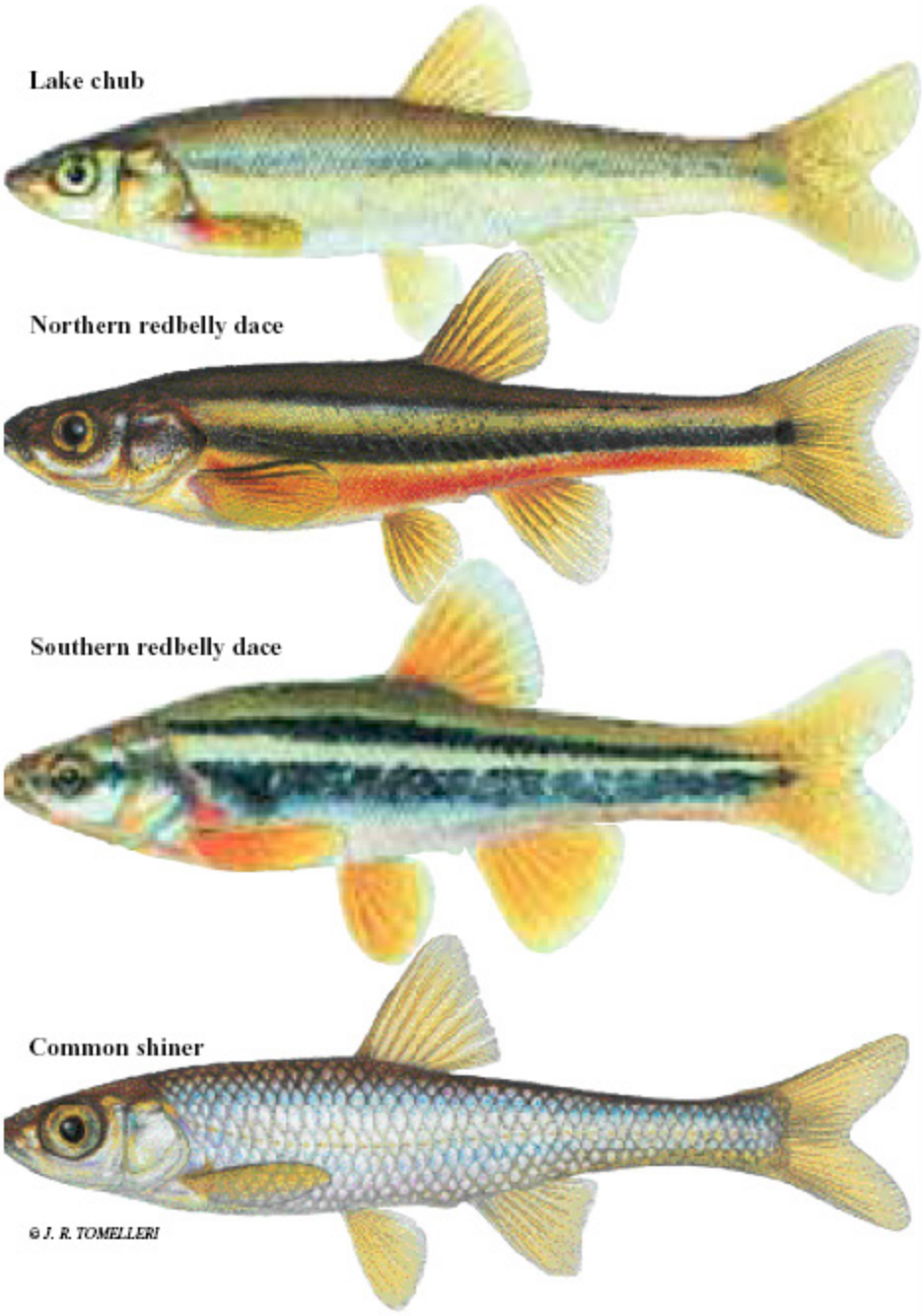


FRONT RANGE NATIVE MINNOWS
Lake Chub, Northern Redbelly Dace, Southern Redbelly Dace and Common Shiner

THESE FOUR FISH SPECIES are small-bodied minnows that occur in stream, pond, lake and reservoir habitats along the Front Range of the Rocky Mountains and the transition zone between montane and eastern plains habitats. The lake chub, northern redbelly dace and common shiner are native to the South Platte River basin in Colorado, and the southern redbelly dace is native to the Arkansas River basin. All of these species are widely distributed outside of Colorado and occur as isolated or glacial relict populations within the state that are at the edge of their range. In 1998, the Wildlife Commission designated the four species as endangered or threatened in Colorado. The primary factors leading to their state listing are very limited distributions in suitable aquatic habitats of which most may be impacted by human land and water development and documented declines within historic range in Colorado.

LAKE CHUB

Couesius plumbeus (Endangered Colorado)

The lake chub has a long, stout body 4-6 inches in length with a dark olive back merging into silvery sides and a dusky white underside. Males may show reddish orange near the head during spawning. Lake chubs are known to occupy lake habitats and migrate into streams to spawn. Historically, the lake chub was known to occur in the St. Vrain and Boulder Creek watersheds. This species was thought to be extirpated from Colorado until it was rediscovered in the St. Vrain River drainage in 1989. Populations have since been discovered in two reservoirs in Clear Creek County and two reservoirs in the upper Cache la Poudre River drainage. Lake chub have been introduced into several other high lakes to develop new populations. As a glacial relict in Colorado, the lake chub has likely always been rare, so recovery goals, when developed, will be correspondingly modest. Recovery actions for this species include establishment of self-sustaining populations in secure habitats.

NORTHERN REDBELLY DACE

Phoxinus eos (Endangered Colorado)

The northern redbelly dace is a small minnow under 3 inches in length with an olive green to brown back, two dark lateral bands run the length of the body on each side with a metallic silver-gold stripe above, a light colored band in between, and a cream-colored underside. As the name implies, these minnows become quite colorful with red to orange coloration and yellowish fins in males during the spawning season. Northern redbelly dace occurred historically in the St. Vrain River, Boulder Creek and West Plum Creek drainages. Recent sampling has shown only one population remaining in the West Plum Creek drainage near Castle Rock, Colo. These dace are known to inhabit slow-moving, spring-fed, cool-water streams or ponds with aquatic vegetation and sandy bottoms. Similar to the lake chub, the northern redbelly dace has a limited distribution in Colorado, so recovery goals, when developed, will be correspondingly modest. Recovery actions for this species include establishment of self-sustaining populations in secure habitats within historically occupied drainages.

FRONT RANGE NATIVE MINNOWS

Lake Chub, Northern Redbelly Dace, Southern Redbelly Dace and Common Shiner

SOUTHERN REDBELLY DACE

Phoxinus erythrogaster (Endangered Colorado)

The southern redbelly dace is similar in size and general coloration to its northern counterpart. In addition, this species has small dark irregular shaped spots on its back. Males do not show the reddish coloration but are more yellowish to light orange during spawning. Only two populations of southern redbelly dace were known in Colorado near Pueblo in the early 1980s. These populations have since disappeared, but two other populations were developed as a result of relocating fish from these populations into ponds at Fort Carson and the Pueblo Army Depot. The southern redbelly dace inhabits cool, clear streams or off-channel ponds with abundant vegetation and riparian shade. For conservation purposes, the current range of this species is considered to be the Upper Arkansas River drainage near Pueblo, and the Chico Creek drainage. Recovery actions for this species include establishment of self-sustaining populations in suitable, secure habitats within these drainages.

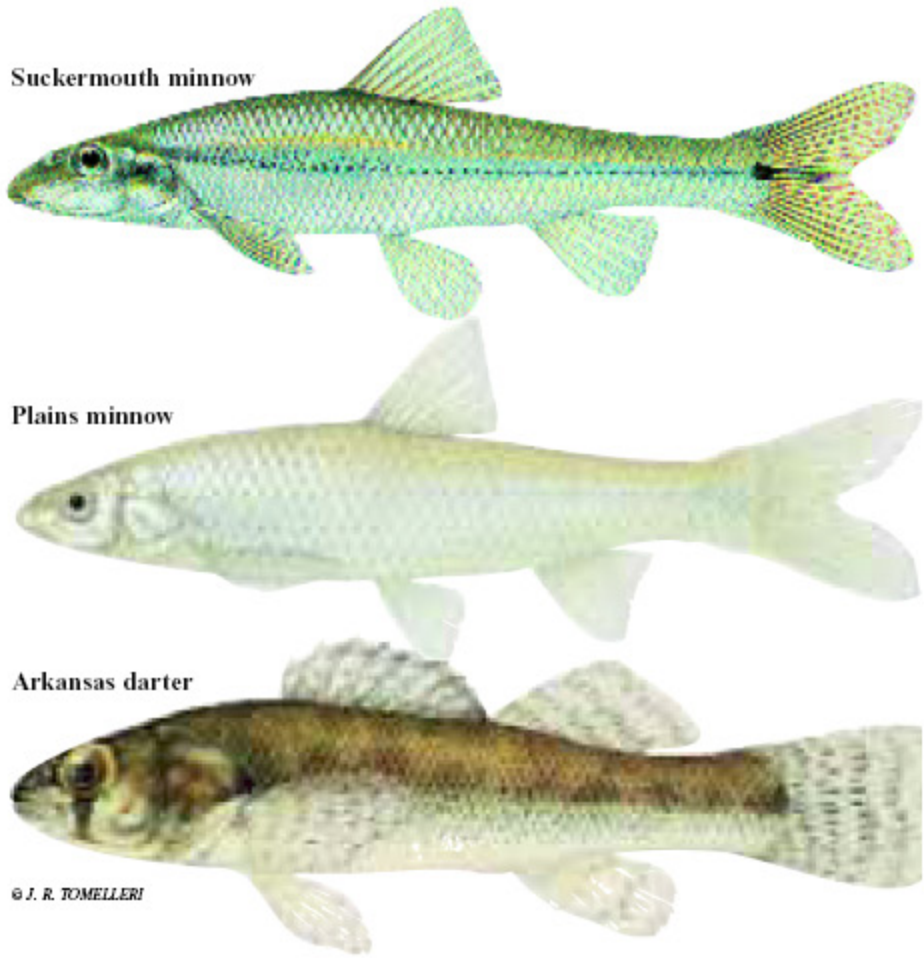
COMMON SHINER

Luxilus cornutus (Threatened Colorado)

The common shiner is bright silver and stout-bodied with a distinct stripe down the midline of the back. The tail fin is deeply forked. Males develop tubercles, or bumps, on the head, back and fin rays during breeding, and blue coloration of the head with pink colored fins and body. The common shiner is currently rare in Colorado, occurring only in the upper South Platte tributary system and the St. Vrain River drainage. Habitat requirements of common shiner are streams of moderate gradient with cool clear water and gravel substrates shaded by overhanging riparian bushes and trees. The common shiner is known to be intolerant of silt-predominated habitat and, therefore, is adversely affected by habitat changes due to siltation. The historic distribution data indicates a clear declining trend in the South Platte River Basin. The common shiner appeared well distributed in Front Range, transition zone streams in the 1900-1978 time period. Decline in distribution appears most evident in the last decade. Due to these apparent declines and the vulnerability of its Front Range stream habitats to modification, conservation efforts are focusing on expanding its distribution into protected habitats. A robust population of this species has recently developed in a reach of Left Hand Creek where the Division of Wildlife recently restored stream habitat. Common shiner were also introduced into suitable habitat within the Rocky Mountain Arsenal.

NATIVE MINNOWS OF THE EASTERN PLAINS

Suckermouth Minnow, Plains Minnow, Brassy Minnow and Arkansas Darter



Brassy minnow

THESE FOUR FISH SPECIES are small-bodied fish that occur in stream and river habitats in the eastern plains of Colorado. The suckermouth minnow and plains minnow are native to the South Platte, Arkansas and Republican river basins. The brassy minnow is native to the South Platte and Republican river basins and the Arkansas darter is native to the Arkansas River basin. All of these species are widely distributed outside of Colorado in the Missouri and Mississippi river basins, but have experienced declines throughout the Great Plains states. Within Colorado, these species are also at the western edge of their range. In 1998, the Wildlife Commission designated the suckermouth minnow, plains minnow and brassy minnow as endangered or threatened in Colorado. The primary factors leading to the state listing of these three species include documented declines in distribution in Colorado and dependence upon aquatic habitats impacted by human land and water development. The Arkansas darter has been listed in Colorado since 1975. A recovery plan was developed for the Arkansas darter in 1994 and revised in 2001.

SUCKER-MOUTH MINNOW

Phenacobius mirabilis (Endangered Colorado)

The suckermouth minnow is a slender minnow 2-5 inches in length and with a conspicuous dark spot at the base of the tail fin. As suggested by its name, the mouth of this fish is located on the underside of the head with lobed sucker-like lips. The suckermouth minnow inhabits clear shallow water riffle areas with sand and gravel and year-round flow. This minnow feeds on insect larvae and invertebrates and spawns in the late spring-early summer. Habitat and food used by this species is vulnerable to siltation, dewatering and nutrient enrichment. This species is now extremely uncommon in Colorado based on recent inventory efforts in the South Platte, Republican and Arkansas river basins. Populations persist in the South Platte River and Arkansas River between John Martin Reservoir and the Kansas state line despite the 2002 drought. No suckermouth minnows have been located in recent sampling in the Republican River basin. Earlier distribution data indicates the presence of the species was well documented in the mainstem South Platte River in 1979-1984. This species declined significantly in distribution and abundance in the South Platte River system since the early 1900s. The Arkansas River population appears constrained from upstream distribution by placement of the dam for John Martin Reservoir, and the remaining downstream occupied reach is vulnerable to continuing water and floodplain development. Individuals of this species have been discovered in the river above the reservoir and some stocking of hatchery-raised fish in the Arkansas River has occurred. Current conservation efforts are focused on enhancing this species distribution and abundance through establishing broodstocks at the Division of Wildlife's John W. Mumma Native Aquatic Species Restoration Facility near Alamosa to begin restoration stocking and conducting research on limiting factors to identify and restore suitable habitat.

NATIVE MINNOWS OF THE EASTERN PLAINS
Suckermouth Minnow, Plains Minnow, Brassy Minnow and Arkansas Darter

PLAINS MINNOW

Hybognathus placitius (Endangered Colorado)

The plains minnow is another slender minnow that reaches 5 inches in length, and is very similar in appearance and coloration to the brassy minnow. The plains minnow tends to be larger than the brassy minnow, which commonly reach only 3 inches in length. Both species are olive or yellow-green colored on the back and demonstrate a brassy colored reflection on the sides. The mouths of these fish are small and located slightly underneath the snout like the suckermouth minnow, but unlike the suckermouth minnow, the lips of the plains and brassy minnow are quite thin. The plains minnow lives in river mainchannels with some current, turbid water conditions and sandy bottoms. Spawning in plains minnow is associated with high and receding flows in the spring, usually under turbid water conditions. The eggs of the plains minnow are buoyant and disperse downstream with the river current. Presently, this species is nearly extirpated from Colorado. Historically the plains minnow inhabited the mainstem channels of Colorado's eastern plains rivers. Early records in the late 1800s indicate plains minnow were "not rare in the river" as far up as Pueblo in the Arkansas River and extended in distribution through the lower Arkansas River in Colorado near the Kansas border. In the South Platte River, early identification of this species was confused with the brassy minnow, but records from the early 1900s indicate plains minnow occupied at least the lower river reaches. Records from the 1980s and as recent as 1994 and 2004 indicate the plains minnow has persisted in the South Platte River between Fort Morgan and Sterling. Plains minnow were collected in small numbers in the Republican River in the late 1970s, but were absent from samples taken in 1994 and 2004. If this species was ever common to any of the rivers in eastern Colorado, those populations diminished rapidly with water and land use development. It is clear this species has been rare in Colorado since the early 1900s. Elimination of highly variable water levels, unstable streambeds and fluctuating water temperatures can contribute to the decline of short-lived fish species like the plains minnow that are adapted to highly unstable plains rivers. It is likely that water depletion, diversions and barriers could interfere with the downstream dispersal of eggs and young fish and the upstream dispersal and recruitment of juvenile fish into adult populations inhabiting upstream river reaches and tributaries. Reintroduction via stocking will be necessary to restore populations and initiate recovery actions. Research will be needed to identify suitable habitats and limiting factors.

BRASSY MINNOW

Hybognathus hankinsoni (Threatened Colorado)

The brassy minnow, as its name would suggest, appears brassy in coloration along its sides. This species may easily be confused with the plains minnow though its adult size is smaller and it appears to inhabit smaller tributary stream habitats primarily. While brassy minnow may be found in the South Platte River, it is believed the river acts as a conduit for connecting tributary stream populations. Habitat used by brassy minnow include cooler, flowing

waters or pools with sand to gravel substrate and aquatic vegetation most often found in smaller tributary streams. This species was considered common in Colorado in the early 1900s, but is at the southern periphery of its range in Colorado. Historic distributions show the brassy minnow has declined in distribution since 1985. The frequency of occurrence of the brassy minnow in recent sampling has decreased from previous inventory sampling in 1979-1981. Populations remain in the South Platte River basin in the St. Vrain River, Cache la Poudre River, Lonetree Creek, Pawnee Creek and lower South Platte River (east of Sterling). In the Republican River basin, populations are still found in the Arikaree River and South Fork of the Republican River. Recent research has demonstrated brassy minnow persist in these small, fluctuating stream environments by tolerating high water temperatures and low dissolved oxygen concentrations and surviving in pool habitats remaining during periods of intermittent flow. While loss of brassy minnow populations may be common due to natural or man-caused degradation in stream habitats, recolonization and expansion can occur rapidly when more favorable habitat conditions are restored. Conservation efforts have focused on identifying suitable habitats and limiting factors to facilitate restoration stocking and habitat improvements.

ARKANSAS DARTER

Etheostoma cragini (Threatened Colorado, Federal candidate)

The Arkansas darter is a 3-inch cousin of the walleye and yellow perch. Its back has many fine black specks, a dark, vertical wedge-shaped spot beneath the eye, and 12-14 dusky bars along the side. The species is found in the Upper Arkansas, Fountain Creek, Horse Creek, Upper Arkansas at John Martin, Big Sandy Creek, Rush Creek, Black Squirrel Creek and Chico Creek drainages. Their distribution has not changed significantly based on comparisons of historic data, particularly since 1979. In April and May, breeding males are bright orange underneath. This native of the Arkansas drainage prefers shallow, clear, sandy streams with spring-fed pools and abundant rooted aquatic vegetation. Darter populations in Colorado persist in large deep pools during late-summer low-water periods when streams may become intermittent. These darters can tolerate very high water temperatures and very low dissolved oxygen levels during the late summer season, but are vulnerable to the presence of predators like northern pike in these pool refugia. Protection of riparian buffer corridors from overgrazing by livestock; protection of springs, pool refugia and groundwater levels from depletion; removal of introduced fish predators and elimination of water pollution along occupied streams would greatly enhance their habitat, abundance and distribution.