

NEVADA'S NATIVE FISHES

The number of native fishes in Nevada is low when compared with counts from all 50 states. Nevada ties with Colorado with our 48 species, 20 more than Utah, but far fewer than the 284 species found in Alabama. Isolation of many aquatic systems across this driest of the 50 states has allowed for genetic changes that can generate new forms over time. As an example, dozens of distinct populations of tui chubs and speckled dace exhibit characteristics that separate them from chubs and dace in neighboring valleys and isolated drainages. Many of these may be regarded as full species or subspecies in the future.

Overall, the conservation status of the state's native fish diversity is troubling—56% of the taxa are considered to be at risk, and many of them are federally listed as endangered or threatened. Three Nevada fish species and five subspecies are now extinct, and three other species are extirpated from the state—they only occur in waters outside of Nevada. The most common activities posing threats to at-risk native fishes include introductions of non-native fishes and other aquatic animals, water diversions and depletions, and other modifications to habitats mostly associated with agriculture and urbanization.

At least 12 (25%) of Nevada's fishes are endemic to Nevada waters—they occur here and exist nowhere else. Examples are the Devils Hole pupfish (*Cyprinodon diabolis*) which resides in a single spring hole near Ash Meadows, and the cui-ui (*Chasmistes cujus*), a large lakesucker occurring only in Pyramid Lake and the lower Truckee River. Additionally, the Moapa dace (*Moapa coriacea*), the desert dace (*Eremichthys acros*), and the relict dace (*Relictus solitarius*) are in genera found only in Nevada.

Nevada's fishes are exceptional in another respect. This is the only state with an entire family of fishes limited to its boundaries. The Empetrichthyidae, the poolfishes, are found in Railroad Valley, White River Valley, and originally in springs near Pahrump and Ash Meadows. The Ash Meadows species is now extinct, and the Pahrump poolfish persists only as introductions into several other waters.

The illustrations on this poster do not cover all of our Nevada native fishes, but the unrivaled art of Joe Tomelleri accurately pays tribute to the beauty and diversity of our ichthyofauna. We hope that the appreciation of these natives leads to a more widespread concern for their well-being and the implementation of conservation actions that will assure their continued existence in their aquatic habitats across the state.

Families of Native Nevada Fishes

Family Cyprinidae

The Cyprinidae, or minnow family, is one of the most abundant and widely distributed groups of freshwater fishes in the world, occurring throughout North America, Eurasia, and Africa. In North America there are approximately 300 species, ranging in adult size from about one inch to almost six feet. Small minnows are important economically because they provide the link in the aquatic food chain from algae or aquatic invertebrates to larger fish species that are highly sought after for food and recreation.

At least 40 named species and subspecies of cyprinids occurred historically in Nevada. Another 15 or so as yet unnamed tui chubs and speckled dace occur in isolated habitats in central and eastern Nevada. Two species, (Las Vegas dace and Pahrana gat spinedace) are extinct. Two other Nevada cyprinids (humpback chub and Colorado pikeminnow) have been extirpated from the state, but still occur elsewhere in the Colorado River basin.

Family Catostomidae

The Catostomidae, or sucker family, is restricted to North America with the exception of one species in China. They are close relatives of minnows, apparently having evolved from cyprinid ancestors in northeastern Asia through a doubling of the number of chromosomes, spreading eventually into North America while dying out in Asia. Many species of suckers, especially in the arid western United States, are long-lived—some have been documented to live more than 50 years. Approximately 60 described species of catostomids occur in North America. The white sucker (*Catostomus commersoni*) is found in at least 40 states in the eastern and central United States and into Canada. Many species are restricted to much smaller areas, even single river/lake basins

in several instances, such as the Owens sucker (*Catostomus fumeiventris*) in the Owens River, California, and the shortnose sucker (*Chasmistes brevirostris*) in upper Klamath Lake, Oregon.

Fifteen native catostomids, in the genera *Catostomus* and *Chasmistes*, historically occurred in Nevada, although two species probably are no longer present in the state. Two other species or subspecies, the Meadow Valley Wash desert sucker and the Wall Canyon sucker, have not yet been officially named and described.

Family Salmonidae

This family includes trout, salmon, char, and whitefishes and is confined to the cooler waters of the northern hemisphere. Salmonids apparently evolved for living in the cold, nutrient-poor waters of glaciated areas and have subsequently colonized many coastal and headwater streams and coldwater lakes in North America and Eurasia. Many salmonids are anadromous—spawning in freshwater and then moving back into oceans to grow and mature. Others are confined to freshwater streams and lakes for their entire life cycle. The family includes many of the best-known species of fishes because of their importance for food and recreational fishing.

Many species have been widely introduced outside their native ranges for the benefit of anglers. The eastern brook trout (*Salvelinus fontinalis*) now occurs throughout the United States in suitable habitats, and rainbow trout (*Oncorhynchus mykiss*) from the western coast of North America have been introduced as far away as New Zealand, Chile, and Argentina. The European brown trout (*Salmo trutta*) was introduced into the United States in the 19th century and now occurs in most states. Introduction of these three trouts has negatively impacted many native trouts in the western United States through predation, hybridization, and competition for food and habitat.

Eight native salmonids, including one undescribed subspecies of cutthroat trout, historically occurred in Nevada. One of these species, the anadromous Chinook salmon (*Oncorhynchus tshawytscha*) was present in the headwaters of the Snake River system in northeastern Nevada, but is now extirpated from the state. The Alvord cutthroat trout (*Oncorhynchus clarkii alvordensis*) was restricted to streams in the Alvord basin of northwestern Nevada and southeastern Oregon and is now extinct.

Family Cottidae

The sculpin family contains both marine and freshwater species, all adapted to living at the bottom of water bodies. The 25 or so freshwater sculpin species in the United States are all placed in the genus *Cottus*. All sculpins are scaleless, but some species have sharp prickles over most of their body. Sculpins are typically only a few inches in length, with a large flattened head, large eyes, and fanlike pectoral fins. Sculpins have large mouths with small teeth and are voracious feeders on aquatic invertebrates, especially insect larvae, snails, and beetles. They are typically inactive during daylight hours and come out of hiding to feed at night. Sculpins often occur in trout waters, and some fishermen erroneously believe that they feed extensively on trout eggs and young. However, food habit studies consistently show that predation on other fishes is exceedingly rare.

Three native species of sculpins are known to occur in Nevada, one in the eastern portion of the state within the Bonneville Basin, and one in the Lahontan Basin of western Nevada and adjacent California, and one in the Jarbidge River in Elko County. A recent discovery of sculpins in an isolated spring in southern Nevada may eventually prove to be a new taxon.

Family Cyprinodontidae

This family, the pupfishes, consists of about 100 species, often living in harsh habitats that no other fishes can tolerate. Cyprinodontid fishes occur in diverse habitats throughout much of the world. In North America, pupfishes of the genus *Cyprinodon* occur primarily in the desert southwest and Mexico. The name pupfish was first applied by an early researcher as he recorded their “playful” behavior, which is actually the aggression shown between males chasing each other. Pupfishes are small and aggressive, with small conical teeth and extendable lips.

In many species, males are larger than females and typically develop bright iridescent bluish colors, especially during courtship and spawning. Pupfishes feed primarily on small aquatic invertebrates and algae. Many pupfishes can tolerate highly saline water and temperatures as well as extreme fluctuations in both. The Amargosa pupfish (*Cyprinodon nevadensis amargosae*) in the Amargosa River of southern California, can

tolerate water temperatures of 107 degrees F. Two species of *Cyprinodon* (one consisting of two subspecies) are native to southern Nevada within the boundary of the Ash Meadows National Wildlife Refuge.

Family Empetrichthyidae

The two genera (*Crenichthys* and *Empetrichthys*) of fishes in this family, the pool-fishes, have historically been placed by ichthyologists in various families, including the Cyprinodontidae and, more recently, the family Goodeidae. In 1986, two researchers proposed that both genera, found only in isolated spring pools in southern Nevada, should be placed in the family Empetrichthyidae because of their isolation from other Goodeids (which occur only in mountains of central Mexico, 1,500 miles from the Nevada species), and because both genera are oviparous (egg-layers), distinct from the live-bearing Goodeids. Thus, this family is endemic to Nevada. Individuals are less than 2 inches in length. The limited studies to date indicate poolfishes feed primarily on algae, diatoms, and aquatic insect larvae.

Two species of *Crenichthys*, one with five subspecies, occur in southern Nevada. Two species of *Empetrichthys* occurred in southern Nevada near Pahrump, but one of these (*Empetrichthys merriami*, the Ash Meadows poolfish), became extinct around 1948 due to habitat alteration, and introductions of non-native species.

Descriptions of Illustrated Nevada Native Fishes

Family Salmonidae—Trout, Salmon, and Whitefish

Mountain Whitefish

(Prosopium williamsoni)

Max. length: 27 inches

Mountain whitefish have a wide distribution in western North America. In Nevada, they occur in the Truckee, Walker, Carson, and Humboldt rivers, usually at elevations greater than 4,500 feet, including Lake Tahoe. Individuals have a slender, cylindrical body with a smaller relative head size than typical salmonids. Most are less than 20 inches in length. Mountain whitefish occur primarily in clear, cold mountain streams with pools at least 3 feet deep. They feed primarily on bottom-dwelling invertebrates. In streams they will also feed on drifting invertebrates, including terrestrial insects (and artificial lures and flies). They often use their pectoral fins and tail to stir up the bottom, and then feed on the exposed invertebrates. Historically, mountain whitefish were much more abundant than today. They were harvested by Native Americans and commercially in Lake Tahoe.

Bull Trout—Threatened

(Salvelinus confluentus)

Max length: 24 inches

The bull trout, like the introduced brook trout (*Salvelinus fontinalis*), is actually a char, part of the Arctic char complex that ranges over North America and Eurasia. In North America, bull trout are native to the Pacific Northwest and western Canada. They occur in Nevada only in the Jarbidge River drainage, a tributary of the Snake River in Elko County. Bull trout are fall spawners, and are generally restricted to higher-elevation cold-water streams. Some are migratory, and others are permanent residents. Resident juveniles and adults feed primarily on aquatic invertebrates, while migratory adults feed primarily on other fishes, including juvenile trout and salmon. Threats to bull trout include introductions of non-native fishes such as brook trout and hatchery rainbow trout, dams and water diversions and other habitat disturbances.

Columbia River Redband Trout

(Oncorhynchus mykiss gairdneri)

Max. length: 10 inches

Columbia River redband trout are found only in upper Snake River Basin streams in southeastern Oregon, northeastern California, and northeastern Nevada. They are one of a complex group of rainbow trout-like populations in basins that have become isolated from coastal rainbow trout. Columbia River redband trout

are similar in appearance to coastal rainbow trout, but they usually have larger, more rounded spots and distinct white tips on the anal, dorsal, and pectoral fins. Redband trout subspecies seem to prefer cool, clear, relatively small low-gradient streams.

Lahontan Cutthroat Trout—Threatened

(Oncorhynchus clarkii henshawi)

Max. length lake form: 48 inches

Max. length stream form: 24 inches

The Lahontan cutthroat trout is one of several subspecies of cutthroat trout and is native to the Lahontan Basin of northeastern California, southeastern Oregon, and northwestern Nevada. Cutthroat trout are named for a red or orange slash mark that runs along both sides of the lower jaw in adults. This subspecies is generally heavily marked with large, rounded black spots. In Nevada, Lahontan cutthroat trout occurred naturally in the Truckee, Carson, Walker, Humboldt, and Quinn River drainages. Stream-dwellers generally live less than 5 years, and lake dwellers live between 5 and 9 years. Lahontan cutthroat trout were found in Tahoe, Pyramid, and Walker lakes but were extirpated from those three lakes by the late 1930s. Fish in Pyramid and Walker lakes were reintroduced from several sources, and provide important recreational fisheries in both. They are intolerant of introduced salmonids such as rainbow, brook, and brown trout due to predation, competition, and hybridization. These factors, along with dams and water diversions, have caused the decline in Lahontan cutthroat trout numbers.

Bonneville Cutthroat Trout

(Oncorhynchus clarkii utah)

Max. length: 10 inches

Bonneville cutthroat trout historically were found in the Bonneville Basin of western Utah, southwestern Wyoming, and extreme eastern Nevada. In Nevada, Bonneville cutthroat trout occur naturally in only a few isolated streams near the Utah-Nevada state line on the east side of the Snake Range in White Pine County. Some habitat at higher elevations is within Great Basin National Park. A few out-of-basin introductions into other streams have occurred, including one into Goshute Creek about 55 miles north of Ely. Coloration of this cutthroat is usually not as vivid as in other subspecies, and it has large, more evenly distributed spots. Like other trout species, Bonneville cutthroat require naturally fluctuating flows, well-distributed pools, stable stream banks, and abundant cover.

Family Cyprinidae—Minnows

Desert Dace—Threatened

(Eremichthys acros)

Max. length: 2 inches

The desert dace occurs in thermal streams, pools, and marshes at Soldier Meadow in Humboldt County. Desert dace have the highest temperature tolerance of any minnow in western North America, and occupy habitats varying in temperature from 64-104 degrees F.

Spring outflows are usually too hot to inhabit, so cooler habitats downstream generally have the highest fish densities. Desert dace closely resemble the co-occurring Lahontan speckled dace (*Rhinichthys osculus robustus*), but differ in possessing small, sharp, horny sheaths on both jaws that aid in grazing on algae. Threats to the desert dace include habitat alterations and water diversions, and introduction of non-native fishes such as goldfish and green sunfish.

Humpback Chub—Endangered

(Gila cypha)

Max. length: 20 inches

This rare species is found in fast, turbulent waters of the Colorado River system in, and upstream of, the Grand Canyon, and is one of North America's most unusual fishes. The most notable feature is the prominent hump between the head and dorsal fin in adults. The streamlined body is almost entirely scaleless. Humpback

chub are omnivores and can live for more than 30 years. Their distribution throughout the Colorado River system has been drastically reduced by construction of dams and the introduction of non-native fishes. The species is extirpated from Nevada waters.

Bonytail Chub—Endangered

(Gila elegans)

Max. length: 24 inches

Bonytail chub are highly streamlined and have small, flattened heads with a distinctive small hump behind the head. Adult bonytail chub are omnivorous feeders on drifting insects, algae, and plant debris such as leaves, stems, and seeds. Young bonytail chub feed primarily on aquatic insect larvae. The species occurred historically throughout the Colorado River Basin in the larger turbid rivers, but recent surveys indicate that it is presently found only in Nevada/Arizona in Lake Mohave on the Colorado River. The population there does not appear to be reproducing, and is maintained by stocking juvenile fish raised at the Dexter National Fish Hatchery in New Mexico. Presence of bonytail chub in Lake Mohave indicates that adults can adapt to a reservoir existence, but lack of any naturally reproducing populations indicates that the long-term survival of this species is questionable.

Pahranagat Roundtail Chub—Endangered

(Gila robusta jordani)

Max. length: 10 inches

The Pahranagat roundtail chub is known to occur only in Ash Springs and the Pahranagat River downstream for less than 1 mile in the Pahranagat Valley in Lincoln County. It also occurred historically in Crystal and Hiko springs upstream from Ash Springs but has been absent from both those sites for several decades. Adult males develop bright red fins during spawning. Adults are omnivores, feeding mostly on aquatic and terrestrial insects, other small fishes, and drifting pieces of vegetation. Other forms of *Gila robusta* occur elsewhere in the Colorado River Basin, and the relationships and taxonomy of this species complex are not well understood.

Virgin River Chub—Endangered

(Gila seminuda)

Max. length: 17 inches

The Virgin River chub occurs in the Virgin River in Utah from Pah Tempe Springs downstream to Lake Mead in Nevada, and in the Muddy River in Nevada. A population of this species is also maintained at the Dexter National Fish Hatchery in New Mexico. This species prefers deeper areas where water is swift, but not turbulent, and is generally associated with boulders or other cover. As with many other chubs, coloration is olive-silver to silver, and feeding habits are omnivorous, including insects, other fishes, and algae.

White River Spinedace—Endangered

(Lepidomeda albivallis)

Max. length: 5 inches

The White River spinedace is one of seven taxa in the minnow family that are placed in a unique subgroup because the first two dorsal fin rays and pelvic fin rays are stiff and spine-like. White River spinedace formerly occurred in several springs and outflows in the White River drainage of Lincoln County but have been extirpated from all habitats except the Flag Springs system in Nevada's Kirch Wildlife Management Area. The decline of this species from historic levels was caused by channelization, diversions, impoundments, removal of riparian vegetation, and competition and predation by introduced fishes. In the early 1990s this fish was one of the most endangered fishes in the United States—only 20 individuals remained in the Flag Springs system. Removal of largemouth bass allowed the spinedace to proliferate and expand its range. Today there are more than 1,500 individuals at Flag Springs. Additionally, another population has since been established on private land in northern White River Valley.

Leatherside Chub

(Lepidomeda copei)

Max. length: 6 inches

The leatherside chub gets its name from its leathery skin which is covered with very small scales. Males have patches of orange-red color on the pectoral, pelvic, and base of the anal fin. This chub is native to the Bonneville Basin of Utah and eastern Nevada but also occurred in the upper Snake River Basin in eastern Idaho, western Wyoming, and northeastern Nevada. The species may have been introduced into the upper Snake River Basin because it was unknown there until 1934, and has been introduced into other basins as a bait fish. Recent studies have indicated that this species is actually composed of two species which fit best into the genus *Lepidomeda*. Of these two species, *Lepidomeda copei* is rare, and is known from only four locations in tributaries of the upper Snake River and Bear River drainages in Utah, Wyoming, Idaho, and in the Goose Creek system of northeastern Nevada.

Big Spring Spinedace—Threatened

(Lepidomeda mollispinis pratensis)

Max. length: 4 inches

This rare fish occurs only in the Condor Canyon section of Meadow Valley Wash in Lincoln County. The species was originally described from Panaca Big Spring which historically connected with Meadow Valley Wash just below Condor Canyon but was extirpated from that area by the late 1950s due to spring modifications for irrigation, and the introduction of non-native mosquitofish, carp, and bullfrogs. It was thought to be extinct, but in 1977 it was rediscovered in Condor Canyon in a waterfall pool. In 1980, the species was successfully transplanted above the waterfall. Like other spinedace, Big Spring spinedace are opportunistic, trout-like drift feeders on insect larvae, algae, and other plant material. They are bright silver in color, and the skin appears slightly leathery and almost scaleless. Their existence in Condor Canyon is threatened by presence of introduced crayfish and rainbow trout, water diversions, and silt runoff.

Moapa Dace—Endangered

(Moapa coriacea)

Max. length: 5 inches

The Moapa dace is a small, bronze-colored minnow found only in several warm springs and outflows in the upper Muddy River in Clark County. It is a very active fish with a dark spot near the base of the tail and occurs in swift water. Its rapid movement in these conditions is similar to humans running wind sprints in the thin air of a 20,000 foot mountain in the sweltering heat of the Mojave Desert. Moapa dace are omnivorous drift feeders, consuming insects and plant material. In 1979, the Moapa Valley National Wildlife Refuge was established to protect habitat for the Moapa dace and other native species. Spring outflows and small streams on and immediately below the refuge provide the only remaining spawning habitat for this species. Moapa dace larvae have been found throughout the year, indicating year-round reproduction. The species was historically common in 25 springs and about 9 miles of outflow streams and river channel. Threats include water depletion due to diversions and groundwater pumping, spring modifications for agriculture, and the introduction of non-native fishes.

Woundfin—Endangered

(Plagopterus argentissimus)

Max. length: 3 inches

The woundfin is a slender, bright silvery minnow with a flattened head and belly, long snout, leathery skin, and no scales. Historically the woundfin occurred in much of the lower Colorado River Basin, including the Virgin and Gila rivers and lower Muddy River in Nevada. Woundfin appear to be extirpated from all of their historic habitats except the Virgin River, where they occur from Pah Tempe Springs, Utah, downstream to Lake Mead. Adults are omnivorous drift feeders and prefer main channels of seasonally swift, warm streams with constantly shifting, sandy bottoms.

Colorado Pikeminnow—Endangered

(*Ptychocheilus lucius*)

Max. length: 6 feet

The Colorado pikeminnow is the largest North American minnow, reaching 6 feet in length and 80 pounds in weight, although in the last 30 years the largest pikeminnow recorded was 38 inches long and weighed 25 pounds. Its former abundance is indicated by the terms “white salmon” and “Colorado salmon” used by early settlers, and it was used for food and as a sport fish. Colorado pikeminnow were formerly abundant in the Colorado River. They now exist only as small unconnected populations in the Green, Duchesne, Yampa, White, Gunnison, and Colorado rivers. This species has been extirpated from the lower Colorado River, including the Nevada portion. Adult pikeminnows are voracious predators on smaller fishes, even taking artificial lures and live bait. Studies have documented spawning migrations in spring and early summer up to 200 miles. As with other big-river Colorado River Basin native fishes, the depleted status of Colorado pikeminnow populations is due primarily to dam construction and other water projects that lower water temperatures and block migration routes, as well as the introduction of non-native species.

Northern Pikeminnow

(*Ptychocheilus oregonensis*)

Max. length: 25 inches

The Northern pikeminnow occurs in Pacific drainages in British Columbia south to the Columbia and Snake River basins in Washington, Oregon, Idaho, Wyoming, and Nevada. In Nevada it is present in northern Elko County in the upper Snake River Basin. The species is widespread and sometimes abundant in lakes, ponds, and rivers, and was consumed by Native Americans. Some early observers concluded that pikeminnows competed with salmon and trout for food and preyed on juvenile salmonids. Consequently, efforts to control pikeminnow populations included chemicals, dynamite, lowering of lake levels, and traps. More recent studies indicate that such competition and predation are rare except in unusual circumstances.

Relict Dace

(*Relictus solitarius*)

Max. length: 2 inches

This small minnow occurs only in a system of four basins in eastern Nevada in Elko and White Pine counties. In the 1940s, this species was abundant but was extirpated in many areas due to habitat alterations (spring and outflow modifications for agriculture), and introduction of non-native species such as largemouth bass. Populations are known to occur in Ruby, Butte, Steptoe, Goshute, and Spring valleys, although evidence indicates the populations in Spring Valley were introduced by early settlers. In 1977, some dace from Steptoe Valley were moved to Shoshone Ponds in Spring Valley, a population that still exists. Studies in the 1970s showed that *Relictus solitarius* is an omnivore, feeding primarily on invertebrates.

Moapa Speckled Dace

(*Rhinichthys osculus moapae*)

Max. length: 3 inches

The Moapa speckled dace is one of several described subspecies of the widely-distributed speckled dace (*Rhinichthys osculus*) in the western United States. Moapa speckled dace are endemic to the Muddy River of Clark County in southern Nevada. Here it co-occurs with the endangered Moapa dace (*Moapa coriacea*) but mainly occupies the cooler waters downstream from the thermal spring area where Moapa occurs. As with the Moapa dace, Moapa speckled dace populations have declined due to water depletion from diversions and groundwater pumping, spring modifications for agriculture, and the introduction of non-native fish species.

Ash Meadows Speckled Dace—Endangered

(*Rhinichthys osculus nevadensis*)

Max. length: 4 inches

Originally included with the Amargosa speckled dace group in 1893, this subspecies is now referred to as the Ash Meadows speckled dace since it occurs only in the Ash Meadows area of the Amargosa River Basin

in southern Nye County following extinction of speckled dace populations now considered to have been a separate species, *Rhinichthys deaconi*, in the Las Vegas area. Although previously known from at least ten springs and outflows in the Ash Meadows National Wildlife Refuge, by 1985 this rare fish was present in only three spring systems. It prefers fast-moving outflows and is omnivorous, feeding primarily on insects and algae. Like other Ash Meadows fishes, it is threatened by habitat modifications and introduction of non-native species such as bullfrogs, crayfish, largemouth bass, and snails.

White River Speckled Dace

(*Rhinichthys osculus* ssp.)

Max. length: 4 inches

This as-yet undescribed subspecies of speckled dace is restricted to the White River drainage basin in White Pine and Nye counties, Nevada. In surveys conducted in 1991-1992, it was found in 18 springs and outflows in the White River Valley and was the most widely distributed native fish remaining in the system, although it had been extirpated from two springs where previously found.

Lahontan redbside

(*Richardsonius egregius*)

Max. length: 7 inches

The Lahontan redbside is native to the Lahontan Basin of California and Nevada, including the Truckee, Carson, Walker, Humboldt, and Quinn River basins. It is rare in Pyramid and Walker lakes but more common in Lake Tahoe. It has also been introduced into the upper Feather River in California. Lahontan redb sides are noted for their brilliant breeding colors, especially the bright red lateral stripe with a yellow border. A variety of common names make reference to the breeding colors, including redbside minnow, red-striped shiner, and Lahontan redshiner. Lahontan redb sides feed on aquatic and terrestrial insects and small crustaceans.

Newark Valley Tui Chub

(*Siphateles bicolor newarkensis*)

Max. length: 5 inches

The Newark Valley tui chub is one of at least 16 subspecies of tui chubs (*Siphateles bicolor*) in Nevada. Tui chubs as a group are highly successful in a large variety of lake and river habitats in California, Oregon, and Nevada. Most isolated drainage systems support at least one distinctive subspecies or form. Tui chubs are typically large-scaled, chunky fish with shortened and rounded fins, and feed on detritus, algae, and invertebrates. In large terminal lakes such as Pyramid and Walker, it is the only fish species that can reproduce successfully in the highly alkaline lake waters—all other native fishes must move into fresh water streams to reproduce. Tui chubs are generally long-lived, and those subspecies that occur in larger lakes may reach lengths of 16 inches and be more than 30 years old. In springs and small ponds, such as those in Newark Valley, individuals are much smaller but still typically live relatively long lives of 6-8 years.

Family Catostomidae—Suckers

White River Desert Sucker

(*Catostomus clarkii intermedius*)

Max. Length: 12 inches

The White River desert sucker is a subspecies of the desert sucker (*Catostomus clarkii*). This subspecies was historically found only in remnant streams of the White River system in White Pine and Lincoln counties. It has been extirpated from Pahrnagat Valley, and is now rare in the White River Valley except for Lund Town Spring. Other subspecies of desert sucker are found in the Little Colorado, Virgin, and Gila River basins in Arizona. Desert suckers have a distinct cartilaginous ridge on the inside edge of the lower jaw for scraping algae and small invertebrates from rocks.

Flannelmouth Sucker

(*Catostomus latipinnis*)

Max. length: 30 inches

The flannelmouth sucker is native to the Colorado River system. It currently is restricted to larger streams and rivers in the middle and upper Colorado River Basin in Arizona, Nevada, Utah, New Mexico, Colorado, and Wyoming. The species occurs in most stream habitat types but does not appear to survive long-term in reservoirs. Flannelmouth suckers can swim long distances and have been documented to undergo spawning migrations of more than 100 miles. They feed primarily on algae, invertebrates, and plant matter. As with most other Colorado River fishes, their numbers and distribution have declined dramatically from historic levels due to construction of dams and water diversions, decreased flows and water quality, and the introduction of non-native species. In 1976, flannelmouth suckers were reintroduced into the lower Colorado River in California and were documented in 2001 as still present and reproducing. To date, this represents the only successful reintroduction of a native fish species in the lower Colorado River. Their long-term survival is still to be evaluated.

Mountain Sucker

(*Catostomus platyrhynchus*)

Max. length: 8 inches

This is the most widely distributed species of *Catostomus* in western North America, occurring in the Columbia, Bonneville, Lahontan, and Colorado River basins. In Nevada, it is found in the Walker, Carson, Truckee, Quinn, and Humboldt River basins. Mountain suckers seem to prefer clear streams less than 2 feet deep. They are occasionally found in small lakes and reservoirs. Like the White River desert sucker, mountain suckers feed primarily algae and aquatic invertebrates. Unlike most stream-dwelling fish in Nevada, mountain suckers spawn from June to August rather than in spring.

Warner Sucker—Threatened

(*Catostomus warnerensis*)

Max. length: 20 inches

The Warner sucker is found only in the Warner Basin in southcentral Oregon and northwestern Nevada. Its range includes permanent and ephemeral lakes, sloughs, canals, and low-gradient streams. In Nevada, it occurs only in Twelvemile Creek, which loops through the extreme northwest corner of the state for a few miles. Adults feed on bottom invertebrates, algae, and detritus. Spawning occurs in April and May, and males develop a pale to brilliant red lateral band. Although historically abundant and widely-distributed in the basin, the range and numbers of Warner sucker are reduced. In basin-wide surveys in 1987–89, it comprised only 2.5% of fishes collected. Reasons for the decline include stream channel and watershed degradation from livestock grazing, construction of small agricultural diversion dams, and predation on young suckers by introduced brown bullheads and crappie.

Wall Canyon Sucker

(*Catostomus* sp.)

Max. length: 13 inches

The Wall Canyon sucker, an undescribed species, is found only in Wall Canyon in northwestern Washoe County. The only other co-occurring native species is the speckled dace, but brown trout and rainbow trout have been introduced for many years into two small reservoirs on lower Wall Creek. Recent surveys indicated that both trout species have moved upstream from the reservoirs and that the Wall Canyon sucker population in the creek has plummeted. Agencies have recently installed a barrier to help isolate the upstream sucker population from trout in the reservoir. Trout are no longer stocked but appear to be self-sustaining in the system despite efforts to control their population.

Cui-ui—Endangered

(*Chasmistes cujus*)

Max. length: 26 inches

Cui-ui occur only in Pyramid Lake and the lower Truckee River, and is one of only three species in the genus *Chasmistes*. All three species are lake-dwellers as adults, but undergo migrations into streams to reproduce. Unlike other suckers, *Chasmistes* feed primarily on zooplankton. Cui-ui were historically an important sacred food for Native Americans. Because of upstream Truckee River water diversions beginning in the early 1900s, the level of Pyramid Lake dropped about 80 feet by 1982, and fish access into the lower Truckee River was restricted except in occasional high-runoff years. The long-lived (up to 50 years) cui-ui survived by spawning during those infrequent events, but the short-lived (7–8 years) native Lahontan cutthroat trout was extinct in Pyramid Lake by 1938. By the 1980s, almost 90% of the cui-ui in Pyramid Lake were from only two year-classes, 1950 and 1969. However, recent improvements in fish passage into the lower Truckee River, combined with timed water releases from upstream reservoirs, have allowed more frequent spawning so that many more year classes of cui-ui are now present.

Razorback Sucker—Endangered

(*Xyrauchen texanus*)

Max. length: 30 inches

The razorback sucker is endemic to the Colorado River and its major tributaries. Razorback suckers feed primarily on algae and detritus but also consume aquatic insect larvae and zooplankton. Historical records document the former abundance of this species, and it was a major food source for Native Americans. At present, the only naturally occurring population in the lower Colorado River Basin is in Lake Mohave. Successful reproduction there is rare. Most in the lower basin are large adults up to 45 years old. The species is rare in the upper basin, but small reproducing populations still occur in the Green and Yampa rivers. A major recovery program for the razorback sucker was initiated in 1998, focusing on release of hatchery-reared fish in the upper basin, primarily the Green River. Some hatchery-reared fish have also been introduced into the lower basin in Lake Havasu and Senator Wash. As is the case for other big river fishes, razorback sucker decline is due to dam construction, water depletions and diversions, and predation and competition from introduced species.

Family Cottidae—Sculpins

Mottled Sculpin

(*Cottus bairdi*)

Max. length: 6 inches

This species is found in two separate parts of North America. In the east, it occurs from northern Georgia and Alabama north to Canada and west to eastern Missouri, Iowa, and Minnesota. In the west, it occurs in Canada, Washington, Oregon, Idaho, Wyoming, Montana, New Mexico, Utah, and Nevada. In Nevada, it is found in upper Snake River tributaries in northern Elko County and also in the Bonneville Basin in streams flowing eastward in the Snake Range. It is a bottom-dwelling carnivore, typically hiding in gravel, rubble, and other cover during daytime, feeding mainly at night on insect larvae, crustaceans, and small fishes. Small individuals are commonly eaten by larger individuals. Males defend the nest against predators, including insects and other sculpins, but may occasionally eat some of their own eggs.

Paiute Sculpin

(*Cottus beldingi*)

Max. length: 5 inches

Cottus beldingi is the only sculpin native to the Lahontan Basin in California and Nevada, including the Truckee, Carson, Walker, and Humboldt rivers. It is also found in Lake Tahoe. Typical Paiute sculpin habitat in streams is a rubble or gravel bottom in medium-gradient rocky sections of cold, clear water. In Lake Tahoe, they usually occur at depths less than 200 feet but have been found as deep as 650 feet. Like other sculpins, they

remain sedentary and hidden in cover during the day and feed mainly at night on aquatic insect larvae. Cannibalism on smaller individuals has been documented.

Family Cyprinodontidae—Pupfishes

Devils Hole Pupfish—Endangered

(*Cyprinodon diabolis*)

Max. length: 1 inch

This pupfish occurs only in Devil's Hole, a 92-degree F, 10-foot by 25-foot pool located 45 feet below ground level in a fault in Ash Meadows, southern Nevada. This small surface pool is part of a large, deep reservoir. Survival of the fish population depends on a small rock shelf that is wedged into the fault just below water level. The shelf provides a substrate for feeding and breeding activities. Because of its geological and biological uniqueness, Devil's Hole was made part of Death Valley National Monument (now a National Park) in 1952. The population in Devil's Hole is one of the smallest populations known for any vertebrate and previously ranged from about 200 to 600 individuals during a year. However, a 2004 flash flood washed debris and scientific equipment onto the shelf, and by November, 2005, divers counted only 84 fish. In 2006 and early 2007 only 38 adults were counted, and 93 total fish were counted in November 2007. Several attempts to establish artificial populations have been unsuccessful, as have attempts to rear the species in aquaria.

Ash Meadows Amargosa Pupfish—Endangered

(*Cyprinodon nevadensis mionectes*)

Max. length: 2.5 inches

The Ash Meadows Amargosa pupfish is found only in large, warm, spring-fed streams and pools on the Ash Meadows National Wildlife Refuge in Nye County. This pupfish can thrive in shallow water and can withstand temperatures between 36 and 107 degrees F. Males have a bluish tint which becomes more vibrant during spawning. Because of the warm water, spawning can occur year-round but is usually most active in May and June. Food consists mainly of algae, diatoms, and small invertebrates. Threats to this species include groundwater pumping for agriculture and domestic water supplies, and the introduction of non-native species.

Warm Springs Pupfish—Endangered

(*Cyprinodon nevadensis pectoralis*)

Max. length: 2 inches

The Warm Springs pupfish occurs only in small, warm, spring-fed habitats on the Ash Meadows National Wildlife Refuge in Nye County. All occupied habitats are small—the spring pools do not exceed 4 feet in width and 3 feet in depth. All of these spring systems occur in an area of less than a square mile. Coloration and life history of this species is very similar to that of the Ash Meadows Amargosa pupfish. Threats to this species include groundwater pumping for agriculture and domestic water, and the introduction of non-native species.

Family Empetrichthyidae—Springfishes and Poolfishes

Preston White River Springfish

(*Crenichthys baileyi albivallis*)

Max. length: 2 inches

The Preston White River springfish is one of five subspecies of *Crenichthys baileyi*, and is one of only five native fishes known from warm springs in the upper White River system in White Pine, Nye, and Lincoln counties. In the 1960s, it was found in six connected spring systems, but by 1991 it remained in only four systems in the upper White River which were no longer connected due to water diversions and agricultural and domestic use, thereby eliminating the opportunity for genetic mixing among populations. The Preston White River springfish is an omnivore, feeding on algae, diatoms, vascular plants, and invertebrates. Reasons for the disappearance of this subspecies from two springs are not definitively known, but both springs contain large populations of introduced guppies, which have been documented to prey on larvae of other fishes.

White River Springfish—Endangered

(*Crenichthys baileyi baileyi*)

Max. length: 2 inches

Crenichthys baileyi baileyi is found only in Ash Springs in Pahrnagat Valley, Lincoln County. It is one of five subspecies of *C. baileyi*. Almost no information is available on the life history and habitat of this fish, but they are assumed to be omnivores similar to other *C. baileyi* subspecies. Observations indicate that foods include algae, diatoms, and aquatic invertebrates. The spring pool was modified many years ago by construction of a small dam, creating a large pond for recreation which now contains introduced shortfin mollies, mosquitofish, and carp.

Moapa White River Springfish

(*Crenichthys baileyi moapae*)

Max. length: 2 inches

Crenichthys baileyi moapae occurs only in warm (80-90 degrees F) headwater spring systems of the upper Muddy River in Clark County. Abundance and distribution of *C. b. moapae* have decreased due to habitat modifications, primarily dam construction and replacement of natural channels by concrete and earthen ditches, and introduction of non-native shortfin mollies, mosquitofish, and Asian cichlids. *C. b. moapae* is most abundant within the Moapa Valley National Wildlife Refuge, which was designated in 1979 for protection of native fishes in the Muddy River.

Railroad Valley Springfish—Threatened

(*Crenichthys nevadae*)

Max. length: 1.5 inches

The Railroad Valley springfish is the only fish species native to the thermal spring systems of Railroad Valley in Nye County. The species occurs naturally in springs where the water temperature is 90-100 degrees F, and has been observed to enter water as warm as 104 degrees F for short periods. Railroad Valley springfish are omnivores, primarily feeding on algae and snails. Springfish still occur in all six historic locations, and have been introduced into five other central Nevada springs in an attempt to develop refugia populations. Abundance in all historically occupied springs has fluctuated due to various habitat modifications including water diversions and introduction of non-native fish species. Springfish were extirpated from the largest historic spring location at Big Warm Spring but were successfully reintroduced in 2007 after extensive habitat restoration under an agreement between the U.S. Fish and Wildlife Service and the Duckwater Shoshone Tribe. Through cooperative efforts with the State of Nevada, the Lockes Ranch property was purchased in 2005, and the four springs there are undergoing habitat restoration activities.

Pahrump Poolfish—Endangered

(*Empetrichthys latos latos*)

Max. length: 2 inches

The Pahrump poolfish, formerly known as the Pahrump killifish, occurred in the Pahrump Valley in southern Nye County. It was the only native fish species in the valley, and is one of two species within the genus *Empetrichthys*. The other species was the Ash Meadows poolfish (*E. merriami*), which was extinct by 1948. Two other subspecies of *E. latos* (*E. l. concavus* and *E. l. pahrump*) in Pahrump Valley were also extinct by 1948, primarily from water diversions and withdrawals from the spring sources. Pahrump poolfish remained at a single spring on the Manse Ranch. Fortunately, two other populations of Pahrump poolfish were established, one at Shoshone Ponds in White Pine County and one at Corn Springs on the Desert National Wildlife Refuge, Clark County. The native population at Manse Spring became extinct by 1980 due to the spring drying. Another population was later established in ponds at Spring Mountain State Park, near Las Vegas. Studies conducted on the poolfish population in Manse Spring indicated that foods consumed were insects, snails, other aquatic invertebrates, and detritus.

For more information on Nevada's native fishes, please refer to the following:

1. Fishes and Fisheries of Nevada by Ira La Rivers. 1962.
2. Fishes of Arizona by W. L. Minckley. 1973.
3. Inland Fishes of California by Peter B. Moyle. 2002.
4. Fishes of the Great Basin by William F. Sigler and John W. Sigler. 1987.
5. Web sites for the following:

Desert Fishes Council—www.desertfishes.org

NatureServe—www.natureserve.org/explorer/

Nevada Department of Wildlife—www.ndow.org

Nevada Natural Heritage Program—www.heritage.nv.gov

U.S. Fish and Wildlife Service—www.fws.gov/nevada/

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