

An Outline of the History of Fisheries Management on the West Side of Rocky Mountain National Park.

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Pre-1900

- The Colorado River cutthroat trout (CRC) was the only native trout to what is now the western part of Rocky Mountain National Park (RMNP). Believed to have first occupied this area thousands of years ago by ascending what is now the Colorado River (Trotter 2008). There are few records of other non-game fish species inhabiting the waters of this area. Hale (1906) indicated that there was a species of sucker present when he was in the Grand Lake area in 1878. Mottled sculpin are known to be native to the Colorado River (Ellis 1914), and sculpins presently occupy the river within RMNP. Although the taxonomy of Colorado sculpins is uncertain (Woodling 1985), recent genetic testing of upper Colorado River sculpins, indicates that they are Paiute sculpins (Mitton 2008).
- Historic distribution. Fish probably only present below what are now known to be fish migration barriers (ex. Adams Falls, Cascade Falls, Granite Falls, etc.). Hale (1906) diary also gives insight into historic distribution in Grand Lake in 1878.
- Early settlers utilized fish and some also took part in commercial fishing, John Mitchell (Grand Lake Prospector 11/8/1883, see photo) and Judge Joseph Wescott (Denver Daily Tribune 8/11/1878).
- First stocking of non-native fish west of the Continental Divide occurred in 1882 when brook trout were stocked into Corral Creek near Hot Sulpher Springs (Forest and Stream 6/29/1882).
- Harry Harbison built a fish hatchery at what is now known as Columbine Lake in 1894 (Fort Collins Courier 6/21/1894, see photo). He was issued a permit to collect cutthroat trout spawn from Grand Lake area (Callicotte 5/22/1893).
- First stocking of vicinity of RMNP was in 1896 when Grand Lake was stocked with non-native rainbow trout (Land 1896).
- State Fish Commissioner targeted upper Colorado River for annual stocking (Swan 1898).
- The construction Grand Ditch, a trans-basin water diversion which collects water from eleven headwater streams of the Never Summer Mountains, was begun in 1890. The ditch carries water from the Colorado River basin across the Continental Divide into the Cache la Poudre River basin. It was completed to its current length, 14 miles, in 1936. In 1930 the Never Summer Mountains range, and the Grand Ditch, were added to RMNP (Hickey 1988). A study in 2000 determined that on average 29% of the water of the Upper Colorado River

watershed is diverted (Woods 2000). This diversion of water decreases the amount of available fish habitat within the Colorado River, and the ditch allows for fish to cross the Continental Divide in both directions.

1900s

- Leadville National Fish Hatchery attempted to establish a North Inlet set up egg collecting station for cutthroat trout in 1903 and 1904, but high water in both years would not permit the collection of fish. Instead they set up hatching station along the North Inlet where about 500,000 cutthroat trout eggs were brought in from other parts of Colorado by railroad and wagon annually, hatched and stocked into nearby waters (Leadville Records).
- Harbison supplied cutthroat trout eggs to Leadville from his hatchery when the Federal egg collections were unsuccessful (Leadville Records).
- State of Colorado opens fish hatchery at Hot Sulpher Springs in 1906 (Woodward 1906, see photo).
- Grand Lake Improvement Association builds hatchery building for Leadville along the North Inlet in 1908 (Leadville Records). Prior to this, troughs were set up outdoors.
- Leadville Superintendent laments fact that Grand Lake residents do not apply for fish: "These Grand lake people are the best ever, but they are very slow to realize that it is essential that they fill out applications if they wish fish" (Thompson 6/15/1908).
- While most of the fish stocked during this period were cutthroat, albeit from different sections of Colorado, non-native brook and rainbow trout also stocked. Non-native brook trout are now known to displace cutthroat trout and rainbow trout are known to hybridize with cutthroat trout.

1910s

- State abandons Sulphur Springs Hatchery due to lack of water and moves to Grand Lake Hatchery (Shinn 1912).
- State and Leadville both use Grand Lake Hatchery in 1911 and 1912. Leadville no longer uses Grand Lake hatchery after 1912. Leadville stocked about 2.5 million fish from the Grand Lake station while they operated it (Leadville Records).
- State operates brook trout egg collection station at Columbine Lake beginning in 1912 (Shinn 1912).
- RMNP created in 1915. Fish management: "It has been the custom of the State Game and Fish Commissioner to stock certain lakes and streams in this locality with trout, and this has been continued since the National Park has been created" (RMNP Superintendent's Annual Report 1915).
- Trails are constructed up major drainages and fish are stocked shortly after completion of these trails, ex. lakes on East Inlet in 1914 (Harbison 2/14/1914) and Lake Nanita in 1918 (RMNP Superintendent's Monthly Report 9/5/1918).
- Cutthroat trout continue to be the most heavily stocked fish species, but non-native brook and rainbow trout continue to be stocked as well. Emphasis of fisheries management within RMNP is on sport fishing.

1920s

- Grand Lake Trout Club, a group of businessmen and lodge owners, active in stocking fish in area, particularly fishless waters and higher lakes. “The object of the trout club is to stock the barren lakes and streams that are at present not reached by the automobile tourist, so that real fishermen may be able to enjoy their favorite sport in the Grand Lake country in succeeding years” (Estes Park Trail 9/3/1926). It appears that this group makes the decisions on what and where fish are stocked with the NPS assisting in obtaining fish and stocking.
- Johnny Holzwarth of the Holzwarth Trout Lodge active in taking guests to backcountry lakes on horseback to fish (Holzwarth 1965).
- First advice on fisheries management given by NPS, from Albright (1929):
 - In certain parks there still exist lakes and streams which contain no fish life, known as “barren” or “vacant” waters. Where such exist not fish of any species should be introduced without specific authority. In many instances it may be desirable to introduce certain forms of fish food and permit such to become abundant before fish are introduced. It is also planned to permit a limited area of barren waters to remain so; as such would be of biological interest to future generations.
 - In the past there has been considerable mixing of species; cutthroat, rainbow, brook and sometimes mackinaw and Loch Leven have been introduced into the same waters. It is desired that this be discontinued and that where a water contains but one species of fish that future plantings be confined to that species until such time as investigations may determine other species should be introduced.
 - The same plan should hold where two or more species are present; only such species as are present should be planted and the Superintendent may decide as to the advisability of confining the plants to one of the species present or including plantings of the other species which now inhabit that water.
- Cutthroat trout continue to be the most heavily stocked fish species, but non-native brook trout continue to be stocked as well. Emphasis of fisheries management within RMNP is still on sport fishing.

1930s

- Feast (1931) formulates a stocking policy for RMNP.
- Potts (1936) recommends stocking only cutthroat trout in most park waters.
- NPS first realizes that the current fisheries management is not consistent with other NPS wildlife policies by allowing the harvest of fish (Wright, Dixon and Thomas 1933) and introducing non-native fish species for recreational fishing (Sellars 1997).
- First NPS policy in regard to fisheries management, 1936: “To bring all fish cultural activities in the national parks and monuments within the general policies applying to all other forms of animal life, the following policy affecting fish planting and distribution shall be followed:

- No introductions of exotic species of fish shall be made in national park or monument waters now containing only native species.
- In waters where native and exotic species now exist, the native species shall be definitely encouraged.
- In waters where exotic species are best suited to the environment and have proven of higher value for fishing purposes than native species, plantings of exotics may be continued with the approval of the Director and the superintendent of the park in which such waters are located.
- It is the definite purpose of this policy to prohibit the wider distribution of exotic species of fish within the national parks and monuments, and to encourage a thorough study of the various park waters to the end that a more definite policy of fish planting may be reached.
- In waters where the introduction of exotic species threatens extinction of native species in an entire national park or monument area, such plantings should be discontinued and every effort made to restore the native species to its normal status.
- The number of any species of native non-game fish should not be reduced even where such reduction may be in the interest of better fishing.
- All forms of artificial stream improvement which would change natural conditions should be avoided, but the restoration of streams or lakes to their natural condition is permissible where thorough investigation indicates the desirability of such action.
- There should be no effort to introduce exotic fish or other exotic aquatic life for the purpose of increasing the supply of fish food.
- In cases where a lake or stream is of greater value without the presence of fishermen, there should be no stocking of such waters.
- In national parks and monuments where there still remain certain lakes which do not contain fish, permission of the Director must be secured before stocking.” (Cammerer 1936)
- RMNP essentially followed the NPS policy. With a few exceptions only cutthroat trout stocked. However they mostly stocked non-native Yellowstone cutthroat trout from 1938 through 1953. The Yellowstone is a subspecies native to the Yellowstone National Park area.
- Civilian Conservation Corps active within RMNP stocking fish and constructing fish rearing ponds, including ones on the East Inlet (see photo).
- Map of entire park showing fish species present in every water of the park, 1938.

1940s

- State closes Grand Lake fish hatchery in 1940. Between the Sulphur Springs and Grand Lake hatcheries operated from 1906-1940 over 15 million fish were stocked from these two hatcheries into Grand County waters (State of Colorado 1899-1942).
- Map of entire park showing fish species currently and previously stocked in every water of the park, 1941

- RMNP instructed by NPS Director to locate a Colorado source for their cutthroat trout. This proves to be problematic and Yellowstone cutthroat trout continue to be stocked until 1953 (Canfield 1946).
- Park overstocked with small brook trout (Madsen 1941).
- Wright (1944) advises abandonment of stocking Yellowstone cutthroat trout because it has not provided satisfactory results.
- Grater (1945) creates first fish stocking history for RMNP.

1950s

- The U. S. Fish and Wildlife Service (FWS) were requested to come to RMNP and survey park waters for greenback cutthroat trout (GBC), the native trout of RMNP east of the Continental Divide. Tonahutu Creek was one of the waters surveyed. The objectives of these surveys were:
 - To secure additional specimens of fish so that positive identification could be made
 - To secure live specimens to serve as a brood stock for cultural and study purposes
 - To appraise stream and lake habitats with a view toward establishment of sanctuaries in RMNP
- These surveys found what was believed to be a pure GBC population in the Big Thompson River within Forest Canyon (Bulkley 1957).
- In 1958 additional surveys with the same objectives as 1957 were conducted. In addition a life history study was conducted on the Forest Canyon cutthroat trout population. The Fay Lakes drainage was selected as a GBC sanctuary and fish were eradicated from it using rotenone (Bulkley 1959).
- In 1959, 209 GBC were removed from Forest Canyon and subsequently stocked into the Fay Lakes drainage (Cope 1959). This was the first native cutthroat trout restoration project within RMNP.
- From 1954 through the 1960s cutthroat trout stocked into RMNP waters came from Colorado sources (Kennedy 2011).
- Comprehensive policies for Fish and Wildlife resources updated (National Park Service 1959).

1960s

- Surveys of additional fish populations were conducted by FWS to assess their fishing potential in 1960 (Wallis and Azevedo 1961), 1961 (Azevedo and Wallis 1962) and 1963 (Linn 1963). Almost all of the lakes on the west side of RMNP were surveyed during 1961 and 1963.
- In 1965 a long range fishery management plan was completed. The park was divided into 13 fishery management units with all lakes classified based on how they were to be managed:
 - I – Waters not managed for sport fishing
 - II – Waters managed for fishing based upon self-supporting populations of fishes
 - III – Waters managed for fishing based upon populations of fishes supplemented by periodic stocking

Class III lakes were scheduled for stocking with 2-3 inch cutthroat trout every 2-3 years (Guse and Wallis 1965).

- Major shift in fisheries management in 1969. It was determined that it was inconsistent with NPS policy of “perpetuating and where possible restoring natural aquatic ecosystems.” A 3-5 year moratorium on fish stocking was established to determine the biological capabilities of park waters to support trout. This was also done to protect against damage to alpine lake shorelines caused by fishermen. An emphasis was placed on native cutthroat trout and their restoration within RMNP. This is the first time in the history of the RMNP fisheries program that the emphasis was not on sport fishing. This is still the current management (Stevens 1969). Thus, by 1960’s, the majority of the historically fishless waters within RMNP contained stocked populations of non-native species of sport fish.

1970s

- RMNP Natural Resources Management Plan indicates a need to determine the basic occurrence and distribution of all fishes within RMNP, especially GBC and CRC. There were no known populations of CRC within RMNP at this time (Butts 1970).
- Valid diagnostic characteristics are developed to distinguish between sub-species of cutthroat trout (Wernsman 1973).
- In 1976 the moratorium on fish stocking was made permanent. (RMNP 1976)
- Timber Lake and Creek converted to Colorado River cutthroat trout population in 1979 (Rosenlund 1979).
- Failures in the Grand Ditch result in erosion and siltation of the upper Colorado River (Mullen 1975, see photo).

1980s

- Taxonomic recommendations provided by Dr. Robert Behnke and his students from Colorado State University for most fish species with RMNP. Taxonomic information included (but not limited to): Taxonomy of cutthroat trout from the upper Colorado River within RMNP (Wernsman 1973, Behnke 1975, Rosenlund, Kennedy 2001), Timber Lake restoration project (1979), taxonomy of cutthroat trout from Paradise Creek and Boundary Lake (Wagner 1982), taxonomy of fish from Ten Lake Park and Fifth (Behnke 1987), and Columbine Creek and Lake Nanita (Behnke 1988).
- Prior to 1980 the northern and southern boundaries of RMNP were straight lines. In 1980 changes were made to these boundaries so they followed watershed boundaries. A few lakes, including Boundary Lake at the headwaters of Paradise Creek, that previously had been outside RMNP were now part of the park. While the lakes were outside the park they were under fisheries management of the Colorado Division of Wildlife (DOW) and stocked with non-native fish which worked their way downstream into RMNP.
- Ptarmigan Creek and Bench Lake converted to Colorado River cutthroat trout in 1985. Fish were secured for this restoration project from the Williamson Lakes in the Sierra Nevada Mountains of California. In one day the fish were transported by helicopter out of the Williamson Lakes, put on a plane and flown to Colorado,

and transported by helicopter into the Ptarmigan Creek drainage with minimal loss (Pister 1988).

1990s

- The cutthroat trout in Lake Nanita are determined to be pure CRC in 1990 (Martinez 1990). The DOW starts a CRC hatchery broodstock with Nanita fish. This broodstock provides fish in support of the Conservation Strategy for the Colorado River Cutthroat Trout Plan (CRCT 2006).
- Salmonid whirling disease is first detected in the Colorado River within RMNP in 1995 and was detected at a headwater trend site at Lulu City in 1999 (U. S. Fish and Wildlife Service 2010). However no clinical signs of the disease have been observed in fish, nor has there been any drastic declines in fish populations.

2000s

- The FWS writes a comprehensive report summarizing the fisheries management of RMNP up to that time (Rosenlund, Kennedy and Czarnowski 2001).
- In 2002 a native cutthroat trout restoration project was scheduled for Pettingell Lake, a remote lake in the North Inlet drainage. Because of concerns of some Grand County residents the RMNP Superintendent cancelled the project. Following this RMNP decided to create management plans for each of the native cutthroat trout, GBC and CRC, to re-assess the park's fisheries management program. Due to on-going cutthroat trout taxonomic research, these plans have not been completed.

Literature Cited

- Albright, Horace M., Director NPS. August 6, 1929. Memo to all park superintendents.
- Azevedo, Robert A. and O. L. Wallis. February 15, 1962. Inter-Agency Lake Surveys and Trout Investigations, Rocky Mountain National Park, 1961.
- Behnke, Robert. 1980. Memo dated April 6, 1980 to Bruce Rosenlund concerning purity of cutthroat trout from Ypsilon Lake.
- Behnke, Robert. 1987. Identification of cutthroat trout samples from Rocky Mountain National Park. Colorado State University.
- Behnke, Robert. 1988. Three samples of cutthroat trout from Rocky Mountain National Park. Colorado State University.
- Bulkley, Ross V. 1957. Report on 1957 studies on the Green-Back trout in Rocky Mountain National Park.
- Bulkley, Ross V. January 15, 1959. Report on the 1958 Fishery Studies by the Bureau of Sport Fisheries and Wildlife on Rocky Mountain National Park.
- Butts, David B. 1970. Natural resources management plan for Rocky Mountain National Park.
- Callicotte, W. R. (State of Colorado Fish and Game Commissioner). May 22, 1893. Permit to Collect Spawn. Colorado State Archives.
- Cammerer, Arno B. April 13, 1936. Office Order No. 323 (The Fish Policy). National Park Service.
- Canfield, David H. 1946. Supplementary Data to Accompany 1946 Annual Fish Planting Report for Rocky Mountain National Park.
- Cope, Oliver B. October 15, 1959. Report on 1959 Fishery Studies by the Bureau of Sport Fisheries and Wildlife Denver, Colorado.
- CRCT Coordination Team. 2006. Conservation strategy for Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*) in the States of Colorado, Utah, and Wyoming. Colorado Division of Wildlife, Fort Collins. 24p.
- Denver Daily Tribune. August 11, 1878. Grand Lake, Camping on the Banks of Colorado's Lucerne.
- Ellis, Max M. 1914. Fishes of Colorado. University of Colorado Studies XI:5-136.

Estes Park Trail. September 3, 1926. Grand Lake Ripples: The Little Fishes.

Feast, CN. 1931. Tentative Report on the Formulation of a Stocking Policy of the Streams and Lakes of Rocky Mountain National Park.

Forest and Stream. June 29, 1882. Fish and Game in Colorado.

France, Lewis Brown. 1884. With Rod and Line in Colorado Waters. Chain, Hardy and Company, Denver, Colorado.

Fort Collins Courier. June 21, 1894. Harbison's Fish Hatchery.

Grand Lake Prospector. November 8, 1883. Advertisement for trout for sale by John Mitchell.

Grater, Russell K. 1945. Fish planting data on the lakes and streams of Rocky Mountain National Park.

Guse, Neil and O. L. Wallis. 1965. Long range fishery management plan: Rocky Mountain National Park, 1965-1974.

Hale, Irving. 1906. A Tramp Through Middle Park. Sons of Colorado Vol. I(2):30-35 and Vol. I(4):3-10.

Harbison, Harry M. Letter dated February 14, 1914 to G. G. Ainsworth, Superintendent, Leadville NFH. Records of the Leadville National Fish Hatchery. U.S. Fish and Wildlife Service, D. C. Booth National Historic Fish Hatchery and Archives, Spearfish, South Dakota.

Hickey, Jeffrey S. 1988. An uneasy coexistence: Rocky Mountain National Park and the Grand River Ditch. Master's thesis. University of Colorado-Boulder.

Holzwarth. August 18, 1965 Oral interview.

Kennedy, Christopher M. 2011. Rocky Mountain National Park fish stocking history. U. S. Fish and Wildlife Service, Estes Park, CO.

Land, Gordon. 1896. Biennial Report of the State Fish Commissioner of the State of Colorado for the Years 1895 and 1896. The Smith-Brooks Printing Company, State Printers, Denver, Colorado.

Leadville National Fish Hatchery. 1903-1912. Records of the Leadville National Fish Hatchery. U.S. Fish and Wildlife Service, D. C. Booth National Historic Fish Hatchery and Archives, Spearfish, South Dakota.

Linn, D. Wayne. 1963. Lake survey summary sheets.

Madsen, David H. February 20, 1941. Report of David H. Madsen, Supervisor of Fish Resources. Fish and Wildlife Service. Salt Lake City, Utah.

Martinez, Anita. April 3, 1990. Letter to Bruce Rosenlund concerning meristic analysis of Colorado River cutthroat trout from Nanita Lake, Rocky Mountain National Park.

Mitton, Dr. Jeff. Personal communication. University of Colorado-Boulder.

Mullan, James W. 1975. Annual project reports, fishery management program, 1974-1975. U. S. Fish and Wildlife Service, Vernal, Utah.

National Park Service. 1959. Policies for the protection and management of fish and wildlife resources. Administrative Manual, Division of Ranger Activities, Volume VI, Part 2, Chapter 5, Pages 1-8.

Pister, Phil. 1988. Banking trout for Colorado's future. Colorado Outdoors 37(2):8-10.

Potts, Merlin K. 1936. A preliminary survey of conditions in streams and lakes of Rocky Mountain National Park with recommendations for the future propagation of trout. Rocky Mountain National Park.

Rocky Mountain National Park. Superintendents Annual Reports.

Rocky Mountain National Park. Superintendent Monthly Reports.

Rocky Mountain National Park. 1976. Aquatic resources management plan.

Rosenlund, Bruce. 1979. Rocky Mountain National Park fisheries management report, 1979. U. S. Fish and Wildlife Service.

Rosenlund, Bruce D., Chris Kennedy and Ken Czarnowski. 2001 Fisheries and aquatic management Rocky Mountain National Park. U. S. Fish and Wildlife Service.

Sellars, Richard West. 1997. Preserving nature in the national parks. Yale University Press.

Shinn, James A. 1912. Biennial Report of the State Game and Fish Commissioner of the State of Colorado for the Years 1911-12. The Smith-Brooks Printing Company, State Printers, Denver, Colorado.

State of Colorado. 1899-1942. Hatchery planting records. Colorado State Archives, Denver, CO.

Stevens, David R. 1969. Memo dated August 5, 1969 to RMNP Superintendent, subject: Fish Stocking Program.

Superintendent's Annual Report of Operations at Leadville (Colo.) Station for the Fiscal Year Ending

Swan, J. S. 1898. Biennial Report of the State Forest, Game and Fish Commissioner of the State of Colorado for the Years 1897 and 1898. The Smith-Brooks Printing Company, State Printers, Denver, Colorado.

Thompson, W. T. Letter dated June 15, 1908 to Commissioner of Fish & Fisheries, Washington, D. C. Records of the Leadville National Fish Hatchery. U.S. Fish and Wildlife Service, D. C. Booth National Historic Fish Hatchery and Archives, Spearfish, South Dakota.

Trotter, Patrick. 2008. Cutthroat: native trout of the west. Second Edition. University of California Press.

U. S. Fish and Wildlife Service. 2010. National wild fish health survey database. <http://www.fws.gov/wildfishsurvey/database/page/intro>. Last accessed March 2011.

Wagner, Eric. 1982. Taxonomic analysis of cutthroat trout from Rocky Mountain National Park. Colorado State University.

Wallis, O. L. and Robert A. Azevedo. May 18, 1961. Inter-Agency Lake Surveys and Trout Investigations, Rocky Mountain National Park, 1960.

Wernsman, Gary R. 1973. Systematics of native Colorado cutthroat trout. Master's thesis. Colorado State University.

Woodling, John. 1985. Colorado's little fish: a guide to the minnows and other lesser known fishes in the State of Colorado. Colorado Division of Wildlife.

Woods, Scott W. 2000. Hydrologic effects of the Grand Ditch on streams and wetlands in Rocky Mountain National Park, Colorado. Master's thesis. Colorado State University.

Woodward, John M. 1906. Biennial Report of the State Game and Fish Commissioner of the State of Colorado for the Years 1905 and 1906. The Smith-Brooks Printing Company, State Printers, Denver, Colorado.

Wright, George M., Joseph S. Dixon and Ben H. Thompson. 1933. Fauna of the national parks: a preliminary survey of faunal relations in national parks. National Park Service.

Wright, Stillman. 1944. A Report on Some Fishery Problems in Rocky Mountain National Park.

PHOTOS

TROUT, TROUT!

All desiring fresh trout can procure them at my fish boat. A good supply always on hand. My facilities for taking care of fish are unsurpassed.

✓ ORDERS FROM GEORGETOWN, CENTRAL AND DENVER FILLED ON SHORT NOTICE.

All Trout Warranted in Good Condition

JOHN MITCHELL.

Ad from Grand Lake Prospector, November 8, 1883.



Fishing in the outlet of Grand Lake, 1894



Harry Harbison fish hatchery at what is now known as Columbine Lake.



State of Colorado Grand County (Sulpher Springs) Fish Hatchery, 1906 (appeared in the Biennial Report of the State Game and Fish Commissioner of the State of Colorado for the Years 1905 and 1906)



East Inlet Fish Camp, 1936 (RMNP Archives)



Enrollees of the Civilian Conservation Corps draining the East Inlet fish rearing ponds, 1935 (National Archives and Records Administration)



Damaged caused by operation of the Grand Ditch on the Upper Colorado River between Lulu City and Lady Creek (appeared in Mullan 1975).