



UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
Rocky Mountain National Park
and
Shadow Mountain National Recreation Area
P. O. Box 1086, Estes Park, Colorado

June 18, 1958

Memorandum

To: Superintendent, Rocky Mountain National Park

From: Biologist

Subject: Historical References to Trout

Historical references to trout which inhabited waters of the central Rocky Mountains and those of the Great Plains to the east are not abundant. Usually also the scanty mention of fish is not detailed enough to furnish satisfactory clues to their identification. During a decade of reading historical literature, all references to fish have been copied and many of them were referenced so as to be readily available. Following are the important statements in the early literature I have incidentally encountered while pursuing an avocation dealing with the early status of wildlife on the Great Plains.

While voyaging up the Missouri River enroute to the Rocky Mountains, Zebulon Montgomery Pike (1895:378) wrote in July, 1806: "For the first time, I saw trout west of the Allegheny Mountains." On September 6, 1806, near the headwaters of the Little Osage River, Pike recorded: "In the holes of the creek we discovered many fish, which from the stripes on their bellies and their spots, I supposed to be trout and bass, they were twelve inches long." (ibid.:397)

Pike is not positive in this instance that the fish found were trout as he appeared to be with respect to the fish caught or seen in the Missouri River. His description of 'stripes and spots' concerning the fish he supposes to be 'trout and bass' appear to be in reverse order. Certainly if the fish were of the species he supposed, the spotted ones were trout. This inversion is not believed to be significant. Pike was not writing a scientific treatise on animals. The astonishing fact is that Pike took time to mention fish at all, let alone provide scientifically accurate data.

In connection with the fish described as greenback trout, Elliot Coues, the editor of Pike's narrative, places the small stream where the fish were found to be in Bourbon County, Kansas. This stream, the headwaters of Little Osage River, originates in the Great Plains and presently has no connection with Rocky Mountain streams

before its ultimate confluence with the Missouri River. The locale where the fish were seen in 1806 is an air-line distance of about 125 miles from the future site of Fort Riley where Dr. Hammond labeled the fish later classified as Salmo Glerki stonei, and again later given the popular name of greenback trout.

Joseph Gregg, in his The Commerce of the Prairies, wrote, "Having travelled in this manner for about eighty miles, we entered one of the most charming prairie vales that I have ever beheld, and which in the plenitude of our enthusiasm, we named 'Spring Valley', on account of the numerous spring-fed rills and gurgling rivalets that greeted the sight in every direction, in whose limpid pools swarms of trout were carelessly playing...." (Gregg, 1905:23) The manner of traveling on this trip made in May 1839 was to follow ridges between the Canadian and North Canadian Rivers, and I put Gregg's Spring Valley in the Enid Prairies of Oklahoma.

The tributaries of the Canadian River arise in the Sangre Cristo Range, but the summer runoff does not carry far out onto the Plains. By August and September this river is nearly dry for hundreds of miles. The Long Expedition of 1820 traveled for roughly 500 miles down the valley of this stream and found running water in only one or two instances, occasioned, as Dr. James wrote, by recent rains, and then ran for only a mile or two. In Spring Valley, Gregg had encountered a place where the river had entrenched its channel down to the level of ground water and there the stream was spring fed. Gregg gives no clues to assist in determining the species of trout.

Colonel Henry Inman, quotes from H. M. Bryant who wrote a monograph for a Kansas newspaper: "We caught more fish than we could possibly dispose of." (Inman, 1916:74) This was written in late May, 1829, at the mouth of Walnut Creek, an affluent of the Kansas River. Somewhere on the Santa Fe Trail, possibly 20 or so miles south of the lower crossing of the Arkansas River, i.e., in the vicinity of present Cimarron, Kansas, Bryant also recorded: "On the surface of the water floated thick the dead bodies of small fish, which the intense heat of the sun that day had killed." (ibid:89) The fish were seen in a pool of water in the sandy bed of a dry creek, presumably a tributary of the Arkansas, but possibly a stream which drained into the Cimarron River. This narrative furnishes no clues to the identity of the fish in either case. It does establish, however, that fish lived in the Arkansas River in 1829 and possibly also in the Cimarron.

In describing the overland stage route, Colonel Inman mentions a well-known station at the foot of the Glerietta Mountains, a half mile from the Rio Pecos ruins. "I recall the fact that once Kosleskie's Ranch was the favorite eating station on the trail;

where you were ever sure of a substantial meal, - the main feature of which was the delicious brook trout, which were caught out of the stream which ran near the door...." (*ibid.*:149) This was written sometime before 1897 about the overland stage route which Inman states was started in 1850. By this time brook trout could have been transplanted, but it seems improbable brook trout would be introduced into the Pecos River.

At this point the Pecos River can hardly be described as a Plains stream. Its headwaters were not far distant northward in forested mountains where trout could have existed. The fish Kosleskie served travelers may have originated in the mountains. It is hard to believe that any fish lived in this part of the Pecos River in pre-Columbian times within a half mile of the largest Pueblo that Coronado encountered in 1542. This appears probable when one of the Coronado Expedition chroniclers wrote that the inhabitants of the nearby Cibola on the Rio Grande River did not know what sort of a thing fish (*pescado*) is.

The only information Inman supplies is that sometime after 1850 trout inhabited waters of the Pecos River. Where they came from is not known, but the name brook trout Inman gave them may have no connection with the fish from eastern United States we now call brook trout. If not, they certainly were strains of cutthroat trout native to the waters of the upper Rio Grande River.

Captain Drannon made a trip up the Cache la Poudre River in the summer of 1852 and noted, "Its waters were full of trout of the speckled or mountain variety." (*In Waltrous, 1911:26*)

The best description of trout caught in waters of the eastern slope of the Central Rocky Mountains I have found comes from the pen of an English woman who compiled a book from the letters she wrote while visiting Colorado in the early 1870's. Writing about "Parks" in the mountains, of which Miss Bird had first-hand knowledge of Estes Park only, she mentions, "bright swift streams full of red-waisted trout." (*Bird, 1897:121-22*) In October of 1873, when their meat supply was very low, a Frenchman, "catches about fifty speckled trout for each meal." (*ibid.*:142) The next reference appears to have been an observation made by Miss Bird. The time was late October or early November, 1873, and the locale was Estes Park. "Often the trout are caught as fast as the hook can be baited, and looking through the ice-hole in the track of a sun-beam, you see a mass of tails, silver fins, bright eyes and crimson spots, a perfect shoal of fish, and truly beautiful the crimson spotted creatures look, lying still and dead on the blue ice under the sunshine. Sometimes two men bring home 60 lbs of trout as the result of one day's winter fishing." (*ibid.*:266)

Miss Bird's descriptions of these fish do not furnish adequate information from which assignment to species can be made. Like Captain Drannon she states they are 'speckled', then confuses the issue by twice mentioning 'crimson spots'. She could have been confused, if the speckled trout were native cutthroats, with the deep red marks on each side of the throat. Her 'red-waist-coated trout' also fits the description of cutthroat. On the other hand these fish could have been eastern brook trout which had been introduced into the Big Thompson River at lower elevations. I do not know when eastern trout were introduced into Colorado waters. Even though there was only one settler in Estes Park in 1873 when the above was written, the foothills had been settled for some time. Additional research may throw more light on this aspect.

Under publication date of 1871, Ferdinand V. Hayden writes, "The little streams are full of fine trout, which are easily caught, they not having learned as yet the cunning arts of self-protection, like their eastern relatives." This important statement has been overlooked by biologists. It refutes a later statement that both Hayden and Colonel Richard Dodge made to the effect that there never were any fish in waters of the North Platte River. The 'little streams' were tributaries of the North Platte because at that time Hayden was traversing the region south of the Union Pacific Railroad in the vicinity of Elk Mountain, Wyoming.

Since I have misplaced my bibliographical card to this reference, and do not have volumes at hand, I cannot assign a specific date to this observation. The notation appears on page 135 of one of Hayden's Geological Survey Reports. I feel sure it must be his fifth annual report which would have been written in 1870 or 1871.

With respect again to the reputed absence of fish from the North Platte River, an earlier statement by Hayden is also significant. While ascending the Big Laramie River, a tributary of the North Platte, in the fall of 1868 Hayden records, "Before reaching the (Laramie or Medicine Bow) mountains, we passed a series of alkaline lakes, which are simply shallow depressions, receiving the drainage of a small area without any outlet.... In the spring these lakes are quite large, and are filled by the overflow of the branches of the Big Laramie, which are greatly swollen by the melting snow, from the neighboring streams, and in the autumn the water becomes so alkaline by evaporation that the fish die in great numbers along the shores. It is a curious fact that not a single trout has been taken from any of the branches of the North Platte, unless a few have been caught in the Sweetwater, while the little branches of the South Platte are filled with them." (Hayden, 1873:34-35) This last sentence should be compared with

essentially the identical statement made by Colonel Dodge. (Dodge, 1877:247-48) This is understandable because Colonel Dodge was in command of the military detachment which accompanied the Hayden party that year.

Analysis of this observation of Hayden suggests that it is inconsistent. The Laramie River and its tributaries which receive their water from melting snow are 'branches' of the North Platte. The fish which died in the alkaline lakes must have been restocked annually from the flood waters of the greatly swollen streams. Since the tributaries of the Big Laramie River dry up each fall, the fish must have survived in these branches in the mountains. Thus, while we have no indication from Hayden's description that the fish were trout, the circumstances strongly suggest that the 'great quantities' of dead fish were trout.

Colonel Richard I. Dodge furnishes some very interesting and pertinent information regarding fish in waters in the Rocky Mountains and on the Great Plains. "There are said to be trout in some of the streams which take their rise in the second plain, as the Bijou and some of the tributaries of the Republican. This is not well authenticated, and I doubt it." (Dodge, 1877:247). This Bijou is doubtlessly a tributary of the South Platte River, and Dodge's 'second plain' probably signifies the land feature now commonly called the High Plains.

The reference to the possibility of trout in the tributaries of the Republican River is especially pertinent to considerations of greenback trout. The Republican River joins the Kansas River roughly four miles west of the site of Fort Riley where Dr. Hammond labeled the fish specimens which were later classified as Salmo clarki stonias. If trout inhabited branches of the Republican River as Dodge records, the type specimens of greenback trout could have been collected in the vicinity of Fort Riley.

As we have seen from other observations some waters of streams which arise on the Great Plains contained trout in the early historical period. The waters of Joseph Gregg's Spring Valley and the headwaters of the Little Osage River, as recorded by Pike in 1806, were both spring-fed. Similar situations occur on most all rivers which arise on the Great Plains, including the Republican. The turbidity of waters of the two general classes of Great Plains rivers, i.e., those whose headwaters arise in the plains or in the mountains, are dissimilar. Plains streams that have entrenched to or below the level of ground water are clear streams except during periods of heavy runoff from the occasional drenching the Plains receive in summer. On the other hand the master streams arising in the mountains carry great quantities of sediments with which they

constantly aggrade their channels. The flow of these streams is in only a few instances recharged by underground water. Generally waters of such rivers as the Platte, Arkansas and Cimarron, for instance, constantly lose water by percolation and evaporation so that these streams are peculiarly smaller near their mouths than they are where they discharge from the mountains.

Speculation as to the species of trout seen by Pike in the headwaters of the Little Osage River, by Gregg in Spring Valley, and those collected by Dr. Hammond, presumably in the vicinity of Fort Riley, Kansas, requires more information than presently available. If Dr. Hammond's trout were collected from waters of the Republican or Kansas Rivers, these trout in the other streams could also be greenbacks. How they could exist in these several streams would require investigations of geology. Since, in general, the High Plains consist of outwash debris from the Rocky Mountains, it is safe to assume that at various times over the ages, the Plains rivers have flowed over and deposited sediments in many channels. On the basis, for instance, that the headwaters of both the Platte and Arkansas Rivers contained the same species of trout, then at one time there must have been communication for fish between the two streams above the Missouri River, if that stream is recognized to be too muddy for trout existence.

These few references to fish from the early literature are not definitive, but they do suggest that sources of information probably exist which may throw some light on the history of greenback trout. The references cited are only a few of the many I have in my notes. Unfortunately, however, references to fish have not been indexed so are not readily available. When time permits, I will search for these additional references in my 7,000 pages of notes and, if they contain pertinent information, I will report on them.

The discussions accompanying the above references are based on data which I do not now have time to authenticate from the literature. The discussions are sketchy because the information is of similar nature.

James S. Cole
James S. Cole
Biologist

cc: The Director
Regional Director, Region Two
Dr. Robert Miller
Dr. Olive Cope
Dr. Howard Tanner

- Bird, Isabella L.
1879. A lady's life in the Rocky Mountains. New York.
- Dodge, Colonel Richard Irving
1877. The plains of the Great West. New York.
- Gregg, Josiah
1905. The commerce of the prairies, 1831-39. In
Early Western Travels, 1748-1846, XIX, Thwaites,
Ruben G. Editor, Cleveland.
- Hayden, Ferdinand V.
1873. First, second and third annual reports of the
U.S. Geological Survey of the territories for
the years 1867, 1868, and 1869 under the Department
of the Interior. Government Print. Office,
Washington, D. C.
- Inman, Colonel Henry
1916. The old Santa Fe trail, the story of a great
highway. Topeka (Copyrighted 1898 by the
MacMillan Co.)
- Pike, Montgomery Zebulon
1895. The expedition of Zebulon Montgomery Pike, Vol. II,
Arkansas journey - Mexican tour, New York.
Ed. by Elliott Coues.
- Waltrus, Ansel
1911. History of Larimer County. Fort Collins.

January 6, 1958

Mr. Oliver B. Cope, Chief
Rocky Mountain Investigations
U. S. Fish and Wildlife Service
Thatcher Building
Logan, Utah

Dear Ollie:

I read your report on the green-back trout with great interest and have routed it around to our trout research personnel.

Next summer sometime I would like to arrange a trip for Dr. Tanner and myself to look over these sites, especially upper Forest Canyon and the Ypsilon area.

We are naturally quite interested in the present and future management of this species and appreciate the opportunity of working with you on the problem.

Very truly yours,

W. R. Seaman

W. R. Seaman
Fish Manager

cc: Jim Cole
Dr. H. A. Tanner ✓

✓	
✓	

W. King
1/15/58

January 15, 1958

The Director

Chief, Rocky Mountain Sport Fishery Investigations

Green-back Trout

Reference is made to the Regional Director's memorandum of November 7 to the Director and to Dr. King's reply, both pertaining to the participation of the Branch of Fishery Management in studies on the green-back trout in Rocky Mountain National Park.

It appears to us that the studies requested by the National Park Service and the investigations named in our October 18, 1957 report, "Report on 1957 studies on the green-back trout in Rocky Mountain National Park," constitute a research job as much as a management job. The research should come before the management. We are dealing with a trout whose life history and biology are virtually unknown. Before the green-back trout can be managed, we should certainly have some basis for management. The basis can be achieved most quickly and easily by investigation of the features of its biology needed for sensible management, and this would appear to us to be a research function. There is no question about the status of some of the proposals we made; creel census, poisoning, and planting are management functions. However, other parts of the plan would appear to be of a research nature.

Obviously, we must have definitions of our terms and clear statements of responsibilities for each function. I am hopeful that these will be made available to us soon so that we can better understand our place in the present system.

Oliver B. Cope

OBC:cg

Locate now 7/14

February 13, 1958

Mr. James Cole
National Park Service
Rocky Mountain National Park
Estes Park, Colorado

Dear Jim:

Our thoughts are beginning to turn around our next summer's program. One thing that, of course, is very interesting is the "greenback trout". Do you have any new information since I last talked with you in Estes Park?

I am particularly interested in knowing whether or not Dr. Miller has given us any further satisfaction as to whether or not this really is a distinct fish. Also I should like to ask if the National Park Service has any program with the greenback trout over and above that handled by the Fish and Wildlife Service Biologist.

Dr. Olive in the zoology department and myself have been wondering about the possibility of a life history study of the greenback trout. While such a step on our part is very tentative, we would like to know whether or not such a study is proposed either by your organization or by Dr. Cope. I have just written a similar letter to Dr. Cope inquiring of his intentions. The possibility of our putting a graduate student on the life history of the greenback trout is at the present time only a possibility with a great many "ifs".

I would be very interested in your reply and in any new information you may have.

Sincerely yours,

Howard A. Tanner
Unit Leader

HAT:js

February 13, 1958

Mr. Oliver Cope, Chief
Rocky Mountain Investigations
U. S. Fish & Wildlife Service
Thatcher Building
Logan, Utah

Dear Mr. Cope:

We are busily engaged in planning our activities for the coming summer and have some questions concerning your program and intent on the "greenback trout".

First, have you any more ideas or information concerning the existence of the greenback trout? Is it a valid distinction or not? In addition to these questions, we should like to know what your proposed research on the greenback trout will entail.

I am asking these questions because Dr. Olive and myself are considering the possibilities of putting a graduate student on a study on the life history of the greenback trout. We do not want to enter a field that you intend to cover. However, if you do not propose a life history study and if such a study would fit in with your over-all approach, we might be able to inaugurate such a program here. In considering such a program, our first step was to determine your position in the matter.

Please speak freely on the matter, do not hesitate to object if you wish to. t includes

Looking forward to hearing from you.

Sincerely yours,

Howard A. Tanner
Unit Leader

HAT:js

cc: Dr. John Olive

3/65
HAT
Phone

THATCHER BUILDING
41 South Main Street
Logan, Utah

<input checked="" type="checkbox"/>	Cope	out
<input checked="" type="checkbox"/>		WUB
	Gleanhill	

October 7, 1957

Dr. Robert Miller
University of Michigan
Museum of Zoology
Ann Arbor, Michigan

Dear Bob:

Ross Bulkley of the Rocky Mountain Investigations made several collections of cutthroat trout from Rocky Mountain National Park during July and August of this year. Dr. Cope and myself are acquainted with your correspondence with Howard Tanner on some previous collections from this same area. We are interested in determining definitely whether the green-backed trout (Salmo clarki stonias) still exists.

I have sent eight collections to you by express. I am also enclosing a map to acquaint you with the collection points. The collections are as follows:

1. August 20, 1957, Hague Creek
Elevation, 10,000 to 10,800 feet
Cache la Poudre Drainage
Collector: Ross V. Bulkley (9 fish)
2. August 23, 1957
Tonahutu Creek, Colorado River Drainage
Collector: Ross V. Bulkley (9 fish)
3. August 28, 1957
Elevation, 9,500 feet
Headwaters, Forest Canyon
Collector: Ross V. Bulkley and J. Cole (8 fish)
4. August 27, 1957
Elevation, 10,000 to 10,600 feet
Big Thomson River, headwaters Forest Canyon
Collector: Ross V. Bulkley and J. Cole

October 7, 1957

5. August 8, 1957
Lower Fay (Caddis) Lake
Ypsilon Drainage
Collector: Ross V. Bulkley (2 fish)
6. July 29, 1957
Elevation, 10,100 feet
Albion Creek, one-half mile below old
townsite of Albion.
Collector: Ross V. Bulkley and
William Osborne (18 fish)
7. July 31, 1957
Fall River
Collector: Ross Bulkley (5 cutthroat
1 brook trout)
8. August 1, 1957
Bould Reserve, Albion Creek Drainage
Collector: Shaninahan (4 fish)

From my limited knowledge of the cutthroat trouts, they appear to be different, especially in the distribution of spots, but we would appreciate your professional opinion on this matter.

Sincerely yours,

Norman G. Benson
Fishery Research Biologist

NGB:cg

cc: R. V. Bulkley

Fish To Miller

Pkg 1 S. clarki —

Aug 20 1957

Hague Crk

Elev 10,000' to 10,800

Cache la Poudre drainage

Rocky Mt Natl Park

Coll. R. Bulkley

9 fish

Pkg 2 Aug 23 1957

Tonahutu Crk.

Colorado Riv drainage

Rocky Mt Natl Park

Coll. R. Bulkley

9 fish

Pkg 3 8/28/57

Big Thompson Riv

Forest Canyon Rocky Mts N.P.
9500 ft elev.

Coll R. Bulkley & J. Cole
4 Fish

Pkg 4 8/27/57

Big Thompson Riv.

10,000 - 10,600' elev

Indwtr's Forest Canyon

Rocky Mt N.P.

Coll. Bulkley & J. Cole

8 fish

Pkg 5 8/8/57

Lower Fay (Caddis) Lk.

Ypsilon drainage

Rocky Mt. N.P.

Coll. R. Bulkley

2 Fish

Pkg 6 7/29/57

Albion Crk 1/2 mi

below old town site of

Albion Elev 11,100'

Coll R. Bulkley

Wm Osborne

18 fish

Pkg 7 7/31/57

Fall River

Rocky Mt. N.P.

Coll. R. Bulkley

5 Caddis

1 Brook Trout

Pkg 8 8/1/57

Bould Reserve

Albion Crk drainage

See indiv Tags

Coll. Shanmahan

4 fish

November 27, 1957

Regional Director, Albuquerque, New Mexico
Acting Chief, Division of Sport Fisheries

Fishery Activities, Rocky Mountain National Park

Reference is made to your memorandum on the above subject, dated November 7, which comments on extension of activities proposed by Dr. Cope in his letter of October 18 to Mr. Lloyd, Superintendent, Rocky Mountain National Park. We are pleased to receive this expression of your views and your recommendations regarding the proposed activity.

We are fully in agreement with your opinion that this activity may, and probably should be considered as management rather than research. If we assume that it should be initiated at all, it would follow logically that the activity might be undertaken under the jurisdiction of your office rather than by Dr. Cope's staff. However, we must also consider the matter of expediency, especially in view of the limited resources available to both Fishery Research and Fishery Management Services. If the activity is worthwhile and could be accomplished incidentally, at relative low cost, by research personnel in the area for other purposes, then we should consider it practical to stretch the rather elastic line of organizational demarcation.

It does not appear desirable to have two Branches working in this area. Not because of any question of confusion or problem of coordination, but simply because the extent of the activity and, as your letter points out, the comparatively low priority of the area in terms of need and management opportunity does not warrant a major program effort.

There is no need to consider the advantages of transferring manpower ceilings and funds for this activity to Fishery Management Services, either for use in this area or on other Federal lands; this is no more than a hypothetical field activity for which no funds or personnel have been provided.

This office is aware of some inconsistency between our organization and programs on National Park areas. You may be sure that we will work toward a practical resolution of this problem.

(sgd) Willis King

Willis King

cc: Dr. Cope
Mr. Gottschalk
Dr. King
Branch of Fishery Research

EvenLimbach:hmm

Regional Director

December 16, 1957

Cope		

Chief, Rocky Mountain Sport Fishery Investigations

Rocky Mountain National Park Activities

I would appreciate receiving an answer to my memo of December 2 regarding future fishery investigations in Rocky Mountain National Park.

Oliver B. Cope

OBC:cg

cc: Central Office

Regional Director

Chief, Rocky Mountain Sport Fishery Investigations

Rocky Mountain National Park Activities

Reference is made to Dr. King's memo of November 27 written in response to your memo of November 7 regarding fishery activities at Rocky Mountain National Park.

I would appreciate it if I could see a copy of your November 7 memo so that I can have the benefit of the thinking of our Region II people regarding projects on which we are working.

Oliver B. Cope

OBC:cg

cc: Central Office

December 2, 1957

Cope	
Benson	
Shelley	
Steenhill	

Office Memorandum • UNITED STATES GOVERNMENT

TO : Chief, Rocky Mountain Sport Fishery Investigation, DATE: December 26, 1957
 Logan, Utah

FROM : Acting Regional Director, Region 2, Albuquerque, N. M.

SUBJECT: Rocky Mountain National Park Activities

This is in reply to your correspondence concerning activities in Rocky Mountain National Park.

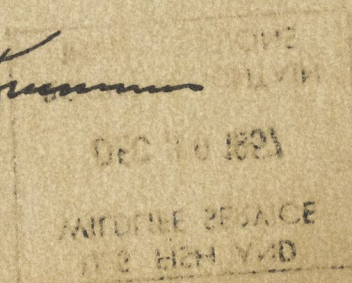
Our memorandum of November 7 to the Director, commenting upon activities proposed by you in the subject park, was prompted by the fact that certain Fishery Management work was proposed. Under the present organization all Fishery Management work is clearly the responsibility of the Regional Director, and, further, the Regional Director under present policy participates in research planning.

In view of the above we made the following points regarding your Fishery Management proposals:

"We question the proposal on the basis that the priority which this work should receive is not as high as priority for management investigations in other Federal areas. We have no assurance that these management investigations will be accepted by the Park Service and will result in increased fishing opportunities. In this Region we have many other agencies, including our own, which urgently need fishery management work and where we can be assured that this work will be immediately applied to increasing the fishery opportunities and will result in productive programs. With these thoughts in mind, we recommend the following:

1. That manpower ceilings and funds required for these management services to Rocky Mountain National Park be transferred to Fishery Management Services.
2. That these efforts be applied to other Federal areas where productive use of the information can be assured.
3. In the event that it is the Bureau's decision to undertake the fishery management work proposed in Rocky Mountain Park, that it be undertaken by the Branch of Fishery Management Services."

William T. Krummes
 William T. Krummes



File by

Thatcher Building
41 South Main Street
Logan, Utah

March 31, 1958

Mr. James V. Lloyd, Superintendent
Rocky Mountain National Park
P. O. Box 1086
Estes Park, Colorado

Dear Mr. Lloyd:

We have heard from Dr. Robert E. Miller from the University of Michigan regarding the identity of the fish which we are calling the green-back trout. Dr. Miller says that he still has insufficient information to state with finality whether any of the samples submitted to him represent Salmo clarki stonias or even whether the green-back trout is a valid subspecies. He also says that irrespective of what kind of cutthroat trout inhabit the east slopes of the Rockies now, some probably represent original strains and these should be preserved. Dr. Miller proposes that additional studies be made in museums, literature, and by rearing the offspring of these fish so that this can be better resolved.

The Fish and Wildlife Service will probably wish to proceed with this project as planned, and I have asked our Branch Chief for confirmation of this. In the meantime, it would be helpful to know whether your office is interested in the restoration of this fish, even if it should turn out to be something other than the green-back trout.

Sincerely yours,

Oliver B. Cope, Chief
Rocky Mountain Sport Fishery
Investigations

OBC:cc

cc: Mr. Paul Thompson
Mr. Seaman
Dr. Tanner

Superintendent, U. S. Fishery Station,
Leadville, Colorado

March 31, 1958

✓		
✓		
✓		

W
B

Chief, Rocky Mountain Sport Fishery
Investigations

Green-back Trout

We are interested in knowing about the condition of the green-back trout which we brought to your station last summer. If they are still alive and doing well, will they be in condition to produce spawn this year? If so, would you have the facilities to rear the immatures into 1959? We would appreciate any comments you can make about the future of these fish and their offspring in the hatchery.

Oliver B. Cope

OBC:cg

cc: Regional Office

Dr. R. B. Miller

-2-

March 31, 1958

information in typewritten form. We must apologize for the position of the incision on the fish. We will not fail to stay away from the midline in the future. Our biologist's observations on the cutthroat mark were not written for the individual fish. He recalls that none of the marks were as bright as are Yellowstone cutthroat, and that there was some variation of the development of the marks from fish to fish.

Your suggestion regarding a collaborator status with compensation seems to me to be a very good one. I know that the Fish and Wildlife Service has imposed upon you in past years and that you have willingly accepted tasks which must have taken considerable time. It seems to me that our Washington, D. C. office should make arrangements, if possible, to secure a collaborator status for you. Although we could initiate it in our office, it seems to me that since many other Fish and Wildlife Service offices are interested in your identification services, it might be better for our Central Office to make the arrangement. I am writing to my Branch Chief to suggest this.

Your suggestion regarding examination of collections in museums and compilation of planting records seems to be an excellent one. I am wondering how you would propose that the examination of specimens be made. Would you want us to arrange to have specimens sent to you from museums that might be willing to send them, or would you suggest that you make a trip to several museums for this purpose? Would you suggest that we secure the information on planting records and send it to you for examination?

We are sorry that you had an intestinal upset and we surely hope that you are feeling better now and that no recurrence will take place. The information you have given us does not come too late, and gives us sufficient basis to decide whether or not to try to restore this fish. I feel certain that the National Park Service will want us to go ahead with the restoration of this fish in Rocky Mountain National Park, and we shall proceed on that basis.

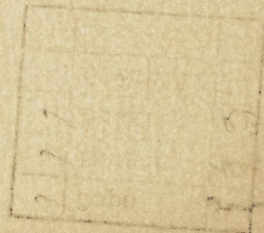
Again, thanks very much for your help. We hope that it can be arranged to have you named as a collaborator with compensation. Meanwhile, we would appreciate having your ideas as to just how this problem should be approached, and knowing which tasks you might be interested in handling and which ones our people could do.

Sincerely yours,

Oliver B. Cope, Chief
Rocky Mountain Sport Fishery
Investigations

OBC:cg

Enc. BofL (copy)



Thatcher Building
41 South Main Street
Logan, Utah

March 31, 1958

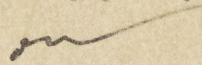
Mr. James V. Lloyd, Superintendent
Rocky Mountain National Park
P. O. Box 1086
Estes Park, Colorado

Dear Mr. Lloyd:

We have heard from Dr. Robert B. Miller from the University of Michigan regarding the identity of the fish which we are calling the green-back trout. Dr. Miller says that he still has insufficient information to state with finality whether any of the samples submitted to him represent Salmo clarki stonias or even whether the green-back trout is a valid subspecies. He also says that irrespective of what kind of cutthroat trout inhabit the east slopes of the Rockies now, some probably represent original strains and these should be preserved. Dr. Miller proposes that additional studies be made in museums, literature, and by rearing the offspring of these fish so that this can be better resolved.

The Fish and Wildlife Service will probably wish to proceed with this project as planned, and I have asked our Branch Chief for confirmation of this. In the meantime, it would be helpful to know whether your office is interested in the restoration of this fish, even if it should turn out to be something other than the green-back trout.

Sincerely yours,


Oliver B. Cope, Chief
Rocky Mountain Sport Fishery
Investigations

OBC:cg

cc: Mr. Paul Thompson
Mr. Seaman
Dr. Tanner ✓

cc: Hagen
Olive
Wagar

C O P Y (this letter was sent to Dr. Tanner)

N22

Rocky Mountain National Park
and
Shadow Mountain National Recreation Area
P. O. Box 1086, Estes Park, Colorado

April 3, 1958

Dr. Robert B. Miller
Curator of Fishes, Museum of Zoology
University of Michigan
Ann Arbor, Michigan

Dear Dr. Miller:

We are apologetic that this is the only way we can express our appreciation for the contributions you have made to the taxonomic research of Rocky Mountain National Park cutthroat trout. Knowing of your interest in the trout of North America, we trust our endeavors to preserve and protect endangered strains of native populations may in some manner recompense you.

You may be assured that we will continue fishery investigations in the Park and we will send you additional specimens properly preserved and labeled. Mr. Cole's excuse for the poor condition of the last shipment of specimens lies partly in his unfamiliarity with fishery techniques and partly in the necessity of transporting the fish in a container only half filled with preservative on the top of his rucksack for two days over very rough terrain. Specimens in good condition can and will be secured.

Mr. Cole has secured from the early Great Plains literature several references to fish of the Plains and Mountains which he will copy or annotate and send you as soon as possible. While these may not help you materially in arriving at a solution of the status of the greenback trout, they may provide clues to the very early or even prehistoric distribution of fishes of the region.

Sincerely yours,

John A. Rutter
Acting Superintendent

Copy to: Region (2) Two
Dr. Olive B. Cope
Dr. Howard Tanner

Office Memorandum • UNITED STATES GOVERNMENT

<input checked="" type="checkbox"/>	Cope
<input type="checkbox"/>	Gledhill

TO : Dr. Oliver B. Cope, Chief, Rocky Mountain Sport Fisheries Investigations, Logan, Utah

DATE: April 11, 1958

FROM : Regional Supervisor, Branch of Fish Hatcheries, Albuquerque, N. Mex.

SUBJECT: Green-back Trout Production

Reference is made to your memorandum of March 31 on the above subject.

We can arrange to carry on a small-scale rearing program of both the greenback trout and the Colorado River cutthroat at Leadville to provide specimens for identification, as suggested. We cannot carry on a large-scale program, but this would not appear to be necessary for the limited number of fish you would need for taxonomic purposes. We shall leave to your arrangement the securing of brood stock, or green eggs of the Colorado cutthroat, for hatching and production at Leadville.

I do not believe that we should bring in fry from another source as the impact of natural conditions may have already altered the somatic characteristics sufficiently to introduce an error into a subsequent study.

Lynn H. Hutchens
Lynn H. Hutchens

Office Memorandum • UNITED STATES GOVERNMENT

✓	Cope	4-7

TO : Chief, Rocky Mountain Sport Fishery Investigations, DATE: April 7, 1958
 Logan, Utah.

FROM : Hatchery Manager, Fish Cultural Station, Leadville, Colorado

SUBJECT: Green-back Trout.

In reply to your memorandum of March 31st concerning the possibility of getting any spawn from the green-back trout, that was brought to this station last summer; I doubt very much if we will get any eggs from ^{these} this year.

I have tried the fish for eggs and sperm and have not been able to find any so far; I will keep a check on the egg possibility from these fish for the next few months.

There are 15 of the trout left and we are keeping them in 40 degree water. The fish that died I believe had Octomitus, as we have a small lot of blackspotted trout below the green-back and they developed Octomitus within a few days after being place below the green-back.

I immediately fed the green-back and blackspotted trout a 0.2 percent carbasone and meat mixture for several days. The blackspotted reacted very favorably, but the green-back that were already diseased and would not eat, died. The remaining green-back seem to be healthy and in good condition.

I will be able to hatch and keep any resulting fry until 1959 as you suggested.

I do not know where I will be able to get any Colorado River cut-throat, but if you have a source I will be glad to raise them in any way that you suggest.

Tom E. French

Tom E. French

cc: Albuquerque



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Rocky Mountain National Park
and

Shadow Mountain National Recreation Area
P. O. Box 1086, Estes Park, Colorado

COPIES	REPLY	REFER TO:
✓	✓	✓
	son	
	N22	

April 8, 1958

Dr. Oliver B. Cope
Thatcher Building
41 South Main Street
Logan, Utah

Dear Dr. Cope:

Thank you for the concise summary of Dr. Robert R. Miller's March 26 letter to you reporting on some of the cutthroat collected last year in Rocky Mountain National Park. Dr. Miller kindly sent us a copy of this letter.

The significant point of Dr. Miller's letter is that he repeats an earlier statement to the effect that these greenish-backed trout probably represent original strains of the fish which inhabited the eastern slope of the Rocky Mountains. Regardless of whether these trout are, or ever can be identified definitely as the green-back trout, they certainly are relics of the original fish fauna of Rocky Mountain National Park.

The present circumstance that insufficient evidence now exists to permit positive taxonomic determination should not deter us from making efforts to protect and perpetuate a fragile population of what could well be an endangered strain of fish. Posterity would hold us responsible, if through dilatory or apathetic attitudes and actions, another animal passes into oblivion.

We are encouraged with your statement that you believe the Fish and Wildlife Service will proceed with the project so well started last year. We are looking forward to working with you and your assistants again this summer.

Sincerely yours,

James V. Lloyd
James V. Lloyd
Superintendent

Copy to: Regional Director, Region Two
w/copy of Dr. Cope's memorandum of 3/31/58

Office Memorandum • UNITED STATES GOVERNMENT

TO : Chief, Rocky Mountain Sport Fishery Invs.

DATE: April 9, 1958

FROM : Acting Chief, Branch of Fishery Research

SUBJECT: Green-back trout

✓	Cope	
✓	Benson	<i>MB</i>
✓	Bulkley	<i>MB</i>
	Gledhill	

Reference is made to your memorandum of March 31 on the above subject.

On the basis of your quotation of Dr. Miller's statements, we must consider the validity of both samples and the subspecies Salmo clarki stomias highly doubtful. As a matter of fact, the recognition of cutthroat as a species is a moot point. As you suggest, the Park Service may wish to go ahead with the restoration of the "green-back" on the strength of the possibility that it is the local native species. Presumably, the Superintendent of Rocky Mountain National Park will refer that question to his Washington Office for decision, but as of now the query has not been received.

It is not likely that it will ever be possible to say that the "green-back" represents the pure native strain. Plantings of hatchery fish for which incorrect records or none at all exist, are known and are probably common. At best the claim of the green-back as the endemic strain is, and probably will be, provisional. We believe that the decision of the National Park Service on restoring this fish will be influenced by the opinions of your staff and by those of State personnel who are also concerned. There appears to be no urgency about making the decision.

For the present we suggest that you continue with planned field studies of populations and habitats of the "green-back", as well as with limited efforts to establish its claim as an original strain. The proposal to propagate the Rocky Mountain and Colorado River cutthroat strains under comparable conditions at Leadville Hatchery, if acceptable to the Regional Office, might resolve the question of temperature determination of vertebral numbers.

We are not now convinced that it will be necessary to divert our limited funds to the securing of taxonomic services, although we realize that such services are occasionally needed. (Possibly National Park Service or the State of Colorado may be sufficiently concerned about the taxonomic status of the "green-back" to support an intensive inquiry.) We are, of course, willing to reconsider this matter if there is sufficient justification.

Bruno von Limbach
Bruno vonLimbach

Tom E. French, Hatchery Manager, Fish-Cultural
Station, Leadville, Colorado

April 28, 1958

Chief, Rocky Mountain Sport Fishery Investigations

Colorado River cutthroat eggs

We have been in correspondence with Mr. Seaman of the Colorado Department of Game and Fish regarding a source of Colorado River cutthroat eggs for the experiment for comparison with eggs of the green-back trout. Although the source which Mr. Seaman mentions, Trappers Lake, may not contain a pure strain of Colorado River cutthroat, it may be necessary for us to use this stock if none other is available. In the meantime, Mr. Seaman desires to know how many eggs would be required for the experiment. I am wondering if you would have an idea regarding numbers of eggs of Colorado River cutthroat we should request for this purpose.

Oliver B. Cope

OBC:cg

cc: Regional Office

Office Memorandum • UNITED STATES GOVERNMENT

✓	ope	

TO : Chief, Rocky Mountain Sport Fishery Investigation, DATE: April 21, 1958
 Logan, Utah.

FROM : Hatchery Manager, Fish Cultural Station, Leadville, Colorado

SUBJECT: Colorado River Cutthroat Eggs.

In reply to your letter of April 18th in regard to the number of cutthroat eggs we should request from the Colorado Game and Fish Dept. for rearing at this station.

I believe that we should have 5,000 as we will have to use a trough to rear them in for the time being.

I have requested Mr. Wilkerson of the Greede station to keep me 5,000 of the cutthroat from the Rio Grande River Drainage.

Tom E. French

Tom E. French

Thatcher Building
41 South Main Street
Logan, Utah

April 21, 1958

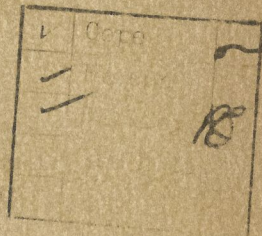
Dr. Robert R. Miller
Curator of Fishes
Museum of Zoology
University of Michigan
Ann Arbor, Michigan

Dear Dr. Miller:

Thank you very much for your letter of April 15 regarding work on the green-back trout.

The fish now being held in the hatchery at Leadville as green-back trout are from Albion Creek, as you suggest. We are advised by the Hatchery Superintendent that we will probably not be able to secure spawn from this stock this year, but that we shall be able to next year. In the meantime, we have heard from the State of Colorado regarding the availability of the fish of the Colorado cutthroat stock. The State of Colorado is taking eggs from what they consider to be the Colorado River cutthroat, but unfortunately the lake, Trappers Lake, is also known to contain Yellowstone cutthroat stock. I have advised them that we would prefer to have eggs from stock which is presumed to be pure rather than from something which may be a hybrid. If the State of Colorado is not able to provide this material for us, it may be that we may have to secure cutthroat from Tonahatu Creek and transport them to the hatchery at Leadville, as we did the green-back trout. I shall keep you informed on our progress in this and will make sure that whenever spawn is taken the adults are preserved for you.

We would be pleased to have some of your formalin-alcohol resistant labels for use on this project. If you can give us some idea of the properties and availability of this type of label, we would be interested in buying some for our other work as well. We shall follow your suggestions about tagging the individual fish and making notations on the features of the outthroat mark.



April 21, 1958

I wrote to our Branch Chief regarding the idea of having you named as a collaborator with pay so that your taxonomic services would be available to us on a different basis than at present. The reply from Washington, D. C. is:

"We are not now convinced that it will be necessary to divert our limited funds to the securing of taxonomic services, although we realize that such services are occasionally needed. (Possibly National Park Service or the State of Colorado may be sufficiently concerned about the taxonomic status of the 'green-back' to support an intensive inquiry.) We are, of course, willing to reconsider this matter if there is sufficient justification."

I shall be glad to ask the State of Colorado and the Park Service if they have funds available to pay for taxonomic work on the green-back trout.

With regard to planting records, we shall start to collect information so that we can have as complete as possible a record of stocking of fish from this area.

It looks as though there is nothing standing in our way with regard to going ahead with our field work on the green-back trout this year, and we shall do what we can to follow through on your suggestions for work on the identity of this fish.

Sincerely yours,

Oliver B. Cope, Chief
Rocky Mountain Sport Fishery
Investigations

OBC:og

Carl Welsh

August 26, 1958

Howard A. Tanner

Dear Carl:

First let me say once again how much I appreciated your help, time, and hospitality. You certainly made my first visit to the San Luis Valley a most enjoyable one.

About 100 miles north of Antonito, it suddenly dawned on me that I had forgotten your books and I believe I also left some clothes in your closet. I am not worried about the clothes but I am certainly sorry to have forgotten your books. Please do not go through the trouble of mailing the clothes. I will get them on later visits or somebody will be coming this way as far as Denver. Do whatever you want to on the books, mail them or send them up. I assure you once more that nearly all of them will find a ready market.

Please note the copy of the attached correspondence to Dr. Miller. The fish came through in good shape and we can look forward with interest to his comments. I will keep you posted.

The very best to yourself and Cleto.

Sincerely yours,

Howard A. Tanner

HAT:js

Enclosure

*Dr. R. H. Miller
Ann Arbor, Mich*

Cutthroat Trout
Differbach and
Regan

UNIVERSITY OF CALIFORNIA

DEPARTMENT OF ZOÖLOGY
BERKELEY 4, CALIFORNIA

RECEIVED
BSF & W-REG. 2 Vincent
DEC 16 1963
F M S
COLORADO COOP.

December 12, 1963

Dr. Robert E. Vincent
Cooperative Fishery Unit
Colorado State University
Fort Collins, Colorado

Dear Dr. Vincent:

I was pleased to receive your letter of December 5. I am now completing a monograph on the native western North American Salmo. This will be co-authored with Dr. Needham and should be published in 1964 in the University of California Publications in Zoology series. Because of your interest, I will try to obtain a copy of a preliminary draft and forward it to you in about one month.

I am interested to learn more about the work conducted at Colorado State. For example, you mentioned a study on the Gila trout. I find that the trout named Salmo gilae by R.R. Miller from Diamond Creek, New Mexico, is quite distinct from what I call the Arizona golden trout from tributaries of the Salt River and, perhaps, the headwaters of the Little Colorado. This trout has also been called S. gilae, but Dr. Miller has said he plans to name it as a new species. I would particularly like to know of any localities in the lower Colorado River system in Arizona or New Mexico where populations of the native trout still exist. My view is that the golden trout complex consists of at least four groups. These, as we know them, are the California, Arizona and Mexican golden trouts and the Gila trout. These trouts should not be considered rainbow or cutthroats but, perhaps, arose by hybridization between the primitive ancestral rainbow and cutthroat. This theory is based on sparse evidence and, I believe, serological studies would do much to clarify the issue. Ray Simon at the Washington College of Fisheries is now doing chromosome studies on the trout and I anticipate he will have something of value to add to our knowledge.

The greenback trout, S. c. stomias, I regard as a valid subspecies because the specimens I have examined are consistently fine scaled and large spotted. This trout also occurred sympatrically in Twin Lakes, Colorado, with another cutthroat (named S. c. macdonaldi) evidently without hybridizing.

Dr. Vincent

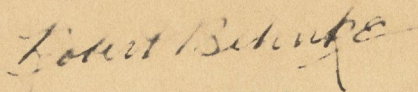
- 2 -

December 12, 1963

I know of only three extant populations of stomias. These are, Albion Creek, Boulder County, Big Thompson River, Rocky Mountain National Park and Red Canyon, Jackson County. I would also appreciate any information concerning hybridization with introduced rainbows and cutthroats as well as any information on the present distribution and abundance of stomias.

The greatest obstacle to my study has been to find pure populations of native trout. A real contribution would be made merely to inventory our native stocks so that material would be available for future and more comprehensive studies.

Sincerely,



Robert J. Behnke
Zoology-Fisheries

RJB:pj

December 18, 1963

Dr. Robert J. Behnke
Department of Zoology
University of California
Berkeley 4, California

Dear Dr. Behnke:

Thank you for your prompt reply of December 12 to my letter. I will be most interested in reading this monography on western salmonids. I appreciate your efforts in acquiring a preliminary draft for my perusal.

The student, Mr. Danny Rogan who I have working on Salmo gilae, spent two summers on Diamond Creek in New Mexico, the type locality, gathering data on this fish. Last summer I was able to visit the area and catch a good number of them. We have a large collection of these fish that Mr. Rogan is using for length-weight, scale, food stomach, taxonomic, etc. studies. The native trout in Arizona certainly looks much different from Salmo gilae. I have some specimens from both and the difference is striking. Mr. Rogan was able to collect both of these fishes and has remarked upon the different spotting and color patterns. As far as known, the Arizona native trout, or as we are commonly calling it, the Apache trout, occurs in approximately seven tributaries of the White and Black rivers that are headwaters of the Salt River. These tributaries are all in the Fort Apache Indian Reservation where we have a Bureau Fishery Biologist. In fact we anticipate going into the area this summer to collect some more of these Apache trout for closer comparison with the Gila trout.

We have been corresponding with Ray Simon concerning the Gila and Apache trouts and plan on furnishing him with eggs this spring.

Your comments on the greenback trout, Salmo clarki atomas, were of interest. We have been experiencing considerable difficulty attempting to find a pure strain of this native fish. There are only a few cutthroat trout left in Albion Creek, Boulder County. Brook

Dr. Robert J. Behnke
Page Two
December 18, 1963

trout appear to have become dominant in this section of stream. Big Thompson River, Rocky Mountain National Park, was stocked with cutthroat trout from Yellowstone in the early 1920's. There is, therefore, no way of being sure that the strain has not been genetically polluted. The Red Canyon, Jackson County, population you mentioned is a new one to us; we certainly will investigate it. We have in addition, found several other populations in small headwater streams that may be greenback trout. We are experiencing the difficulty of never being sure whether we have a greenback or a cutthroat trout of Yellowstone strain as the later have been introduced into nearly every stream along the eastern Rockies.

As we compile the various preliminary reports and accumulate information that may be of interest to you, we will certainly send you a copy. Is there a possibility that you would like to join us in collecting some Apache trout this summer?

It would be helpful if a few of us that are interested in western North American Salmo could gather for some informal discussion and exchange of information and ideas. Perhaps an opportune time will arise in the not too distant future when we could do so.

Sincerely yours,

Robert E. Vincent
Unit Leader

REV/hvh

UNIVERSITY OF CALIFORNIA

DEPARTMENT OF ZOOLOGY
BERKELEY 4, CALIFORNIA

February 19, 1964

RECEIVED
BSF & W-REG. 2

FEB 24 1964

F M S
COLORADO COOP.

Dr. Robert E. Vincent
Cooperative Fishery Unit
Colorado State University
Fort Collins, Colorado

Dear Dr. Vincent:

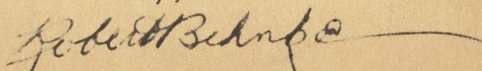
I would consider a position at Colorado State University most attractive. It should be an ideal location for trout studies. I am, however, somewhat committed for the next year or more. I have been accepted by the National Academy of Sciences as an exchange scholar to the USSR. If everything goes according to plan, I would go to Russia next fall for a ten-month period to continue my systematic studies on salmonid fishes with Dr. A. N. Svetovidov at the Soviet Academy of Sciences in Leningrad. Right now, I am attempting to complete our western trout work and finish my thesis so that I can receive my Ph.D. degree this summer.

In reading over the notes of Mr. Dieffenbach, I notice the statement that in Trappers Lake, the cutthroat-rainbow hybrids are "quite infertile". I have often seen reference to cutthroat-rainbow infertility but valid experiments are lacking. From observing hybrid swarms in many western waters, I have the impression that in some waters the hybrids are not only fully fertile but must have a selective advantage over the parent species. The failure of some hybrid matings in hatcheries, I believe, can be attributed to the state of maturity of the spawners or some other extraneous factors and not to genetic incompatibility between the rainbow and cutthroat species. The only detailed experiment I know was done by Gordon Hartmen at the University of British Columbia (unpublished M.S. thesis). He carried out reciprocal crosses between rainbow and cutthroat and, in both cases, the hybrids produced slightly more viable fry than the pure matings. The females were lost in an accident but the males were backcrossed to both rainbow and cutthroat females with no loss of fertility.

I read the report on Trappers Lake by Snyder and Tanner and find it difficult to accept the idea that the native cutthroat and the introduced Yellowstone Lake cutthroat have not completely fused, forming a homogeneous gene pool. Twin Lakes, near Leadville, Colorado, evidently once had two closely related cutthroat trout populations living together without hybridizing. Unfortunately, the form named Salmo macdonaldi probably was extinct by the turn of the century and almost nothing is known of them. I examined the two type specimens of macdonaldi and compared them with some stomias collected from Twin Lakes at the same time. I am quite convinced that they were distinct. It would be most interesting if a similar situation could be discovered.

If you have further information or comments on hybridization, I would be most interested to receive it.

Sincerely,



Robert J. Behnke
Zoologist

Green-back Trout

The green-back trout was discovered in 1870 on the eastern slope of the Rocky Mountains in the Arkansas and Platte River systems in Colorado. The fish was originally described by E. D. Cope as Salmo stonias, but is now regarded as a subspecies of the cutthroat trout, Salmo clarki. After the original discovery of this fish, it was found in many other streams and tributaries in northern Colorado east of the Continental Divide. The Colorado River cutthroat, Salmo clarki pleuriticus, was the native trout in Colorado west of the Divide. As the years passed, the green-back became less abundant, and for many years was thought by biologists to have become an extinct subspecies.

In 1955 Dr. Howard Tanner, Colorado Cooperative Fishery Research Unit at Fort Collins, received reports of the capture of a fish which he suspected might be the green-back trout. The fish had been collected in Albion Creek, a tributary of Boulder Creek, which drains into the South Platte River. This creek lies within the original known range of the green-back trout. Dr. Tanner secured additional specimens from this locality and forwarded them to Dr. Robert Miller, Curator of Fishes, University of Michigan, for identification. Dr. Miller subsequently received more specimens to aid in positive identification, and he concluded that these fish represented a kind of cutthroat different from any others we know today, and that they may or may not be Salmo clarki stonias.

The U. S. Bureau of Sport Fisheries and Wildlife was consulted in 1957 in connection with the possibility of studies on the fish and of its restoration in Rocky Mountain National Park. In that year, some exploration of waters in and around Rocky Mountain National Park was made, and a research program was conceived and planned. The study had three objectives: 1 - to secure additional specimens of S. stonias and culture them, to help Dr. Miller in his identification of the fish; 2 - to secure other specimens to serve as a brood stock for cultural purposes; 3 - to appraise stream and lake habitats with a view toward establishment of sanctuaries in Rocky Mountain National Park; 4 - to study the biology of this little-known fish; and 5 - to establish one or more sanctuaries. Studies carried on through 1959 were done in accordance with these aims.

The effort to secure specimens and culture them for taxonomic studies has been partially successful. The collection of fish from Forest Canyon in Rocky Mountain National Park proved to be feasible, and fish were transported to the U. S. Fishery Station at Leadville, Colorado. Spawning was successful in 1959, when a few thousand eggs were obtained. We still desire to culture these fish alongside the Colorado River cutthroat so that any differences between the groups can be attributed to genetics alone. At the moment, then, we only know that our fish are an unusual kind of cutthroat trout; we still cannot call them the true green-back trout, although they may be. Even with this cloud on their identity, it was decided to proceed with the other phases of the study. //

The program to develop a brood stock at Leadville has been successful, and the Hatchery Manager, Thomas French, has been able to keep some adults alive and take spawn, as pointed out above.

The appraisal of stream and lake habitats was carefully done in 1957 and 1958, when many waters west of the Divide were surveyed from physical and biological standpoints. From information gained in this work, it was decided that the Fay Lake drainage, tributary to Roaring River and Fall River, would be our best test water for the introduction of green-back trout. This system contains three small lakes and about one mile of main stem. The drainage was chemically treated in 1958, and the result was the complete removal of fish in preparation for the introduction. Detoxification was complete over the 1958-1959 winter, so stocking was done in 1959. In this operation, fish were trapped in Forest Canyon, transported by horse and truck to the Fall River Hatchery of the Colorado State Game and Fish Department, held in ponds, and then lifted by U. S. Air Force helicopter to Fay Lake. Two plants were made, one in August and one in September. In all, 209 adult green-backs, ranging in size from 4.5 to 10 inches, were introduced into Fay Lake. Observation indicated that no mortality occurred from the ponds to the present time. The growth of the population will be closely followed in future years.

The biology of the green-back was studied as intensively as possible in 1958. Studies by Ross V. Bulkley were done in connection with a wier and trap constructed in Forest Canyon. Information on length frequency, growth, age, food habits, reproduction, and stream characteristics was collected, analyzed, and reported upon. This information will be invaluable in any future program involving the management of the green-back trout.

The studies done thus far have added considerably to our knowledge of the green-back trout. We are not yet in a position to show that the fish will occupy any particular place in the fishery in Rocky Mountain National Park or elsewhere. After the measurements of the success of the 1959 introductions, we may be in a better position to make management recommendations.

Summary

CUTTHROAT TROUT (Salmo clarki, Richardson)

INVESTIGATION OF THE SOUTH PLATTE

DRAINAGE, COLORADO

The cutthroat trout (Salmo clarki, Richardson) of the Platte and Arkansas drainages was originally described by E. B. Cope in 1870, as the greenback trout (Salmo stomias, later Salmo clarki stomias). In 1955 fish collected in Albion Creek, a tributary of North Boulder Creek, were believed to be the greenback trout. Specimens were collected by Dr. Howard A. Tanner and forwarded to Dr. R. R. Miller, Curator of Fishes, University of Michigan for identification. Dr. Miller concluded that these fish represented a kind of cutthroat trout different from any others we know today, and that they may or may not be the greenback trout.

The Bureau of Sport Fisheries and Wildlife was consulted in 1957 in connection with the possibility of studies on the greenback trout. The objectives of the work were threefold: (1) to secure additional specimens of fish so that positive identification could be made; (2) to secure live fish specimens to serve as a brood stock for cultural and study purposes; (3) to appraise stream and lake habitats with a view toward establishment of sanctuaries in Rocky Mountain National Park.

Specimens were obtained from Albion Creek, Big Thompson River, Hague Creek and Ypsilon Creek, all in the South Platte drainage, and Tonahutu Creek, a tributary of the Colorado River. The specimens were sent to Dr. R. R. Miller for identification. Dr. Miller found interesting morphological differences between the fish but he stated that the differences may be due to environment. In order to determine the true taxonomic status of the cutthroat trout in

question the fish must be reared under controlled conditions.

A survey was conducted in Rocky Mountain National Park during 1957 and 1958 to see if a fish similar to the cutthroat trout of Albion Creek existed in the Park. The cutthroat trout from the upper Big Thompson River in Forest Canyon closely resembled the Albion Creek fish. Because the population in Forest Canyon was much larger than that in Albion Creek, Forest Canyon was selected as a study site.

Fay Lake drainage, a tributary of Roaring River, Rocky Mountain National Park was renovated in late 1958, and cutthroat trout were taken from Forest Canyon and planted in Fay Lake in 1959. Records were discovered in 1960 that listed two plants of "spotted natives" in Forest Canyon in 1922 and 1923. The introductions were made by the Estes Park Fish and Game Association and totaled 290,000 fish. Upon the basis of this information, Fay Lake drainage was returned to management in 1961.

Little success was achieved in an attempt to hold Forest Canyon and Albion Creek cutthroat trout as brood stock, and the plan to rear cutthroat trout from the South Platte drainage and Colorado River cutthroat trout (S. c. pleuriticus) side by side was abandoned.

The present study started in 1963 is an attempt to find significant differences between four populations of cutthroat trout which may indicate a single population that is most like that described as the greenback cutthroat trout. The populations selected for study were Blackhollow Creek and Roaring Creek in the Cache la Poudre drainage; Albion Creek, a tributary of North Boulder Creek, and North Boulder Creek between Island and Goose lakes.

TAXONOMIC ANALYSIS OF FIVE POPULATIONS OF CUTTHROAT TROUT, SOUTH PLATTE DRAINAGE, COLORADO

	<u>Standard Length</u> Head Length	<u>Standard Length</u> Body Depth	<u>Standard Length</u> Adipose Length	<u>Standard Length</u> Dorsal Length	<u>Head Length</u> Orbit Length	<u>Head Length</u> Head Width
1.	3.929 *	4.221	10.775	4.518	3.997	1.674
2.	3.617	4.252	10.959	4.737	3.932	1.803
3.	3.831	4.305	10.721	4.995	3.802	1.671
4.	3.817	4.317	11.527	4.501	3.928	1.701
5.	3.909	4.471	10.853	4.572	3.643	1.700

	<u>Head Length</u> Snout Length	<u>Head Length</u> Upper Jaw Length	Scales in Lateral Line	<u>Branchiostegals</u> Left Right	
1.	4.610	1.763	130.17	11.16	10.16
2.	4.573	1.843	129.66	11.04	10.38
3.	4.141	1.800	147.20	10.20	9.56
4.	4.341	1.778	126.46	10.64	9.78
5.	4.748	1.888	128.80	10.44	10.14

* All data presented as means

1. Forest Canyon, Rocky Mountain National Park (6 observations)
2. North Boulder Creek (50 observations)
3. Blackhollow Creek (50 observations)
4. Albion Creek (50 observations)
5. Roaring Creek (50 observations)

November 2, 1955

Dr. Robert R. Miller
Museum of Zoology
University of Michigan
Ann Arbor, Michigan

Dear Dr. Miller:

In correspondence with you last fall I promised to send you a collection of fish taken here in Colorado, which we believe to be the Great Lakes whitefish, Coregonus c. clupeiiformis. As of this date I have not done so and I apologize. However, our interest in these fish is still present and we are still interested in a verification of our identification.

In addition to the whitefish, I have recently come into the possession of a collection of 20 or 25 cutthroat trout believed by members of the University of Colorado Museum to be representatives of the cutthroat trout formerly known as the greenback trout, Salmo clarki stonias. As you are no doubt aware, many of the "splinters" of the cutthroat trout were described at one time as being present in the various drainages in Colorado. Due to changes of civilization, the introduction of the eastern brook trout and the indiscriminate plantings of the yellowstone cutthroat, these formerly recognizable subdivisions of the cutthroat have become lost or are periled at the present time.

These trout that I would like very much to send to you for identification were taken from a creek known as Albion Creek, a tributary of Boulder Creek in Boulder County, Colorado. This area has long been denied to the public on the grounds that it was a domestic water source and is a quite logical place to find a greenback trout, if such trout ever existed as described so many years ago. In observing these trout personally, I can only say that they are markedly different from the yellowstone cutthroat trout in coloration and in body configuration. We are interested in these fish from two standpoints. First of all if identification as the greenback trout is verified, we are duty bound by law to make every effort

2-Dr. Robert Miller-11/2/55

to preserve them from extinction. Secondly, from a strictly practical standpoint we should like very much to have a cutthroat brood stock available which is well adapted to stream habitat. These trout seem particularly well adapted.

I am, of course, aware of the difficulty in identifying the various groups of cutthroat. I am not even sure you favor recognition of these various groups as subspecies. In any event we shall be very interested in your reply and sincerely hope that you will see fit to make identification.

Cordially yours,

Howard A. Tanner, Unit Leader

HAT:ds

November 17, 1955

Dr. Robert R. Miller
Associate Curator of Fishes
University of Michigan
Ann Arbor, Michigan

Dear Dr. Miller:

Thank you very much for your letter of November 10 concerning the Great Lakes whitefish and the cutthroat trout. The specimens are well preserved and will be sent to you under separate cover immediately. We took a kodachrome picture of these fish. However, the fish were collected just before sunset at an elevation of about 11,000 feet; and I consider the kodachrome of the fish worthless for your purposes.

I am very interested in the report of the cutthroat trout you studied from the Roaring Fork River. If I am not mistaken, we have 2 or 3 Roaring Fork Rivers in Colorado. Can you tell me which one these fish were from, and any other details concerning them?

In my opinion it is very likely that the Colorado Game & Fish Department will soon be taking a more active interest in the remnants of our original native cutthroat subgroups.

Cordially yours,

Howard A. Tanner, Unit Leader

HAT:pb

cc: Mr. T. L. Kimball

UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN, U. S. A.

MUSEUM OF ZOOLOGY

November 10, 1955

Dr. Howard A. Tanner
243 Forestry Building
Colorado A & M College
Fort Collins, Colorado

Dear Dr. Tanner:

I would be very glad to check the identification of the specimens you believe to represent the Great Lakes whitefish. I am also very much interested in the cutthroat trout which you describe and would like very much to study them. It just so happens that a few years ago we received some specimens which I tentatively identified as Salmo clarki stomias from Roaring Fork River, Colorado. The person who collected these also sent me a very fine ektachrome of one specimen.

As you have noted, positive identification of subspecies of cutthroat trout is very difficult but I will be very glad to do the best I can with the specimens you described; I trust that they are well preserved. Do you, by chance have a kodachrome or other colored picture of them? If not a color description would be helpful.

Sincerely yours,

R. R. Miller

Robert R. Miller
Associate Curator of Fishes

RRM/b

January 13, 1958

Dr. Robert R. Miller
Associate Curator of Fishes
Museum of Zoology
University of Michigan
Ann Arbor, Michigan

Dear Dr. Miller:

I have greatly appreciated your letter of January 5 and the considerable effort on your part in the examination of our cutthroat. I regret that I have not yet sent the whitefish. I will do so when a suitable container is available. I understand I violated postal regulations by sending a formalin solution in a glass container through the mails.

In your letter you had a question or two, which I will attempt to answer. You ask whether or not trout have moved through the Moffat Tunnel into South Boulder Creek. This would not occur in normal operations. Only in a case of line breakage or in some other past accident would such a passage occur. Any trout coming through Moffat Tunnel into Boulder Creek Watershed could not reach Albion Creek. Albion Creek is separated from the rest of the watershed by a waterfall.

On the basis of your letter, I have written our Director suggesting that we take action to set aside another watershed for the greenback cutthroat. The one I have in mind is a tributary of the Little South Poudre, just north of the northern boundary of the Rocky Mountain National Park. If approval is granted and the watershed can be secured in its entirety, I expect we will be eliminating the eastern brook trout from the small watershed and transplanting numbers of greenback trout into it. It appears to be ideal as a fish tight barrier exists between it and the rest of the Little South Poudre, and the watershed while small does contain two lakes and several beaver ponds. This should assure us of a supply of the greenback trout and its perpetuation as a pure strain. It probably will represent a re-establishment of this species in a portion of its historical range rather than an introduction of it into a new area.

2-Dr. Robert R. Miller-1/13/55

There exists among our Department's Administrators an awareness of the fact that we are on the verge of losing, if we have not already lost, the native subspecies of the cutthroat. It seems to be a good possibility that I can secure time and support for an effort to learn more of whatever native cutthroat may still exist in the state. Are you interested in taking upon yourself further identification of Colorado cutthroat subspecies? I have in mind areas where the Rio Grande cutthroat is thought to remain as a pure strain, several areas of the Colorado River cutthroat probably exist and I have already taken collections from known cutthroat populations on the upper Cache La Poudre Drainage. A report of these collections will be sent to you as soon as it is ready.

I will appreciate hearing from you further on the subject. Additional collections of native cutthroat will not be made until this coming summer. If you are interested, any reasonable agreement for methods of collection, preservation, numbers of specimens etc. that you may feel necessary or desirable can be worked out.

I am glad you liked the preservation job on the cutthroats you have examined. They were preserved shortly after being collected in a solution of 6 parts distilled water, 3 parts 95% alcohol and 1 part formalin.

Thanks again for your fine cooperation.

Cordially yours,

Howard A. Tanner, Unit Leader

HAT:ds

UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN, U. S. A.

MUSEUM OF ZOOLOGY

January 5, 1956

Dr. Howard A. Tanner
Colorado Cooperative Fishery Research Unit
243 Forestry Building
Colorado A & M College
Fort Collins, Colorado

Dear Dr. Tanner:

The beautifully-preserved cutthroat trout (but no whitefish) arrived on December 6 and I have just finished a preliminary study of them. Whoever preserved these fish is to be complimented; I couldn't have done a better job, and it is a real pleasure and satisfaction to work with such fine material.

The greenback cutthroat, Salmo clarki stomias Cope, was reported to have been taken at Fort Riley on the Kansas River in eastern Kansas. Obviously the specimens did not come from this place or not likely even from the Kansas River basin. Locality data for many of the animals described on the early surveys have been found to be grossly in error. It was the custom for early collectors, such as surgeon Hammond, to work out from a base but to label material with the base-camp name. It's generally conceded that the types of stomias were actually taken in the South Platte drainage and that the greenback trout also occurs in the headwaters of the Arkansas River. These are still suppositions, however, although they may have to remain as our best guess.

I have examined the types of Cope's species at the Philadelphia Academy. They are in very poor condition (December, 1951) and I did not have good optical equipment for making scale counts. The label with the two specimens reads: "Fort Riley, Kansas, Dr. W. A. Hammond", I could not get a lateral scale count greater than 152 (made 2 rows above the lateral line), which is awfully low for a cutthroat of this type and does not agree with my own counts on cutthroats from the South Platte Basin. An error of 20 to 30 scales could easily be made under such conditions. Therefore, I do not place much emphasis on the seemingly coarse scales of the types (Cope, unfortunately, did not give a lateral scale count in his description).

The 9 specimens you sent from Albion Creek, tributary to Boulder Creek, represent a pure cutthroat stock, I feel sure. Their scale counts vary from 186 to 205 and the basibranchial teeth from 1 to more than 12, except for the smallest which apparently has none. The fine scales number the same as in Salmo clarki pleuriticus across the divide in the upper Colorado River basin, but your specimens do show some differences (albeit slight) from the Colorado subspecies. Do you know if trout have moved across the divide through Moffat Tunnel into South Boulder Creek? If so, is it possible that these fish reached Albion Creek? Your specimens also agree with the collections from Red Canyon, branch of Roaring Fork River, Sec. 7, T8N, R82W, Jackson County, Colorado, a tributary to the North Platte River. S. c. stomias is stated to differ from S. c. pleuriticus chiefly in having very large spots largely confined to the posterior one-third of the body and in the life colors (deep green back, etc.). They are obviously very closely related. I agree with you that your specimens are very different in body form and coloration from S. c. lewisi. There is a good figure of S. c. stomias (at least so identified) on Plate I, Figure 2 of the Bulletin of the U. S. Fish Commission, Vol. IX for 1889, published 1891; the specimen depicted came from Twin Lakes, Colorado (see p. 3249 of the 4th part of Jordan and Evermann's

Dr. Tanner
January 5, 1956
Page 2

"Fishes of North and Middle America").

I wish I could state definitely that your material represents S. c. stomias but I would only be kidding myself if I did. I believe it is a pure cutthroat stock and that it may represent the greenback cutthroat, but much more study is required to learn if S. c. stomias and S. c. pleuriticus are really different. A tentative identification as greenbacks is certainly in order and, on this basis, it is surely worth making every effort (as required by Colorado law) to preserve this stock.

Two copies of this letter are enclosed should you care to send one to the University of Colorado Museum and one, perhaps, to the Director of the Colorado Game and Fish Commission.

Sincerely,

Robert R. Miller

Robert R. Miller
Associate Curator of Fishes

RRM/b

The Director

July 23, 1957

Chief, Rocky Mountain Investigations

Green-backed trout

I have just returned from Rocky Mountain National Park, where I spent a week in the field with James Cole, Biologist of the National Park Service. We talked with biologists of the State of Colorado, with those of the University of Colorado at Boulder and at their biological laboratory in the mountains east of Boulder, and with naturalists and rangers in Rocky Mountain Park. We examined preserved specimens of Salmo clarki stansias from a lot examined by Bob Miller.

Our first trip was to the area from which specimens of the green-backed trout had come. This water is outside the park, in a preserve on which the city of Boulder has its domestic water reservoirs. We examined the waters and secured many fish, all of which were brook trout. Apparently the green-backs had spawned and gone downstream before we arrived. Additional specimens are being saved for us by the water master and the biologists of the station.

After having seen the waters where the green-backed trout are apparently now living, we made trips to park waters to find comparable situations. We packed in to the high country and examined many streams and lakes, principally in the Fall River and Ipsillon Lake drainages. We found cutthroat trout in several waters; some were typical Yellowstone cutthroat, some seemed a lot like the green-backed trout, and some appeared to have some L.G. pleuriticus about them. At any rate, the waters are suitable for some cutthroats, even though they may never put on much growth or be present in great numbers.

It will be necessary to look over several other waters and make measurements during periods of normal water stages. This is a very high water year in Colorado, so we did not get a normal impression. I therefore propose to send Ross Bulkley to Rocky Mountain Park this week. He will take gear along for sampling and measuring, and will stay three or four weeks. We will use an NPS man from that Park as Ross' assistant. Out of all this we should get the data we need to pick a stream system for the green-backed trout. I have talked with Lynn Hutchens about culturing some green-backs, and if Ross can get some adults this trip we will move them to Leadville for holding and spawning.

I plan to return to Rocky Mountain in October, at which time Cole and I can write a proposal on this whole thing and give you something definite.

Oliver B. Cope

Thatcher Building
41 South Main Street
Logan, Utah

October 18, 1957

Dr. William Osborn
University of Colorado
Boulder, Colorado

Dear Dr. Osborn:

Attached is a copy of our report on the green-back trout work in 1957. We would be very happy to have your comments on our plans for future work.

Sincerely yours,

Oliver B. Cope, Chief
Rocky Mountain Sport
Fishery Investigations

OBC:cg

Enc. Rept.

Behnke

File.
Florence Creek, U. & O. Indian Reservation

November 24, 1975

Status of fish population, 11/18 & 19/75

Accompanied by Tribal Wardens Steve Ridley and Wayne Perank, arrived at Florence Creek Ranch about 1:30 p.m. on the 18th. From there we drove a 4-wheel drive up Florence Canyon a little further than last cultivated field (once) and as far as it was possible to go in a vehicle. From there we hiked about four miles up the canyon further to approximately the area of the introduction site of the greenbacks in 1967. However, there is the possibility that we were still below this site, but not by much if this is true. This site has always been difficult to find unless the creek itself was followed, which has become increasingly difficult over the years due to the growth of brush along the stream course. A series of small, but old beaver dams designated the site originally and it is possible that these are now obliterated although still functional in 1968-70.

In any event it was growing dark at the time, 4:45 p.m., and it was essential that we began the sampling because we were running out of daylight and could go no further without aborting the mission. About 100 yards above a new, active small beaver dam and pond perhaps 6-8 feet wide, 15 ozs. of sodium cyanide was introduced. Typical of the stream here, width and depth was only 2-3 feet by 3-6 inches. The necessary sample of greenbacks for Behnke was collected (22 fish, 3-12 inches) by 5:30 p.m. along with perhaps 80-100 brook trout (3-9.5 inches). In the fading light, I followed the stream below the beaver dam, which acted as a partial block net, several hundred yards. Only a few added greenbacks were observed along with numerous brook trout.

Numerous brook trout, up to 10 inches, were observed in the hike in at various points along the stream. On the morning of the 19th, the lower end of Florence Creek, beginning just above the new diversion structure, at right angles to the big rock, was sampled. Only brook trout were observed

and collected. The stream supports an amazing population of brook trout considering its small size. In the pool, 6-8 feet wide, above the diversion structure, there were around two dozen EBT up to 11 inches long. Another slightly larger (10-12 feet wide) beaver pond just upstream, not sampled, was observed to contain twice as many fish.

The brook trout were spawning. Most EBT's were in average condition, with a few showing big headness. The greenbacks were in good condition. Only seven of the twenty-two collected had a size more than 5 inches. The larger fish were brilliantly colored in contrast to this year's collection in Hidden Valley and Como Creeks.

Behnke is to do the systematics on the greenbacks so as to determine environmental influences on this original Forest Canyon stock.

Florence Canyon Creek has changed considerably since my first observations in 1968. Although the irrigation ditch characteristics of the stream remain for the most part, the banks seem much more stabilized from the increased vegetation than when first observed. The banks are more undercut. This and beaver dams, accumulation of vegetative detritus, etc., all has contributed to increased trout habitat, namely small pocket pools.

Riparian vegetation shows no sign of deer or cattle use. Perank saw one deer during the night and this was the only deer seen in the entire trip. This is amazing in contrast to early trips, see 1970 notes when accompanied by Foster. Six chukar coveys were seen in Florence, Chandler and along the Green River dugway. Approximately 139 birds were counted in these coveys, although only a small portion of two of the coveys were flushed in driving by.

Rocky
Mtn
News
Apr 26
73

Restock of native trout due

Rocky Mountain National Park announced an attempt will be made on a long-range basis to restore to park waters the native greenback trout and river cutthroat, replacing the brook trout, brown trout and Yellowstone cutthroat now found in the park.

The goal will be to have the native greenback trout in waters of the park's east drainages and the Colorado River cutthroat on the west side of the park, where these fish were the original natives.

Park officials said the proposed changes result from a re-evaluation of the fishing policy of the park and the National Park Service.

The objective will be to eventually restore the fish that were natives of the park and to eliminate so-called exotics, the Eastern brook trout, German brown trout and Yellowstone cutthroat.

Park officials said no stocking of fish has been done in Rocky Mountain National Park since 1968 in the belief that a natural fish population is a part of the scheme to save a representative segment of native America.

In connection with its program, park officials listed a number of proposed fishing regulations planned to be put into effect within the next few months.

It asked interested persons to submit written comments, suggestions or objections to the plans to the superintendent of Rocky Mountain National Park, Estes Park, Colo. 80517 by May 7.

Proposed regulations will set a cutthroat limit of four fish which must be 10 inches or longer.

The possession limit for brook, rainbow and brown trout will be six fish, with no minimum length requirement.

Only artificial lures or flies with one single, double or treble hook with a common shank would be legal to use in fishing park waters.

Possession of bait, including worms, insects, minnows, fish eggs or other organic matters or parts, would be prohibited in the park.

after said...
They said such...
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dogs that sleep und...
night.

Game officials blamed owners, not the dogs, for the problem. They said dogs have an instinctive desire to hunt and kill and all they need is the opportunity.

They said either many owners don't care about the problem or don't believe their pets would chase wild game.

Hunters quizzed

A Wisconsin survey shows a large number of hunters are not primarily interested in bagging game.

The study by the University of Wisconsin found more than 40 per cent of those questioned said they hunt mainly because they enjoy nature or want a chance to get outdoors.

Other popular reasons given were "having a good time with friends" and "enjoying a change of pace."

Less than 15 per cent said collecting a trophy or bagging a limit were most important.

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Use Mountain Daylighting Time.

Date	Day	A.M.		P.M.	
		Minor	Major	Minor	Major
4-29	Sunday	2:05	8:35	2:30	8:00
4-30	Monday	2:45	9:20	3:10	8:00
5-1	Tuesday	3:30	10:05	4:00	8:00
5-2	Wednesday	4:15	11:00	4:50	8:00
5-3	Thursday	5:10	11:55	5:45	8:00
5-4	Friday	6:10	12:35	6:50	8:00
5-5	Saturday	7:20	1:45	8:00	8:00
5-6	Sunday	8:35	2:55	9:05	8:00

FOR TROUT and ALL GAME FISH!

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SPINNERS



See Pg. 40 for details

Voltage

Voltage

48

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Sept. 29, 1912.

File No. 124.

The Director,
National Park Service,
Washington, D. C.

Dear Sir:

Heretofore, the efforts to keep the lakes and streams of the Rocky Mountain National Park stocked with trout have been conducted to a very large extent by individuals and agencies other than the National Park Service. This matter was brought to Mr. Mather's attention, when he was here last April, and he said at that time that he believed the National Park Service should use every practicable method to assist in obtaining an adequate supply of fish.

There is located four miles from Estes Park village a fish hatchery, operated by the State of Colorado. This hatchery has a capacity of approximately one million eggs. Fish from this hatchery are distributed to Fish and Game Associations located in Estes Park and in near-by towns, such as Loveland and Longmont. The Estes Park Fish and Game Association is usually assigned the largest number of fish, and this Association has the decision as to the lakes and streams to be stocked. The Estes Park Game and Fish Association usually place from two thirds to three fourths of their fish in the Rocky Mountain National Park, and the remainder in lakes and streams to the east of the Park.

The Estes Park Game and Fish Association is composed of about sixty residents of Estes Park, who take the keenest interest in the betterment of fishing and the protection of game. The dues of the Association are five dollars per year. This gives the Association about \$300 income. This money is spent either in providing equipment for the transportation of fish, or in the construction of small nursing ponds, in which the fish may be kept, until they are more mature, or for other beneficial objects, in line with the Association's work.

Various individuals of the Association have filed with the U. S. Bureau of Fisheries, applications for trout, within the past two years. In 1921, about 30,000 fish were received from this source, and

during the present year, something less than 200,000 fish have been received from Federal hatcheries.

In view of the fact that the National Park covers 397 square miles, and that some 200,000 visitors come to the Park yearly, it is believed that a considerable increase should be made in the number of fish placed in the streams. At the present time, something less than one million fish are being placed in the lakes and streams in the Park each year. It is believed that this number should be increased to two or three million fish, per year, in order to extend the area, as well as improve the fishing.

I would appreciate it, if you would take this matter up with the U. S. Bureau of Fisheries, and let me know the desired method of procedure, for obtaining additional fish. My suggestion would be that the work of the Estes Park Game and Fish Association be continued without change, but that an additional supply of trout be shipped to the Rocky Mountain National Park. I shall be glad to file any applications that they may wish, if they will send me some blank forms. The lakes and streams of the Park vary in elevation from 7,500 to timberline, at 11,500 feet, and there are a number of lakes at 12,000 feet or more which do or could produce a good supply of fish. At present, the varieties of fish in the lakes and streams of the Park are spotted native trout, rainbow trout, and Eastern brook trout. Good use can be made of any of these varieties of trout that may be available, or of such additional varieties as the Bureau of Fisheries may recommend for conditions in this Park.

There are many streams and lakes in the higher elevations of the Park, which have never been stocked, and are without trout, since many cascades and water-falls prevent the fish from reaching these higher levels. A few such lakes have been stocked, and have produced excellent results. It would be greatly to the benefit of the Park, and add greatly to the enjoyment of its visitors, if additional lakes could be stocked, and thus add to the area in which good fishing may be obtained. By enlarging the area, the fishermen may be distributed more evenly throughout the Park, instead of being congested in a few streams in the vicinity of Estes Park village.

Any suggestions which you may have, regarding the part which the National Park Service should take in this matter will be greatly appreciated.

Very truly yours,

Roger W. Tall,
Superintendent.

1922.

FISH PLANTING

Two shipments, aggregating 170,000 Eastern Brook trout, from the Federal Hatchery, at Leadville, Colorado, were planted in waters of the Park, as follows:

Fawn Lake	21,000
Osage Lake	21,000
Lake of Glass	26,000
Big Thompson River, near Brimwood Hotel	22,000
Cable Creek, south of Long Peak	20,000
Lake Chiquita	20,000
Total	170,000

Eastern Brook trout, from the Estes Park Hatchery, were planted as follows:

Steen's MillPond, west of Deer Ridge	20,000
Wind River	20,000
Retaining Ponds, on Fall River and Big Thompson rivers	20,000
Total	60,000

20,000 native trout, from the same hatchery, were planted in the upper part of Fall River, between Glass Falls and Fall River ranger station.

100,000 native trout, from the same hatchery, were planted in the upper end of Forest Canyon, above the intersection with the outlet from Gorge Lake.

_____ fish were also planted in waters adjacent to the park.

The planting of these fish was done by the Estes Park Fish and Game Association, with the active cooperation of the National Park Service and the Rocky Mountain Fur and Transportation Company.

124

1923.

REPORT OF ESTES PARK FISH AND GAME ASSOCIATION

on

Condition and Classification of Stocking of Lakes and Streams in their District.

Water	Distance	Altitude	Type	No.	Year	Fishing Conditions	
Big Thompson (a)	10 mi.	8000-10000	Spotted Native	140000	1922	1st stocking	
				120000	1923		
"	(b)	3 mi.	7500-8000	Eastern Brook	60000	1923	Fair
"	(c)	12 mi.	7000-7500	Rainbow	50000	1923	Very poor; only stocking since 1917
Fall River	(a)	6 mi.	8000-9500	Spotted Native	30000	1922	First Stocking
"	(b)	4 mi.	8000(dams)	Eastern Brook	80000	1923	Good
"	(c)	5 mi.	7500-8000	Rainbow	10000	1922	Poor
"	No. Park	5 mi.	7000	Eastern Brook	20000	1922	Fair
Cow Creek	6 mi.	7000	Eastern Brook	20000	1922	Fair	
				30000	1923		
West Creek	3 mi.	8000	Unstocked				
Fox Creek	3 mi.	8000	Unstocked				
Black Canyon Creek	4 mi.	7500-8000	Eastern Brook			Well stocked	
Hearing River	5 mi.	8000-10000	"			Fair	
Mill Creek (dams)	4 mi.	6000-8000	"	60000	1922		
Master Creek	9 mi.	8000-9000	Spotted Native	80000	1922		
				80000	1923	Fair	
Wind River	6 mi.	8000-9000	Eastern Brook	20000	1922		
				70000	1923	1st stocking	
Hidden Valley Creek (dams)	5 mi.	8000-9000	"	80000	1922		
				80000	1923	Good	
Gulch Creek	3 mi.	8000-9000	"	50000	1922		
				20000	1923	Fair	
Fish Creek	5 mi.	7500	"	50000	1922		
					1923	Poor	



DEPARTMENT OF COMMERCE
BUREAU OF FISHERIES

Leadville, Colo.

November 17, 1923

Superintendent,
Nat'l. Park Service,
Denver, Colo.

Dear Mr. Toll:

In reply to your of the 15th I would say that you have taken the matter of securing rainbow trout eggs up in the proper manner.

So far I have been unable to secure any field station in Colorado for collecting rainbow eggs, last year we had 100,000 shipped in from Oregon, which did not even make a dent in the number of applications we had for rainbows.

We will collect about 6,000,000 brook eggs this fall, our native eggs are all shipped in from Yellowstone Park.

I may be in Denver in a short time and if possible will call on you and get better acquainted.

Respectfully,

C. H. Van Atta
C. H. Van Atta
Supt.

P+R Dist

Report of planting fish in
Grand Lake District 1925

On August 6th I gave out enough fish applications to cover entire district.

August 7th Mr Charlie Fisher and myself went to Estes Park and got Estes Park fish clubs special canoe Mr. Fisher donating his car for the trip.

August 8th I left Pole Creek Sta. at 5³⁰ A.M. and we packed 25,000 native trout to Lake Nakai. I took 8 men and thirteen head of horses.

We took horses as far as possible on Lake Manita trail. Then we packed on our backs to Manita then over ridge to Nokoni.

Mr Charlie Fisher, Lou Osborn,
Dr. Davis, Barnie McCay, Redwood Fisher,
Ralph Wescott, Paul Ambrose, and
Myself the men underlined were
men from trail crew.

On August 10th I took the State Supt. of Hatcheries to look over retaining ponds on east inlet he pronounced them first class retaining ponds.

Aug 11th Mr. Charlie Fisher and myself took 25,000 native trout up Tonahutu Creek above falls we used 4 pack horses and 2 saddle horses

Aug 12th we took 25,000 native trout to Lake on east inlet in sec. 31 T3N R74W a very hard trip as there was no trail most of the way.

Mr. Charlie Fisher, Lou Osburn, Gus Spitzmiller, Redwood Fisher and myself

Aug. 13th we put 50,000 native trout in retaining ponds on east inlet

Aug 14th we put 25,000 native trout in retaining ponds on outlet of Grand Lake.

Aug 17th we put 40,000 native trout in beaver ponds on east inlet.

Ranger McCreen

* Bulkley in 1957 report, page 9, indicated that outthroat trout taken above Granite Falls on Tonahutu Creek were possibly S. c. pleuriticus as the creek in in the original range of this subspecies and that "there is no record of any planting in the section of Tonahutu Creek above Granite Falls."

Office Memorandum • UNITED STATES GOVERNMENT

TO : Bob Behrke

DATE: 7/28/72

FROM : J. W. Muller

SUBJECT: Possible grunbuchs from Caddis Lake (Fry Lake)
Attached notes should provide needed background.
Six fish are being forwarded separately.

We have an excellent collection of wild rainbow,
Smokvornets, & possibly rainbow-cut crossers for
you from Nevee Reservoir, WYO

A summary and evaluation of the Greenback cutthroat project with respect to the Fay Lake, 1957-72.

The remote Fay Lake drainage (2.2 miles in length), consisting of Connecting stream and Fay Lake (4.6 surface acres, 19 feet maximum depth, 11,200 foot elevation), Fay (4.6 surface acres, 26 feet maximum depth, 11,040 foot elevation), and Caddis (0.7 surface acres, 3-4 feet maximum depth, 10,760 foot elevation) was investigated in 1957 as a possible sanctuary for the Greenback cutthroat trout. On September 9, 1958, the drainage was treated with rotenone (30 gallons) downstream to a 60 foot cascade, ~~and upstream~~ ~~upstream~~ ~~upstream~~ an effective barrier to upstream fish movement. Two hundred and nine adult Greenback cutthroat from Forest Canyon were ferried into the area by helicopter and planted in Fay Lake, the ~~lake~~, in 1959. Bullock, ~~as revealed in correspondence~~, ~~and~~ the originator of this management, did not believe, ~~the fish~~ as shown by correspondence, that the fish would disperse to Caddis Lake because of the shallow and precipitous Fay Lake outlet.

69 stockings medium - S. R. - cult. were in 2 wks
- woven by stock - near acrobats - creek over

- Air Force Pond, 9100 ft - gill net - problem. Snake R, but acrobats - problem. stocked.

A specimen of the lake during the summer of 1966 failed to reveal the presence of any trout. An angler who visited the lake, without knowledge that it was closed to fishing, reported that he had observed trout in the lake in 1966. In follow-up investigations the next year (1967), several cutthroat trout were observed in Fay Lake, and two specimens were collected. Trout were not observed or collected in Fayline or Caddis Lakes.

Dr. Robert Rush Miller, Curator of Fishes, University of Michigan Museum could not positively identify the two specimens collected from Fay Lake, ^{and} with discovery that Yellowstone stream cutthroat stocked in Forest Canyon may have contaminated the putative stock, the project was abandoned and the Fay Lakes returned to management status. With this, Fay Lake was ~~stocked~~ ^{independently} evidently stocked

once in the early 1960's prior to the moratorium on all stocking beginning in 1969.

The Fay Lakes were visited on July 18 and 19, 1972. Two gill nets fished overnight (5:30 PM - 2:00 AM) in Fay Lake ~~and~~ ^{and} no fish. Evening and morning observations of the lake's surface failed to disclose any evidence of fish life, so it may be safely assumed that the lake is barren. However, trout were observed to be relatively abundant in the slit to and in Caddis Lake proper. Six of these fish (7.5 to 10.2 inches in length) were sampled by hook-and-line and forwarded to Dr. Robert D. Behrke, C.S., for identification. The fish collected appeared to represent ~~intergrades~~ ^{intergrades} between Yellowstone and Greenback stream.

A few comments are in order. Fay and Fayline were found to be barren both in the 1957 survey and in the reclamation of 1958, so it is perhaps not

surprising that the greenbacks did ~~not~~ "take" in the lake.
However, in the 1957 reclamation, about 200 native
cutthroats were killed in the outlet, ~~and~~ and outlet
of Cedar Lake as well as Cedar Lake people.

J.W.M.

Law Office

OF

ARTHUR A. BROOKS, JR.

TELEPHONE

960-1849

640 S. SUNSET AVE.

SUITE 206

WEST COVINA, CALIFORNIA 91790

December 24, 1984

Robert J. Behnke
Trout Unlimited
Trout
P.O. Box 6225
Bend, Oregon 97708

Dear Robert Behnke:

I have been a member of TU since 1966 and at one time was president of a rather moribund Southern California Chapter. I did do some conservation work in the Bishop area for which I received a token of appreciation (golden trout lapel pin) from the Inyo County Board of Supervisors (Commissioners in Colorado.) I belong to a number of conservation organizations including, inter alia, the Nature Conservancy and the Sierra Club. So much for credentials.

Your article on the Greenback Cutthroat in the Winter issue of Trout intrigues me. That is the purpose of this letter.

My grandmother (maternal), the late Emma Lee Mason, cousin of Robert E. Lee, late commander of the army of Northern Virginia, homesteaded in Clear Creek County in 1894 about 35 miles west of Denver. She owned about 1½ miles of Yankee Creek, a tributary of Bear Creek, in turn a tributary of the South Platte. Her place was known as Brookvale, but has long since passed out of family hands.

I caught my first trout a 7" brookie when I was seven years of age-circa 1920. from Yankee Creek under my late mother's tutelage.

But when I older grew (apologies to Longfellow) I fished Bear Creek on the lower (about 8500') slopes of Mt. Evans.

As one blessed with considerable recall, I remember catching 17 native trout that must have been 'stomias' in late August 1929. This was at a bend in Bear Creek just below a now demolished summer home known as the Ellen Witter place and near (still there) Camp Rock.

These trout looked exactly like the one depicted by Mike Stidham in Trout, supra.

There were no rainbow (or brown for that matter) above a "barrier falls" some five miles below in front of a summer home then known as the Newberry Place.

Robert J. Behnke
Page two

I did catch two brookies (13"-14" inches) on hiking trips to the same area in the early 1930s, but the very predominant strain was native as described above.

Although I fished Bear Creek many times below the barrier falls during those years I caught nothing but rainbow and brookies (a few) no natives.

Now, regrettably, I am told by my brother Colonel Lee C. Brooks, of Denver, that he has fished the same Camp Rock stretch of Bear Creek the past two summers and has caught only stocked rainbow and a few brookies-no natives-and the Colonel is an accomplished *fisherman* and knows the area well and has known it for 50 years.

I used, in catching the natives, in 1929 a snelled grey hackle, yellow body, fished dry, and found these fish, as you have stated, amazingly vulnerable-almost too easy to hook-all were 10"-12".

Parenthetically, (and perhaps not in the early thirties on hikes up Mt. Evans (from Evans Ranch Bldgs) I often fished Beartrack Creek-a Short hike from the now burned down U.S. Forest Service cabin (alt 10,485'). There the fish in Beartrack Creek meadow just east of the Beartrack Creek Trail were almost entirely brookies or, and I find this significant, a trout that strangely resembled the Kern plateau Golden. (I remember my cousin, the late Robert Brooks of Topeka, Kansas, bragging "I caught 8 dandies-golden trout:" Bob was a medical student at the University of Pennsylvania, but not an ichthyologist (sp?) But the trout he thought were possibly golden were very different in coloration from the usual hi altitude brookies.

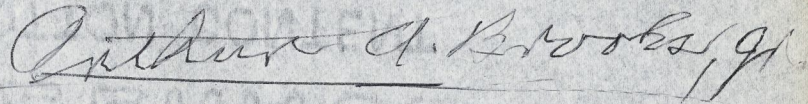
Below the meadow and in faster water with deep holes the 'natives' were again the predominant strain. Beartrack Creek (out of Beartrack Lakes on the Southeast shoulder of Mt. Evans) converges with Bear Creek at a point unknown to me, but probably two miles or so west of Camp Rock and at an altitude of about 9800'. Bear Creek itself was barren at Shelter House level, too many barrier falls. Bear Creek has its source at Summit Lake.

I doubt very much that the fish I caught were Twin Lakes Yellowfin. But I would enjoy your opinion.

As a confirmed brown trout dry fly fisherman, I commend to all at TU A.J. McLane's latest book "Great Fishing and Hunting Lodges of North America" Holt Rinehart 1984. See page 63 on Hot Creek Ranch. I've been fishing there since 1966. The last time was October of this year-net result: 2 beautiful 2-2½ lb. wild brown on a no. 20 grey sedge-1 lb tippet and using a short 8' leader as I've been taught on the Test and Itchen in Hampshire over the past 8 years.

Robert J. Behnke
Page three

All the best and Tight Lines,



ARTHUR A. BROOKS, JR.
J.D. Duke University 1937
Former Legislator and State
Senator, Denver, Colorado

AAB/cal

cc: Col. Lee C. Brooks
8493 W. Center Avenue
Lakewood, Colorado 80226

P.S. (but not very) I'm sure the Colorado Division of Wild
life will (or should) ban all fishing for the Cutthroat at least
for 10 years even in Rocky Mountain National Park.

AAB

Law Office

OF
ARTHUR A. BROOKS, JR.

TELEPHONE
960-1849

640 S. SUNSET AVE.
SUITE 206
WEST COVINA, CALIFORNIA 91790

December 26, 1984

Robert J. Behnke
Trout Unlimited
Trout
P.O. Box 6225
Bend, Oregon 97708

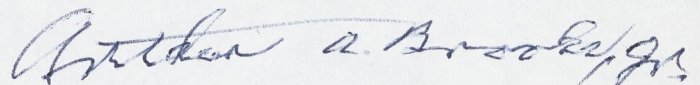
Addendum to letter of 12/24/84.

Last evening I discussed with my my youngest brother, Theodore L. Brooks of Brooks, Miller and Brooks, Attorneys, Montrose, Colorado the contents of your article on Greenback trout and my subsequent letter to you.

Ted tells me that as recently as 2 or 3 years ago and as long ago as 25 years, he and his older son Teddy, Jr. of Montrose, (B.A. New Mexico, M.S. Michigan State) caught a number of "stomias" possibly pleuricitus from Bilk Creek in the Mt. Wilson area, San Miguel County. This was at an altitude varying from 9500' to 10,000'. Nearest town is Ophir. (Possibly ghost). This must be in the Telluride area with which I myself am somewhat familiar. (I have photographed Mt. Wilson many times)

Ted feels the appropriate agencies have not been sufficiently thorough in finding greenback habitat in the San Juan area. I, of course, express no opinion on this. But I would appreciate your observations.

Most sincerely and a very
Merry Christmas,



ARTHUR A. BROOKS, JR.

AAB/cal

cc: Hon. Theodore L. Brooks
Post Office Box 179
Montrose, Colorado 81401

E. ROBERT TURNER

CITY MGR.

Box 791

BOULDER

~~STEELE~~ ALBION CREEK.

258-3446 LAKEWOOD
3311 SILVER LAKE

TOM PLATT

Ms. Light

CITY OF BOULDER
WATER AND SEWER MAINTENANCE RATES

May 1, 1959

Per Ordinance #1855 and Amended Ordinance #2017, April 1, 1957 and
Amended Ordinance #1965, April 1, 1956

QUARTERLY RATES

FLAT

1 to 4 rooms	\$3.50
4 to 8 rooms	4.25
Each additional room over 850
 Baths, each	 1.00
 Water Closets, 1 in unit	 1.00
Each additional50
 Square foot area of lot (for sprinkling charge)	
Per square foot056

Provided there are two or more families in a house or residence each is set up on the above flat rate basis

METERS

Minimum charges per size of meter in use.	Consumption useable per minimum rate Thousand gals.
<u>Inside City</u>	

3/4" or smaller.....	\$ 6.00	24
1"	8.00	32
1 1/4"	12.00	48
1 1/2"	15.00	60
2"	25.00	107
3"	50.00	250
4"	80.00	455
6"	150.00	916
8"	250.00	1,583

Charge per thousand gallons

Greenback trout

August 27, 1963

Dr. Norman Benson
Bureau of Sport Fisheries and Wildlife
Yankton, South Dakota

Dear Norm:

It has been brought to our attention that you have an excellent series of slides showing different color and spotting patterns of the Yellowstone cutthroat trout. I would like to have duplicates of this series as a reference for some of our cutthroat taxonomy work. Please advise if you still have these slides and if it would be possible to get duplicates made.

Sincerely yours,

Robert E. Vincent
Unit Leader

REV/hvh

UNITED STATES GOVERNMENT

Memorandum

TO : Unit Leader
Colorado Cooperative Fishery Unit
Fort Collins, Colorado

DATE: June 24, 1963
RECEIVED
BSF&W-REG. 2

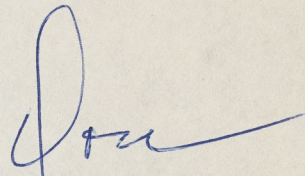
FROM : Unit Leader
Cooperative Fishery Unit
Logan, Utah

JUN 25 1963

F M S
COLORADO COOP.

SUBJECT: Greenback trout

The material on S.C.Stomias is enclosed. Sorry, but it took a while to find it. Please photocopy and return to our office. In haste (as usual).



D. R. Franklin
Unit Leader

Enclosure

DRF:cc

Returned 6/28/63

Greenback Trout

June 20, 1963

Mr. E. Robert Turner
City Manager
Box 791
Boulder, Colorado

Dear Mr. Turner:

On July 19, 1963, I talked with your city engineer concerning access to the Boulder watershed area. He could see no difficulties in our having access to some of the streams in this area, however, he suggested that a letter to you explaining our wants would be appropriate.

The Colorado Cooperative Fishery Unit is a joint enterprise between the Colorado Game and Fish Department, Colorado State University, and the Federal government. We have a graduate student who will be working on the life history of a variety of the cutthroat trout and one of the few areas in the state where this fish is still found is Albion Creek within your city watershed. We would like to make periodic trips to this stream throughout the summer in order to collect a few specimens of this unique fish as well as to observe its natural habitat. I understand that Mr. Platt is the caretaker for the watershed and arrangements could be made with him to open the gates for us.

The staff of the Natural History Museum at the University of Colorado has been apprised of our plans and have offered their full assistance.

Your cooperation by providing access to this area will be greatly appreciated and will facilitate the gathering of data on this unique fish.

Sincerely yours,

Robert E. Vincent
Unit Leader

Greenback Trout



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

National Fish Hatchery
Leadville, Colorado
June 21, 1963

Mr. William H. Dieffenbach
Cooperative Fishery Unit
Colorado State University
Fort Collins, Colorado

Dear Mr. Dieffenbach:

We do not have any of the greenbacks at this station.

They have not been planted in other areas besides the Ypsilon drainage.

Sincerely,

Tom E. French

Tom E. French
Hatchery Manager

TEF:eh

C O P Y

June 17, 1963

Tom E. French
P. O. Box 950
Leadville, Colorado

Dear Mr. French:

I am a graduate assistant with the Cooperative Fishery Unit and am planning to study the greenback cutthroat trout. The last time I visited your hatchery in 1961, you were holding brood stock greenbacks. I would like to know if; (1) you are holding greenbacks at present, (2) they have been planted in other areas besides the Ypsilon drainage; (3) if you are still holding greenbacks, what are the future plans for these fishes.

Thank you for any time and consideration you may give me through this letter.

Sincerely yours,

William H. Dieffenbach
Graduate Assistant

WHD/hvh



United States Department of the Interior

FISH AND WILDLIFE SERVICE
COLORADO FIELD OFFICE
330 S. GARRISON ST.
LAKEWOOD, COLORADO 80226

IN REPLY REFER TO:

OCT 14 1981

MEMORANDUM

To: Greenback Cutthroat Trout Recovery Team
Members and Cooperators

From: Bruce D. Rosenlund, Acting Team Leader,
Greenback Cutthroat Trout Recovery Team

Subject: 1981 Greenback Cutthroat Trout Recovery Activities

The primary objective of the Greenback Cutthroat Trout Recovery Plan is to restore the greenback cutthroat to a non-threatened status within its historic range.

During the 1981 field season, recovery efforts resulted in 17,240 greenbacks being introduced into 18.1 surface acres of lakes and reservoirs and 6.05 miles of stream. The following areas were stocked with greenback cutthroat trout in 1981.

<u>AREA</u>	<u>LOCATION</u>	<u>Number and size of of greenbacks</u>	<u>Surface acres or stream miles</u>
<u>So. Platte Drainage</u>			
Bear Lake	RMNP	432 (5")	11.2 S. A.
Ouzel Lake	RMNP	8,000 (Fry)	6.4 S. A.
Ouzel Creek	RMNP	8,570 (Fry)	2.9 miles
Williams Gulch	Roosevelt NF	40 (5")	1.9 miles
Hourglass Creek	Roosevelt NF	158 (5")	1.25 miles
<u>Arkansas Drainage</u>			
Lytle Sp. Res.	Fort Carson	40 (3"-8")	0.5 S. A.

All greenbacks stocked within the South Platte River Drainage were from the Como Creek broodstock held at the USFWS, Fish Cultural Development Center. The five inch greenbacks were from eggs taken in 1980. The fry, at 1640/lb. were from eggs taken in 1981. Prior to the import of these fish, both groups of greenbacks were examined for kidney disease, and were found to be negative. In 1982, approximately 30,000 fry should be available for stocking.

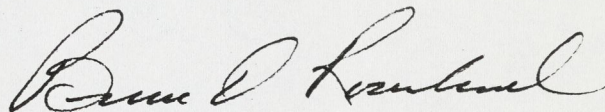
Greenback Cutthroat Trout Recovery Team
Page 2

The transfer of Cascade Creek greenbacks to Fort Carson is for the purpose of establishing a broodstock reservoir, and fry for future restoration projects within the Arkansas River Drainage. Since most of the greenbacks transferred to Fort Carson were near eight inches in length, it is probable that eggs can be taken in 1982. Also, eggs may be available from McAlpine Pond in 1982.

Non-native salmonids were removed from George Creek and Cornelius Creek, and Sheep Creek was re-treated in 1981. A draft addendum to the 1980 EAR has been submitted to re-treat George and Cornelius Creeks, if necessary. No waters within Rocky Mountain National Park were treated with piscicides in 1981.

In a somewhat related matter, the stocking of Colorado River Cutthroat fry into Timber Lake and Creek, RMNP, appears to be succeeding. Fry stocked in September 1980, were 3.5" by September 30, 1981. The Colorado River Cutthroats were obtained as eggs from Clinton Gulch Reservoir and reared to fry (4440/lb.) at the Glenwood Springs SFH.

I understand that Mr. Jim Bennett has been hired as the new non-game aquatic specialist for the DOW. I would like to propose a Team Meeting for January 12, 1982, to discuss team activities for 1982, and the revised Recovery Plan. Please let me know if you have any comments or suggestions.



cc: Team Members
Director, DOW
Director, Region 6, USFWS
Area Manager
FCDC
FDCC
Ron Zuck, Amax Inc.
Dr. Behnke
Glenwood SFH

memorandum

DATE: 4/16/80
REPLY TO ATTN OF: Bruce D. Rosenlund, USFWS, 330 So. Garrison, Lakewood CO 80224
SUBJECT: Ypsilow lake & Crak

TO: Dr Behrke, CSU

After talking to you, I thought a map of where I collected the fish would be helpful. Also, the color photographs may be of interest.

Please return the color photographs since I will need them to prepare the final report. Will supply you with color photographs RMAP Report for 1979 when it is completed.

Thanks,
Bruce



Table -- Salmo clarkii stomias

Sample and Date of Collection	Gillrakers			Vertebrae			Basibranchial Teeth			Scales Lateral Series			Scales Above Lateral Line		
	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean
SOUTH PLATTE SYSTEM															
Moraine Park, Colorado - 1889	1	19		1	59		1	absent		1	195		1	44	
Bear Creek, Morrison, Colorado - 1889	4	16-20	18.3	4	62-63	62.5	4	1 - 1 tooth 3 - 0 teeth					4	41-44	42.7
Pingaree Park Colorado - 1932	2	18-20					2	1-6		2	196-213		2	47-48	
Albion Creek, Boulder Co. Colorado - 1955	9	18-22	19.4	9	59-61	60.1	7	1-23	6.9	9	178-205	191.2	9	44-51	47.2
Big Thompson R., Rocky Mtn. Nat. Park., Colorado - 1959	20	18-21	19.1	20	59-62	60.8	19	1-10 1 - 0 teeth	7.1	19	177-215	199.8	11	43-51	47.5
NORTH PLATTE															
Red Canyon, Jackson Co. Colorado - 1950	20	18-22	19.6	20	59-61	59.9	20	1-13 5 - 0 teeth	4.2	20	172-194	184.5	20	40-49	44.0
ARKANSAS SYSTEM															
Arkansas River, Lead- ville, Colorado - 1889	2	21-22		4	60-62	61.0	2	2-12		2	198-213		2	46-49	
Twin Lakes Leadville, Colo. - 1889	8	18-20	19.5	7	61-62	61.7	8	6-14	10.6	7	170-202	186.9	7	46-53	49.0

Taxonomic data for six cutthroat trout collected from Forest Canyon of the Big Thompson River, Rocky Mountain National Park, Colorado. (measurements in millimeters)

Sex	Head Length	Standard Length	Body depth	Dorsal fin length	Adipose fin length	Head Width	Orbit length	Snout length	Upper jaw length	Branchiostegals left	Branchiostegals right
M	49	170	42	36	14	27	12	11	29	11	10
IM	44	170	38	36	19	26	11	10	25	11	10
F	41	167	37	39	16	26	10	9	23	12	11
M	39	157	35	33	13	24	10	8	22	11	10
F	36	150	33	33	14	22	10	8	20	11	10
F	39	155	37	38	15	23	10	8	22	11	10

Scales in lateral line	Scales two rows above lateral line	Scales above lateral line	Spotting Areas 1-6	Hyoid Teeth
134	186	44	45-12-22-16-28-11	8
126	177	40	64-20-34-25-31-22	10
131	176	42	49-18-28-25-27-18	12
127	182	41	56-18-39-25-28-13	12
132	183	44	54-14-34-22-33-23	9
131	179	42	35-13-29-24-28-19	14

Rocky Mtn. Park. (No stocking since 1960s)

- Special Rept. 1973 - Considerations re. greenback cutthroat trout.

Note the brook trout population killed by poisoning Hidden Valley Creek in Sept. 1973. - After the end of the busy tourist season, after heavy fishing pressure all summer in this roadside water - approx. 2000+ trout ^{weighing} at 100 lbs. per surface acre of stream was found. - How can this be explained? - Probably most fishermen fishing Park waters are novice tourists - They tend to frighten the fish rather than catch them.

- Ann. Rept. 1972 - Trout & trout fishing data from several waters. - Some streams have very good fishing and not far from roads. - Note the brown trout found in Onahue Crk. - these evidently had migrated out of Shadow Mtn. Res. for spawning.

- Ann. Rept. 1974-75. Data on lakes in R.M.P. - After stocking ceased in 1960s it was believed most lakes with rainbow trout & cutthroat trout would lose their populations because of inadequate spawning

streams. Surprisingly, cutthroat trout (some hybrids) were found reproducing in several of these lakes.

— Copy of article in 1878 issue of Forest & Stream Magazine re. greenback cutthroat trout in Poudre R. - note statement that Poudre has almost 100 mi. of good trout fishing (Chambers L to S. Platte would be about 100 mi.) - no doubt there was excellent trout populations below Fort Collins 100 yrs. ago.

- Colo. Div. Wildlife Rept. #7 - West & Dowdy Lakes.
- Note that for every 10 lbs. of catchable rainbow trout stocked in West L. - 7 lbs. are caught. Whereas every one lb. of fingerling brown trout stocked returned 20-50 lbs. to the angler. A 2 lb. plant of fingerling cutthroat (1900 fish) made into West L. in 1973 probably returned about 300 lbs. to the angler's creel - Another significant finding here was that stocking catchable trout didn't meet a demand - it created a demand.

— For. Ser. Rept. on Threatened & Endangered Trout - Available from Rocky Mtn. For. & Rng. Exp. ST2. on Prospect ST.