

- Nebraska not in Bonnville system.
 - Only in Missouri - high basibranchial teeth

CHARACTER ANALYSIS SHEET

Species S. c. virginialis
 Locality Nebraska, Fort Thompson
 USNM
 Field No. 3639 Coll. by Dexler
 Date of Coll. ? Measurements by Behrke Date 2-26-59
 Jar No. _____ No. of Jars _____ No. of Spec. 1 Specimen No. _____

Standard L	311				
Body D	74				
Head L	82				
Head D	53				
Head W	39				
Least interorbital bony W	22				
Occiput to snout tip	53				
Snout L	18				
Orbit L	18				
Upper Jaw L	48				
Anal origin to snout tip	150				
Depressed dorsal to insertion of adipose	52				
Dorsal origin to anal o	103				
Dorsal fin basal L	38				
Dorsal fin depressed L	58				
Adipose fin depressed L	20				
Caudal peduncle D	31				
Caudal peduncle L	48				
Vertebrae	61				
First arch gill rakers (upper)	8				
(lower)	14				
(total)	22				
Basibranchial teeth	46	- a dense growth - similar to Ind. Lk.			
Branchiostegal rays (right)	12				
(left)	12				
Pectoral fin rays	16				
Ventral fin rays	9				
Scales in lateral line	120				
Scales above lateral line	44				
2 rows above	aprox 190				

- seems too large for stomias
and too lite, also spots
too small - This leaves 3
possibilities ① utah ② virginalis (Rio Grande)
③ pleuriticus (northern form.)

- Color is faded - spots - small - medium
most all above lat. l. and concentrated
on caudal ped. and tail.

- Only Missouri R. drainage
(Arkansas-Platte) in Neb. - which would
be stomias - this did not resemble the
stomias I examined from Colo. - Probably
the specimen was collected in Rio Grande
system and sent from Ft. Thomp. Neb.

See letter from Dr. Taylor.

- Big Popoagie R. Wyo. - Wind R. system
note in bottle
or Museum Register

CHARACTER ANALYSIS SHEET

Page ___ of ___ pages

Species Salmo clarkii eremogenes

Locality Crab Ck, Wash.

USNM (1-3) *4 = USNM 62963

Field No. 62962 Coll. by _____

Date of Coll. _____ Measurements by Behrke Date 2-16-60

Jar No. _____ No. of Jars _____ No. of Spec. _____ Specimen No. _____

	1	2	3	4			
Standard L	39	42	42	45			
Body D							
Head L							
Head D							
Head W							
Least interorbital bony W							
Occiput to snout tip							
Snout L							
Orbit L							
Upper Jaw L							
Dorsal origin to snout tip							
Depressed dorsal to insertion of adipose							
Dorsal origin to anal o							
Dorsal fin basal L							
Dorsal fin depressed L							
Adipose fin depressed L							
Caudal peduncle D							
Caudal peduncle L							
Vertebrae							
First arch gill rakers (upper)	6	6	6				
(lower)	12	12	12				
(total)	18	18	18				
Basibranchial teeth	/	/	/				
Branchiostegal rays (right)	10	12	11				
(left)	11	12	11				
Pectoral fin rays	13	15	13				
Pelvic fin rays	9	/	9	9			
Scales in lateral line							
Scales above lateral line	/	/	/				

- too small and poorly preserved to be
of use. - pair marks 8-9 faintly seen -

no scales or spotting. -

13



14



15



16

17

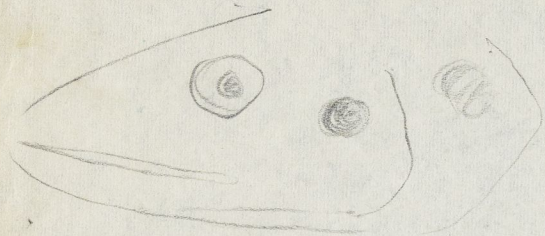


18



GBS-3

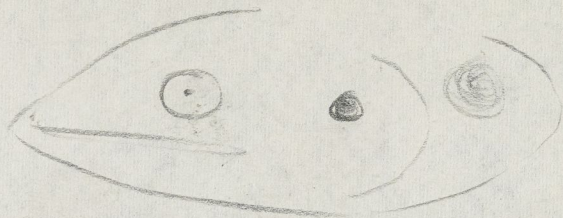
1.



2.



3



4



5



6



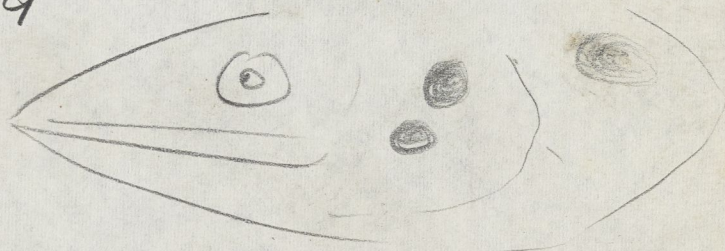
7



8



9



10



11



12



GBS 2A - these fish faded, not as good specimens as GBS-1 or 3

1



2 on R side

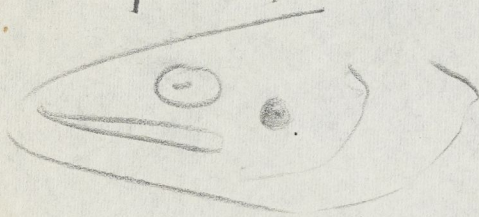
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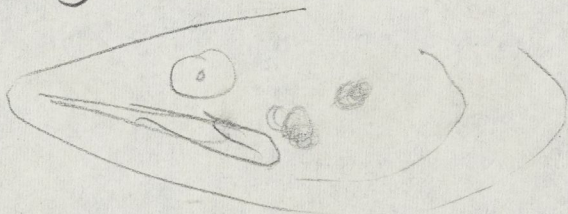
3



4



5



6

7

8



9



10 - none

May 9, 1962

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

Dear Bob:

Many thanks for the loan of the old stocking records of the Rocky Mountain National Park and for a copy of Wallis' letter.

There is a great lack of detailed information on Salmo clarkii stomias. This is especially unfortunate because from the specimens I have examined, I believe it represents one of the few described forms which has enough distinctness to be retained as a valid subspecies. All of the stomias collections I observed are fine scaled specimens, typically with from 175-210 scales in the lateral series and 40-50 above the lateral line. This is the finest scaled American cutthroat. In most specimens, the arrangement and size of the round black spots is also quite distinctive. Some samples have a low vertebral count also, but this is not true of all stomias. You have pointed out in a previous letter that it was possible that the type material actually came from Kansas as Cope claimed. The types as you found them at the National Museum were coarse scaled, and I suspect that they may, in reality, be Rio Grande cutthroats. Evidently there were many slips between collections and Cope's published accounts in those days. I told you previously that the collection from the White River, Arizona, mentioned by Cope and Yarrow in 1875 (your Apache trout) are labeled Panguitch Lake, Utah, at the U.S. N. M. The next time I am in Washington I will take some time and examine the types of stomias.

I have a notation that Jordan (1920. Copeia, 81: 27) said that no trout were native to the North Platte drainage. Your collection (UMMZ 160719) from Red Canyon, Jackson County, Colorado, is from a North Platte tributary. The scale counts and vertebrae counts of these specimens do not suggest that they are an introduced lewisi from Yellowstone. The fact that these trout had smaller spots than the typical stomias and many had 10 pelvic rays instead of 9, leads me to believe that, perhaps, a slightly differentiated stomias was endemic to the North Platte system.

Very truly yours,

Robert J. Behnke
Research Assistant

RJB:fbc

Enclosures

cc for PRN ✓

river? near Estes Park, Colo. 1931	Vert.	Rakers	Scales	above l.l.	Basibranchials	Misc.
AT Colorado		18.3		42.7	3=0	
Moraine Park, Colo. no date So. Platte	62(2) 63(2) 62.5	16, 18, 19, 20		41, 43, 43, 44	1=1	9x10 branchial rays
Bear Crk. Morrison 1889 S. Platte	59	19	195	44	0	
Twin lakes Ark	$\frac{61}{2}$ $\frac{62}{5}$ 61.7	$\frac{18}{1}$ $\frac{19}{2}$ $\frac{20}{5}$ 19.5	170, 179, 197 202, 183, 196 180 170-202 186.9	39-49 46.0 49, 52, 49, 47 53, 46, 47 46-53	6-14 (8)	
Arkansas R.	$\frac{60}{1}$ $\frac{61}{4}$ $\frac{62}{1}$ 61.0	21, 22	198, 213	46, 49	2, 12	
Red Canyon N. Platte 1956 Rising Hk.	59-61 59.95 N=20	18-22 19.6 20	172-194 184.5 20	40-49 44.0	15=1-13 (4.2) 5= no teeth	12= 10 pelvic rays 8= 9 spots smaller and above & below ant.
Albion Creek 1955 S. Platte	59-61 60.1 N=29	18-22 19.4 9	178-205 191.2	44-51 47.2	7=1-23 (6.9)	
Pingree Park 1932			196, 213			
Big Thompson R. (Forest Canyon) K by mtn. Net. Pl. S. Platte 50 mi. N.W. corner	N=20 59-62 60.8	18-21 N=20 19.1	177-215 199.8 N=19	43-51 47.5 N=11	(19) 1-10 7.1 1 no teeth	Caca (20) 22-40 31.4 basibranchial 1 row well developed post. rakers-

July 14, 1960

Dr. Paul R. Needham
Department of Zoology
University of California
Berkeley 4, California

Dear Paul:

While I realize that you are probably in Europe I write now as it is the first real opportunity I have had to review the ideas which you have been exchanging with me and with Howard Tanner regarding the systematics of the cutthroat trout. I am sure you realize that my long silence on this matter has not been the result of a lack of interest.

Enclosed with this letter is a copy of one I wrote to Oliver B. Cope on March 26, 1958, in which I attempted to summarize and bring up to date my feelings about the greenback cutthroat, Salmo clarki stomias. I think you will admit that we are moving (perhaps "groping" is more fitting) in a field where a great deal more objective data is critically needed if we are to reach firm conclusions.

Frankly I cannot accept your statement (in your letter to Dr. Tanner dated February 19, 1960; see also your letter to him of January 26, 1960) that the Albion Creek cutthroat represents "typical S. c. stomias". In the first place this sample is far removed from the stated type locality and, secondly, it represents a very fine-scaled form—whereas what we know of the types of stomias indicates that they represent a rather coarse-scaled population. Note Cope's recording of 42 scales above the lateral line and contrast this with Behnke's counts of 44-51 (ave. 47.2) in 9 specimens of the Albion Creek form. When I examined Cope's types (Dec., 1951) I could count only an estimated 150 and 152 scales (2 scale rows above the lateral line); even if this count were low by 25 scales, this would put the count at about 175, whereas I recorded 186 to 205 and Behnke got 178-205 scales in the Albion Creek sample. Even though the types are in very bad condition I think it would be a serious mistake for Behnke not to examine them. (Of great interest to me, incidentally, is the extraordinarily close agreement between the scale counts Bob and I got on the Albion Creek sample; his 178 versus my 190 was the only real discrepancy, and I think we could both reach a closer figure on that specimen.)

In my letter to Dr. Cope (enclosed) I was pessimistic regarding the question, "Whence came the types of S. stomias?". I reasoned that the stated type locality was no doubt erroneous, perhaps in part on the strength of Jordan's statement. One should, however, not always accept the prevailing authority—at least attempt to learn whether an alternative viewpoint may not be as reasonable or more so. Recently I completed a rather thorough study of the changing fish fauna of the American Southwest and, realizing what profound changes rivers and aquatic populations have undergone in the past century,

July 14, 1960

it made the idea of cutthroat trout near Fort Riley, Kansas, much less incredulous. Fortunately, James E. Cole, biologist at Rocky Mountain National Park, became interested in the early historical records of trout in the central Rockies and on the Great Plains, and he assembled this information for the Superintendent of Rocky Mountain National Park. These references were compiled during a decade of reading historical literature. In short, the report suggests that the Republican River, as far down as Fort Riley, should not be unequivocally ruled out as a possible trout habitat as late as the 1870's. This lead should be seriously considered and it is my understanding that Mr. Cole is looking further into the subject. In any event, one thing seems to be unquestioned: the types of Salmo stomias did not come from Albion Creek!

Bob Behnke had a query regarding the cutthroat sample from Rearing Fork River; in particular he wondered whether there might not have been some stocking of exotic species. As shown by the enclosed copy of Dr. Greenbank's notes, this seems highly unlikely. What I think this sample shows is merely that Salmo clarki (and trout in general) are extraordinarily variable creatures. Moreover, in my opinion, the Rearing Fork sample appears to be more "typical" of stomias than does the Albion Creek form.

We are not, I believe, going to be able to solve the classification of cutthroat (or other) trout without using the experimental approach. Dr. Cope embarked on such a program in 1958 but I have not heard how he is progressing.

Sincerely,

Robert R. Miller
Curator of Fishes

RRM:mw
Enc. 2

cc: Robert Behnke
James E. Cole
Oliver B. Cope
Howard A. Tanner

НОВАТОР У* ДИМИТ
ОСТАВ В* СОБЕ
ЧИНОВА В* СОБЕ
СС: НОВАТОР ВЕРИЖЕ

ВУО* S
ВМ:ММ

ОСТАВ В* СОБЕ
НОВАТОР В* ВЕРИЖЕ

ВЕРИЖЕ

Содержание сего документа является секретным и подлежит охране в соответствии с требованиями законодательства Республики Беларусь.

Содержание сего документа является секретным и подлежит охране в соответствии с требованиями законодательства Республики Беларусь.

Содержание сего документа является секретным и подлежит охране в соответствии с требованиями законодательства Республики Беларусь.

STOMIAS
MILLER

Salmo stomus

- Moraine Park Colo. -

3 of 4 no basibranchial teeth

branchiostegal rays 9-10

Vert. 62, 62, 63, 63.

scales above l. 41, 43, 43, 44

- Bear City Morrison Colo.

(1) -10-11, 59, 44 - smaller spots
no basibranchial teeth

- Twin Lakes Colo. ^{tiny} - small basibranchial teeth

(1) 10-11.

- Arkansas R. - headville Colo

(2) 11, 11

46, 49

60, 61, 61, 61, 61, 62

- Twin Lakes

10-11

61, 61, 62, 62, 62, 62, 62

39, 44, 47, 47, 48, 48, 49

59 | 60 | 61 | 62 | 63

1 | | | 2 | 2

1 | 4 | 1 | |

2 | 5 | | |

1 | 1 | 6 | 8 | 2

$\bar{X} = 19$ 39-49
61.5 ~~45-47~~

- Red Canyon - 59.25 - spots smaller

40-49

184.5

-10 pelvic rays
small spot

Notes regarding a collection of cutthroat
trout from upper Platte R. system, Colo.

John Greenbank
Nov. 2, 1950.

sec. 7; coll. Aug. 23, 1950

T 8N1

R 82W

- Red Canyon branch of Roaring Fork R.

trib. to N. Platte R., - ~~to~~ Jackson Co. Colo. -

1 mi. below Rocky Run Lake

11,000 ft. near continental divide

color - back - full bronze

side - light moss green upper half;
green - wavy lower half

belly - light wine.

opercle - plum - red

cherry under chin.

paired fins - cherry in lower edge
shading to olive green above

dorsal fin - barely pink on extreme
upper edge; main portion pale
steel blue.

anal - several spots - or streaks of black
- 1st 3 rays red as paired fins

cut mark - very accentuated almost
cardinal.

old times - said larger fish in lake ("natives")

Compared with Stomox description -
resembles pleuriticus - nothing green
about back - it is bronze.
opinion no slip between stomox & pleuriticus

Stomias

Letter from R. R. Miller

July 14, 1960

- Can't agree that albino Ch. represent typical Stomias - fine scaled and far from type locality.
- Cope records 42 scales above lat. line.
- examined (Miller) Cope's types in Dec. 1951 estimated 150 & 152 scales 2 rows above lat. line.
- Should examine types -
 - Recently realized the profound changes in the fauna of Am. S. west. during past century idea of culthout at Ft. Riley, Kansas. much less ^{incredulous} ridiculous. Dr James E. Cole, biologist at Rocky Mtn. Nat. Park, from reading historical literature - reports - Republican River as far down as Ft. Riley, should not be unequivocally ruled out as possible trout habitat at ^{late} least as the 1870's.
- who used Stomias next & fixed type locality. ??
- does Cope retain authority. ??
- Jordan 1920; Cope's 3, No. 81:27 - no trout native to N. Platte drainage -

- Miller letter (July 14 1960)

examined stromia types at U.S.N.M.
- very bad condition
counted . 150 x 152 scales lt. rev.

- James Cole, biologist at Rocky Mtn. Nat. Park -
examined historical records - trout in
Republican River, as far ^{down} south as Fort Riley,
should not be unequivocally ruled out as a
possible trout habitat as late as the 1870's.

- Roaring Fork stromia (N. P. letter) - Humboldt notes -
very inaccessible - stocking doubtful - - Jordan (1920): 81
no trout N. Park

Big Thompson stocked w/ Yellowstone (letter fr. O.C.
Wallis to R.R. Mills . 1922 160,000
- in area where 1901 coll. made - 1923 130,000

Jordan 1891

" Common in upper tributaries of Ark R. and
in Twin Lakes, ... largest spot of all trout.
Cope first said from Platte R. at Ft. Riley, Kansas
then said Kansas R. The Kansas R. rises in
rugged country in Col. & contains no trout anywhere.
It is safe to presume no water in which trout
can live within 500 miles of Ft. Riley.

- Cope 1872 (a) type description

p. 433 Salmo (Salar) stomias

General form short and stout, head large
& wide, with wide mandible and mouth.
42 scales above lat. line.

Two specimens from the Platte River, from near
Fort Riley, Kansas. Discovered by Dr. William A.
Hammond, M.D.

Cope 1872 (b) - stomias readily separated by its
large head and mouth. Its habitat, so far as known,
is the Kansas River, far to the eastward of the
Rocky Mountains. * footnote p. 470 - " In Hayden's
Report, Geology of Wyoming, 1871, p. 433, this is erroneously
stated to be the Platte a very different river."

= Cope & Yanon
mistakes (wheels)

p. 681 - (1875)

- Greener blackfish (Sacramento system)
Orthodon microlepidotus 1872 -

Utah Lake

lot. 596 - White River Ariz. -
labeled Panquitch Lake - at U.S.N.M.

- Stomias : Its habitat as far as known is the
Kansas River from the eastward of the Rocky Mts.

Cope 1872 (Hayden)

- Stomias separated by large head and mouth -
habitat as far as known is Kansas R. - footnote
pg. 470: "In Hayden's Rept. Geol. Wyo. 1871, p. 433
this is erroneously stated to be the Platte - a very
different river."

Rio Grande

- Grand Utah bk.
- eats atch L.
- Spilurus - Coqu -

J. & E. says and similar to pleuriticus but
fewer scales - range - upper Rio Grande

southward to Chihuahua -

Rio Casas Grandes. resembles S. gilae -
disrupted trib. of Rio Grand

Rio Yaqui - Rio Grande -

trib. Rio Yaqui - Rio Casas Grandes - close at

continental divide - Mills (1958) - Yaqui captured

Casas Grandes fauna which is Rio Grande -
introduction?!

Suckley 1879: 136

nigralis - So. Rocky Mtn, Utah, New Mexico

- plate - 1 x 111 - Pacific R.R. Repts. vol 10

Santa Fe N. Mex. specimens - brighter, more silvery,
spots, smaller, less numerous.

- variety found in Utah bk. - less spotted - S. utah

Nebraska

Ft. Thompson Neb.

coll. Dexter

S. c. virginialis

USNM # 3639

311 mm.

- silvery small spots -

22 gill rakers 51 vert,

46 basibranchial teeth

190 = 44

Wm. Taylor

- No Ft. Thompson Neb. - one in S. Dak. & Wyo^{on}

on Popoagie k. - label in bottle reads "Big
Papause"

- See Pac. R. R. Surv. vol. 9 i 92c

Snyder mentioned spec. from Nebraska

- Cope (1872) = spelurus - new sp. -

Sanque de Christo Pass - Colo. -

large spots -

- not as slender as virginis

(1875) Brazos R. - N. Mex. - like color small spots.

Hayden
O.S. Geol. Surv. Mont.
Cope 1872 Ann. rept. 5 (1872)

stomia correction

Kansas R. not Platte

Salmo pleuriticus - new species
p. 471

Hayden Wgo. 1872
Ann. rept. 4 (1871)
p. 433

Salmo (Salax) stomia new sp

2 specimens from Platte R. near
Fort Riley Kansas - discovered
by Wm. A. Hammond M.D.

Fort Riley in eastern
Kansas near junction
of Republican and
Kansas rivers.



plate



For
our files

— photo stats of Forest Ser.
correspondence sent to K. K. Miller
copy of ~~by O. H. Wallis~~
- letter from Roger W. Tell Supt. Nat.
Park Ser. - Denver to Director Nat. Pk. Ser.
Wash. - Sept. 29, 1923.

(1) - Estes Park hatchery - fish distributed
by local fish and game assoc. - in Rocky
Mtn. Nat. Park and elsewhere. Stocked
"spotted native trout", rainbow & brook.

- letter, Nov. 17, 1923 from C. H.
(2) Van Atta, Supt. Leadville, Colo.,
U. S. Bur. Fish., Hatchery. to, Mr. Tell.

— Big demand for rainbows
* "Our native eggs are all
shipped in from Yellowstone Park".

(3) - handwritten ~~letter~~ report of fish
plantings in Grand Lake Dist. 1925 -
by Ranger McLaren.
- packed native trout to Lake Mokeni
- Aug. 11, stocked native trout above
falls in Torahuta Ck. - noted by

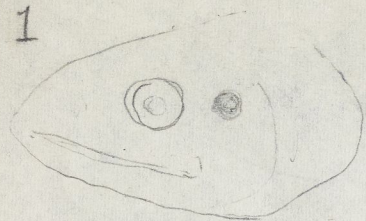
Wallis that Tonahutu Cr. was
mentioned in a 1957 report by Bulkeley
to perhaps hold native pleuriticus
above Granite Falls because there
was no record of stocking.

This book contains all
collections referred to in pgs. 4, 5, 6 of
tables, ~~but~~ (except. last 2 entries of
Bonneville basin - bottom pg. 6).

Also includes data on stomies
on pp. 8 & 9 of tables.

Opercle and Cheek spots on GBS-1

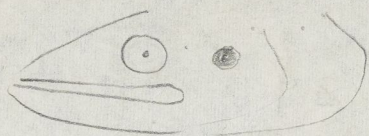
#1



#2



#3 (9 pan marks)



#4

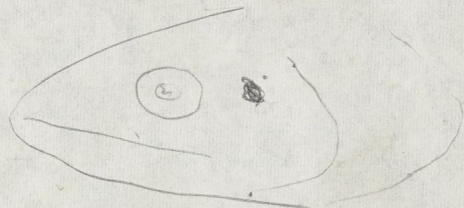
9 pan marks



5



6



7



8

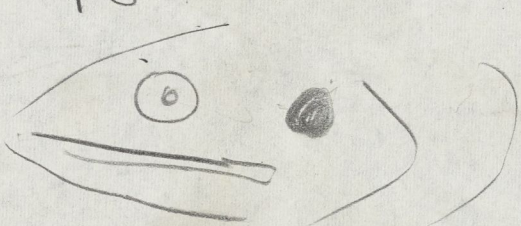


all have
9
pan marks

9



10



11



12



13



14



15



16

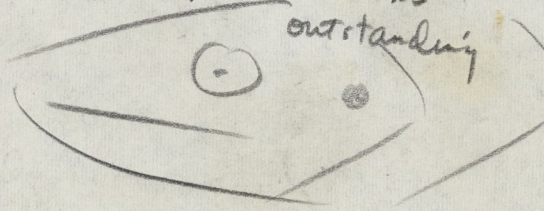


17



18

pan marks
outstanding



19



20



21



22



23



24



25



26

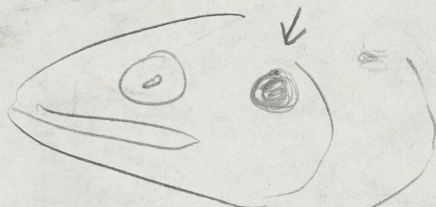


27

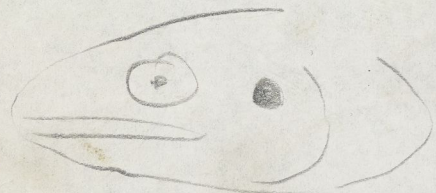


28

2 on R side



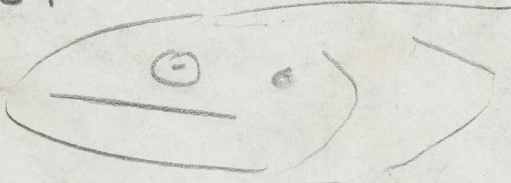
29



30



31



check teeth on gill rakers
- compare w/ other cuts.



7-8 (7.6)
11-14 (12.3)
19-21 (19.9)

40-49 (46.6)
180-195 (188.1)
9 (9)
39-45 (41.7)

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

DO W Project

SPECIES _____ LOCALITY Brush Creek #1

COLLECTED BY _____ 2- DATE E. Douglas Crk.

Cat. # _____ Measurements by _____ DATE _____

Specimen # _____

	1	2	3	4	5	6	7	8	
Total L.		169	108	127	112	112	137	115	99
Standard L.	109	138	87	106	88	92	115	88	82
Body D									
Head L									
Oroït L									
Upper Jaw L									
Dors. Orig. to Snt. tip									
Dorsal fin basal L									
Dorsal fin depressed L									
Adip. fin depressed L									
Caudal peduncle D									
Caudal peduncle L									
Vertebrae									
1st Arch gillrakers (up)	7	7	7	6	7	7	6	7	6
(lower)	13	12	13	11	12	12	13	11	12
(total)	20	19	20	17	19	19	19	18	18
Branchiostegal rays right									
(left)									
Dorsal rays									
Anal rays									
Pectoral fin rays									
Scales in lateral line									
Scales above lateral line	34	43	42	45	38	39	42	40	43
Scales 2 rows above lat.	158	182	174	163	157	155	161	172	186
Pelvic fin rays	9	9	9	9	9	9	9	9	8
Pyloric caeca	34	30	33	36	31	30	36	31	29
Dentition	0	0	4	3	3	2	3	0	3

Brush

E. Douglas

8

Teeth

9-0
16-2
11-2
12-3

N=12 3 1/2 teeth

9-1 2-4 (2.8)

6-7 (6.6)
11-13 (12)
17-20 (18.6)
58-45 (41.5)

38-415 (41.5)
155-186 (167.5)
8-9 (8.8)
29-36 (32.0)

4P - 6-8 (6.9)
lower - 11-13 (11.9)
total - 18-20 (18.8)

36-42 (39.1)
163-183 (174.4)
8-9 (8.9)
44.52 (38.7) 41.0
0-6 1.5


* - largest has obvious hybrid spots
(*1 Canyon Crk)

*4 Soldier Crk.

- largest spec.

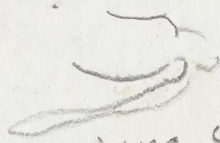
spots small, irregular, profuse -

St. Ursin Pond - unnamed ca. 40 acre shallow pond
(w/ deep shaft) el. 10,000 ft. trib. So. St. Ursin -
isolated - brook trout below - at Brainard L. Trail.

* 2 basibranch. plate  - 3 roots of teeth but
no teeth. - specimen gutted!

201-48 192-50

197-49



long caeca
on Long Drawer
Trout

Kremmling Res. ^{water} ~~public~~ supply for Kremmling - private, not stocked - no other fish species known from watershed above dam - may be pure native population - Col. G. & F. has taken eggs (20,000 1972) - specimens to 5 lbs. + taken.

VERTEBRAE	N = 4	$\bar{x} = 62.0$ $\bar{x} = 62.3$	61/63 2/2 61/62/63 1/1/2
GILL RAKERS	N = 4/1	$\bar{x} = 20.0$	17/20/21/22 1/1/1/1
BRANCHIOSTEGAL RAYS (R)	N = 4	$\bar{x} = 11.0$	10/11/12 1/2/1
	(L) N = 4	$\bar{x} = 11.0$	10/11/12 1/2/1
SCALES ABOVE LAT. L.	N = 4	$\bar{x} = 36.8$	36, 36, 37, 38
SCALES 2 ROWS ABOVE LAT. L.	N = 4	$\bar{x} = 164.5$	165, 165, 160, 168
PELVIC FIN RAYS	N = 4	$\bar{x} = 9.0$	$\frac{9}{4}$
PYLORIC CAECA	N = 3	$\bar{x} = 38.6$	36, 38, 42
DENTITION	N = 4	$\bar{x} = 11.0$	1, 9, 14, 20

well developed posterior rakers on first arch.

Rakers 17-22 (20.1)

Scales above 30-40 (37.7)

Scales 2 rows above lat (176.6)
160-190

Pyloric caeca 30-54 (39.1)

Dentition 1-21 (8.2)

TABLE 1. Character analysis of collections of Bonneville basin cutthroat trout
~~meristic variation~~

Locality	Vertebrae	Gillrakers	Pyloric caeca	Scales above lat. line 2nd lat. set.	Basibranchial teeth
Snake Valley area N (Undescribed subsp.)	37 60-64 62.3	46 19-25 22.0 (21.8)	25 30- 25-47 (33.9)	34-45 (39.1) 34-44 38.9 141-157-150.4 133-171 (148.9) 8.6	40 6-90 (27.3) 8-55
Pine Crk. N=61 1959, 1970, 1972 N=61					
Hampton Crk. (Pine Crk. stock) 1970, 1972 N=32	60-63 (61.6)	20-23 (20.9)	28-39 (33.7)	35-45 (38.9) 136-162 (150.2)	5-47 (28.6)
Goshute Crk. (Pine Crk. stock) 1970, 1972 N=31	61-64 (62.3)	17-22 (20.0)	31-45 (36.1) (35.7)	35-45 (39.0) 135-162 (145.4)	8-90 (28.6)
Hendry's Crk. extremely ^{very} headwaters 1972 N=20	61-64 (62.4)	18-23 (20.9)	29-46 (36.1)	35-44 (37.4) 39.2 120-163 (142.1) (149.9)	10+20 a/o teeth 19 = 14-49 14-58 (28.5)
Hendry's Crk. ^{downstream} but above barrier 1970 N=77	20-22 20.9 61-63 (61.9)	20-22 (20.9)	33-46 (39.0)	41-44 (42.1) 146-175 (155.3)	4+7 4 no teeth 3 with 13-16 (8)
Hendry's Crk. below barrier 1970 N=10 hybrids	61-63 61.9	18-22 (20.2)	35-47 (41.0)	36-42 (39.7) 142-160 (152.1)	7+10 7 no teeth 3 with 1-6 (1)

Hendrys
below barrier
1970
N=5

61-62 (61.6)

19-21 (20.2)

22-40 (30.4)

34-37 (36.4)

137-150 (144.2)

1-30 (12.6)

Hendrys
invalves
1972
N=20

61-64 (62.4)

18-23 (20.9)

29-46 (36.1)

35-44 (37.4)
^{check} 39.2

129-163 (142.2)
(150.2)
(149.9)

one of 20 w/6 teeth

~~6-49~~ (23.5)
~~14-49~~

Hampton Crk.
1972
N=22
1970
N=10

60-63 (61.6)

20-23 (21.0)

28-39 (33.7)

35-45 (38.4)

5-47 (28.6)

1970

59-63 (61.4)

20-21 (20.5)

29-36 (33.1)

33-43 (41.0)

136-162 (150.4)

141-157 - 149.8

1972

60-63 (61.6)

20-23 (20.9)

28-39 (33.7)

35-45 38.9

136-162 150.2

Mill Crk.
1972 N=20

60-64 (63.1)

17-22 (19.3)

34-58 (45.2)

35-42 (38.3)

2-29 (13.3)

139-175 (154.1)

Pine Crk.
1972-20

60-64 (62.2)

19-25 (22.0)

25-41 (33.6)

33-46 (38.9)

8-50 (27.3)

120-176 (147.0)

1970 -FD

60-64 (62.2)

20-22 (21.2)

36-47 (39.7)

37-44 - (40.1)

13-55 (30.1)

1958 31
N=61

60-63 (62.3)

19-23 (21.5)

133-156 (143.5)

(28.3)

37-42 (39.1)

8-55 (28.3)

123-140 - 142.1

34-45 39.1

133-171 (146.8)

① letter Miller
personal comm. R.E. Miller

caeco

② Mill Crk. 1970, 72 N=30	60-64 (62.6)	17-22 (19.4)	34-56 (42.5)	35-43 (39.7) 139-175 (154.1)	2-30 (13.2)
① Lehman Crk. 1938 N=2 UMMZ 141701	62, 62	20, 21	—	40, 42 148	17, 20 28
② Trout Crk. 1933 - UMMZ 191644 N=2	61, 63	21-22 (19.1) 19, 22	37, 41	38, 40 147, 149	10, 18
③ Muncy Crk 1972 hybrids N=15	58-64 (60.9)	17-20 (19.1)	33-48 (36.8)	35-45 (37.1) 128-155 (134.4)	2 of 15 w/ teeth 13-29 (8.7) 9.7
④ Birch Crk. 1975 N=14		18-22 (20.1)	37-41 31-47 (37.9)	37-42 (39.3) 141-168 (156.5)	2-36 (17.9)
Goshute Crk 1972 N=21	61-64 (62.3)	17-22 (20.0)	32-45 (39.0)	36-45 (39.0) 135-162 (149.0)	8-90 (28.6)
⑧ Deep Crk. N21 1884 FMNH 260		1 21? 13 lower			at least 32
③ Trout Crk. 1974 N=17 prob. sp.		18-22 (19.9)	25-40 (34.0)	37-44 (39.9) 150-170 (161.5) 137-168 (152.4)	2-39 (22.2)
④ Trout Crk. 1974 Area I N=6		20-22 (21.0)	26-39 (33.0)	39-42 (40.2) 145-159 (150.5)	2-27 (18.2)
⑤ Area I N=6		18-22 (20.2)	30-39 (34.7)	38-41 (40.2) 14-37 (20.2) 145-154 (149.3)	14-37 (20.2)
⑥ Area II N=6		18-21 (19.9)	31-40 (34.9)	38-42 (40.2) 144-155 (149.5)	9-39 (20.6)

Composite
~~Exp.~~ Typical Values of S. c. utz based on museum specimens and
recent collections from various parts of basin (from Bolander 1932)

<u>vert.</u>	<u>teeth</u>	<u>Csecs</u>	<u>teeth</u>	
62-63	17-21 (19)	25-50 (35-40)	33-45 (37-40) 145-180 (155-165)	1-20 (10)