Fish and Fisheries
in
Nevada

There is no place on Planet Earth quite like Nevada. The world's largest landlocked basin is bordered on the north and south by two major river drainages. A desert by the strictest definitions, Nevada hosts an amazing variety of unique fish. Many are found in the most unlikely places. The Nevada Department of Wildlife manages a thriving fisheries program in a place that isn't really adapted to support such a high demand for fishing. And, there are countless opportunities to enjoy Nevada's unique and abundant fish resources.

Nevada Geography in a Nutshell	40
Pleistocene Lakes of the Great Basin	41
Rivers, Streams and Lakes of Nevada	42
Geographic Regions of Nevada	43
How Come? (A natural science and geography quiz)	44
Native Fish	45
A Checklist of Native Fish of Nevada	46
What Town Would I Live In? (geography and native fish)	47
Native Fish of Nevada Map	48
Adaptations (matching activity)	49
Adapt Your Own Fish (an exercise in WILD imagination)	50
Fisheries and Fishing in Nevada	51
Introduced Fish (a checklist)	53
Where Did I Come From?(an analysis and reasoning game)	54
More or Less	55
King Salmon in Nevada? (geography and history)	56
State Hatchery Map	57
On the Road Again...(fish and geography)	58
Walker Lake	59

Nevada Geography in a Nutshell

Nevada is completely a desert state. It is the driest state in the union. It has hundreds of streams and dozens of lakes, but most of the streams are small, intermittent, or even seasonal. Very few of the lakes are of any size, or always have water. The reason for Nevada's dryness is that storms, full of moisture advance from the Pacific Ocean, east across California and lose most of their moisture in the Sierra Nevada Mountains. This creates a rain-shadow over most of the state.

Almost all of Nevada's total area falls into one of two major divisions: The Great Basin or the Mojave Desert. All the streams in the Great Basin flow into the Great Basin. This water usually ends up in terminal lake (no water flows out) or settles into a marsh or sink (playa). In the southern tip of the state, the Mojave Desert part, the water runs into the Colorado River. Along the northern border, bits of Nevada lie just outside the Great Basin, where water flows into the Snake River.

Great Basin – Imagine a shallow pan, with a rough bottom, that covers most of Nevada and Utah, and you have a good picture of the Great Basin. Topographically, it looks like someone scooted a loose rug along a hardwood floor. Geologically speaking, that's exactly what's happening. The Pacific Plate slides underneath the Coastal Plate, and the Sierra Nevada Mountains are being pushed inland. The Sierras push the mountains of the Great Basin along in front of them. The Great Basin receives about seven inches of rain and snow a year. Only a small portion of the water that falls in the Sierras actually makes it into Nevada. Most of the Sierra run-off flows into the Sacramento and San Juaquin River systems and eventually back to the Pacific.

Steep mountain ranges run north and south through Nevada like tiger stripes. Some of them are hundreds of miles long. In fact, there are more mountain ranges in Nevada, than in any other state. Deep canyons that score the sides of the mountain ranges often have creeks that start with perrenial springs, fed by winter snows and spring rains. These streams create oases in the stark mountains, with lush vegetation growing along stream corridors or riparian areas. Small and often isolated populations of fish dwell in these mountain creeks.

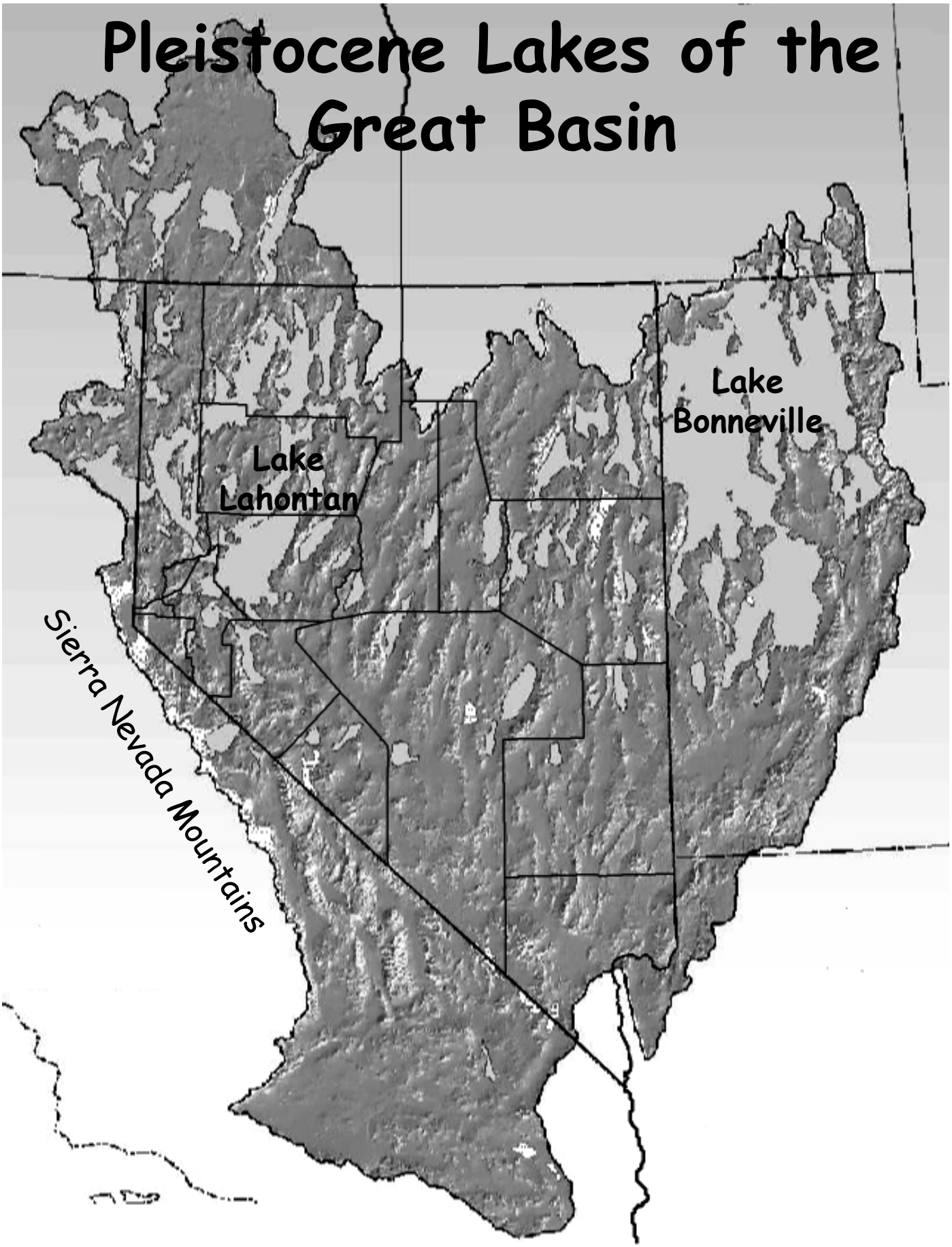
Between the mountain ranges are sweeping valleys. Many have dry, flat lakebeds or playas, where water from local streams disappears into the thirsty earth. In wet years, these playas may fill with water. But, the alkali is so strong and the wet seasons so brief, that nothing lives in these temporary, shallow lakes. When the hot summers come, the water usually evaporates, leaving white-hot alkali flats, covered in shimmering mirages.

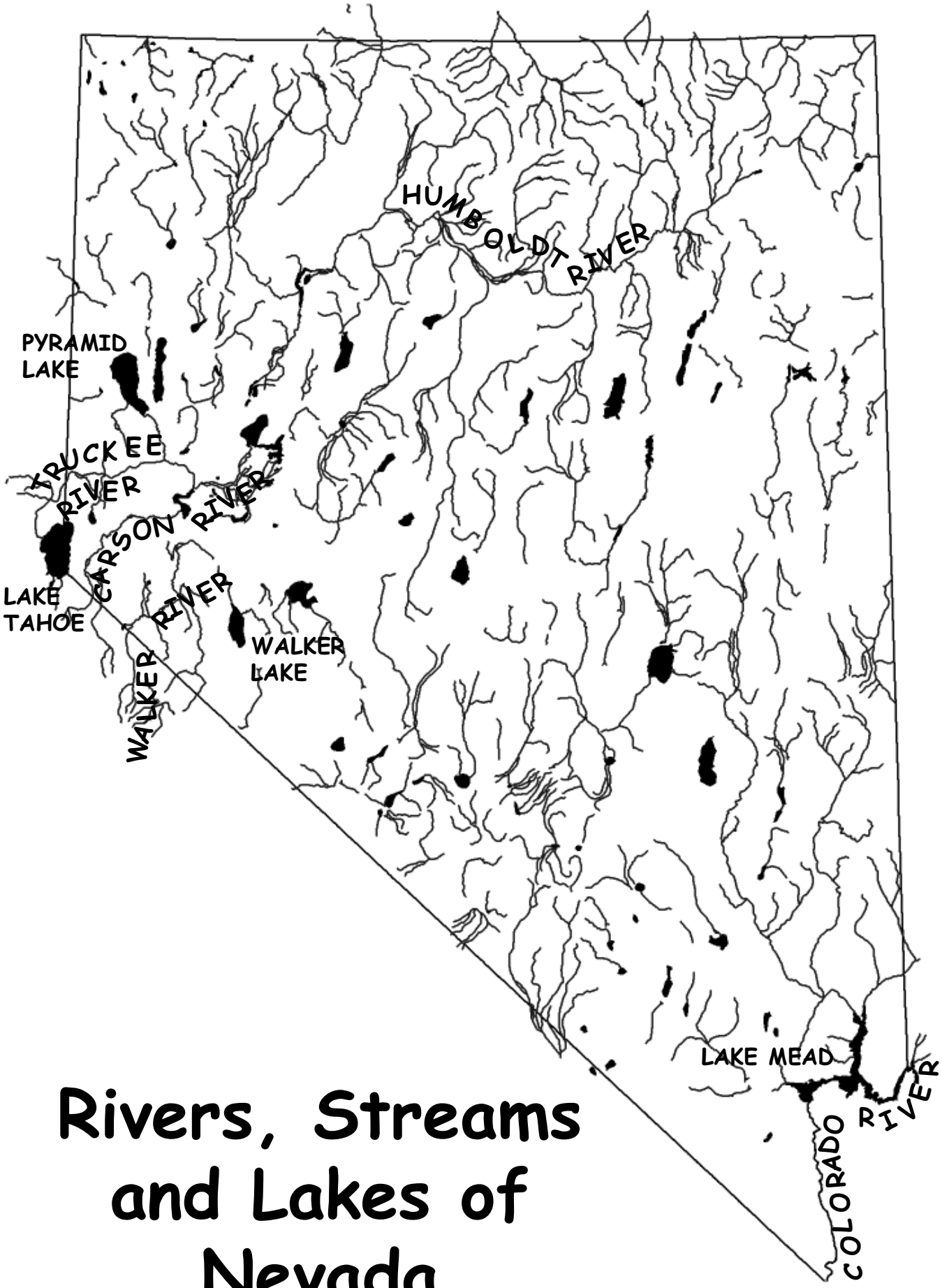
Mojave Desert – In the United States, the Mojave Desert covers a large part of Arizona, New Mexico, the southeast corner of California and the southern-most tip of Nevada. It is exceptionally dry with an average rainfall of less than four inches per year. Most of the water for this region flows out of the highlands of Utah, Wyoming, Colorado, New Mexico, Arizona and Nevada, into the Colorado River system.

The Mojave Desert is characterized by sparse vegetation, specially adapted to the harsh desert climate and poor, alkaline soils. The desert is dotted with myriad small oases created by perennial springs. Historically, Las Vegas was a chain of shallow pools and small lakes, fed by springs and strung together by connecting streams. Water from the Las Vegas valley eventually found its way into the Colorado River through wetlands in Las Vegas Wash. Other isolated pools of water are scattered across the southern Nevada desert.

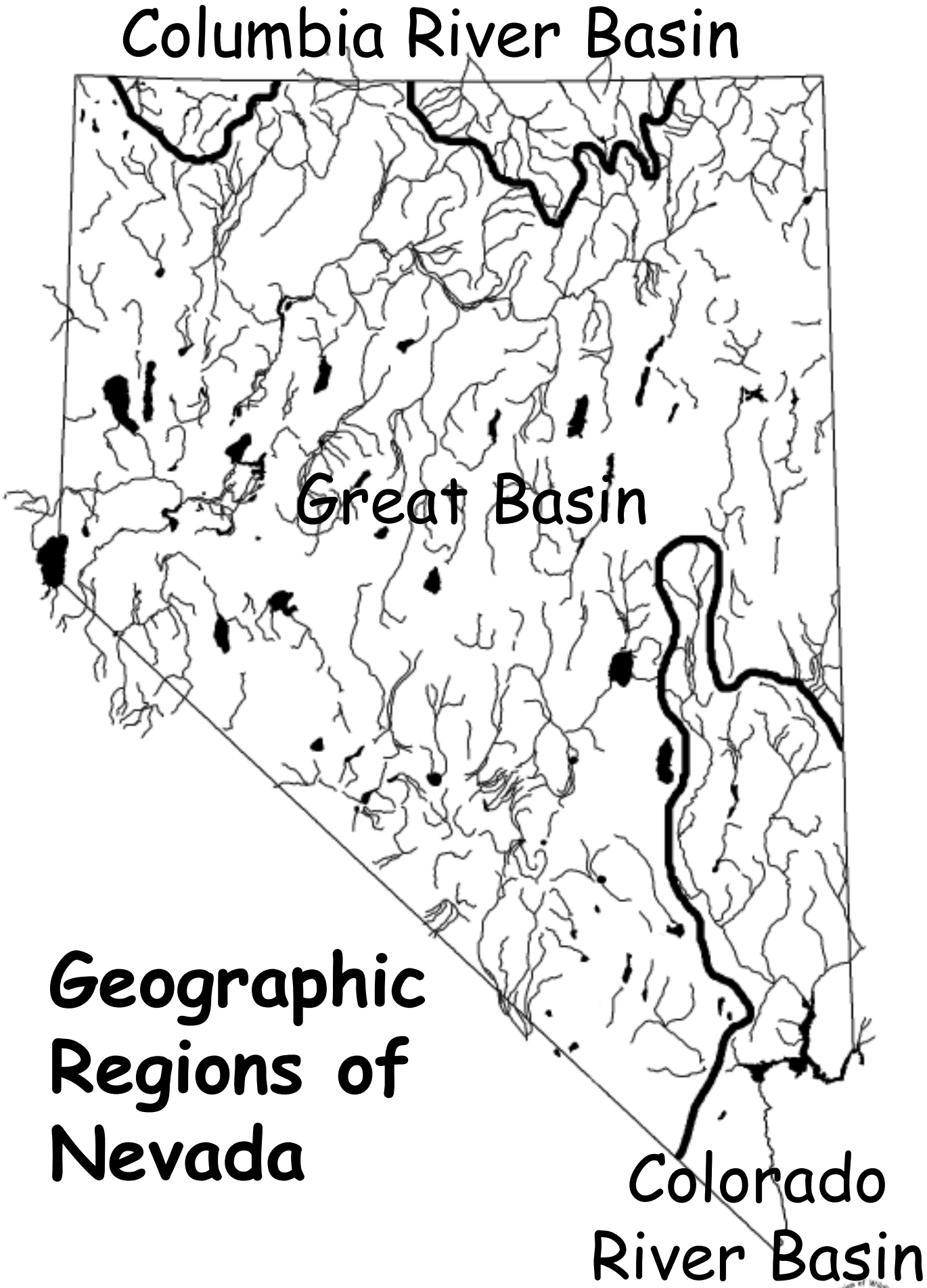
Among the most striking features of Nevada's Mojave Desert region are the deep canyons and arroyos of the Colorado River drainage. Prior to the construction of Hoover Dam in 1931, the Colorado River was unchallenged. Turbulent floods, muddy water and summer drought marked its flows. While these presented nearly insurmountable problems for human use of the river, native fish were well adapted to the murky water and muscular currents.

Pleistocene Lakes of the Great Basin





Rivers, Streams and Lakes of Nevada



Geographic Regions of Nevada

How Come?

Using the maps and the information in *Nevada Geography in a Nutshell* (page 40) and *Native Fish* (page 45), have small groups of students answer these questions about Nevada.

Why is Nevada a desert?

How much rain is there in the Great Basin?

How much rain is there in southern Nevada (Mojave Desert)?

Does all the water in northern Nevada flow into the Great Basin?

What about southern Nevada?

What ocean does Nevada water eventually flow into?

Why are there so many mountain ranges in Nevada?

How did these mountains come to be?

What used to be found in the valleys (in Pleistocene times)?

What do we find in the valleys now?

Why are there creeks and streams in the mountains?

What happens to the water from these creeks and streams?

How did the isolated pools and springs form?

How did so many different populations of small fish form?

Native Fish

There are more than 85 fish native to Nevada's waters, including 27 different dace, 20 chubs, six springfish, 14 suckers, five trout, four killifish, two squawfish, a chiselmouth and a whitefish. More than one-quarter, 26 species of fish are endangered and five, the King Salmon, Yellowstone Cutthroat, Colorado Squawfish, Humpback Chub and the Bonytail Chub are now extinct in Nevada. All of the fish are found in three major basins, the Great Basin, the Colorado River Basin or the Snake River/Columbia River Basin.

As recently as 10,000 years ago, a pair of Pleistocene lakes filled the lowlands of the entire Great Basin. Lake Bonneville covered the northwestern third of Utah and Lake Lahontan filled the valleys and sinks of northern Nevada. Many of the fish that live in Nevada today plied the brackish waters and tributaries of ancient Lake Lahontan. As this Ice Age lake shriveled into the emerging desert conditions of present-day Nevada, many of the fish in the big lake disappeared, others became isolated in the smaller bodies of water that remained.

Until construction of Hoover Dam began in 1931, the spring floods of the Colorado River and its tributaries had gone unchallenged for eons. Native fish were specifically adapted to the muddy water, swift currents, extreme temperatures and droughts of the river and its tributaries. Dams and diversions were built which changed conditions in the river and reduced the range of many of these prehistoric natives. In this new environment, some species dwindled, and others flourished.

Until the beginning of the 20th century, Nevada's anglers actually enjoyed salmon and steelhead runs in the very northern-most part of the state. The anadromous fish swam from the Pacific up through the Columbia and Snake rivers into the upper reaches of the Jarbidge, Owyhee and Bruneau rivers. With the construction of major dams along the Snake and Columbia rivers, the ocean-going fish were blocked from getting into the state. Fish native to the Snake River system are still found in these three Nevada river systems.

A Tale of Two Fish – There are two species of fish, the Lahontan Cutthroat trout and the Colorado Squawfish, that represent the history of many of Nevada's native fish. The same factors that affected these fish have impacted every native fish in Nevada.

Lahontan Cutthroat trout were once so plentiful that pioneers recorded walking across the Truckee River on the backs of the spawning trout. These fish, which were the top predators in Pleistocene Lake Lahontan, grew to five feet and weighed up to 60 pounds. Land development, pollution, diversion of water, introduction of nonnative trout, unregulated commercial fishing (overfishing) and the construction of dams and other permanent obstacles all led to the extinction of the original Lahontan Cutthroat trout populations in Nevada.

Colorado Squawfish thrived in the Colorado River system. For more than 10,000 years, they migrated hundreds of miles against spring floods. These big minnows grew to six feet and weighed up to 90 pounds. Construction of dams cut the Colorado Squawfish off downstream. Clear, cold water from the dams did not suit these fish. And, introduced game fish competed with and preyed on the remaining Squawfish. Now, the Colorado Squawfish is extinct in the lower Colorado River basin, including Nevada. Wild populations are found only in isolated areas of the upper Green and Colorado rivers.

A Checklist of Native Fish of Nevada

***Historically found in Nevada but now extinct within the state's borders**

Fish not shown to scale

	Nevada Range
King Salmon*	Extreme N Nevada bordering Idaho
Dolly Varden Trout	Extreme N Nevada bordering Idaho
Lahontan Cutthroat Trout	W Central Nevada and Humboldt River
Yellowstone Cutthroat Trout*	Extreme N Nevada bordering Idaho
Bonneville Cutthroat Trout	Eastern Nevada bordering Utah
Utah Cutthroat Trout*	Eastern Nevada Bordering Utah
Colorado Cutthroat Trout	Colorado River SE Nevada
Red-Band Rainbow Trout	Extreme N Nevada bordering Idaho
Bull Trout	Extreme N Nevada bordering Idaho
Mountain Whitefish	N Nevada along the outer Great Basin
Lahontan Mountainsucker	W Central and NW Nevada
White River Mountainsucker	White River SE Nevada
Biglip Sucker	Extreme N Nevada bordering Idaho
Bridgelip Sucker	Extreme N Nevada bordering Idaho
Utah Sucker	Extreme N Nevada bordering Idaho
Flannelmouth Sucker	Colorado River Drainage SE Nevada
Tahoe Sucker	NW Nevada and the Humboldt River
Razorback Sucker	Colorado River SE Nevada
Cui-ui Sucker	Pyramid Lake W Central Nevada
Northern Squawfish	Extreme N Nevada bordering Idaho
Colorado Squawfish*	Colorado River SE Nevada
Chiselmouth	Extreme N Nevada bordering Idaho
Colorado Gila (Humpback Chub)*	Colorado River SE Nevada
Swiftwater Colorado Gila (Bonytail Chub)*	Colorado River SE Nevada
White River Colorado Gila	White and Colorado Rivers SE Nevada
Utah Gila	Extreme E Nevada on the Utah border
Redside Shiner	N Nevada
Lahontan Redside	NW Nevada Reese and Humboldt Rivers
Columbia Redside	Extreme N Nevada bordering Idaho
Bonneville Columbia Redside	Extreme N Nevada bordering Idaho
Tui Chub	Sierra Nevada Mountains NW Nevada
Lahontan Tui Chub	NW Nevada and the Humboldt River
Speckle Daced	
Snake River Speckled Dace	Extreme N Nevada bordering Idaho
Lahontan Speckled Dace	NW Nevada Humboldt and Reese Rivers
Amargosa Speckled Dace	Amargosa River SW Nevada
White River Speckled Dace	White River SE Nevada
Moapa Dace	Moapa Valley SE Nevada
Soldier Meadows Desertfish	Soldier Meadows NW Nevada
White River Spine Dace	White River SE Nevada
Virgin River Spinedace	Virgin River Extreme SE Nevada
Big Spring Spinedace	Meadow Valley Wash SE Nevada

Pahranagat Spine Dace	Pahranagat Valley SE Nevada
Woundfin (minnow)	Virgin River Extreme SE Nevada
Big Spring Amargosa Pupfish	Ash Meadows SW Nevada
Lovell Spring Amargosa Pupfish	Ash Meadows SW Nevada
Devil (Devil's Hole) Pupfish	Death Valley SW Nevada
White River Springfish	White River SE Nevada
Railroad Valley Springfisn	Railroad Valley N Central Nevada
Ash Meadows Poolfish	Ash Meadows SW Nevada
Manse Ranch Pahrump Poolfish	Pahrump Valley, SW Nevada
Pahrump Ranch Pahrump Poolfish	Pahrump Valley, SW Nevada
Raycraft Ranch Pahrump Poolfish	Pahrump Valley, SW Nevada

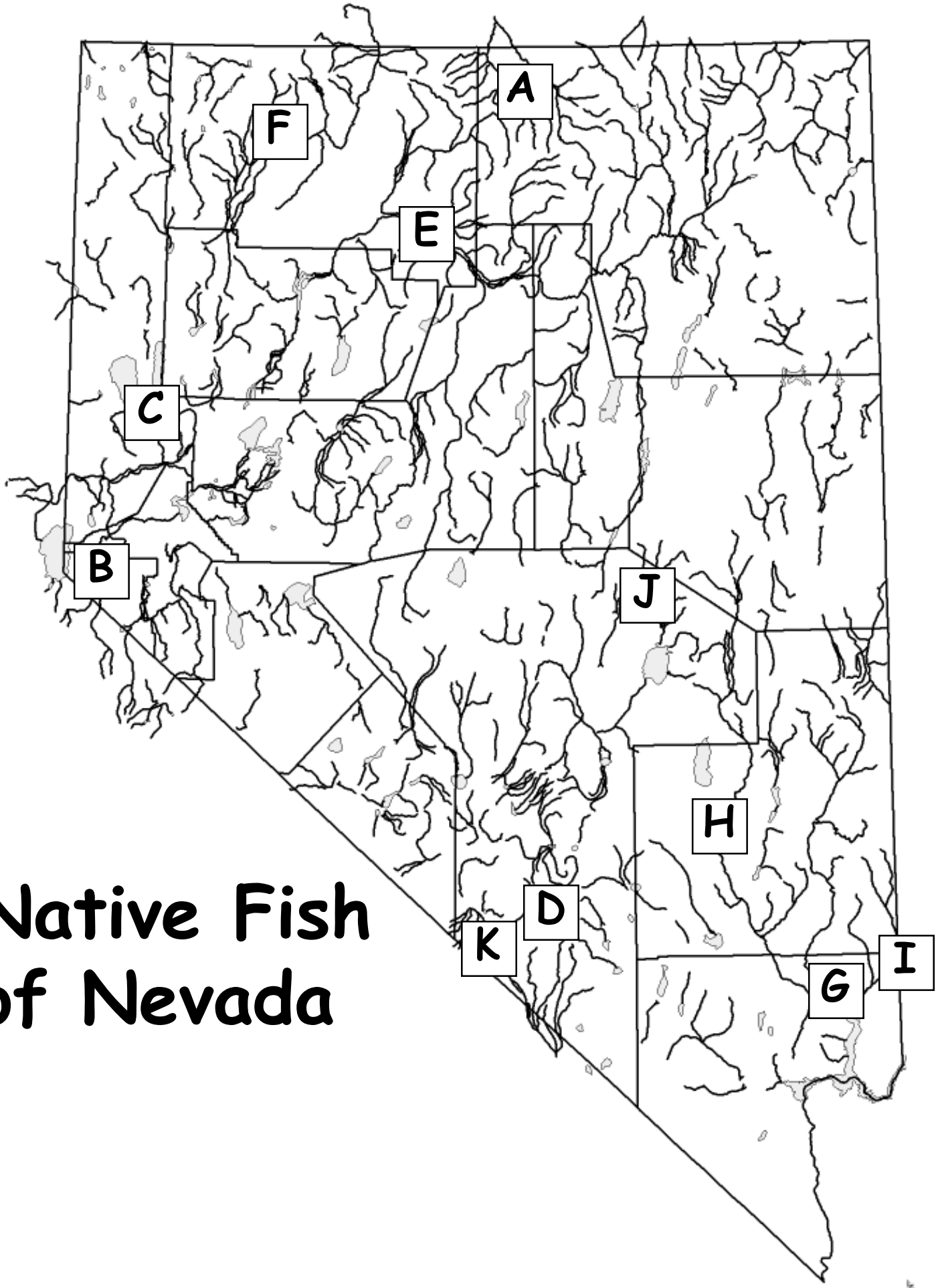
What Town Would I Live In?

Using the map on page 48 and a Nevada state highway map, have small groups of students identify the town nearest the location of the following fish.

	Fish	Town
A	Snake River Speckle Dace	Mountain City
B	Lahontan Cutthroat Trout	Reno/Carson City*
C	Cui-ui Sucker	Wadsworth/Fernley*
D	Amargosa Speckle Dace	Beatty/Pahrump*
E	Lahontan Redshiner	Battle Mountain
F	Soldier Meadows Desertfish	Gerlach
G	Moapa Dace	Glendale/Moapa Valley/Logandale*
H	Pahranagat Spine Dace	Caliente
I	Woundfin (Minnow)	Mesquite
J	Railroad Valley Springfish	Duckwater/Ruth/Ely*
K	Devil's Hole Pupfish	Beatty

* May be one town or the other depending on the detail of your map.

Native Fish of Nevada



ADAPTATIONS

Match the adaptations of the fish with the habitat where it is most likely found.

Sculpin: The sculpin is adapted to feed on emerging insects in cold, clear streams. Its flat body and odd shape help it hide on the bottom of the river, or dodge from rock to rock to avoid the strong current. Sculpins actually change color for camouflage.

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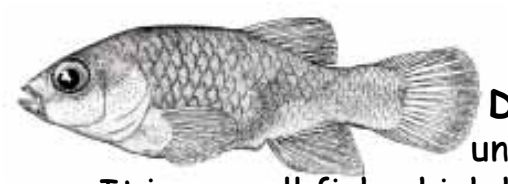
Where am I found?



Devil's Hole Pupfish: The Devil's Hole Pupfish is uniquely adapted to live in the deep, dark warm water. It is a small fish which helps it nimbly swim in small confines and passages.

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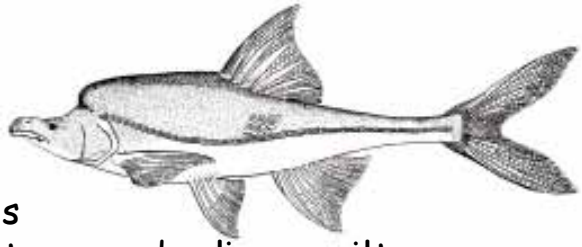
Where am I found?



Humpback Chub: It's not really a chub, but a unique fish whose shape has adapted to allow it to migrate through the voilent floods and deep canyons of desert rivers. The Humpback Chub is conditioned to weather extreme water temperatures and relies on silty backwaters for nesting cover.

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Where am I found?

Woundfin (Minnow): A desert fish, the Woundfin has adapted to small, desert tributaries choked with silt, that alternate between raging flood and drying up to small, isolated pools. In flodd the Woundfin can hang near the bottom or scoot along the eddies of the stream. In drought, the Woundfin lies low at the bottom of the shallowest pool.

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Where am I found?

Colorado River - Deep canyons, silty waters, high floods and droughts, meandering and braided channels with lots of isolated backwaters in the summer and fall.

Truckee River - Fast clear water, mountain stream, a free-stone river with lots of various-sized rocks, lots of aquatic vegetation and insects

Virgin River - Tributary to the Colorado River, prone to extremes in water levels, flooding in late Spring and completely drying up in fall and winter.

Ash Meadows - A string of isolated springs, pools and holes, many geothermal, dark and confined.

See "Fashion A Fish" Aquatic WILD Guide

ADAPT YOUR OWN FISH

Use your WILD imagination to draw or describe adaptations for fish that could live in these unusual habitats:

A lake that goes completely dry for at least three months out of the year, or it may be dry for years at a time -

A pot-hole that is completely dark all the time, with narrow passages and small chambers, the water is always warm, but in some spots very hot -

A river that sometimes flows above the ground and sometimes underground -

A muddy river that has fast and violent currents in the Spring, and slows to a trickle in the Fall, in the summer the water is hot, in the winter it's cold -

Fisheries & Fishing in Nevada

Nevada is the most arid state in the union and a rapidly growing human population has put increasing demands on water resources and fishing in the state. From the days of the Comstock until the early 1900's, Lake Tahoe and Pyramid Lake actually supported commercial fishing for the famed Lahontan Cutthroat Trout. And, in the late 1800's, Colorado Squawfish was a staple on the menu of restaurants in Nevada, Arizona and Utah. Nowadays, commercial fishing is restricted to carp and Sacramento Blackfish, which are sold in California markets. Department of Wildlife fishery programs support and promote recreational fishing in Nevada. Because of the demand for fishing in Nevada, and our limited water resources, there would be no fishing in Nevada without the hatchery system. Although a variety of cold and warm water fish live in the state, the primary focus of the hatchery program is on trout.

Habitat

Habitat is the key for fish and fishing in Nevada. Regional and field biologists constantly survey, plan and work to secure and improve habitat for fish. For fish, the essential habitat element is water. With growing human demands on Nevada's water for agriculture, mining, industrial and municipal use, water for fish water becomes more of an issue every year. Policies and practices on public land, which encompasses 87 percent of Nevada, are changing, presenting opportunities to restore native habitat along waterways that have been neglected and abused for years. Cities and towns often provide opportunities to develop fishable waters in odd places, like golf course ponds, lakes within city parks and nearby agricultural waterways. Increasingly, communities are seeing the value of developing wetland parks as natural settings for recreational and educational activities. Regardless of how things are changing, because of Nevada's growing population, there will always be a conflict about how we use our valuable water.

Native Fish

Native Fish often live in unique habitats and the primary task of the biologists may be protecting these unusual habitats from human encroachment. In some cases, little is known about many of these curious little fish. They are the subject of much study by a variety of groups including fisheries societies, universities or other government agencies. Nevada Department of Wildlife biologists ultimately have the authority and responsibility for managing these fish. They work together with these groups to help ensure that Nevada's isolated and unique native fish populations survive into the future. Some of Nevada's native fish are "federally listed," meaning that they are a sensitive, threatened or endangered species. The Nevada Department of Wildlife works directly with federal agencies to help preserve and enhance habitat and restore endangered fish in Nevada.

Non-Native Fish

For the last 100 years many of Nevada's waters have been managed primarily for human use. This caused changes in the way water flowed in streams and into lakes and reservoirs, how deep and fresh the big lakes were, how cool and clear streams and lakes were. Lakes (reservoirs) appeared where none existed before as dams were built. Wetlands appeared where none existed before due to spill-over from irrigation and mining. Other natural wetlands disappeared as the water was used up by cities, mines and farms.

As people moved into Nevada, they wanted to be able to fish the waters of Nevada. Some people brought the fish they liked to catch in their home states. The changes in

Nevada's waters favored other kinds of fish that weren't nativeto Nevada, so those fish were brought in. In some cases, waters were poisoned to clear the way for the new fish. Hatcheries were built, and strains of fish that could thrive with the changed Nevada environment were raised in the hatcheries and planted in Nevada's streams and lakes in order to boost Nevada's fishing opportunities.

Fish Hatcheries

Hatcheries hatch and grow trout for recreational fishing only. Fishing in Nevada is almost completely supported by the hatchery program. The **Lake Mead Hatchery** (southern Nevada), **Mason Valley Hatchery** (near Yerington), **Gallagher Hatchery** (Ruby Valley, near Elko) and **Spring Creek Rearing Station** (eastern Nevada, near Great Basin National Park), produce rainbow, cutthroat and brown trout for stocking in lakes and streams throughout the state. Regular stocking of the state's waters is scheduled in the spring and summer and fall for the northern half of the state and fall winter and spring in the south. Catfish, bass and other fish are brought in from other states to supply our warm-water fisheries. Hatchery trucks sometimes carry fish hundreds of miles to stock both popular and isolated waters within their region (see map page 56).

The fish have been raised in long troughs, called raceways, in water that is a consistent temperature, with regular feedings. Often, it's quite a task to acclimate (adjust) the fish to extreme differences between the raceways, the truck and their new environment. Water that's too warm or cold, too different in the chemical or pH balance or with insufficient oxygen may promote disease in the fish or even kill them. So, biologists study the waters in their areas closely, in order to make recommendations about when to stock and how many fish to put in each place. When hatchery workers are stocking the fish, they make last-minute checks, and may have to gradually change the water in the truck-tank to acclimate the fish for stocking.

Restoration

Within the last few years, there have been efforst to restore native fish to their natural range. Native fish are being reared in some state and federal hatcheries, habitat restoration is being done in some of Nevada's waters and some waters are being set aside for the restoration of native fish. But, there are problems with restoring native fish. Many of the historic habitats of these fish can't be changed back to the way they were. Dams can't be torn down, cities, mines and farmers still need water. Polluntants and waste still find their way into the river, changing the chemical balance and oxygen levels of the rivers and lakes. Non-native fish are bred to fare better in these altered habitats. Game fish are more agrressive that the natives and out-compete them or even prey on the natives. In an ironic twist of history, some of the waters designated for native fish restoration are even being poisoned to clear out all the non-natives to make way for the native fish.

The Future

What will the future hold for fish in Nevada? It's hard to say. Nevada's state hatcheries have all been rennovated, including some additional changes to allow for the rearing of native fish. Nevada'scities are all growing, especiallyLas Vegas. These big urban areas are making more and more demands on Nevada's water resources and even more drastic changes in the aquatic environment. A decline in the number of anglers may reduce the positive influence that this group may have on the future of fish and fishing in Nevada. And, changes in farming, ranching and an increase in mining may affect the watery world of fish.

Introduced Fish

More than 20 species of fish have been introduced into Nevada, some as early as 1877 (Bullhead Catfish). The fish were brought to Nevada as game fish, for commercial or decorative purposes, some even got here by accident. Listed below is a timeline of fish importation, the native range of the fish, their range in Nevada and the reason they were brought here. These are just some of the fish that have been brought into Nevada.

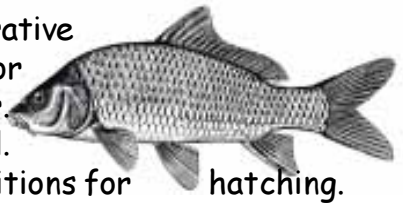
Date	Fish	Native Range	Nevada Range	Reason
1877	Bullhead Catfish	Mississippi River	NW Nevada	Commercial/Game Fish
1879	Sacramento Perch	California	N Nevada	Game Fish
1880	Rainbow Trout	Western States	Statewide	Game Fish
1881	Asiatic Carp	China	Statewide	Commercial/Decorative
1883	Brook Trout	Eastern U.S.	N Nevada	Game Fish
1892	Channel Catfish	Mississippi	Statewide	Game Fish
1895	Brown Trout	Germany/Europe	Statewide	Game Fish
Before 1900	Lake Trout	N Central U.S.	Lake Tahoe	Game Fish
Before 1900	Goldfish	China	Statewide	Decorative
1900	Largemouth Bass	Eastern U.S.	Statewide	Game Fish
1909	Bluegill	Eastern U.S.	Statewide	Game Fish
1921	Golden Trout	Western States	Sierra/Ruby Mtns.	Game Fish
1924	Black Crappie	Eastern U.S.	Statewide	Game Fish
1930	Yellow Perch	NE U.S.	N Nevada	Game Fish
1934	Mosquito Fish	Eastern U.S.	Statewide	Pest Control
1938	White Catfish	Atlantic States	NW Nevada	Game Fish
1939	Green Sunfish	Eastern U.S.	Statewide	Game Fish
1950	Kokanee Salmon	Siberia/Pacific NW	Lake Tahoe	Game Fish
1953	Threadfin Shad	Mississippi River	Colorado River	Forage Fish
1956	White Crappie	Eastern U.S.	Statewide	Game Fish
1970	Silver Salmon	Pacific NW	N Nevada	Game Fish
1970's	Walleye Pike	N Central U.S.	N Nevada	Game Fish
1970's	Smallmouth Bass	Eastern U.S.	Statewide	Game Fish
1970's	Arctic Grayling	Canada/Alaska	NW Nevada	Game Fish-Accidental
1970's	Striped Bass	Atlantic States	Colorado River	Game Fish
1970's	Bowcut Trout	None (hybrid)	Statewide	Game Fish
1980's	White Bass	NE U.S.	Statewide	Game Fish
1980's	Wiper Bass	None (hybrid)	N Nevada	Game Fish
1980's	Tiger Trout	None (hybrid)	N Nevada	Game Fish
1980's	Redear Sunfish	Southern States	Statewide	Game Fish
1990's	Spotted Bass	Eastern U.S.	N Nevada	Game Fish

Several species, including Tilapia (Africa) Fathead Minnow (Southern U.S.), the Tiger Muskie (hybrid) and Northern Pike (N. Central U.S.) have been illegally introduced into the state. Generally, these were done by well-meaning anglers as game fish or as "bait-bucket introductions." Regardless of the reason, non-native fish have affected the habitat and life-history of native fish. Aggressive game fish, such as pike and rainbow trout, or prolific spawners like carp and Fathead minnows will completely take over in some waters In the past, some drastic management measures included changes in water flows to favor game fish, and even chemical treament of new reservoirs, like Lake Mead, to get rid of native fish and make way for game fish.

Illegally introduced species continue to wreak havoc among native and more desirable game fish. As sensibilities among fisheries managers have changed, compromises have been made in the management of the states waters and fisheries to accomodate the needs of native fish.

Where Did I Come From?

Use the descriptions of these fish to try and match the location and region where these introduced fish originated and where they now live in Nevada.



Carp: Domesticated thousands of years ago in Asia, for food as decorative pets for wealthy landowners, carp are particularly well-suited for survival in a wide variety of environments, both warm and cold water. They are scavengers and feed on almost any plant or animal material. The can lay thousands of eggs anywhere and require no special conditions for hatching.

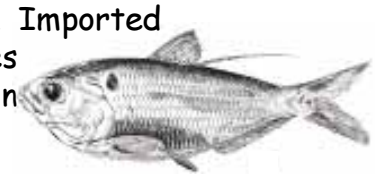
Where do I come from **Where do I live in Nevada?**

Kokanee Salmon: Originally an anadromous fish (living in both the ocean and the rivers), some Sockeye Salmon became landlocked (living only in lakes and rivers) and became Kokanee Salmon. All salmon need fast-moving, cold, clear water and fresh, clean gravel to lay their eggs, big rocks and lots of vegetation to hide in, and a big ocean or lake to grow up in.

Where do I come from **Where do I live in Nevada?**

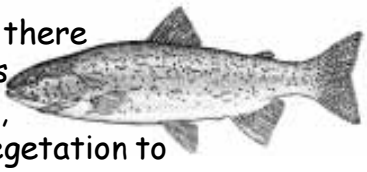
Perch: Like carp, this hardy game fish is well-adapted to survive in almost any aquatic environment. But, it does better in cooler streams and lakes and more moderate climates. It can spawn anywhere and lays thousands of eggs. It was brought into Nevada as a game fish and has thrived in some areas of the state.

Where do I come from **Where do I live in Nevada?**



Threadfin Shad: This fish prefers warm water and warmer climates. Imported to provide a food base for other game fish, the Threadfin Shad does well in sunny, warm environments and doesn't require much vegetation for cover, hiding instead in rocky outcroppings.

Where do I come from **Where do I live in Nevada?**



Rainbow Trout: Many strains of this trout were anadromous, but now there are whole populations of this popular game fish that live only in lakes and streams throughout the United States. Like their salmon cousins, they need clear, cold, clean water, gravel and stones in the river and vegetation to hide in and provide habitat for insects to eat.

Where do I come from **Where do I live in Nevada?**

More or Less

Before humans began to change the landscape of Nevada, there were relatively few types of fish in many of the rivers and streams of the state. The fish that lived here were specifically adapted to the extreme conditions of the climate and habitat.

Between 1902 and 1968 huge dams were built throughout the West, which blocked the migrations of many native Nevada fish. Reservoirs, impounded behind the dams, cleared up the water and stopped the extreme fluctuations in flows. The reservoirs were colder, as were tail-race waters downstream from the dams. The rivers dropped their silt the reservoirs. As a result, sandy backwaters and oxbows dissappeared, and the murky water no longer offered escape and nesting cover for spawning fish and fry. During severe drought, water may be drawn off for agricultural or municipal use, sometimes leaving rivers completely dry. Municipal, agricultural and industrial waste may find its way into the rivers. Rivers and streams may be dredged and diked for flood control, destroying the natural bottom of the river.

Today, there is a wide variety of non-native fish in many of those waters that held only a handful of hardy, native fish before. But, many of the natives disappeared over the years. Use the habitat requirements of the fish below, to tell whether they have either flourished (more) or dwindled (less). Check the appropriate box.

More **Less**

Channel Catfish - _____ _____

Adapted to live in muddy or clear water, spawns almost anywhere, lays thousands of eggs, scavenger that feeds on almost any plant or animal material. The Channel Catfish is very localized and does not migrate.

More **Less**

Colorado Squawfish - _____ _____

The top predator in the basin, this large minnow achieved 90 pounds and six-feet in length, yet it could still negotiate the shallowest stream and most tubulent rapids. It would migrate for hundreds of miles to spawn in the shallow, clear, fast-moving tirbutaries of the Green and Colorado Rivers.

More **Less**

King Salmon - _____ _____

This anadromous fish swims upstream, through rapids and waterfalls, to the furthest reaches of the Snake and Columbia River Basins to spawn in the gravel of cold, clear streams. When the young hatch, they must swim down to the ocean to mature.

More **Less**

Lahontan Cutthorat Trout _____ _____

Once the king of ancient Lake Lahontan, this trout grew up to five feet and often weighed 60 pounds. After Lake Lahontan receded, it was restricted to the Truckee, Walker, Carson and Humboldt river drainages, It would migrate into the upper tributaries to spawn.

More **Less**

Crappie _____ _____

This fish is adapted to live in a wide variety of temperate climates and water temperatues. It prefers clear waters in reservoirs and lakes, but can succeed in more brackish (mineralized/salty) water.

More **Less**

Cui-ui Lakesucker - _____ _____

This localized sucker was once found through the entire Great Basin, but as Lake Lahontan dried up, it found a spot in Pyramid Lake. Cui-ui need natural flows to spawn in the river near where it meets the lake.

King Salmon In Nevada?

It's hard to believe, but less than 100 years ago, King Salmon came all the way from the Pacific Ocean into the northern reaches of Nevada. During the late 1800's and early 1900's, the salmon run into northern Nevada was quite well known and fishermen flocked to the region to take advantage of this natural wonder.

In June, 1877, the Winnemucca Silver State wrote,"Gov. Bradley, who has left the capital for a little recreation in the mountains is contemplating the beauties of nature and feasting on fine salmon in the headwaters of the Owyhee near Cornucopia."

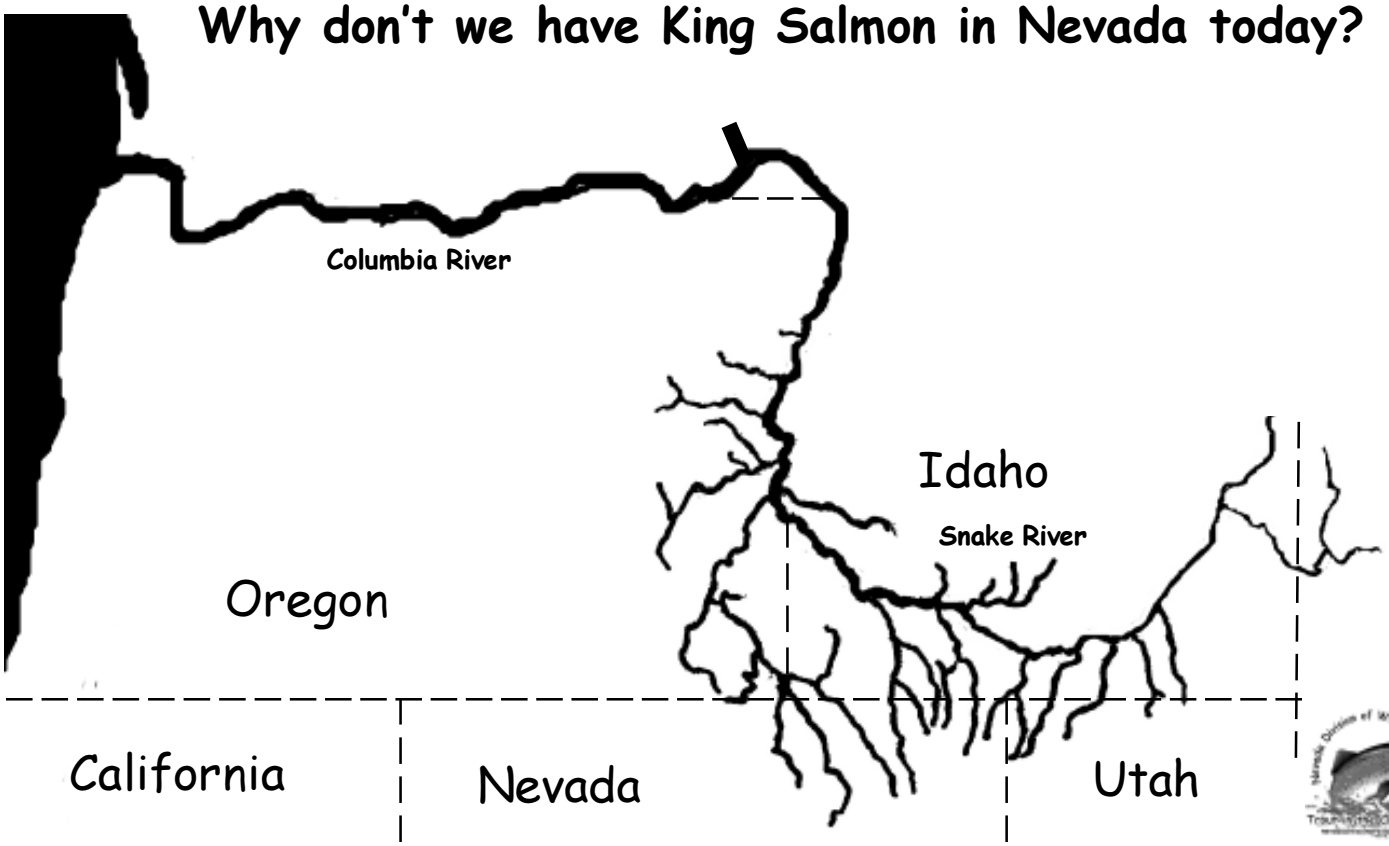
People came from all over Nevada. The Reese River Reveille, in Austin, reported that, "...splendid fish, three feet long and estimated to exceed the weight of 20 pounds, were seen dashing through water scarcely ankle deep. The May 12, 1882 Tuscarora Times-Review said, "The law permits you to fish for salmon now, but it does not guarantee that you will spear any. However, it does not prevent you from lying. Upwards of 9,000,000 are reported as having been taken up to date, but actual count--a footing of about 20."

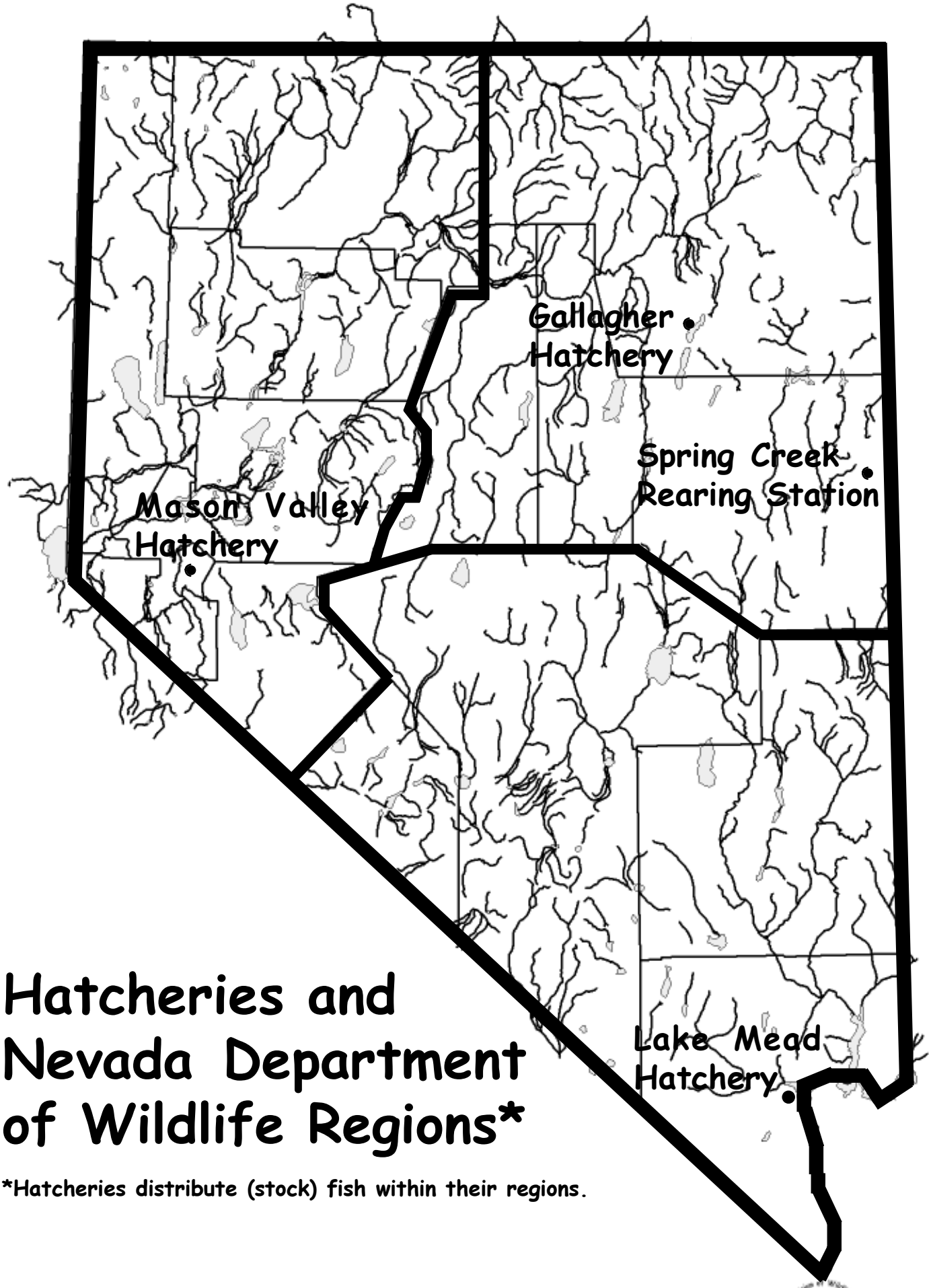
By the early 1900's the fabled salmon fishery of Nevada was gone. Old timers even gave the last salmon to come upstream a name. What happened to this wonderful salmon run? Why isn't it likely that we'll ever see salmon in Nevada again?

Use a colored pen or pencil to trace the migration route of the King Salmon from the Pacific Ocean into Nevada.

In which rivers did early Nevadans catch these?

Why don't we have King Salmon in Nevada today?





Hatcheries and Nevada Department of Wildlife Regions*

*Hatcheries distribute (stock) fish within their regions.

On the Road Again...

Once the fish are raised, hatchery workers load them into large tank trucks equipped with aerators to give the fish plenty of oxygen and keep them alive for the trip to their new home, which could take several hours. The hatchery trucks travel, sometimes hundreds of miles, across some of the hottest and driest parts of North America to stock the fish. Look at the map on page 56, then find the waters listed below on a state road map. Identify which hatchery the trout came from, and give the hatchery truck driver directions to this water.

Lake Mead

Walker Lake

Ruby Marsh

Truckee River

Cave Lake

Eagle Lake

Onion Reservoir

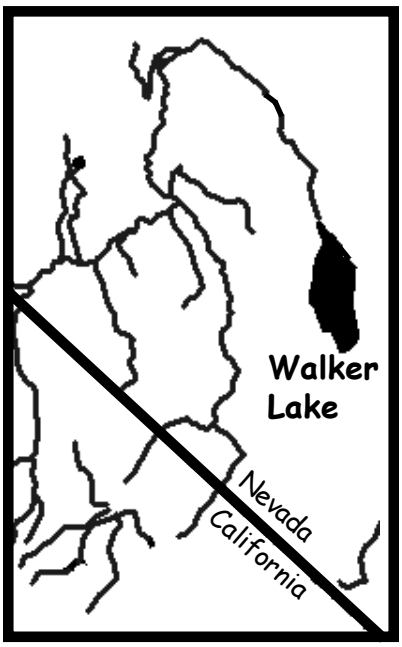
Humboldt River

Truckee River

Walker Lake

Walker Lake is one of the last bits of ancient Lake Lahontan. The Nevada Department of Wildlife has tried to manage Walker Lake as a trout fishery, with Lahontan Cutthroats. The big problem with Walker Lake is the quality of its water. When the lake is full, trout do well and live a natural life of five to eight years. If the water is low, it is more saline and alkaline (salts and minerals), and the fish will only live two to three years because their bodies are overworked, trying to adjust to their environment.

Usually, the water in Walker Lake is so low, so alkaline and so saline that fish brought from the hatcheries can't last very long unless they are acclimated (slowly adjusted) from the clean water of the hatcheries, to the lower water quality in the lake. To do this, biologists and hatchery workers used to mix Walker Lake water with hatchery water, and allow them to acclimate for 24 hours before the fish were transported to Walker Lake. This was a complicated and difficult task, requiring three hatchery trucks at a time, and only allowing the movement of 10,000 pounds of fish (about 50,000 fish) at a time. Nowadays, all 100,000 pounds of fish are taken to the Pyramid Lake hatchery and allowed to acclimate for a week in Pyramid Lake water, which is pumped through the raceways in the hatchery. Then, the fish are transported to Walker Lake, all at once. This is safer, more efficient and just as effective.



Let's say you only have one Lahontan Cutthroat trout that you want to move from the Mason Valley Hatchery to Walker Lake. You have it in a 20 gallon tank and you want to get the water in the tank to 50% Walker Lake quality over two days.

How many gallons of hatchery water would you have to replace with Walker Lake water each day?

Day One	Day Two

Look at the schedule below and use the information above to estimate when the fish would be ready for release.

Day One	Day Two	Day:
9 a.m.	9:30 a.m.	Time:
Water Change	Water Change	Ready for Release

The water in your tank is 10 degrees warmer than Walker Lake. You can only drop the temperature by two degrees an hour without stressing your fish. Replacing one gallon of water in your tank with lake water will reduce the temperature by two degrees. If your fish is ready at the time you listed above, when will you actually be ready for release?