

# Colorado's Wildlife Company

2003 FALL COMPENDIUM OF WILDLIFE APPRECIATION



NR 6/125.13/2003/fall  
0-2

COLORADO STATE PUBLICATIONS LIBRARY  
NE6/125.13/2003/fall C.2  
Young, Mary Taylor/Saving suckers, danc  
3 1799 00032 7247

# Chubs in the Tub:

Colorado's Native Aquatic Species Restoration Facility

# Saving Suckers, Dancing with Dace

by MARY TAYLOR YOUNG

It's not a flashy place, this modest collection of buildings set on the arid, open country of the San Luis Valley near Alamosa. But the John W. Mumma Native Aquatic Species Restoration Facility, more easily known by its acronym NASRF, houses a treasure. Its walls shelter the rare and valuable—brood stock of Colorado's threatened and endangered native fish as well as a unique species of toad that dwells in the state's highest reaches.

These fish won't make a flyfisherman's pulse race, break records for size or beat out tropical fish for color. But they are key to preserving the wildlife heritage of Colorado's streams and rivers, and to preserving the state's power of self-determination in management of its waters and waterways.

Thirteen native species—12 fish and one toad—inhabit a collection of tanks, ponds and aquaria at this Colorado Division of Wildlife (DOW) facility. Three of them are Colorado River fishes on the federal endangered species list. Colorado pikeminnow and bonytail are spawned at the federal hatchery in Dexter, New Mexico and shipped to NASRF as fry—hatchling fish. They are reared to lengths of five inches and eight inches, respectively, then released into the wild. There are a few endangered razorback suckers, but they are no longer reared here. "We use them to keep the ponds clean," says facility manager Dave Schnoor. The bottom-feeding fish are "like little Hoovers," vacuuming up algae and other detritus. NASRF has had good success rearing another Colorado River inhabitant, the roundtail chub, which is not on the federal list but is classified in Colorado as a species of special concern.

Also thriving here are Rio Grande chub—45,000 fry will be released in 2003—but Rio Grande suckers have been another story. Only when the staff tried to cultivate the species did they discover the sucker's narrow requirements for water quality, pH and food. "It's been a challenge, but now they're very healthy and spawning," says Schnoor. "Last year we got eggs to hatch, but now we're having trouble getting the fry on feed. There's something we're missing in that little window between swimup and getting on feed. Every single step has had some challenge to it."

Offering particular challenges are several species of minnows collected from streams and rivers of the Front Range and Eastern Plains. Few people have ever heard of Arkansas darters, common shiners, or plains or suckermouth minnows, though they may have seen them over the years darting in the shallows of streams and ponds. Then there are southern redbelly dace and northern redbelly dace, nicknamed "serbs" and "nerds" by the staff for the shorthand "srbd" and "nrbd" used to label the tanks.

Rearing fish in hatcheries is no new endeavor for the DOW, but most of the species at NASRF have never before been propagated. "They're not a hatchery product," says Schnoor, "we have to do a lot of experimentation to keep them alive, get them to spawn, incubate the eggs, and to rear fry."

Instead of the raceways full of sleek-bodied trout that are familiar at other state hatcheries, the NASRF boasts rows and rows of glass aquaria—250 in all—that give it the look of a pet store. Another 80 round and rectangular tanks that look like large laundry tubs, and eight outdoor ponds, house more fish. Many of them will grow to be no larger than two to five inches, meaning techniques and equipment developed for propagating sport fish must be greatly modified. Even conventional aquaculture terms like "fingerling," meaning a growing fish about as long as a

finger, can't be used, since these animals may be less than finger-sized when full-grown.

Keeping the fish in aquaria requires an intensive feeding and cleaning regime that is different for each species. Each also has its own nutritional requirements. Just learning what to feed them has been an enormous task. "We go to the aquarium store and buy everything on the shelf," says Schnoor, "grind it up in a mix and feed it to see what works." Even then, "most of the fry (of the minnows) are too small to eat the brine shrimp that is a mainstay in hatchery culture for fish that are hard to feed." Presently they are fed rotifers (a microscopic life form), but first the staff must raise algae to feed the rotifers.

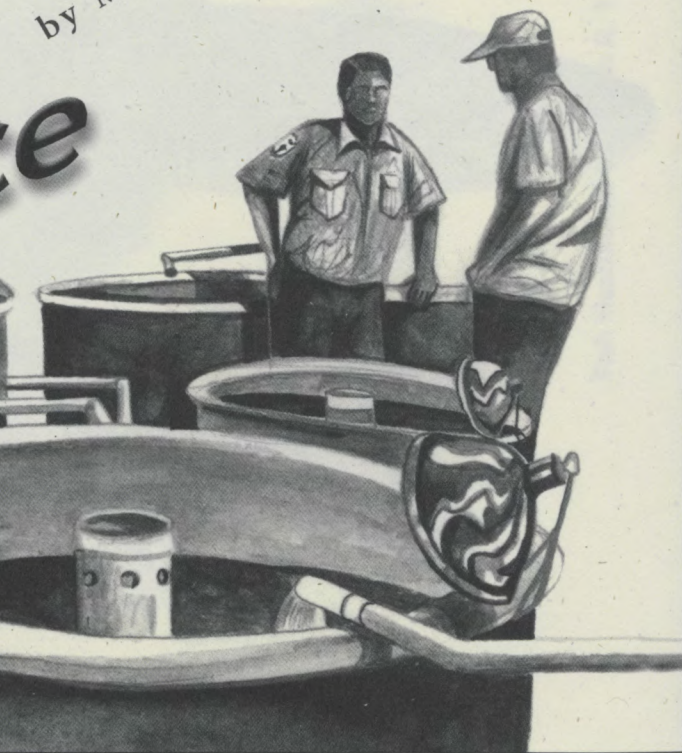
After food comes another hurdle—reproduction. Common techniques used to increase spawning in sport fish, such as squeezing them by hand to strip the ripe eggs, might kill these goldfish-sized minnows. But inciting these captive fish to spawn has been a challenge. By pasting pictures of colorful males to the side of the aquarium, they've triggered male Arkansas darters into breeding colors for spawning. They've adjusted water temperature, lighting, even tried hormones. "It must be timed almost exactly right to get healthy eggs," says Schnoor, "too early, no eggs; too late, the eggs are too ripe." And injecting a three-inch fish without injuring it is tricky.

Then there are the boreal toads. The unblinking eyes of dozens of toads gaze from long Fiberglas raceways that have been modified with incurving rims to keep them from climbing out. Other tanks are filled with fat black tadpoles, some sprouting two or four legs. Boreal toads, which live at higher altitudes than any other amphibian in Colorado, underwent a mysterious die-off several years back. A fungus is the likely culprit. Propagating the toad has not been particularly hard—nearly 16,000 will be released in 2003—but finding safe, fungus-free ponds to receive them has been.

Schnoor praises his staff for their energy and ingenuity in caring for their challenging charges. "We've got a tremendous crew," he says. "They're very diligent on watching the fish to see what's going on."

The idea of a hatchery dedicated to native fish had been germinating within the DOW since the mid-1980s. By 2000 it became a reality. Support for the facility is broad-based. Of the \$6 million required to purchase the property and construct the buildings, \$1 million came from the Great Outdoors Colorado Trust Fund (GOCO), which continues to contribute for operations and maintenance. The Colorado Water Conservation Board gave \$2 million, and the DOW \$3 million.

After just one year in business, NASRF achieved a milestone—re-stocking bonytails, Arkansas darters and southern redbelly dace in their native waters. In 2003 they will release fry of all but three of the fish they're working on, plus tadpoles, toadlets and adult boreal toads. Plains and suckermouth minnows and Rio Grande suckers aren't yet producing releasable fry.



What is the greatest success story so far? "Numbers-wise," says Schnoor, "it's Rio Grande chub and roundtail chub. Rio Grande sucker has had the most success in terms of overcoming challenges. They have such stringent requirements, it's a challenge just getting them to survive."

Why go to so much effort and expense for suckers and minnows, species considered worthless by many people? First, explains Schnoor, these species, however small or unattractive, are part of the ecosystem. "They're here for a reason. We don't know the key to the environment, but it's best not to lose them if we don't have to."

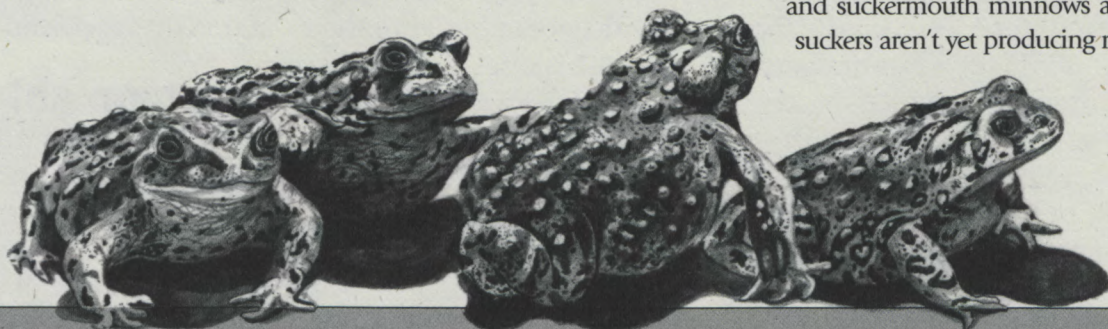
The second reason is pragmatic. "The Endangered Species Act says we will attempt to recover these fish and keep them from going extinct," explains Schnoor. "Our goal at this facility is to keep the native fishes of Colorado from being listed federally as threatened or endangered." The restrictions imposed with federal listing would greatly affect use of the state's waterways, says Schnoor, restricting water use for irrigation, urban expansion, recreation and other demands. "This is a sleeping giant that could really impact

Species	Status	Spawned at NASRF	Projected number for 2003 release	Size at Release
Arkansas darter	ST	Yes	3,500	1"
Bonytail	SE, FE	no	4,885	8"
Boreal toad	SE	yes	13,838 tadpoles 2,000 metamorphs	n/a
Colorado pikeminnow	SE, FE	no	1,000	5"
Common shiner	ST	Yes	5,000	2"
Northern redbelly dace	SE	Yes	200	1"
Plains minnow	SE	Yes (none to date)	n/a	n/a
Rio Grande chub	SC	Yes	45,000	2"
Rio Grande sucker	SE	Yes (none to date)	n/a	n/a
Roundtail chub	SC	Yes	5,000	2"
Razorback sucker	SE, FE	no	575	5"
Southern redbelly dace	SE	Yes	1,000	1"
Suckermouth minnow	SE	Yes (none to date)	n/a	n/a

SE - Colorado State Endangered      ST - Colorado State Threatened  
SC - Species of Special Concern      FE - Federally Listed Endangered

life in Colorado," he adds. Luckily, Colorado is ahead of the curve in trying to recover its native aquatic wildlife. "We've inventoried what's out there, brought them in, are working with them," says Schnoor. "The key is that there are still enough of them in the wild so we can learn what to feed them, how to raise them, then figure out how to spawn them and then release the young."

There are several federal hatcheries rearing endangered fish, but NASRF is the only state-run facility in the country working on them. These efforts, says Schnoor, will allow Coloradans to continue to raise crops, have land and recreate. "This will keep the waters open that people like to fish in, even if they're not fishing for these animals." Schnoor definitely feels a sense of personal mission in his work. "I'd be in intensive care if there were only 12 of one of these fish left, and I let them die. If my life can make a difference, the mission's here, to keep these guys from becoming extinct. We have the capability to do it, it's just a matter of keeping the opportunity."



Colorado's Wildlife Company bids farewell to Bob Hernbrode, this publication's *Big Kahuna* since the inaugural issue in 1989, who is retiring from the Division of Wildlife after 27 years. Bob, we will miss your wisdom and guidance.

Writing/Editor: Mary Taylor Young; Graphic Design: Blonde Ambition; Illustration: Paul Gray; Biological and Program Advisor: Bob Hernbrode



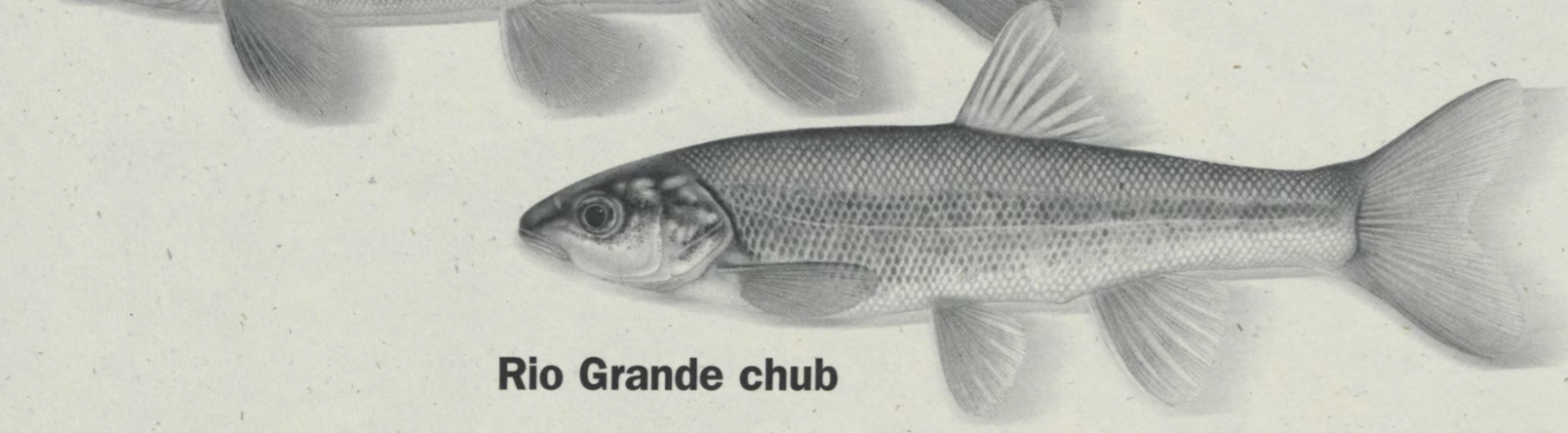
Rio Grande sucker



Razorback sucker



Colorado Pikeminnow



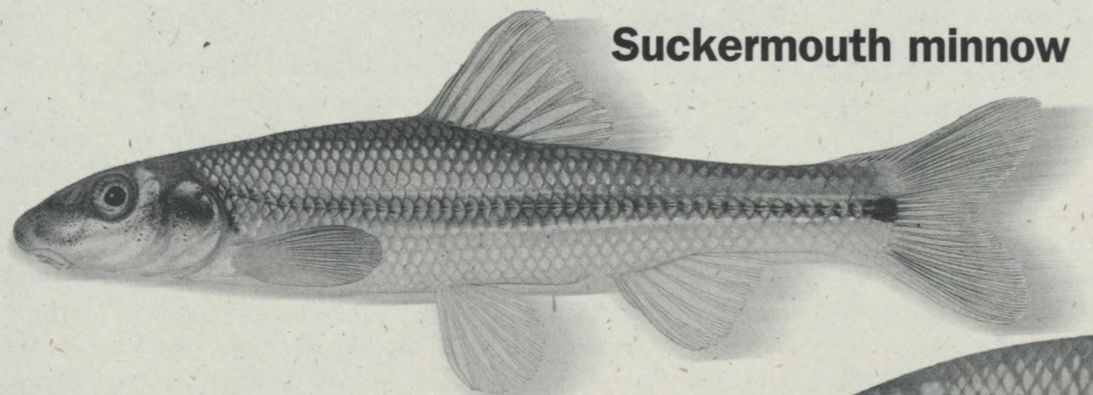
Rio Grande chub



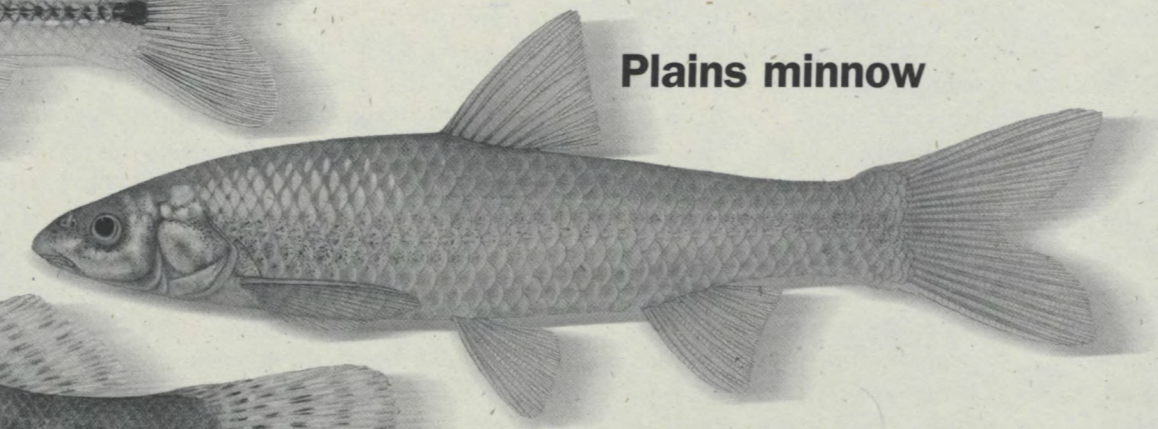
Bonytail



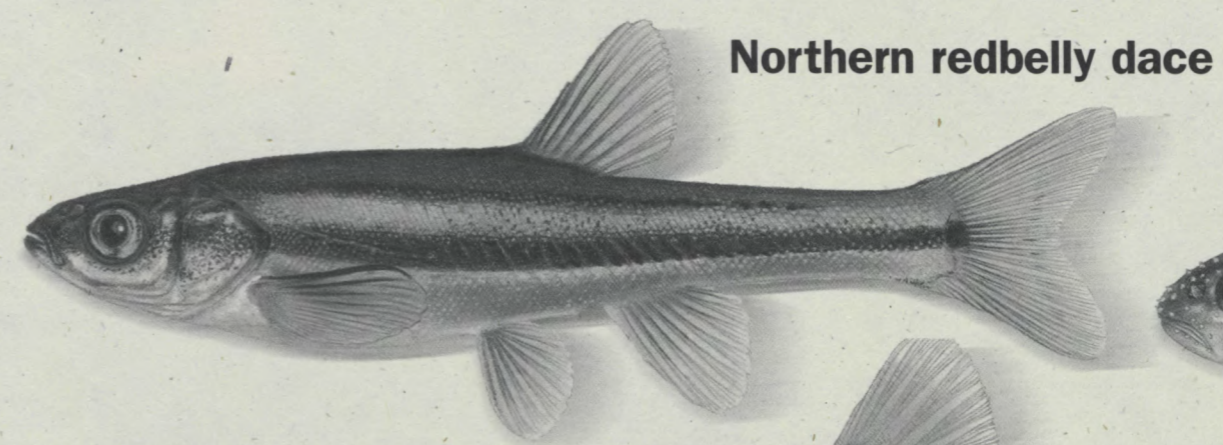
Roundtail chub



Suckermouth minnow



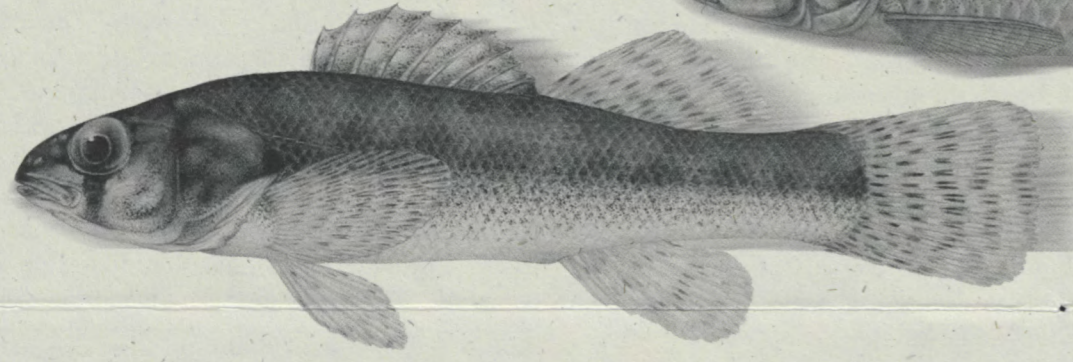
Plains minnow



Northern redbelly dace



Common shiner



Arkansas darter



Southern redbelly dace

# Colorado's Native Fish and Amphibians: Surviving the Ripple Effect

Over the last 150 years, miners, farmers, ranchers and city-dwellers have been making their homes and earning a living in Colorado, changing the land and waterways to human use. The ripple effect created by these changes directly and indirectly affected the state's aquatic wildlife, which were adapted to cycles of spring flooding, summer drought, and specific ranges of temperature and water quality. Damming, water diversion, control of spring flooding, predation by non-native fish, pollution from agricultural and urban runoff, destruction of vegetation and streambanks by livestock grazing, siltation, changes in water temperature, increased susceptibility to disease from environmental stresses—all these factors brought the species on this page to such critical levels that they have been designated either endangered, threatened or a species of special concern.

## RIO GRANDE RIVER

### Rio Grande sucker

4-6 inches, brown with black blotches and white or yellow undersides. Thick-lipped mouth typical of suckers. Prefers smaller streams with clear water, pools and riffles. Declined due to hybridization with non-native white suckers, predation from game fish such as northern pike, and sedimentation of streams that covered the gravel stream bottoms needed for feeding and spawning.

### Rio Grande chub

Up to 12 inches in larger streams. Dusky back, silver undersides. Two dark bands sometimes along the sides. Inhabits pools in small and moderate streams especially where there are undercut banks, overhanging vegetation and aquatic plants. Found in scattered locations in the Rio Grande Basin.

## EASTERN PLAINS

### Suckermouth minnow

2-5 inches, slender with conspicuous dark spot at base of tail fin. Mouth is on underside of head like a sucker, with thick lips. Inhabits shallow, clear riffles with sand and gravel and year-round flow. Sample evidence during drought conditions found more fish more widely-distributed in the South Platte River than expected, but the species is still rare. Populations persist in deeper habitats in river and tributary streams, preferably with gravel stream bottoms, which is very limited in the South Platte. Some inhabit the Arkansas River below John Martin Reservoir, where habitats are more stable and there is more gravel on the river bottom.

### Plains minnow

5 inches, olive or yellow-green color, with brassy reflection on the sides. Small mouth located under the snout, thin lips. Historically inhabited mainstream channels of Eastern Plains rivers, but has been rare since the early 1900s. Despite being nearly undetectable in the South Platte River system in recent decades, a relatively large and widespread population has been "rediscovered" in 2002, giving hope for future potential.

### Arkansas darter

3 inches, back speckled with small black specks, dark, wedge-shaped spot beneath the eye and dusky bars along the sides. In April and May, breeding males become bright orange underneath. Still found in various streams of the Arkansas River drainage. Prefers clear, shallow, sandy streams with spring-fed pools and abundant stream vegetation. Tolerates very high water temperatures and low oxygen levels during late summer, when streams dry up, by surviving in deep pools.

## FRONT RANGE

### Southern redbelly dace

Up to 3 inches long, olive-colored back with small, dark spots, creamy undersides. Two dark stripes along each side. Last natural populations have disappeared but captive populations survive in ponds at Ft. Carson and the Pueblo Army Depot. Inhabits cool, clear streams and ponds with abundant vegetation and shade.

### Common shiner

Up to 6 inches long, bright silver with a distinct stripe down the back. Stout-bodied, with a deeply-forked tail. During breeding, males develop blue heads, pink body and fins and bumps on the head, back and fin rays. Found only in streams of the upper South Platte and St. Vrain rivers. Inhabits cool, clear, gravel-bottomed water with overhanging shade.

### Northern redbelly dace

Less than 3 inches long, olive to brown-colored back, two dark bands run along each side with metallic silver stripe above and pale band between. During spawning, the undersides of the males turn orange or red, with yellowish fins. Inhabits slow-moving, cool-water streams, spring-fed streams and ponds with sandy bottoms and aquatic vegetation. The only known population is in the West Plum Creek drainage near Castle Rock.

## COLORADO RIVER

### Razorback sucker

Up to 36 inches long. Bronze to yellow with a sharp keel behind the head. Once widespread in the Colorado River, now reproducing populations remain only in the middle Green River in Utah, with a pond near Grand Junction. Inhabits quiet, muddy backwaters. Being re-stocked in the Green, Colorado, Gunnison and San Juan rivers.

### Bonytail

16-18 inches, green above, silvery-white below, with a slight bump behind the head. Portion of the tail before the tail fin tapers to be almost pencil-thin. A member of the minnow family. Extremely rare, with no self-sustaining populations remaining throughout the entire Colorado River system. Have been released in the Green and Yampa rivers.

### Roundtail chub

18 inches, silvery to dusky yellow or light green. Fins of spawning males become pinkish. Inhabits slow-moving waters of the Colorado River and its larger tributaries. The most common chub in the Colorado River Basin, though declining in the Yampa River.

### Colorado pikeminnow

Once reached lengths of 6 feet and 80 pounds, the recent record is 37 inches. Greenish-gray to bronze with silver or white along the sides and bottom. During spawning, their fins may become orangeish. Largest North American minnow, once extremely numerous throughout the entire Colorado River, now found only in the Green, Yampa, White, Colorado, Gunnison, San Juan and Dolores rivers. Inhabits swift, muddy waters with quiet backwaters.



## AMPHIBIAN

### Boreal toad

The only non-fish species at NASRE, this amphibian is uniquely adapted to high-altitude life. Adults grow to 3-4 inches long. Mottled, dark "warty" skin, pale stripe down the back. Found throughout the state at elevations between 7,000 and 12,000 feet in spruce-fir forests and alpine meadows. It breeds in lakes, marshes, ponds and bogs with sunny exposures and quiet, shallow water. As of 2000, only 29 known populations remained in the state. A deadly fungus is thought to be the main cause of the species' decline.

**Y**ou might be able to see some of the fish propagated at NASRF in the wild, but it won't be easy. Besides being rare, many are bottom dwellers, inhabit muddy water, or are quite small. Your best chance is during spawning, when they move to the surface or shallow water, and take on bright colors and patterns. Luckily, many of the species can be seen in tanks and aquaria at various locations.

The NASRF is open to the public, but please call before visiting; the staff is not always available to give tours. **719-587-3392**

All four endangered Colorado River fish—bonytail, razorback sucker, Colorado pikeminnow and humpback chub—are on exhibit at the **Ocean Journey** aquarium at 700 Water St. in Denver. **303-561-4450**

# Gone Fish(watch)in'

**\*\*Fishwatchers please note, all these fish are protected by law and may not be caught, seined-for or otherwise collected or harassed. If they are caught inadvertently, they must be released immediately into the waters they were taken from.\*\***

The **Montrose Pavilion**, a conference center at 1800 Pavilion Drive in Montrose, has a 200-gallon aquarium displaying bonytail, razorback sucker and Colorado pikeminnow. **800-982-2518**

A tour can be arranged to visit the **USFWS Grand Valley Endangered Fish Facility** in Grand Junction to see hatching and rearing of razorback sucker and Colorado pikeminnow. **970-245-9236**

Young razorback suckers are on exhibit at the **Nature Conservancy's Carpenter Ranch**, on U.S. Highway 40 just east of Hayden. **970-276-4626** or **www.nature.org**

**Dinosaur National Monument Visitor Center Quarry** is opening an aquarium displaying razorback sucker, pikeminnow and bonytail. **435-781-7702**

**Hot Creek State Wildlife Area**, about 15 miles southwest of Monte Vista, supports the

last historic, self-sustaining population of Rio Grande suckers. These bottom-dwelling fish are visible during spawning—March to June and in November—when they are up in the riffles. They develop striking black, red and white stripes head-to-tail. The area is closed from January 1 to April 30 to vehicle access, but the walk-in is only about a mile.

A population of northern redbelly dace inhabits **West Plum Creek** near Castle Rock and might be visible in that area.

Arkansas darters and southern redbelly dace can be seen in a spring-fed stream on the **Hugo State Wildlife Area** near Hugo, just north of the southwestern-most ponds.

**Colorado's Wildlife Company and accompanying educator's guide are available online at [WWW.WILDLIFE.STATE.CO.US/COLO\\_WILD\\_CO/HOMEPG/CWCINDEX.HTM](http://WWW.WILDLIFE.STATE.CO.US/COLO_WILD_CO/HOMEPG/CWCINDEX.HTM)**



## WILDLIFE VIEWING WORKSHOPS

• **Sharpen** your senses to the sights and sounds in nature • **Discover** where, when and how to see wildlife responsibly • **Learn** how to use binoculars and field guides • **Interpret** signs of wildlife on a nature walk. Price: \$15 per person/household. Visit **www.wildlifewatch.net** or call **303-291-7258**

*Colorado's Wildlife Company is published quarterly, mailed free of charge. Permission granted for reproduction for educational and noncommercial uses only, with credit to writers, illustrators, Colorado's Wildlife Company, and the Colorado Division of Wildlife. Printed on 75% recycled paper. Send letters to editor Mary Taylor Young at [mary@marytayloryoung.com](mailto:mary@marytayloryoung.com). To add a friend, make changes in subscription or to request back issues contact Renée Herring, Colorado Division of Wildlife, 6060 Broadway, Denver, CO 80216; 303-291-7258.*



**WATCHABLE WILDLIFE**



**STATE OF COLORADO**  
Bill Owens, Governor  
**DEPARTMENT OF NATURAL RESOURCES**  
Greg Walcher, Executive Director



**COLORADO DIVISION OF WILDLIFE**  
Russell George, Director  
6060 Broadway  
Denver, CO 80216

**PRSRST STD**  
**U.S. Postage**  
**PAID**  
**Denver, CO**  
Permit No. 1533  
Permit No. 2378

**RECEIVED**  
DEC 01 2003  
STATE PUBLICATIONS  
Colorado State Library

\*\*\*\*\*5-DIGIT 80203  
LIBRARY STATE PUBLICATIONS  
201 E COLFAX AVE RM 314  
DENVER CO 80203-1704

P-1 P37

Return Service Requested