is always something to catch. Largemouth bass were the dominant fish in the 60s and 70s. As the reservoir filled, the flooded brush provided excellent cover for young bass. The newly flooded soil added life-giving nutrients to the crystal clear water. Largemouth bass and crappie thrived in this perfect environment.

With time, the reservoir filled and the habitat changed. The inundated brush disappeared. The "crappie trees" decomposed leaving only bare stumps. Bass and crappie no longer "owned" this changing reservoir. Although walleye were never introduced their numbers slowly grew from the population present in the river when the dam was closed. Walleye numbers exploded as the lake filled. The Colorado River Gorge and steep rock slides became the dominant habitat type. Bass and crappie still used the shallow brushy coves but their numbers declined as favorable habitat was no longer available to them. Walleye populations reached their highest numbers as the reservoir filled in 1980-81.

The decline of the largemouth bass population was recognized and measures were taken to offset it by the introduction of smallmouth bass in 1982. Smallmouth bass love rocks. The young fish hide in them and the adult fish lie in wait to ambush crayfish and sunfish that frequent these rocky areas. The rocky shoreline shunned by largemouth bass is now being repopulated with smallmouth bass. Black bass fishing in 1989 will rival that seen in the 1970s. A stable largemouth population combined with increasing smallmouth numbers mean good news for Lake Powell anglers.

Striped bass, another popular species, were introduced in 1974 to provide a trophy

fishery while controlling the under utilized population of open-water threadfin shad. Before the introduction of striped bass, shad were only eaten in the shallow water near shore where bass, crappie and walleye lived. Striped bass could now use shad in the open water area which was rapidly increasing in the filling reservoir. This worked well until 1980 when striped bass were found to be reproducing in the flat calm water of the reservoir. This phenomenon was unheard of anywhere else in the world. Striped bass were not known to be able to reproduce under conditions as they existed at Lake Powell.

Nature's surprise caused striped bass numbers to expand beyond the capabilities of the tiny shad's ability to support the lake's predatory fishing population. Striped bass literally eliminated shad from the vast open water zone. Shad, however, do still exist in the canyons and coves where turbid water protects them from total elimination. Each spring spawning adult shad produce sufficient young to repopulate the reservoir, but these tiny fish are eaten by young striped bass before they can reach open water.

Adult striped bass are confined to the deep, cool water in summertime by their strict temperature requirements. During fall and winter they are able to feed heavily on shad throughout the lake. However, in the summertime feeding consists of quick trips into the warm water where shad are more numerous and easy to capture. When shad numbers declined and disappeared from the open water, adult striped bass could no longer compete effectively for food. Their body condition declined and numbers were reduced by angler harvest and natural mortality.

The current striped bass population is composed of warm water tolerant, 12- to 20-inch fish that eat the annual shad crop. They then forage directly on plankton when the shad are gone. Presently the striped bass and shad populations have suppressed each other to the point that striped bass cannot grow much larger than 20 inches and shad cannot populate the open water of the reservoir. A delicate balance exists between predator and prey. Fewer shad have also caused a decline in walleye numbers. Largemouth and smallmouth bass meanwhile

have not been directly impacted because of the different area they occupy and food habits that allow them to eat whatever is available.

In 1989, the Lake Powell fisheries were dominated by juvenile striped bass and an increasing population of black bass. Anglers will always be able to catch an occasional crappie or walleye but cannot expect limit catches of these species. On any given day, 12- to 20-inch striped bass commonly can be caught anywhere in the reservoir. These fish provide good sport and good eating while striped bass larger than 18 inches may be suffering from malnutrition and will be less desirable as table fare.

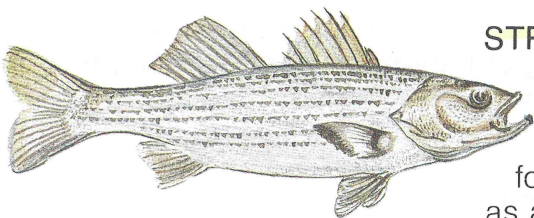
While anglers are fishing and enjoying Lake Powell, biologists will be continuing to study the problem of forage limitation. Research has indicated that the food shortage could be relieved by adding a deep, cool water fish to take some of the predatory burden off the shad population. Utah biologists have proposed the introduction of

rainbow smelt to the presently unoccupied depths of Lake Powell. Smelt would occupy a vacant area, not compete with shad for food or space, provide excellent forage for striped bass and walleye, and therefore leave shad available for bass and crappie.

The plan seems to be well accepted as a solution at Lake Powell. Unfortunately, smelt will not stay totally in Utah. Smelt would rapidly colonize all Colorado River reservoirs. Because of this, there is great concern that smelt would jeopardize the small and struggling populations of humpback chub and razorback sucker that cling to survival in the lower Colorado River. Studies are being conducted to determine the impact of smelt throughout the entire system. Meanwhile, the public is being asked to be patient for the year or two delay that this extensive research will require. If it can be proven without a doubt that smelt will rejuvenate the fishery at Lake Powell without causing unacceptable consequences downstream, the appropriate steps will be taken to introduce them.

Source: State of Utah Division of Wildlife Resources 1989 Fishing Proclamation.

FISHES



STRIPED BASS

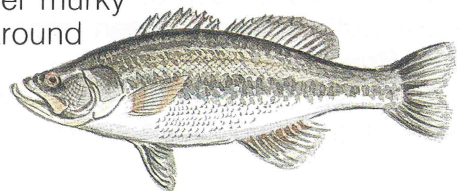
May be caught year round but the best fishing is in the fall. A school fish, stripers thrash about the surface as they feed on schools of shad. They may be found deep along canyon walls, and rock piles as well as around trees and brush in the back of canyons in the spring. Fish in the early and late hours, and deeper during the day.

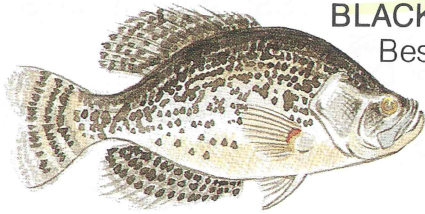
Lake record: 39 pounds 12 ounces.

LARGEMOUTH BASS

Spring is the best time to find largemouth bass in warmer murky waters late in the day and early morning as they feed around brush, rock slides and ledges. During the day and in warmer months they are deeper near sheer walls.

Lake record: 10 pounds 2 ounces.





BLACK CRAPPIE

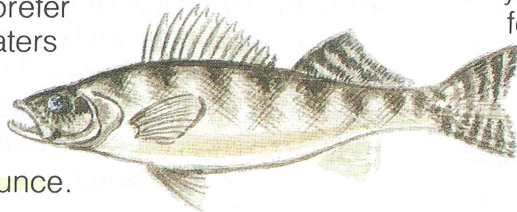
Best fishing is in the spring and early summer in the shallows around brush and submerged trees.

Lake record: 2 pounds 14 ounces.

WALLEYE

April and May are the best months to find walleyes feeding at night and in early morning hours in cloudy shallow areas. During the day they prefer deep, dark waters and steep rockslides.

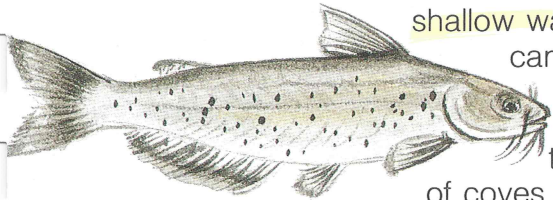
Lake record: 8 pounds 1 ounce.



CHANNEL CATFISH

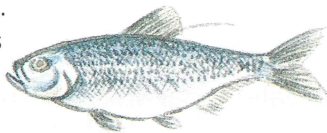
Best fishing is late in the day and night in mid-summer. Look for them in the warm shallow waters of the canyon heads and bays, and at the mouths of coves and rivers.

Lake record: 24 pounds.



THREADFIN SHAD

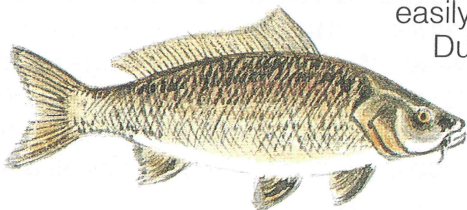
This very small silvery fish is a basic food for other game fish. Large schools runs in the warmer waters.



CARP

Recognized by its goldish color and low-slung mouth with short barbels on each side, they are easily seen swimming around the docks and beached boats.

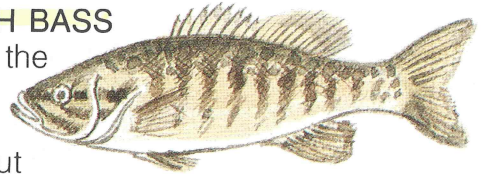
Due in part to their bony nature, these scavengers are not enjoyed by most anglers.



SMALLMOUTH BASS

Basically have the same habits as the large-mouth bass, but they do like the rocky shoreline where they feed on crayfish and sunfish.

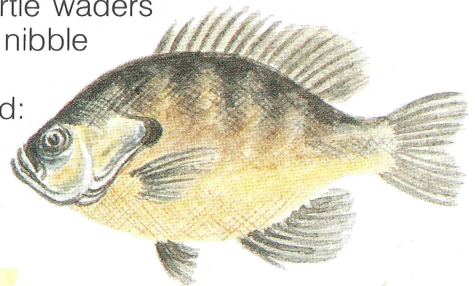
Lake record: 2 pounds 9 ounces.



BLUEGILL

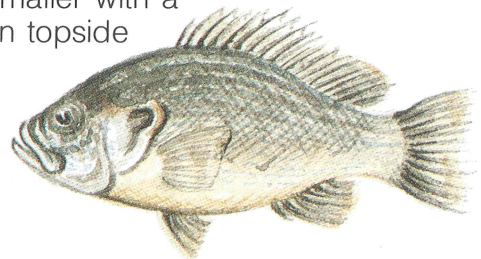
Spring through fall the bluegill usually may be found in small coves and around brush and trees. They frequently startle waders when they nibble on toes.

Lake record: 1 pound 8 ounces.



GREEN SUNFISH

Resembles the bluegill in appearance and habits but smaller with a muted green topside and shiny brownish underside.



COLORADO SQUAWFISH

The largest minnow in North America is a protected species and is illegal to remove from Lake Powell. The body is long and slender with a dusty green topside and silver colored underside. The mouth is large and toothless. They may reach a length of 6 feet and a weight of 100 lbs.

Rainbow Trout and Brown Trout, Northern Pike and Flannel Mouth Suckers exist in limited numbers at Lake Powell.

FISHING LICENSE INFORMATION FOR LAKE POWELL

ARIZONA RESIDENTS

Any person with a valid Arizona license can fish the Arizona portion of Lake Powell. To catch and creel trout, you must buy a trout stamp. An Arizona resident with a valid Arizona license must purchase a Utah stamp to fish the Utah portion of Lake Powell.

UTAH RESIDENTS

Any person with a valid Utah license can fish the Utah portion of Lake Powell. An individual with a valid Utah license must purchase an Arizona stamp to fish the Arizona portion of Lake Powell.

NON-RESIDENTS

Any non-resident wishing to fish both the Arizona and Utah portions of Lake Powell must buy a license from both states.

LICENSE REQUIREMENTS for JUVENILES

Any resident or non-resident under the age of 14 years may fish without a license. Creel and possession limits are the same as for adults except only 1/2 the legal limit of trout may be taken. Juveniles may purchase a license if they wish to catch the full limit.

CREEL and POSSESSION LIMITS

Striped Bass	20
Channel Catfish	25
Bluegill	no limit
Crappie	20
Walleye	10
Trout	4
Largemouth and Smallmouth Bass in the aggregate	6

COLORADO RIVER, LEE'S FERRY AREA SPECIAL REGULATIONS

No baits, only artificial lures and flies, may be used in this area. Trout from 16 to 22 inches may not be possessed; there is a two-fish limit, but only one may be more than 22 inches long. Possession limits and daily bag limit for trout:

Licensed anglers	2
Juveniles	1

GEOLOGY

Some 60 million years ago, a great internal shifting and volcanic action formed the Rocky Mountains. A great uplifting created the huge Colorado Plateau which covers part of Arizona, Utah, Colorado and New Mexico.

The plateau is home to the rugged canyons and rock formations which make up Glen Canyon. Eons ago, this was a flat, low-lying expanse which alternately was covered by seas (as testified by the many marine fossils) and great sand masses deposited by desert winds. The weight of seas compressed the layers of sand and sediment into stone of varying hardness and thickness. A familiar example of this process is Navajo sandstone (known as slickrock). Once covered, erosion has exposed the round, smooth sand-dune-shaped rock formation.

In addition to the Colorado Plateau, greater local uplifts formed the Waterpocket Fold, Navajo and Henry Mountains. Water and wind eroded layers of stone and produced many deep canyons.

Arches are carved out of softer rock by winds. Natural bridges are formed by the action of water. Windows are openings caused by exfoliation, the scaling off of layers of rock due to expansion and contraction, and is visible also on the steep canyon walls and continues to occur.

"Desert Varnish" caused by iron oxide, water and minerals, streak the faces of these sheer red-beige walls with shiny blacks and browns. Wind and sun weather the rock face from a beige to a polished gun metal blue-black.

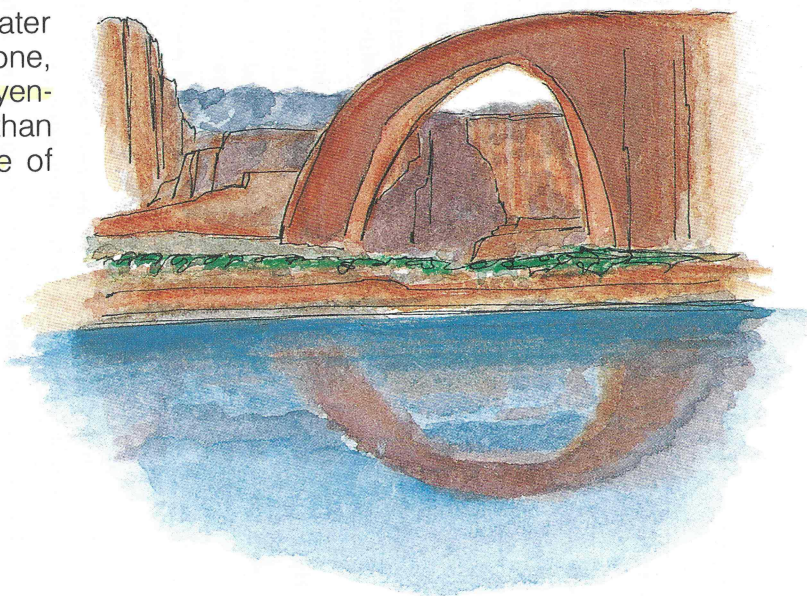
ERA PERIOD	FORMATION NAME	FORMATION DESCRIPTION	WHERE FOUND	
MESOZOIC	STRAIGHT CLIFFS SANDSTONE	Massive beds of light yellow to buff marine sandstones. Contains coal and abundant fossils.	Cap Rock on Kaiparowits Plateau, Warm Creek Rd.	
	TROPIC SHALE	Dark gray to olive mudstone. Erodes to form badlands and is highly fossiliferous with beds of coal. Laid down in marshes and beneath the sea.	Kaiparowits Plateau, Warm Creek Rd.	
	DAKOTA SANDSTONE	Brown and grayish buff sandstone and conglomerate. Loosely cemented stream deposits. Some fossil wood.	Kaiparowits Plateau	
	MORRISON FORMATION	Generally gray sandstone, limestone and mudstone. Found in irregular slopes, cliffs and ledges.	Cap rock on Tower Butte, cap rock on Grand Bench.	
	ENTRADA FORMATION	Red buff to white and creamy yellow sandstone, partly cross-bedded: forms rounded, smooth vertical cliffs.	Wahweap and Warm Creek Bay, Castle Rock.	
	CARMEL FORMATION	Deep red and gray siltstone: seen as broad irregular slopes, ledges and caps on low mesas.	Lakeshore Drive, cap rock on many cliffs near lake.	
	NAVAJO SANDSTONE	Red, orange or white cliffs of cross-bedded sandstone, forms vertical, rounded and irregular cliffs, canyons, alcoves, buttes and mesas.	Rainbow Bridge, all along lake from Wahweap to Bullfrog.	
	KAYENTA FORMATION	Grayish maroon sandstone seen as vertical and irregular cliffs and ledges with many springs.	Base of Rainbow Bridge, on river above Lee's Ferry.	
	WINGATE SANDSTONE	Reddish-brown to pale reddish orange, seen in large vertical "columned" cliffs and box canyons.	Orange Cliffs, Waterpocket Fold.	
	CHINLE FORMATION	Multi-colored beds of volcanic ash, ooze and silts, stream deposits in fresh water contain fossil wood and minerals, seen mostly as badlands.	Base of Orange Cliffs, Red and White Canyons, the Rincon and Lee's Ferry.	
PALEOZOIC	MOENKOPI FORMATION	Reddish-brown siltstones and shales, often with ripple marks. Forms irregular slopes and ledges with dark and light horizontal bands.	Mouth of Dirty Devil River, Escalante Basin and Lee's Ferry.	
	CUTLER FORMATION	Light gray through buff to reddish-brown and gray sandstone, seen as irregular ledges and cliffs.	Catacart Canyon, Upper San Juan Canyon.	
	CEDAR MESA SANDSTONE	Light colored sandstone deposited as beaches along a seashore, interfingers with Cutler Formation.	Catacart Canyon, Upper San Juan Canyon.	
	HONAKER TRAIL FORMATION	Grayish purple cliffs and ledges, formerly called Rico Formation.	Catacart Canyon, Upper San Juan Canyon.	
	PARADOX FORMATION	Pinkish-gray vertical and irregular cliffs, formerly called Hermosa Formation.	Catacart Canyon, Upper San Juan Canyon.	
				Reprinted from N.P.S. data.

Glen Canyon Stratigraphy

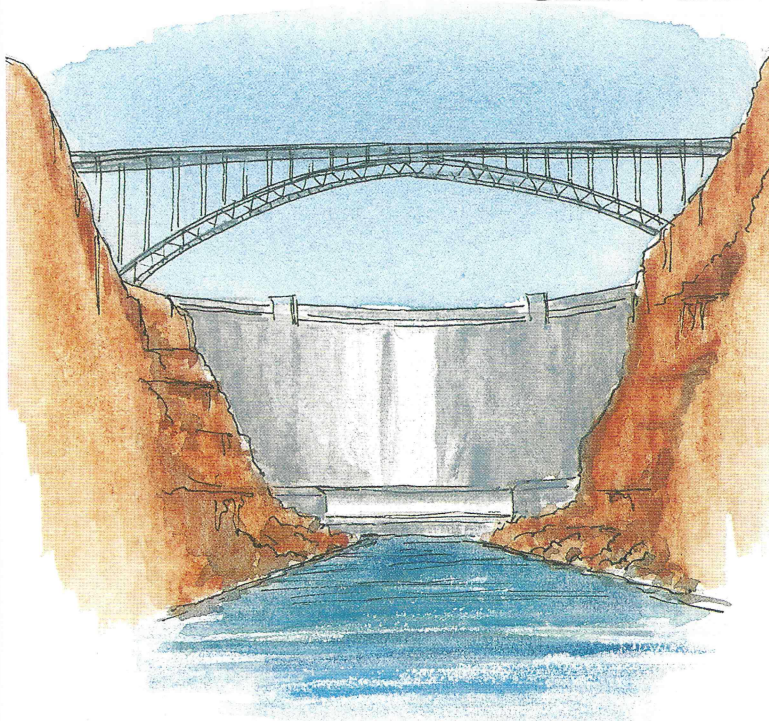
RAINBOW BRIDGE

Rainbow Bridge National Monument is the world's largest natural bridge. Known to the Navajo Indians for many years as "Nonnezoshi" or "rainbow of stone," it was officially sighted by the Douglas-Cummings exploration party in 1909. Led by Indian guides, the party traveled through mazes of rimrock ledges and rugged slickrock to be rewarded with the sight of a natural stone bridge, 42 feet thick, spanning 275 feet and rising 290 feet above Rainbow Bridge Creek. Rainbow Bridge and the canyon were formed by water flowing from Navajo Mountain down Rainbow Bridge Creek. Eventually the water bore through the softer Navajo sandstone, ultimately carving out the bridge. The Kayenta formation, more resistant to erosion than Navajo sandstone, constitutes the base of Rainbow Bridge.

Today, the bridge is most often reached by water plus a quarter-mile walk from courtesy docks in Rainbow Bridge Canyon. Access by land includes traveling two difficult foot trails and requires a permit from the Navajo Nation (See Hiking). Please respect this sacred place of the Navajos. Do not throw rocks, swim, picnic, anchor, dock overnight or camp at the monument. This is truly one of nature's wonders and should be treated as such.



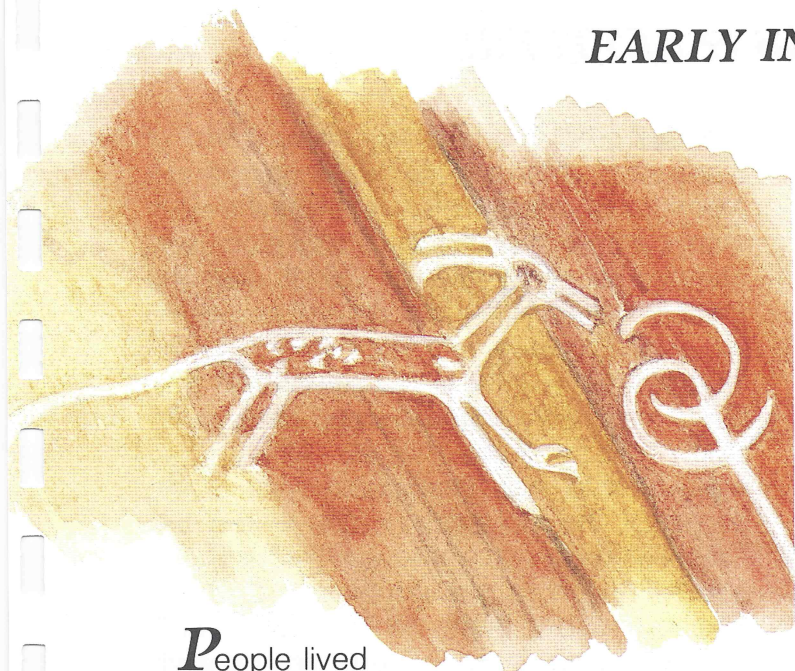
GLEN CANYON DAM



The concrete arch dam and power plant, built between 1956 and 1964, contains more than 5 million cubic yards of concrete poured round-the-clock for more than three years. The dam's crest is 1,500 feet long, lies 710 feet above bedrock and 583 feet above the original river channel.

Lake Powell started filling on March 13, 1963, and reached capacity in 1980. Its full-pool elevation of 3,700 feet holds 27 million acre feet of water and is 560 feet deep at the dam. The dam, wedged into a deep sandstone gorge on the Colorado River, backs up water for 186 miles and forms 1,960 miles of shoreline which is longer than the continental Pacific coast. Glen Canyon Bridge was completed in 1959, eliminating a 200-mile drive to cross from one side of the canyon to the other.

EARLY INDIANS



People lived in the Glen Canyon area as early as 3,000 years ago. Evidence of the Desert Archaic people, who were hunters and gatherers, has been found in the form of flat slab milling stones, woven textiles and baskets. About 2,000 years ago these nomadic people began the transition from hunter-gatherers to farmers, now known as the Basketmakers. The Anasazi, "Ancient Ones," culture followed. They built complex stone houses and grainaries in sandstone alcoves. Kivas, subterranean chambers entered through the roof, were used for ceremonies. Their drawings cover canyon walls. Images carved in stone are known as petroglyphs, while those which were painted are pictographs. In very steep areas "Moqui steps," shallow hand and footholds were carved in the rock. Most sites are found in side canyons near perennial springs. Moqui, Navajo and Lake canyons show the longest and heaviest use. Tributaries of the Escalante River were also heavily occupied. A severe drought and raiding tribes may have caused the agricultural Anasazi to leave during the

13th century. The lake now covers many of the ruins which were studied before the lake was filled. The Anasazi are believed to be the ancestors of the Hopi Indians. The Rio Grande Pueblos, Paiute, Ute and Navajo Indians followed.

After many years of warring with settlers and the United States, a treaty was reached in 1868 with the Navajos, which designated a reservation much smaller than the present one adjoining Lake Powell's southern shore. Primarily involved in raising sheep and cattle, the Navajos also are known for their beautiful silver work, rugs, paintings and pottery.

The archaeological sites of the Anasazi are very fragile. It is illegal to excavate, remove, damage, alter or deface any archaeological resource. Please do not harm or destroy them by writing graffiti or sitting on walls or by climbing on or camping in the ruins. If you see anyone participating in any of these activities, report the boat or vehicle number to a ranger.





EXPLORERS & SETTLERS

Two Spanish Franciscan priests, Father Escalante and Father Dominguez were the first to provide a written record of Glen Canyon. With their party they set out from Santa Fe, New Mexico in July 1776 to originate a route to California.

After three months, bypassing the canyon country to the north, the group arrived in the area of Cedar City, Utah. With winter beginning, the party decided to return to Santa Fe. On October 26, they reached

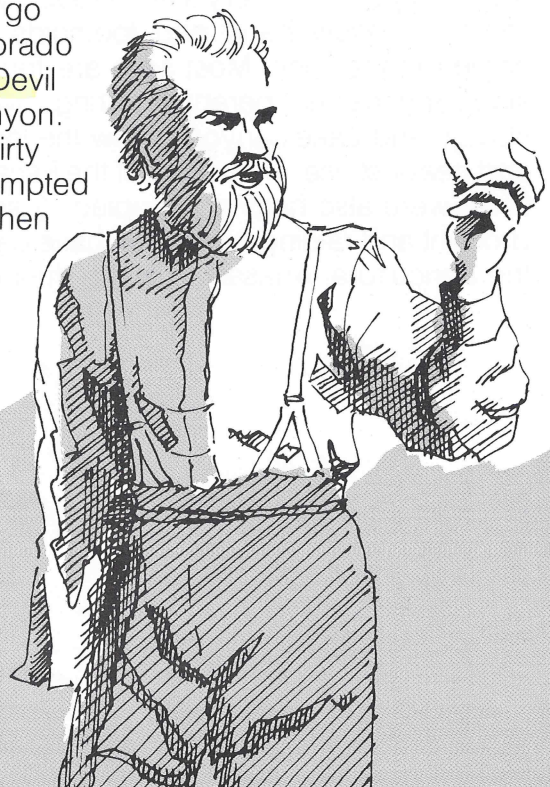
the Colorado River at the present site of Lee's Ferry. After several nearly disastrous attempts to cross the river, the exhausted men climbed out of the river bottom and camped along Wahweap Creek near the present marina. After four days of searching for a ford to cross the river and living on "toasted leaves of small cactus plants" and horse meat, they chiseled steps in the sandstone wall at Padre Canyon. Finally they were able to lead their pack stock to the banks of the Colorado, cross where the river was wide and shallow at Padre Butte, and exit the area through Navajo Canyon. They returned to Santa Fe in January 1777. The "Crossing of the Fathers" lies beneath Padre Bay.

JOHN WESLEY POWELL

Major John Wesley Powell, a one-armed Civil War veteran, teacher and scientist, was the first white man to chart the Lake Powell region. In May 1869, Powell, with nine men and four small boats, left Green River, Wyoming, to go down the uncharted Green River and on to the Colorado River. In July, they reached the mouth of the Dirty Devil River which Powell considered the start of Glen Canyon. Peaceful water and many wooded glens from the Dirty Devil down to the Paria River (near Lee's Ferry) prompted Powell to name the region Glen Canyon. The men then took their boats through the Grand Canyon and came out at the Virgin River, now Lake Mead.

Powell's second trip through the area in 1871 did not include the Grand Canyon but was completed at the Paria River. Compared to the first trip, a more thorough documentation was performed as he mapped and named many of the geographical features along the way.

An early advocate of water reclamation, Powell became a founder of the National Geographic Society, a director of the U.S. Geological Survey and president of the American Association for the Advancement of Science.



MORMONS

The Mormons, members of the Church of Jesus Christ of Latter-Day Saints, settled in Navajo occupied areas in the mid-1880s. The United States acquired the region through the Mexican Cession in 1848. Clashes between the Mormons and Indians occurred and military reprisals against the Indians ensued. Finally, a peace treaty was signed and trade followed. Lee's Ferry was started 40 miles downstream from Padre Bay to provide ferry service to aid the Mormon settlement of Arizona.

In 1879, the Mormon Church sent a group of about 230 people, 1,000 head of livestock and 83 wagons to colonize the San Juan Valley. A journey, expected to take six weeks by taking a shortcut across the Colorado River further upstream from Lee's Ferry, lasted six months. "Hole-in-the-Rock," a narrow opening in the canyon rim, was blasted, cut and filled for three quarters of a mile. The 1,000 foot drop to the river included some grades of 25-45 percent. On the 26th of January 1880, after 45 days of work, men

attached ropes to the rear of the wagons and rough-locked the rear wheels to slow the descent.

Charles T. Hall built a ferry to carry the pioneers across the river. Another steep road was built on the opposite side to reach a wide bench 300 feet above the river. The wagon train continued through Cottonwood Canyon and evidence of the old road, Emigrant Trail, still can be seen at the end of the canyon. The pioneers struggled as far as Bluff, Utah, and settled there in April 1880.

Charles T. Hall stayed on for about a year at "Hole-in-the-Rock" to continue operating the ferry. In 1881, he moved 35 miles upstream and established a better crossing and ferry service known as Hall's Crossing which operated until 1884 and is now the site of Hall's Crossing Marina.

Today one may climb the "Hole-in-the-Rock" trail but many boulders now fill the hole. The steps seen in the slickrock near the original trail were cut by miners after the pioneers.



PROSPECTORS

In 1883 Cass Hite arrived to prospect for gold ... which he did discover. He also discovered a good crossing on the Colorado River at Trachyte Creek which he called a "dandy crossing." There he established an outpost and later a post office which were called "Hite City." Hite died in 1914 at his ranch at Ticaboo Creek. All of these sites are now under water.

After Hite's gold discovery, many prospectors followed, some with grand schemes and large equipment. The American Placer Company assembled a steam-driven, 92-foot-long paddle-wheeler to carry coal from mines near Crosby Canyon off Warm Creek Bay to its gold dredging operation at Lee's Ferry. Unfortunately it took as much coal to steam

back upstream as it could carry down. It made only five trips and was abandoned at Lee's Ferry where part of the boiler still appears at low water.

In 1889, Robert Stanton, an engineer, was hired to survey Glen Canyon for a possible railroad route from Grand Junction, Colorado, to the Pacific Coast. The railroad was never built, but Stanton was convinced that gold mining in Glen Canyon would be very profitable. He formed the Hoskaninni Company. A huge floating dredge was brought into the canyon by pieces and reassembled at what is now Stanton Canyon just east of Bullfrog Bay. Because the gold was so fine, the dredge was unable to recover it and was abandoned as a total failure.

Gold was discovered in the San Juan

River in 1892. Easier access allowed large equipment to be brought in. Even so, miners experienced little success.

In gold prospecting at Glen Canyon, no one fared well. Access roads to the area crossed extremely rough terrain. Getting equipment and supplies in and out proved difficult and required cutting "miners stairs" in the steep sandstone. Plus, the powdery

gold, called "flour gold," was too fine to collect by conventional placer mining methods. The gold mining rush lasted from 1883 to 1912, and picked up again during the depression years of the 1930s.

In the 1950s uranium prospectors came into the region, and some active uranium mining continues today.

WILDLIFE

In and around the Glen Canyon region, 80 species of mammals have been observed. However, most are infrequently seen because they live nocturnally to avoid the heat of the day. Watch for tracks in the sand since this may be as close as you will get to some of these animals.

COTTONTAIL RABBIT

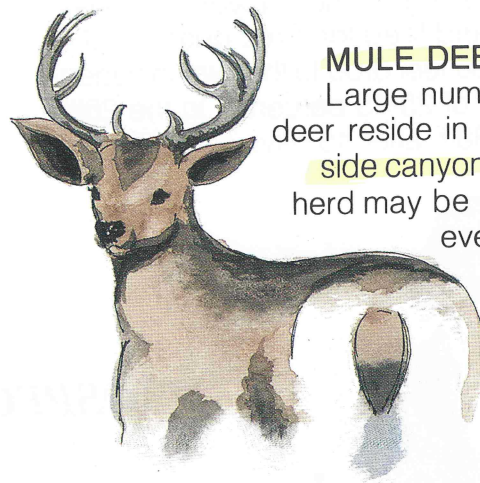
These small foraging rabbits may be seen year-round throughout the area. A relative of the cottontail is the bigger-in-size jackrabbit (actually a hare) with its large rear legs and long ears.

BATS

Probably the most abundant of the mammals, at least 13 species of bats have been identified in Glen Canyon. All are insect eaters; none are vampires. These small, flying mammals leave their rocky shelters at sunset to catch insects with the help of built-in radar. Watch them flitting around night lights without fear. Bats are highly susceptible to rabies, so do not try to catch them or touch a dead bat.

COYOTE

Primarily night time pack hunters, it is not uncommon to see a lone coyote roaming about during daylight hours. Although they feed mainly on rodents and rabbits, it is still advisable not to let your pet wander too far from camp or boat.



MULE DEER

Large numbers of mule deer reside in the wooded side canyons and often a herd may be seen in early evening coming down to water.

MOUNTAIN LION

A night stalker, the mountain lion is seldom seen. Its presence might only be observed by its tracks in the sand. The lion feeds on rodents, rabbits and deer. Mountain lions can obtain a size up to four feet long, standing about two-feet tall.

BOBCAT

A cousin to the mountain lion, but smaller in size, the bobcat's habits are very similar to the mountain lion. The most noted features are its short, stubby tail and fur-tuffed ears.

BIGHORN SHEEP

There are three small herds of these rare, nimble-footed browsers in the San Juan River Arm, the upper Escalante, and Cataract Canyon.