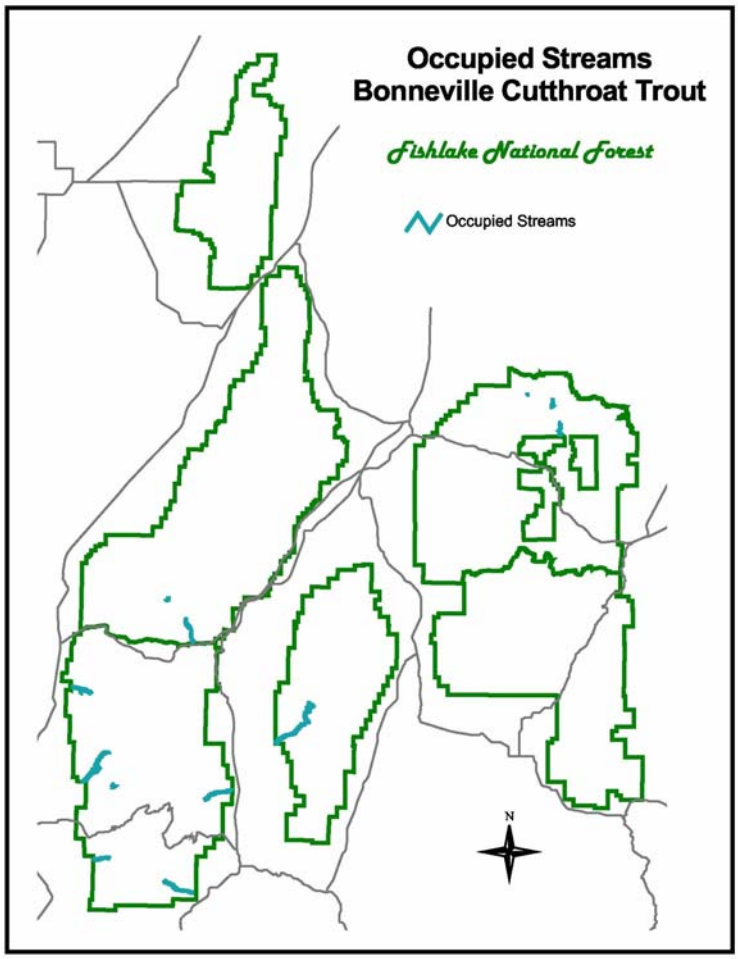
SENSITIVE FISH SPECIES

Bonneville Cutthroat Trout *(Oncorhynchus clarki utah)*

Bonneville cutthroat trout is one of three cutthroat trout subspecies native to Utah. Bonneville cutthroat trout historically occurred in the Pleistocene Lake Bonneville basin, which included portions of Idaho, Nevada, Utah, and Wyoming (Kershner 1995). The desiccation of Lake Bonneville into the smaller Great Salt Lake and fragmentation of other stream and lake habitats may have led to three slightly differentiated groups of Bonneville cutthroat trout. These groups are found in the Bonneville basin proper, the Bear River drainage, and the Snake Valley (Behnke 1992). There are 8 known populations of pure strain Bonneville cutthroat trout on the Fishlake National Forest, inhabiting approximately 38 miles of stream habitat. There are several recently reintroduced populations, and several small potential remnant populations.

The map below displays 38 miles of occupied Bonneville cutthroat trout habitat on the Fishlake National Forest.



Habitat for the Bonneville cutthroat trout is widely distributed and variable. It ranges from high elevation (3,500 m mean sea level) streams with coniferous and deciduous riparian trees to low elevation (1,000 m mean sea level) streams in sage-steppe grasslands containing herbaceous riparian zones. As

such, Bonneville cutthroat trout have adapted to a broad spectrum of habitat conditions throughout their range (Kershner 1995).

Sexual maturity is typically reached during the second year for males and the third year for females (May et al. 1978). Both the age at maturity and the annual timing of spawning vary geographically with elevation, temperature, and life history strategy. Lake resident trout may begin spawning at two years of age and usually continue throughout their lives, while adfluvial individuals may not spawn for several years. Annual spawning of Bonneville cutthroat trout occurs in the spring and early summer (Binns 1981). May et al. (1978) reported Bonneville cutthroat trout spawning in Birch Creek, Utah beginning in May and continuing into June. The native brood stock at Manning Meadow Reservoir (2,900 m elevation) spawn from late June to early July (Hepworth and Ottenbacher 1995).

Fry emerge in mid-July through mid-August (depending on time of spawn) and migrate to channel margin habitats associated with stream banks. Growth of resident fish is highly dependent on stream productivity. Growth rates of Bonneville cutthroat trout tend to be slower in headwater drainages than in lacustrine environments (Binns 1981).

Bonneville cutthroat trout require relatively cool, well-oxygenated water, and the presence of clean, well-sorted gravels with minimal fine sediments for successful spawning.

Both terrestrial and aquatic invertebrates are important food items for stream-dwelling Bonneville cutthroat trout (May et al. 1978). Dipterans and debris were the dominant food items for immature trout and terrestrial insects were the dominant prey for mature individuals (Kershner 1995).

There are numerous threats to Bonneville cutthroat trout. These include hybridization and/or competition with nonnative salmonids, degradation of habitat from diversions, livestock grazing, road building, fire, mining and timber harvest activities, as well as angling (Binns 1981).

Colorado River Cutthroat Trout *(Oncorhynchus clarki pleuriticus*)

Colorado River cutthroat trout is one of three cutthroat subspecies native to Utah. Historically, this subspecies occupied portions of the upper Colorado River basin in Wyoming, Colorado, Utah, and New Mexico (Behnke 1992). Though it is now restricted to headwater streams and lakes, its original distribution included portions of the Colorado, Green, Yampa, White, and San Juan Rivers (Young 1995). Although reduced in range and numbers, pure populations of Colorado River cutthroat trout still exist in their native drainages. There are three known populations of pure strain Colorado River cutthroat trout on the Fishlake National Forest inhabiting approximately 8 miles of stream habitat.

Colorado River cutthroat trout populations may be lake resident, fluvial, or adfluvial, and life history characteristics vary somewhat between these strategies. Colorado River cutthroat trout appear to be slower growing than other subspecies, with few fish over 200 mm, probably because of the short growing season. However, Colorado River cutthroat trout transplanted to lower elevation ponds grew to nearly 400 mm in two years, and were commonly over 250 mm in tributaries to the Green River in Wyoming, especially where fish were associated with beaver ponds (Young 1995). Some individuals from the wild brood stock of Colorado River cutthroat trout in Dougherty Basin Lake reach lengths of over 400 mm (Hepworth et al. 2002).

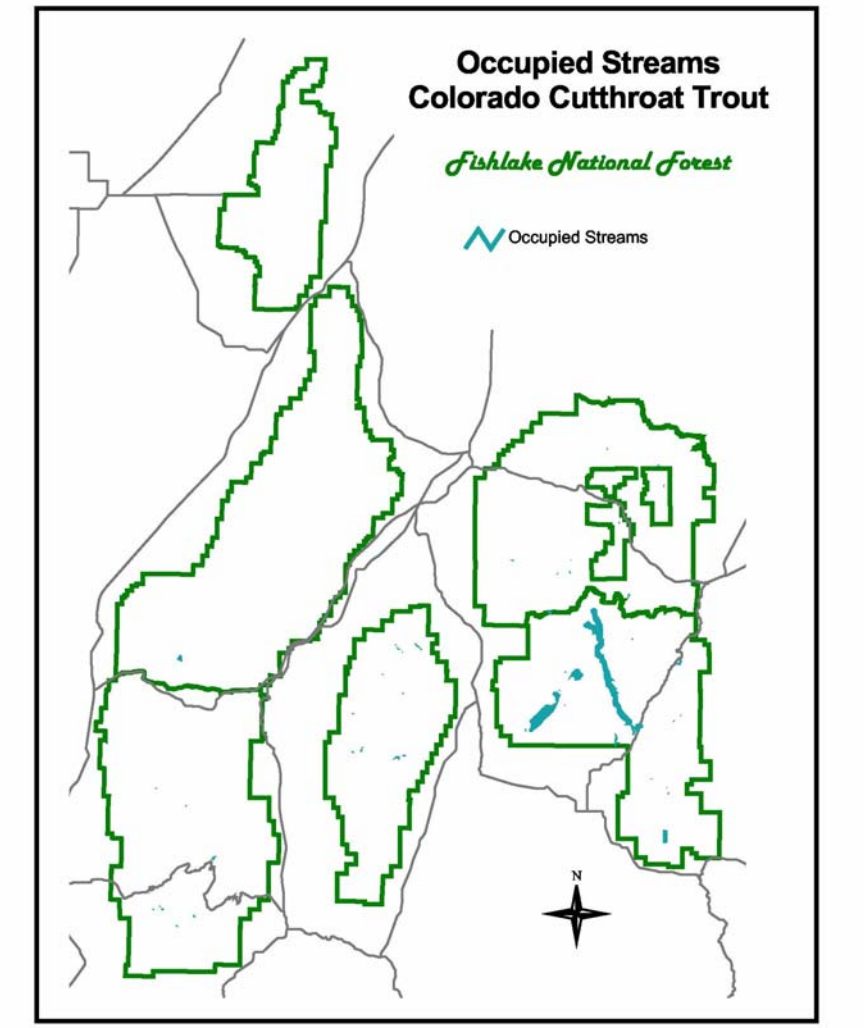
Colorado River cutthroat trout spawning usually begins when spring floods begin to recede in late spring and early summer, and is possibly cued by changes in water temperature. Fecundity varies with individual size and location as well as life history. Water temperature, elevation, and climatic variation determine fry emergence. In known populations, emergence usually occurs in late summer. Maturity is reached at approximately three years of age for fluvial populations (Young 1995).

Habitat requirements for Colorado River cutthroat trout are poorly understood, and results of studies are frequently conflicting. Typical of most cutthroat species, Colorado River cutthroat trout inhabit habitats with cold, clean water and spawn over gravel substrates with good water through-flow. Coarse woody debris, greater depth, and lower velocities are positively associated with Colorado River cutthroat trout presence; however, these conditions are not readily available within many streams containing Colorado River cutthroat trout. Small population size and restricted habitat areas confound most conclusions on habitat requirements (Young 1995).

Colorado River cutthroat trout do not compete well with introduced salmonids. This is possibly due to having evolved with the mottled sculpin and several endemic Colorado River minnows and suckers, and not with other salmonids (Young 1995).

Diets of sub-adult Colorado River cutthroat trout are comprised mainly of macroinvertebrates and plankton, whereas adults can be piscivorous with a larger proportion of large macroinvertebrates and terrestrial insects in their diets than that of sub-adults (Young 1995).

The Colorado River cutthroat trout only occurs on the Loa Ranger District of the Fishlake National Forest, as displayed below.



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