CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginialis

Locality Indian Creek and Rio Seco, Colo.

Field No. _____ Coll. by _____

Date of Coll. _____ ~~Measurements~~ Summaries by C. F. Reid Date April 27, 1960

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

	N	Range	Mean	S.D.^{2}	S.D.	C.D.	SEM
Standard L							
Body D	28	239-265	252.4				
Head L	28	240-293	256.7				
Head D	26	160-188	172.2				
Head W							
Least interorbital bony W	22	57-71	63.8				
Occiput to snout tip	25	164-203	180.5				
Snout L	17	48-68	55.1				
Orbit L	17	55-78	64.2				
Upper Jaw L	27	126-155	137.2				
Dorsal origin to snout tip	28	491-536	505.6				
Depressed dorsal to scales ~~insertion~~ origin of adipose to l.l.	21	25-30	27.9				
Dorsal origin to anal o							
Dorsal fin basal L	28	121-160	142.6				
Dorsal fin depressed L	28	189-256	222.0				
Adipose fin depressed L	28	80-107	92.5				
Caudal peduncle D	28	103-120	112.4				
Caudal peduncle L	28	152-182	168.9				
Vertebrae	30	61-63	61.8				
First arch gill rakers (upper)	34	7-9	7.4				
(lower)	34	11-13	12.0				
(total)	34	18-21	19.5				
Basibranchial teeth	33	0-6	2.7	(3.2) not counting no Teeth			
Branchiostegal rays (right)	34	9-11	9.9				
(left)	34	9-11	10.3				
Pectoral fin rays	32	13-15	14.1				
Pelvic fin rays	33	8-9	8.9				
Scales in lateral line	31	109-123	117.9				
Scales above lateral line	32	36-45	40.5				
2 rows above	26	146-186	164.3				

CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginialis

Locality Indian Creek, Costilla Co., Colo.

~~Field No.~~ UMMZ 177258 Coll. by

Date of Coll. ~~Measurements~~ Summaries by C. F. Reid Date April 27, 1960

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

	N	Range	Mean	S.D.^{2}	S.D.	C.D.	SEM
Standard L							
Body D	16	239-265	250.4				
Head L	16	240-262	249.1				
Head D	14	164-182	169.8				
Head W							
Least interorbital bony W	13	57-71	63.2				
Occiput to snout tip	13	164-187	174.6				
Snout L	9	48-58	53.7				
Orbit L	9	56-68	63.1				
Upper Jaw L	15	126-147	131.5				
Dorsal origin to snout tip	16	491-524	503.6				
Depressed dorsal to							
scales ~~insertion~~ origin of adipose to l.l.	14	25-30	27.7				
Dorsal origin to anal o							
Dorsal fin basal L	16	121-150	136.2				
Dorsal fin depressed L	16	189-233	210.8				
Adipose fin depressed L	16	80-98	89.2				
Caudal peduncle D	16	103-117	110.4				
Caudal peduncle L	16	152-182	170.1				
Vertebrae	18	61-63	61.8				
First arch gill rakers (upper)	22	7-9	7.5				
(lower)	22	11-13	12.0				
(total)	22	18-21	19.5				
Basibranchial teeth	21	0-6	2.6				
Branchiostegal rays (right)	22	9-11	9.9				
(left)	22	10-11	10.3				
Pectoral fin rays	20	13-14	13.8				
Pelvic fin rays	21	8-9	8.9				
Scales in lateral line	19	113-121	117.9				
Scales above lateral line	21	36-45	40.5				
2 rows above	15	146-186	163.0				

-same as UMMZ #
-borrowed from Tanner, (Colo.)

CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginalis

Locality Indian Ck. - Costilla Co., Colo.

Field No. _____ Coll. by Tanner, Seaman, Welsh

Date of Coll. 8-20-58 Measurements by Behnke Date 3-30-60

Jar No. _____ No. of Jars _____ No. of Spec. 5 Specimen No. _____

	1	2	3	4	5	6	7
Standard L	110	99	146	171	174		
Body D			37	45	42		
Head L			36	43	43		
Head D			25				
Head W							
Least interorbital bony W							
Occiput to snout tip							
Snout L							
Orbit L							
Upper Jaw L			19	23	22		
Dorsal origin to snout tip			75	84	89		
Depressed dorsal to ~~insertion~~ origin of adipose to l.l.	25	/	27	29	28		
Dorsal origin to anal o							
Dorsal fin basal L			20	22	24		
Dorsal fin depressed L			30	35	37		
Adipose fin depressed L			13	16	15		
Caudal peduncle D			17	20	18		
Caudal peduncle L			25	30	29		
Vertebrae	see	back					
First arch gill rakers (upper)	7	8	7	7	7		
(lower)	11	13	12	11	13		
(total)	18	21	19	18	20		
Basibranchial teeth	1	2	0	0	3		
Branchiostegal rays (right)	10	10	10	10	11		
(left)	10	10	10	11	11		
Pectoral fin rays	14	14	14	13	14		
Pelvic fin rays	9	9	9	8	9		
Scales in lateral line	117	117	118	120	121		
Scales above lateral line	37	39	40	41	43		
2 rows above	152	/	/	/	186		

Vert. counts – Indian Ck.

Combined –

61, 61, 62, 62, 62, 63, 61, 61, 63, 62

61, 62, 62, 62, 62, 61, 62, 63.

6 93

CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginalis

Locality Indian Creek, Costilla Co., Colo.

Field No. _____ Coll. by _____

Date of Coll. _____ ~~Measurements~~ Conversions by C. F. Reid Date April 22, 1960

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

Measurements in thousands of standard length

	1	2	3	4	5		
Standard L	110	99	146 [685]	171 [585]	174 [575]		
Body D			253	263	242		
Head L			247	252	247		
Head D			171				
Head W							
Least interorbital bony W							
Occiput to snout tip							
Snout L							
Orbit L							
Upper Jaw L			130	135	126		
Dorsal origin to snout tip			514	491	512		
Depressed dorsal to insertion of adipose			—	–	–		
Dorsal origin to anal o							
Dorsal fin basal L			137	129	138		
Dorsal fin depressed L			206	205	213		
Adipose fin depressed L			89	94	86		
Caudal peduncle D			116	117	104		
Caudal peduncle L			171	176	167		

—These specimens are to go to Calif. Acad. Sci.

CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginalis

Locality Colo., Indian Ck.

same as ~~Field~~ UMMZ No. 177258 ← Coll. by as

Date of Coll. _____ Measurements by Behnke Date 3-24-60

Jar No. _____ No. of Jars _____ No. of Spec. 8 Specimen No. _____

	1 (4)	2 (5)	3 (6)	4 (7)	5 (8)	6	7 →
Standard L	141	167	122	195	191	104	114
Body D	35	41	31	48	46		
Head L	36	40	31	49	50		
Head D	24	28	21	32	32		
Head W							
Least interorbital bony W	9	11	7	12	12		
Occiput to snout tip	26	28	20	33	34		
Snout L	8	8	—	11	11		
Orbit L	9	10	—	12	13		
Upper Jaw L	19	21	16	25	28		
Dorsal origin to snout tip	72	83	61	98	100		
Depressed dorsal to scales ~~insertion~~ origin of adipose t. L.L.	—	30	28		26	29	28
Dorsal origin to anal o							
Dorsal fin basal L	20	24	17	26	24		
Dorsal fin depressed L	30	37	28	39	37		
Adipose fin depressed L	13	14	12	18	17		
Caudal peduncle D	15	19	13	21	22		
Caudal peduncle L	22	28	21	32	29		
Vertebrae							
First arch gill rakers (upper)	7	7	7	8	8	8	7
(lower)	12	13	13	12	13	13	11
(total)	19	20	20	20	21	21	18
Basibranchial teeth	1	2	3	3	2	5	5
Branchiostegal rays (right)	10	10	9	10	10	10	9
(left)	11	10	10	10	10	10	10
Pectoral fin rays	14	14	14	13	14	—	14
Pelvic fin rays	9	9	9	8	9	9	9
Scales in lateral line	115	118	116	121	117	116	—
Scales above lateral line	38	41	37	40	36	—	40
2 rows above	146	178	159	158	150	—	—

8
105

25

8
13
21
1
10
11
14
9
114
37

CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginalis

Locality Indian Creek, Colo.

UMMZ ~~Field No.~~ 177258 Coll. by

Date of Coll. Conversions ~~Measurements~~ by C. F. Reid Date April 22, 1960

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

	1	2	3	4	5	6	7 + 8
	Measurements in thousands of standard length						
Standard L	141 1709	167 1599	122 1820	195 513	191 1524	104	114 + 105
Body D	248	246	254	246	241		
Head L	255	240	254	251	262		
Head D	170	168	172	164	168		
Head W							
Least interorbital bony W	64	66	57	62	63		
Occiput to snout tip	184	168	164	169	178		
Snout L	57	48	—	56	58		
Orbit L	64	60	—	62	68		
Upper Jaw L	135	126	131	128	147		
Dorsal origin to snout tip	510	497	500	503	524		
Depressed dorsal to insertion of adipose	—	—	—		—		
Dorsal origin to anal o							
Dorsal fin basal L	142	144	139	133	126		
Dorsal fin depressed L	213	222	230	200	194		
Adipose fin depressed L	92	84	98	92	89		
Caudal peduncle D	106	114	107	108	115		
Caudal peduncle L	156	168	172	164	152		

There are Rio Seco fish and have been transferred to a new sheet.

CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginalis

Locality Colo., Indian Ck., Costillo Co., Tourinchero Ranch

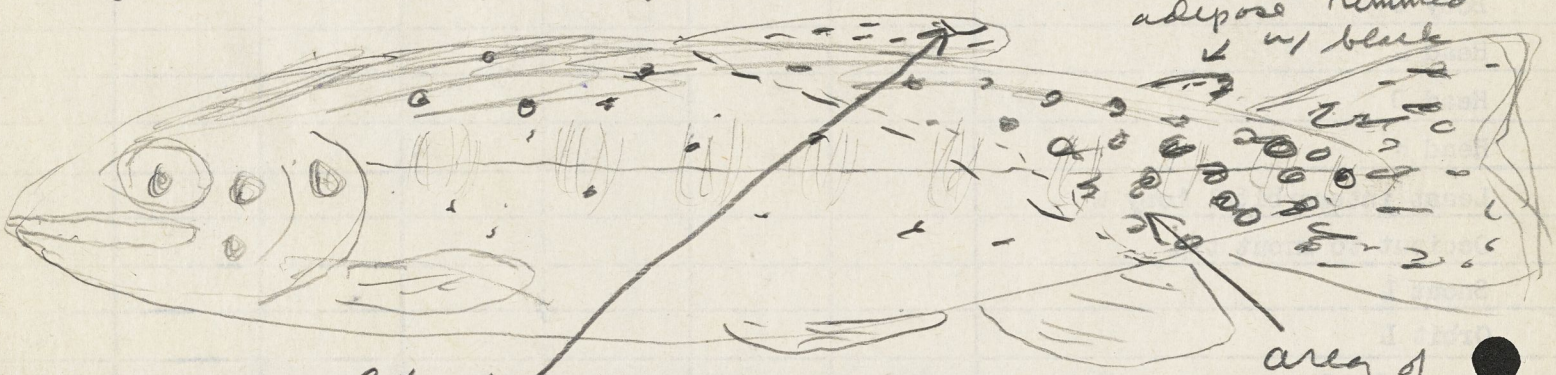
UMMZ ~~Field~~ No. 177258 Coll. by Tanner, Seaman, & Walsh

Date of Coll. VIII:20:58 Measurements by Behnke Date 3:2:60

Jar No. _____ No. of Jars _____ No. of Spec. 10 ~~Specimen No.~~ _____

	1	2	3	4	5	6 (omit)	7 (omit)
Standard L	196	157	107	147	116	123	151
Body D	51	39	26	38	29	31	37
Head L	47	38	27	37	28	36	39
Head D	33	26	18	25	20	22	26
Head W							
Least interorbital bony W	12	10	7	9	7	8	9
Occiput to snout tip	33	27	20	27	20	25	27
Snout L	10	8	/	8	/	7	8
Orbit L	11	10	/	10	/	9	10
Upper Jaw L	25	20	14	20		19	22
Dorsal origin to snout tip	101	80	54	74	57	64	81
Depressed dorsal to insertion of adipose							
Dorsal origin to anal o							
Dorsal fin basal L	24	19	16	19	17	9	23
Dorsal fin depressed L	37	31	24	28	26	30	35
Adipose fin depressed L	17	14	9	13	11	12	13
Caudal peduncle D	22	17	12	17	12	13	18
Caudal peduncle L	33	27	18	26	21	21	24
Vertebrae							
First arch gill rakers (upper)	8	8	7	7	7	7	7
(lower)	11	11	12	11	12	12	12
(total)	19	19	19	18	19	19	19
Basibranchial teeth	3	1	3	3	2	0	5
Branchiostegal rays (right)	9	10	10	10	10	10	10
(left)	10	10	11	10	10	10	11
Pectoral fin rays	~~12~~ abbcr	14	14	14	14	15	14
Pelvic fin rays	~~8~~ tant	9	9	9	8	9	9
Scales in lateral line	118	118	120	120	113	120	121
Scales above lateral line	45	39	41	43	42	40	41
2 rows above	169	173	159	172	168	161	158

These trout tend to be deep bodied, blunt, short head & jaws – with large round or irregular shaped spots concentrated on caudal region above & below line, sparse on rest of body and smaller in size. A few appearing on some specimen on sides of head, none on top or on snout. – dorsal, adipose, caudal fins spotted – not spot on pect., pelv., and –



appears as if was tipped with white, yellow, or orange in life.

posterior gillrakers minute – enlarge on more posterior ceratobranchials – epibranchial portion post. rakers can be felt but not seen.

CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginalis

Locality Colo., Indian Ck., Costillo Co.

UMM 2 ~~Field~~ No. 177258 Coll. by Tanner et al

Date of Coll. Aug. 20-58 Measurements by Behnke Date 3:4:60

Jar No. _____ No. of Jars _____ No. of Spec. 10 ~~Specimen No.~~ _____

	6	7	8	9	10	11	12
Standard L	163	170	116	108	97		
Body D	39	45	29				
Head L	40	42	30				
Head D	27	31	20				
Head W							
Least interorbital bony W	11	12	7				
Occiput to snout tip	28	29	21				
Snout L	9	9	—				
Orbit L	11	10	—				
Upper Jaw L	22	22	15				
Dorsal origin to snout tip	81	84	57				
Depressed dorsal to scales ~~insertion~~ origin of adipose T. 1.1.	28	28	28	26	28		
Dorsal origin to anal o							
Dorsal fin based L	23	23	17				
Dorsal fin depressed L	36	36	27				
Adipose fin depressed L	13	16	10				
Caudal peduncle D	17	19	13				
Caudal peduncle L	27	31	21				
Vertebrae							
First arch gill rakers (upper)	7	8	7	8	9		
(lower)	11	13	12	12	12		
(total)	18	21	19	20	21		
Basibranchial teeth	6	3	3	3			
Branchiostegal rays (right)	10	10	10	10	10		
(left)	11	11	10	11	10		
Pectoral fin rays	14	14	13	14	14		
Pelvic fin rays	9	9	9	9	9		
Scales in lateral line	121	119	116				
Scales above lateral line	40	40	44	41	44		
2 rows above	166	161	148				

CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginialis

Locality Indian Creek, Costillo Co, Trinchero Ranch, Colo.

UMMZ ~~Field No.~~ 177258 Coll. by

Date of Coll. Conversions ~~Measurements~~ by C. F. Reid Date April 25, 1960

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

	1	2	3	4	5		
	Measurements in thousands of standard length						
Standard L	196 |510	157 |637	107 |935	147 |680	116 |862	—	—
Body D	260	248	243	258	250		
Head L	240	242	252	252	241		
Head D	168	166	168	170	172		
Head W							
Least interorbital bony W	61	64	65	61	60		
Occiput to snout tip	168	172	187	184	172		
Snout L	51	51	—	54	—		
Orbit L	56	64	—	68	—		
Upper Jaw L	128	127	131	136			
Dorsal origin to snout tip	515	510	505	503	491		
Depressed dorsal to insertion of adipose							
Dorsal origin to anal o							
Dorsal fin basal L	122	121	150	129	147		
Dorsal fin depressed L	189	197	224	190	224		
Adipose fin depressed L	87	89	84	88	95		
Caudal peduncle D	112	108	112	116	103		
Caudal peduncle L	168	172	168	177	181		

CHARACTER ANALYSIS SHEET

Species Salmo clarkii virginialis

Locality Indian Creek, Costillo Co., Colo.

UMMZ Field No. 177258 Coll. by

Date of Coll. ____ ~~Measurements~~ Conversions by C. F. Reid Date April 26, 1960

Jar No. ____ No. of Jars ____ No. of Spec. ____ Specimen No. ____

Measurements in thousands of standard length

	6	7	8	9	10		
Standard L	163 1613	170 1588	116 1862	108	97		
Body D	239	265	250				
Head L	245	247	259				
Head D	166	182	172				
Head W							
Least interorbital bony W	67	71	60				
Occiput to snout tip	172	171	181				
Snout L	55	53	—				
Orbit L	67	59	—				
Upper Jaw L	135	129	129				
Dorsal origin to snout tip	497	494	491				
Depressed dorsal to insertion of adipose	—	—	—				
Dorsal origin to anal o							
Dorsal fin basal L	141	135	147				
Dorsal fin depressed L	221	212	233				
Adipose fin depressed L	80	94	86				
Caudal peduncle D	104	112	112				
Caudal peduncle L	166	182	181				

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Indian Creek

COLLECTED BY _____ DATE _____

Cat. # _____ ~~Measurements~~ Comm. by Culver DATE _____

Specimen #

	1	2	3	4	5	6	7	8
Total L.								
Standard L.	146	171	174	141	167	122	195	191
Body D	253	263	241	249	246	254	246	241
Head L	247	251	247	255	240	254	251	262
Orbit L								
Upper Jaw L	130	135	126	135	126	131	128	147
Dors. Orig. to Snt. tip	514	491	511	510	497	500	503	524
Dorsal fin basal L								
Dorsal fin depressed L	205	205	213	213	222	230	200	194
Adip. fin depressed L								
Caudal peduncle D	116	117	103	106	114	107	108	115
Caudal peduncle L	171	175	167	156	169	172	164	152
Vertebrae								
1st Arch gillrakers (up)	7	7	7	7	7	7	8	8
(lower)	12	11	13	12	13	13	12	13
(total)	19	18	20	19	20	20	20	21
Branchiostegal rays right	10	10	11	10	10	9	10	10
(left)	10	11	11	11	10	10	10	10
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	40	41	43	38	41	37	40	36
Scales 2 rows above lat.	158	170	186	146	178	159	158	150
Pelvic fin rays	9	8	9	9	9	9	8	9
Pyloric caeca	40	38	39	36	41	40	42	39
Dentition	0	0	3	1	2	3	3	2

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Indian Creek

COLLECTED BY _____ DATE _____

Cat. # _____ ~~Measurements~~ Conv. by Culver DATE _____

Specimen #

	9	10	11	12	13	14	15	16
Total L.								
Standard L.	196	157	107	147	116	163	170	116
Body D	266	248	243	258	250	239	265	256
Head L	240	242	252	252	241	245	247	259
Oroit L								
Upper Jaw L	129	127	131	136	132	135	129	129
Dors. Orig. to Snt. tip	515	516	505	503	481	497	494	491
Dorsal fin basal L								
Dorsal fin depressed L	199	187	224	190	224	221	212	233
Adip. fin depressed L								
Caudal peduncle D	112	108	112	116	103	104	112	112
Caudal peduncle L	168	172	168	172	181	166	182	181
Vertebrae								
1st Arch gillrakers (up)	8	8	7	7	7	7	8	7
(lower)	11	11	12	11	12	11	13	12
(total)	19	19	19	18	19	18	21	19
Branchiostegal rays right	9	10	10	10	10	10	10	10
(left)	10	10	11	10	10	11	11	10
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	45	39	41	43	42	40	40	44
Scales 2 rows above lat.	169	173	159	172	168	166	161	149
Pelvic fin rays	9	9	9	9	8	9	9	9
Pyloric caeca	40	39	38	39	37	41	42	40
Dentition	3	1	3	3	2	6	3	3

Table 5. Standardized Discriminant Function Coefficients of 568 Specimens Representing Pure Populations of *S. c. utah*, *S. c. stomias*, *S. c. pleuriticus*, *S. c. virginalis*, *S. c. henshawi*, *S. c. lewisi*, *S. c. clarki*, an undescribed subspecies from the Humboldt River drainage and *S. gairdneri*, collected from 1872 to 1977.

Morphomeristic Character	Function 1	Function 2	Function 3
Head Length	.13234	1.11088	.71144
Upper Jaw Length	.08265	.01515	.24517
Dorsal Origin to Snout Tip	.07864	.18416	.16302
Dorsal Fin Depressed Length	.32617	.58094	.55733
Caudal Peduncle Length	.31844	.15991	.16530
Caudal Peduncle Depth	.21628	.30135	.47622
Gillrakers Upper	.27121	.79031	.08662
Gillrakers Lower	.18385	.74483	.11222
Gillrakers Total	.14578	*1.11848	.08896
Branchiostegal Rays Right	.01345	.28007	.13639
Branchiostegal Rays Left	.01066	.21811	.01500
Scales Above the Lateral Line	.86237	.10782	.16274
Scales in the Lateral Series	*1.37406	.51448	.00971
Pelvic Fin Rays	.32813	.23698	.46313
Pyloric Caeca	.65390	.25635	.51835
Basibranchial Teeth	.03465	.41120	*.83130

*Characters most responsible for group separation in each function.

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES mt Wheeler cutthroat LOCALITY Hampton creek - conversion

COLLECTED BY _____ DATE 1972

Cat. # _____ Measurements by _____ DATE _____

Specimen # 003

	001	002	003	004	005	006	007	008
Total L.								
Standard L.								
Body D								
✓ Head L	288	281	283	295	283	281	277	280
Oroit L								
Upper Jaw L	135	155	159	163	149	177	138	143
Dors. Orig. to Snt. tip	483	488	442	510	472	474	509	493
Dorsal fin basal L								
✓ Dorsal fin depressed L	262	281	256	255	275	244	250	239
Adip. fin depressed L	118	103	106	091	102	111	111	095
Caudal peduncle D	~~126~~ 127	133	132	122	125	125	129	123
Caudal peduncle L	169	162	141	153	149	162	175	143
Vertebrae								
✓ 1st Arch gillrakers (up)	8	7	6	7	7	7	7	6
✓ (lower)	015	014	014	013	013	014	014	014
✓ (total)	023	021	020	020	020	021	021	020
Branchiostegal rays right	012	011	011	010	011	011	011	010
(left)	011	011	011	010	011	010	010	011
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
✓ Scales above lateral line	045	035	038	041	043	036	037	043
✓ Scales 2 rows above lat.	162	154	155	146	148	150	156	145
Pelvic fin rays								
✓ Pyloric caeca	039	032	035	032	037	033	034	029
✓ Dentition	029	026	017	020	037	027	038	005

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

Mt. Wheeler cutthroat (introduced from Pine Creek)

SPECIES Salmo clarki LOCALITY Hampton Crk, Nev., White Pine Co; 1st stream N. of Hendry's Crk., Mt. Moriah, trib. to Snake Valley

COLLECTED BY Dodge, Behnke, Murphy DATE 1972

Cat. # 1 Measurements by _____ DATE _____

Specimen #

	1	2	3	4 (Teeth on Arch)	5	6	7	8
Total L.	143	162	126	118	153	162	129	174
Standard L.	118	135	113	98	127	135	108	146
Body D								
Head L	34	38	32	29	36	38	30	41
Oroit L								
Upper Jaw L	16	21	18	16	19	24	15	21
Dors. Orig. to Snt. tip	57	66	50	50	60	64	55	72
Dorsal fin basal L								
Dorsal fin depressed L	31	38	29	25	35	33	27	35
Adip. fin depressed L	14	14	12	9	13	15	12	14
Caudal peduncle D	15	18	15	12	16	17	14	18
Caudal peduncle L	20	22	16	15	19	22	19	21

Scales 2 Rows Above $N = 22$, $\bar{Y} = 150.409$ Range = 136-162

Scales Above ll $N = 22$ $\bar{X} = 38.36$ Range = 35-45

Pyloric Caeca $N = 21$ $\bar{Y} = 33.71$ Range = 28-39

dentition $N = 22$ $\bar{Y} = 28.64$ Range = 5-43

gill rakers $N = 22$ $\bar{Y} = 20.77$ Range = 20-23

20	21	22	23
7	10	2	3

VERTEBRAE

$N = 9$ $\bar{X} = 61.6$

60	61	62	63
1	3	4	1

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES mt Wheeler Cutthroat LOCALITY Hampton creek - conversion

COLLECTED BY _____ DATE 1972

Cat. # _____ Measurements by _____ DATE _____

Specimen # 003

	009	010	011	012	013	014	015	016
Total L.								
Standard L.								
Body D								
Head L	278	282	279	301	289	306	281	284
Oroit L								1
Upper Jaw L	144	177	155	183	158	171	155	165
Dors. Orig. to Snt. tip	471	467	503	485	495	495	524	495
Dorsal fin basal L								
Dorsal fin depressed L	211	250	248	250	224	243	242	266
Adip. fin depressed L	096	104	100	110	112	135	106	119
Caudal peduncle D	115	120	131	125	~~112~~ 130	135	126	128
Caudal peduncle L	173	145	162	139	~~130~~ 186	162	165	165
Vertebrae								
1st Arch gillrakers (up)	008	007	008	007	009	008	008	008
(lower)	012	014	014	013	014	013	013	013
(total)	020	021	022	020	023	021	021	021
Branchiostegal rays right	010	011	009	012	011	010	011	011
(left)	010	011	010	012	011	011	011	011
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	039	045	043	038	042	044	039	038
Scales 2 rows above lat.	142	156	141	156	146	154	155	142
Pelvic fin rays								
Pyloric caeca	033	037	032	033	033	032	031	034
Dentition	028	023	025	017	036	013	039	035

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

Mt. Wheeler Cutthroat - Intr. from Pine crk.

SPECIES Salmo Clarkii LOCALITY Hampton crk. Nevada, White Pine Co. 1st stream N. of Hendry's crk, Mt Moriah, trib. to Snake Valley

COLLECTED BY 1 DATE

Cat. # Measurements by DATE

Specimen #

	9	10	11	12	Teeth on Arch 13	14	15	16
Total L.	122	149	155	165	126	135	128	132
Standard L.	104	124	129	136	107	111	105	109
Body D								
Head L	29	35	36	41	31	34	29	31
Oroit L								
Upper Jaw L	15	22	20	25	17	19	16	18
Dors. Orig. to Snt. tip	49	58	65	66	53	55	54	54
Dorsal fin basal L								
Dorsal fin depressed L	22	31	32	34	24	27	25	29
Adip. fin depressed L	10	13	13	15	12	15	11	13
Caudal peduncle D	12	15	17	17	14	15	13	14
Caudal peduncle L	18	18	21	19	20	18	17	18

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES mt wheeler Cutthroat LOCALITY Hampton creek - conversion

COLLECTED BY _____ DATE 1972

Cat. # _____ Measurements by _____ DATE _____

Specimen # 003

	017	018	019	020	021	022		
Total L.								
Standard L.								
Body D								
Head L	311	281	298	303	306	316		290.136
Oroit L								
Upper Jaw L	161	161	157	163	153	167		158.59
Dors. Orig. to Snt. tip	516	504	508	516	518	521		494.954 ~~574~~
Dorsal fin basal L								
Dorsal fin depressed L	268	257	263	229	262	248		251.045
Adip. fin depressed L	107	095	114	098	109	105		106.681
Caudal peduncle D	118	114	131	131	138	130		126.727
Caudal peduncle L	161	171	166	172	160	149		168.454
Vertebrae	62	62	62	61	62	62		
1st Arch gillrakers (up)	8	8	7	7	8	8		
(lower)	013	015	014	013	014	013		
(total)	021	023	021	020	022	021	20.09	
Branchiostegal rays right	010	011	011	010	011	011		
(left)	010	011	011	010	011	011	20.45	
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line							40.09	
Scales above lateral line	037	038	038	039	043	041	~~32.36~~	
Scales 2 rows above lat.	136	157	144	154	156	154	143.86	
Pelvic fin rays								
Pyloric caeca	028	039	034	031	035	037	32.09	
Dentition	043	028	030	032	035	047	27.37	

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

Mt. Wheeler Cutthroat - intro. from pine crk.

SPECIES Salmo clarkii LOCALITY Hampton Crk. Nevada, white Pine Co. 1st stream N. of Hendry's crk. Mt. Moriah - trib to Snake Valley

COLLECTED BY _____ DATE _____

Cat. # 1 Measurements by _____ DATE _____

Specimen #

	17	18	19	20	21	22		
Total L.	111	122	137	146	162	190		
Standard L.	93	105	114	122	137	161		
Body D								
Head L	29	30	34	37	42	51		
Oroit L								
Upper Jaw L	15	17	18	20	21	27		
Dors. Orig. to Snt. tip	48	53	58	63	71	84		
Dorsal fin basal L								
Dorsal fin depressed L	25	27	30	28	36	40		
Adip. fin depressed L	10	10	13	12	15	17		
Caudal peduncle D	11	12	15	16	19	21		
Caudal peduncle L	15	18	19	21	22	24		

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Salmo clarki; humboldtensis LOCALITY Gance Crk. /trib. to N. Fork Humboldt R. Humboldt drainage / Elko Co. / Nev.

COLLECTED BY Pat Coffin DATE 27 July 1972

Cat. # 31 Measurements by Murphy & Trail DATE 1973

Specimen #	12 Total	1	2	3	4	5	6	7	8
Total L.		210	235	252	112	210	194	186	202
Standard L.		177	200	213	95	182	164	155	173
Body D									
Head L		49	55	57	29	52	48	47	48
Oroit L									
Upper Jaw L		26	32	32	14	27	26	25	27
Dors. Orig. to Snt. tip		88	98	106	47	90	76	75	83
Dorsal fin basal L									
Dorsal fin depressed L		46	47	48	25	45	45	40	46
Adip. fin depressed L		14	16	18	7	13	14	14	15
Caudal peduncle D		19	21	21	11	19	18	17	18
Caudal peduncle L		26	30	32	15	26	23	22	27
Vertebrae									
1st Arch gillrakers (up)		7	9	7	7	8	8	8	8
(lower)		12	13	13	14	14	13	13	14
(total)		19	22	20	21	22	21	21	22
Branchiostegal rays right		9	11	10	10	10	10	10	10
(left)		10	11 (injured)	10	11	10	10	10	10
Dorsal rays									
Anal rays									
Pectoral fin rays									
Scales in lateral line									
Scales above lateral line		33 32	35	39	33	36	34	36	34
Scales 2 rows above lat.		135	150 49 50 51	136	139	142	124	128	122 21 23
Pelvic fin rays		9	9	9	9	9	9	9	9
Pyloric caeca		48	54	56	51	46	52	52	59
Dentition		4	10	7	5	13	12	12	8

VERTEBRAE

N= 8

$\bar{x} = 61.9$

61	62	63
2	5	1

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Salmo clarkii humboldtensis LOCALITY Gance Crk. /trib. to N. Fork Humboldt R. Humboldt drainage /Elko Co. /Nev.

COLLECTED BY Pat Coffin DATE 27 July 1972

Cat. # 31 Measurements by Murphy & Trail DATE 1973

Specimen #	9	10	11	12				
Total L.	121	162	160	119				
Standard L.	103	136	135	100				
Body D								
Head L	27	39	37	29				
Oroit L								
Upper Jaw L	12	20	20	15				
Dors. Orig. to Snt. tip	46	67	64	45				
Dorsal fin basal L								
Dorsal fin depressed L	26	32	34	29				
Adip. fin depressed L	8	11	10	9				
Caudal peduncle D	11	13	14	10				
Caudal peduncle L	17	23	23	15				
Vertebrae								
1st Arch gillrakers (up)	7	8	7	8				
(lower)	13	13	13	14				
(total)	20	21	20	22				
Branchiostegal rays right	10	11	10	10				
(left)	11	11	10	11				
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	32	33	34	36				
Scales 2 rows above lat.	142	133	132	133				
Pelvic fin rays	9	9	9	9				
Pyloric caeca	63	47	48	53				
Dentition	7	8	5	3				

	n.	Range	$\bar{X}$
Vertebrae	8	61 | 62 | 63 2 | 5 | 1	61.9
Gill rakers	12		20.91
Branchiostegal rays			
R	12		10.08
L	12		10.41
Scales above LL	12		34.58
Scales, lat. series	12		134.66
Pyloric caeca	12		52.41
Dentition	12		7.83

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Sc humboldtensis LOCALITY Gance Crk

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	1	2	3	4	5	6	7	8
Total L.								
Standard L.								
Body D								
Head L	277	275	268	305	286	293	303	277
Orbit L								
Upper Jaw L	147	160	150	147	148	159	161	156
Dors. Orig. to Snt. tip	497	490	498	495	495	463	484	480
Dorsal fin basal L								
Dorsal fin depressed L	260	235	225	263	247	274	258	266
Adip. fin depressed L	079	080	085	074	071	085	090	087
Caudal peduncle D	107	105	099	116	104	110	110	104
Caudal peduncle L	147	150	150	158	143	140	142	156
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY _____

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	9	10	11	12				
Total L.								
Standard L.								
Body D								
Head L	262	287	274	290				
Orbit L								
Upper Jaw L	117	147	148	150				
Dors. Orig. to Snt. tip	447	493	474	450				
Dorsal fin basal L								
Dorsal fin depressed L	252	235	252	290				
Adip. fin depressed L	078	081	074	090				
Caudal peduncle D	107	096	104	100				
Caudal peduncle L	165	169	170	150				
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Gama Cek / trib to N. Fork Humboldt R.

COLLECTED BY _____ DATE _____

Cat. # 31 Measurements by _____ DATE _____

Specimen #

	(Range)			$\overline{X}$				
Total L.	(112	- 252)		180.3				
Standard L.	(95	- 213)		152.8				
Body D								
Head L	(27	- 57)		43.1				
Orbit L								
Upper Jaw L	(12	- 32)		23				
Dors. Orig. to Snt. tip	(46	- 106)		73.8				
Dorsal fin basal L								
Dorsal fin depressed L	(25	- 48)		38.6				
Adip. fin depressed L	(7	- 18)		12.4				
Caudal peduncle D	10	- 21		14.3				
Caudal peduncle L	15	- 32		23.3				
Vertebrae								
1st Arch gillrakers (up)	(7	- 9)		7.7				
(lower)	(12	- 14)		13.3				
(total)	(19	- 22)		20.9				
Branchiostegal rays right	(9	- 11)		10.1				
(left)	(10	- 11)		10.4				
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	(32	- 39)		34.6				
Scales 2 rows above lat.	124	- 150		134.7				
Pelvic fin rays								
Pyloric caeca	(46	- 63)		52.4				
Dentition	(3	- 13)		7.8				

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

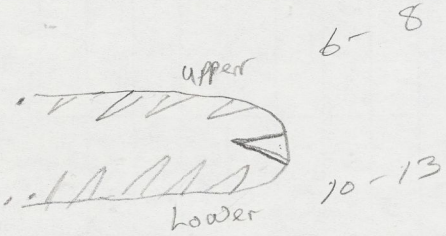
SPECIES S. C. Stomias LOCALITY Huerfano Drainage

COLLECTED BY J. Vayhinge & L. Borow DATE 9-12-76

Cat. # Measurements by Hickman-Culver DATE March 1977

Specimen # 1-15 So. Huerfano Crk. 16-30 Cascade Crk.

	1	2	3	4	5	6	7	8
Total L.	200	204	199	176	179	157	181	146
Standard L.	167	168	167	144	149	132	152	123
Body D	45	45	44	38	39	31	37	32
Head L	45	48	42	38	38	32	42	30
Oroit L	10	11	10	9	9	8	10	8
Upper Jaw L	26	30	24	23	20	17	25	17
Dors. Orig. to Snt. tip	86	92	83	76	75	63	77	60
Dorsal fin basal L	27	27	25	24	24	21	23	18
Dorsal fin depressed L	38	45	39	33	35	30	33	26
Adip. fin depressed L	18	16	17	14	15	13	15	12
Caudal peduncle D	19	20	18	18	18	15	17	14
Caudal peduncle L	25	26	25	22	23	20	23	20
Vertebrae								
1st Arch gillrakers (up)	7	8	6	7	7	8	7	7
(lower)	12?	12	13	12	12	12	12	12
(total)	19	20	19	19	19	20	19	19
Branchiostegal rays right	11	10	11	11?	10	11	10	10
(left)	11	10	11	11	11	12	11	10
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	49	43	44	42	44	43	44	49
Scales 2 rows above lat.	195	188	191	192	190	180	189	200
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	30	34	44	46	48	43	37	43
Dentition	9	1	2	7	5	4	3	11
Anal Fin depress length	29	33	29	27	26	23	26	22


upper
6-8
10-13
Lower

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. c. stomias LOCALITY Huerfano Drainage

COLLECTED BY J. Vahinger & L. Borow DATE 9-12-76

Cat. # _____ Measurements by Nickman-Culver DATE March 1977

Specimen #	9	10	11	12	13	14	15	16
Total L.	196	165	183	220	170	145	179	169
Standard L.	163	138	155	184	144	120	153	134
Body D	36	34	37	49	32	29	36	35
Head L	43	35	38	53	35	29	38	35
Oroit L	11	9	10	12	9	8	10	9
Upper Jaw L	26	18	21	33	19	15	21	19
Dors. Orig. to Snt. tip	83	68	72	101	70	56	73	67
Dorsal fin basal L	27	21	25	26	22	15	24	21
Dorsal fin depressed L	37	31	34	41	33	29	36	33
Adip. fin depressed L	13	11	16	15	11	13	13	12
Caudal peduncle D	18	15	18	22	15	14	18	15
Caudal peduncle L	24	20	25	26	24	20	24	22
Vertebrae								
1st Arch gillrakers (up)	6	8	8	7	8	7	8	7
(lower)	11	11	14	12	13	12	12	12
(total)	17	19	22	19	21	19	20	19
Branchiostegal rays right	10	10	11	10	10	10	10	10
(left)	11	10	12	11	11	10	10	11
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	42	42	45	49	44	40	39	43
Scales 2 rows above lat.	198	163	199	187	210	190	196	183
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	35	33	41	33	38	37	34	30
Dentition	5	4	3	13	6	8	7	8
	30	23	25	32	22	21	27	25

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. C. Stomias LOCALITY Huerfano Drainage

COLLECTED BY J. Vahinger & L. Borow DATE 9-12-76

Cat. # _____ Measurements by Hickman-Culver DATE March 1977

Specimen #	17	18	19	20	21	22	23	24
Total L.	153	156	166	161	145	145	140	165
Standard L.	125	131	139	134	120	122	114	135
Body D	30	32	33	32	30	30	27	28
Head L	31	33	35	33	31	31	30	36
Orbit L	8	9	10	9	8	8	8	9
Upper Jaw L	18	18	20	18	16	18	17	21
Dors. Orig. to Snt. tip	63	67	70	62	57	63	58	67
Dorsal fin basal L	17	17	23	21	18	18	20	20
Dorsal fin depressed L	28	29	32	31	29	25	28	26
Adip. fin depressed L	10	11	12	13	14	13	10	13
Caudal peduncle D	15	15	16	15	13	14	12	14
Caudal peduncle L	20	20	20	22	21	20	18	23
Vertebrae								
1st Arch gillrakers (up)	7	6	7	7	8	9	5	7
(lower)	13	11	11	11	13	12	13	11
(total)	20	17	18	18	21	21	18	18
Branchiostegal rays right	10	10	10	10	11	10	11	10
(left)	11	11	10?	10	11	11	11	10
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	47	42	44	46	41	49	45	43
Scales 2 rows above lat.	198	200	201	198	179	199	185	204
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	35	36	38	38	37	45	37	42
Dentition	7	11	10	9	13	9	4	11
anal Fin depressed L	22	22	26	22	20	20	21	23

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. c. stomias LOCALITY Huerfano Drainage

COLLECTED BY J. Vahinger & L. Borow DATE 9-12-76

Cat. # _____ Measurements by Hickman-Culver DATE March 1977

Specimen #	25	26	27	28	29	30	Range Low	Range Hi	mean
Total L.	204	172	220	158	160	112			
Standard L.	170	143	185	130	132	92			
Body D	46	35	44	32	34	24			
Head L	43	37	48	31	33	23			
Orbit L	10	9	12	9	9	6			
Upper Jaw L	28	21	26	20	19	13			
Dors. Orig. to Snt. tip	92	73	97	66	64	47			
Dorsal fin basal L	24	23	28	19	21	14			
Dorsal fin depressed L	34	32	39	28	31	21			
Adip. fin depressed L	21	12	18	13	13	9			
Caudal peduncle D	20	17	21	16	15	11			
Caudal peduncle L	26	20	26	20	20	15			
Vertebrae									
1st Arch gillrakers (up)	7	7	7	7	7	6	5	9	7.10
(lower)	11	12	12	12	13	12	11	14	12.30
(total)	18	19	19	19	20	18	17	22	19.40
Branchiostegal rays right	10	11	10	11	10	10	10	11	10.37
(left)	10	12	11	11	11	11	10	12	10.80
Dorsal rays									
Anal rays									
Pectoral fin rays									
Scales in lateral line									
Scales above lateral line	47	44	45	44	42	46	39	49	44.23
Scales 2 rows above lat.	207	191	204	190	182	183	163	210	192.4
Pelvic fin rays	8	9	9	9	9	9	8	9	8.97
Pyloric caeca	38	37	43	48	42	42	30	48	38.8
Dentition	10	7	21	5	6	13	1	21	7.23
Anal Fin depressed	30	24	31	23	23	15			

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S.C Stomias LOCALITY Huerfano Drainage

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by Culver DATE _____

conv.

Specimen #

	1	2	3	4	5	6	7	8
Total L.								
Standard L.								
Body D	269	268	263	264	262	235	243	260
Head L	269	286	251	264	255	242	276	244
Oroit L	060	065	060	063	060	061	066	065
Upper Jaw L	156	179	144	160	134	129	164	138
Dors. Orig. to Snt. tip	515	548	497	528	503	427	507	488
Dorsal fin basal L	162	161	150	167	161	159	151	146
Dorsal fin depressed L	228	268	234	229	235	227	217	211
Adip. fin depressed L	108	095	102	097	101	098	099	098
Caudal peduncle D	114	119	108	125	121	114	112	114
Caudal peduncle L	150	155	150	153	154	152	151	163
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								
Anal fin depressed	174	196	174	188	174	174	171	179

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. C. stomias LOCALITY Huerfano Drain.

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by Culver DATE _____

Specimen # Conv.

	9	10	11	12	13	14	15	16
Total L.								
Standard L.								
Body D	221	246	239	266	222	242	235	261
Head L	264	254	245	288	243	242	248	261
Orbit L	067	065	065	065	063	067	065	067
Upper Jaw L	160	130	135	179	132	125	137	142
Dors. Orig. to Snt. tip	509	493	465	549	495	467	477	506
Dorsal fin basal L	166	152	161	141	153	125	157	157
Dorsal fin depressed L	227	225	219	223	229	242	235	246
Adip. fin depressed L	080	080	103	082	076	108	085	090
Caudal peduncle D	110	109	116	120	104	117	118	112
Caudal peduncle L	147	145	161	141	167	167	157	164
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								
Anal fin depressed L.	184	167	161	174	153	175	176	187

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Huerfano Drain

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by Culver DATE _____

Specimen # Carr,

	17	18	19	20	21	22	23	24
Total L.								
Standard L.								
Body D	240	244	237	239	256	246	237	207
Head L	248	252	252	246	258	254	263	267
Oroit L	064	069	072	067	067	066	070	067
Upper Jaw L	144	137	144	134	133	148	149	156
Dors. Orig. to Snt. tip	504	511	504	463	425	516	509	496
Dorsal fin basal L	136	130	165	157	150	148	175	148
Dorsal fin depressed L	224	221	230	231	242	205	246	193
Adip. fin depressed L	080	084	085	097	117	107	088	096
Caudal peduncle D	120	115	115	112	108	115	105	104
Caudal peduncle L	160	153	144	164	175	164	158	170
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								
	176	168	187	164	167	164	184	170

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Huerfano Drain.

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by Culver DATE _____

Specimen #	25	26	27	28	29	30	Range Low	Range Hi	mean
Total L.									
Standard L.									
Body D	271	245	238	246	258	261	207	271	247.17
Head L	253	259	259	238	250	250	238	288	256.03
Oroit L	059	063	065	069	068	065	059	072	65.17
Upper Jaw L	165	147	141	154	144	141	125	179	146.03
Dors. Orig. to Snt. tip	541	510	524	508	485	511	463	549	502.17
Dorsal fin basal L	141	161	151	146	159	152	125	175	152.93
Dorsal fin depressed L	200	224	211	215	235	228	200	268	226.67
Adip. fin depressed L	124	084	097	100	098	098	076	124	95.23
Caudal peduncle D	118	119	114	123	114	120	104	125	114.5
Caudal peduncle L	153	140	141	154	152	163	140	167	155.6
Vertebrae									
1st Arch gillrakers (up)									
(lower)									
(total)									
Branchiostegal rays right									
(left)									
Dorsal rays									
Anal rays									
Pectoral fin rays									
Scales in lateral line									
Scales above lateral line									
Scales 2 rows above lat.									
Pelvic fin rays									
Pyloric caeca									
Dentition									
Anal Fin depress.	170	168	168	177	174	163	153	196	173.57

Colo Riv.

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

Species Salmo clarki Locality Hd. Waters Colo River; near Lulu City

Collected by Nehring, Trojnar & Wernsman Date Aug 12, 1970

Cat. # Measurements by Date

Specimen #	1	2	3	above Ditch 4	Fine spotted (hole in stomach) 5	6	7	8
Total L.	248	255	234	225	216	222	248	239
Standard L	211	216	197	186	181	194	211	198
Body D								
Head L	54	54	48	46	48	45	58	56
Orbit L								
Upper Jaw L	28	30	26	26	27	25	34	33
Dors. Orig. to Snt. tip								
Dorsal fin basal L								
Dorsal fin depressed L	44	43	41	37	43	41	48	45
Adip. fin depressed L	20	21	17	22	17	19	23	19
Caudal peduncle D								
Caudal peduncle L								
Vertebrae				63				
1st Arch gill rakers (up)	7	7	9	7	9	8	8	7
(lower)	12	12	12	12	13	12	13	11
(total)	19	19	21	19	22	20	21	18
Branchiostegal rays right	10	9	10	11	10	10	10	10
(left)	11	9	11	10	10	11	10	10
Dorsal Rays								
Anal rays								
Pectoral fin rays								
Pelvic fin rays	9	8	9	9	9	10?	9	9?
Scales in lateral line								
Scales above lateral line	44	49	44	47	48	46?	45	45??
Scales 2 rows above lat.	192	226	188	197	196	195	191	187
Scales 2 rows below lat.								
(around)								
Pyloric caeca	43	36	35	29	41	35	41	37
Dentition	6	14	10	7	9	8	19	33
Anal fin base								
Anal fin depressed								
Dors. Origin - caudal								
P fin - snout								
P fin caudal								
Pre orbital - Post orbital								

Vertebrae

61	62	63
3	7	4

N = 14 $\bar{x}$ = 62.1

Gill rakers

18	19	20	21	22	23
1	2	3	2	1	1

N = 10
$\bar{x}$ = 20.3

Branchiostegal rays R N = 10 Range = 9-11 $\bar{x}$ = 10.2
L N = 10 Range = 9-11 $\bar{x}$ = 10.5

Pelvic fin rays N = 10 Range = 8-10 $\bar{x}$ 9.0

Pyloric caeca N = 10 Range = 32-43 $\bar{x}$ = 37.1

Scales
Above l l N = 10 Range = 44-49 $\bar{x}$ = 45.7
lat. series N = 10 Range = 187-226 $\bar{x}$ = 195.1

Dentition N = 10 Range = 6-33 $\bar{x}$ = 14.0

Colo. R. Basin

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

Species *Salmo clarki* Locality *Hi waters Colo. River near Lulu City*

Collected by *Nehring, Trojnar & Wernsman* Date *Aug 12, 1970*

Cat. # _____ Measurements by _____ Date _____

Specimen #	9	10	11					
Total L.	207	178	261					
Standard L	172	152	223					
Body D								
Head L	44	37	60					
Orbit L								
Upper Jaw L	25	20	34					
Dors. Orig. to Snt. tip								
Dorsal fin basal L								
Dorsal fin depressed L	39	36	45					
Adip. fin depressed L	16	14	22					
Caudal peduncle D								
Caudal peduncle L								
Vertebrae								
1st Arch gill rakers (up)	8	9	8					
(lower)	12	14	12					
(total)	20	23	20					
Branchiostegal rays right	11	11	11					
(left)	11	11	11					
Dorsal Rays								
Anal rays								
Pectoral fin rays								
Pelvic fin rays	9	9	9					
Scales in lateral line								
Scales above lateral line	45	45	46?					
Scales 2 rows above lat.	192	197	187					
Scales 2 rows below lat.								
(around)								
Pyloric caeca	32	37	34					
Dentition	14	10	17					
Anal fin base								
Anal fin depressed								
Dors. Origin - caudal								
P fin - snout								
P fin caudal								
Pre orbital - Post orbital								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Hd water Colo river

COLLECTED BY _____ DATE _____

Cat. # _____ ~~Measurements~~ Conv. by Culver DATE _____

Specimen #

	1	2	3	4	6	7	8	9
Total L.								
Standard L.	211	216	197	181	194	211	198	172
Body D								
Head L	256	256	244	265	232	275	283	256
Orbit L								
Upper Jaw L	133	139	132	149	129	161	167	145
Dors. Orig. to Snt. tip	493	487	494	494	506	486	448	459
Dorsal fin basal L								
Dorsal fin depressed L	209	199	208	238	211	227	227	227
Adip. fin depressed L								
Caudal peduncle D	101	107	104	104	096	101	096	101
Caudal peduncle L	128	143	143	122	130	130	128	121
Vertebrae								
Ist Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY _____

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	10	11						
Total L.								
Standard L.	152	223						
Body D								
Head L	243	269						
Orbit L								
Upper Jaw L	132	152						
Dors. Orig. to Snt. tip	496	479						
Dorsal fin basal L								
Dorsal fin depressed L	237	202						
Adip. fin depressed L								
Caudal peduncle D	121	096						
Caudal peduncle L	122	133						
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. clarki humboldtensis LOCALITY FRAZER CRK. ELKO CO. NEVADA HUMBOLDT R. DRAINAGE

COLLECTED BY PAT COFFIN DATE NOV. 11, 1971

Cat. # _____ Measurements by ROSLOE DATE NOV. 1971

Specimen #

	1	2	3	4	5	6	7	8
Total L.	218	263	215	225	197	221	186	175
Standard L.	183	225	180	185	164	183	155	147
Body D	40	49	42	45	41	47	40	44
Head L	55	70	50	54	47	53	43	40
Orbit L	13	14	12	12	12	12	11	11
Upper Jaw L	31	43	29	30	26	31	23	22
Dors. Orig. to Snt. tip	98	114	94	93	89	100	83	74
Dorsal fin basal L	23	23	23	25	23	23	24	20
Dorsal fin depressed L	39	39	38	40	35	39	37	33
Adip. fin depressed L	16	15	14	13	11	14	13	12
Caudal peduncle D	19	23	19	20	18	20	16	14
Caudal peduncle L	29	36	29	29	25	28	21	22
Vertebrae	ON BACK							
1st Arch gillrakers (up)	7	7	8	7	8	7	8	8
(lower)	13	13	12	13	13	13	13	13
(total)	20	20	20	20	21	20	21	21
Branchiostegal rays right	9	10	11	10	9	11	10	10
(left)	10	11	11	10	9	10	10	11
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	38	32	40	37	37	37	38	33
Scales 2 rows above lat.	162	143	151	161	142	160	150	134
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	60	57	62	59	72	58	56	53
Dentition	18	8	14	14	7	6	8	0

VERTEBRAE - N=10 $\bar{X}$=61.1

60	61	62
3	3	4

GILL RAKERS N=10 $\bar{X}$=20.6

20	21	22
5	4	1

PELVIC FIN RAYS N=10 $\bar{X}$=9

PYLORIC CAECA N=10 $\bar{X}$=58.6 RANGE 53 - 62 (+72)

DENTITION N=10 $\bar{X}$=8.7

0-5	6-10	11-15	16-20
2	5	2	1

SCALES 2 ROWS ABOVE LAT. LINE
N=10 $\bar{X}$=147.5 RANGE 134-162

SCALES ABOVE LAT. LINE
N=10 $\bar{X}$=36.3 RANGE 32-40

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. clarki humboldtensis LOCALITY FRAZER CRK, ELKO CO, NEVADA HUMBOLDT R. DRAINAGE

COLLECTED BY PAT COFFIN DATE NOV. 11, 1971

Cat. # _____ Measurements by ROSLDE DATE NOV. 1971

Specimen #	9	10						
Total L.	220	138						
Standard L.	188	115						
Body D	45	27						
Head L	55	32						
Oroit L	11	9						
Upper Jaw L	33	17						
Dors. Orig. to Snt. tip	98	58						
Dorsal fin basal L	23	17						
Dorsal fin depressed L	36	25						
Adip. fin depressed L	16	9						
Caudal peduncle D	19	11						
Caudal peduncle L	27	19						
Vertebrae								
1st Arch gillrakers (up)	7	9						
(lower)	14	13						
(total)	21	22						
Branchiostegal rays right	10	10						
(left)	10	10						
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	37	34						
Scales 2 rows above lat.	136	136						
Pelvic fin rays	9	9						
Pyloric caeca	53	56						
Dentition	5	7						

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Sc humboldtensis LOCALITY Frazer Crk.

COLLECTED BY DATE 10/11/71

Cat. # Measurements by DATE 10/71

Specimen #

	1	2	3	4	5	6	7	8
Total L.								
Standard L.								
Body D	219	218	233	243	256	257	258	299
Head L.	301	311	278	292	287	290	277	272
Orbit L	071	062	067	065	073	066	071	075
Upper Jaw L	169	191	161	162	159	169	148	158
Dors. Orig. to Snt. tip	536	507	522	503	543	546	535	503
Dorsal fin basal L	126	102	128	135	140	126	155	136
Dorsal fin depressed L	213	173	211	216	213	213	239	224
Adip. fin depressed L	087	067	078	070	067	077	084	082
Caudal peduncle D	104	102	106	108	110	109	103	095
Caudal peduncle L	049	160	161	157	152	153	135	150
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY _____

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	9	10						
Total L.								
Standard L.								
Body D	239	235						
Head L	293	278						
Orbit L	059	078						
Upper Jaw L	176	148						
Dors. Orig. to Snt. tip	521	504						
Dorsal fin basal L	122	148						
Dorsal fin depressed L	191	217						
Adip. fin depressed L	085	078						
Caudal peduncle D	101	096						
Caudal peduncle L	144	165						
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Frazer Crk. Elko Co., Nevada Humboldt R. Drainage

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	(Range)			$\bar{X}$				
Total L.	(138 - 263)			205.8				
Standard L.	(115 - 225)			172.5				
Body D	(27 - 49)			42				
Head L.	(32 - 70)			49.9				
Orbit L	(9 - 14)			11.7				
Upper Jaw L	(17 - 43)			29.5				
Dors. Orig. to Snt. tip	(58 - 114)			90.1				
Dorsal fin basal L	(17 - 25)			22.4				
Dorsal fin depressed L	(25 - 40)			36.1				
Adip. fin depressed L	(9 - 16)			13.3				
Caudal peduncle D	(11 - 23)			17.9				
Caudal peduncle L	(19 - 36)			26.5				
Vertebrae								
1st Arch gillrakers (up)	(7 - 9)			7.6				
(lower)	(12 - 14)			13				
(total)	(20 - 22)			20.6				
Branchiostegal rays right	(9 - 11)			10.0				
(left)	(9 - 11)			10.2				
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	(32 - 40)			36.3				
Scales 2 rows above lat.	(134 - 162)			147.5				
Pelvic fin rays	(9)			9				
Pyloric caeca	(53 - 72)			58.6				
Dentition	(0 - 18)			8.7				

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Como Creek

COLLECTED BY _____ DATE _____

Cat. # _____ ~~Measurements~~ Conversions by Calvert DATE _____

Specimen #	1	2	3	4	5	6	7	8
	7	1	5	3	2	6	4	
Total L.								
Standard L.	106	166	114	158	164	151	121	160
Body D	264							
Head L	264	265	263	266	262	258	291	261
Orbit L								
Upper Jaw L	141	150	149	152	140	179	165	148
Dors. Orig. to Snt. tip	496	500	500	506	500	503	512	498
Dorsal fin basal L								
Dorsal fin depressed L	255	235	272	256	250	245	248	261
Adip. fin depressed L								
Caudal peduncle D	123	126	132	120	116	113	124	121
Caudal peduncle L	179	163	167	165	165	166	173	170
Vertebrae								
1st Arch gillrakers (up)	6	9	8	7	7	8	8	9
(lower)	11	12	12	11	11	11	11	12
(total)	17	21	20	18	18	19	19	21
Branchiostegal rays right	10	10	10	10	10	10	10	10
(left)	11	11	10	10	11	10	11	11
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	48	47	49	51	47	49	46	47
Scales 2 rows above lat.	190	197	188	202	200	187	205	179
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	31	27	31	25	29	32	33	31
Dentition	6	7	8	3	4	10	8	10

3405

3-12 6 894 24 42 1893 174-205

N=18

Gillrakers	Curve	Scales above	Scales in Series	basit
~~59-62~~	~~26~~		174-205	
17-21	24-42	46-53	~~168-203~~	3-12
19	29.4	48.4	189.3	6
				1 w/o teeth

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES 59 49 1 2 3 LOCALITY Como Creek

COLLECTED BY DATE

Cat. # Measurements by DATE

Specimen #

	9	10	11	12	13	14	15	16
Total L.								
Standard L.	164	164	158	121	114	106	162	156
Body D								
Head L	262	260	281	263	258	258	264	262
Orbit L								
Upper Jaw L	152	165	149	179	141	149	179	150
Dors. Orig. to Snt. tip	512	500	503	490	506	510	501	498
Dorsal fin basal L								
Dorsal fin depressed L	272	245	255	213	258	228	248	250
Adip. fin depressed L								
Caudal peduncle D	113	123	104	126	120	116	120	117
Caudal peduncle L	179	158	163	165	173	163	165	170
Vertebrae								
1st Arch gillrakers (up)	7	7	8	6	8	8	7	7
(lower)	12	11	12	11	12	12	12	12
(total)	19	18	20	17	20	20	19	19
Branchiostegal rays right	10	10	10	10	10	10	10	10
(left)	10	11	11	10	10	11	11	10
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	48	49	46	48	47	52	49	47
Scales 2 rows above lat.	190	183	201	181	185	194	174	179
Pelvic fin rays								
Pyloric caeca	29	26	24	29	28	25	42	30
Dentition	5	4	6	9	12	5	5	7

49.4 46-53

343

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Como Creek

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	17	18						
Total L.								
Standard L.	156	162						
Body D								
Head L	263	264						
Orbit L								
Upper Jaw L	153	152						
Dors. Orig. to Snt. tip	504	501						
Dorsal fin basal L	251							
Dorsal fin depressed L	251	246						
Adip. fin depressed L	164							
Caudal peduncle D	123	129						
Caudal peduncle L	164	160						
Vertebrae								
1st Arch gillrakers (up)	9	8						
(lower)	11	11						
(total)	19	19						
Branchiostegal rays right	10	10						
(left)	10	11						
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	53	49						
Scales 2 rows above lat.	181	184						
Pelvic fin rays	9	9						
Pyloric caeca	30	27						
Dentition	5	3						

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. C. LOCALITY Pilot Peak Range Donner Creek (South of Bettridge)

COLLECTED BY Hickman & Duff DATE June - 2 - 1977

Cat. # Measurements by Hickman Behnke DATE June 10 1977

Specimen # 17

	1 95gm	2 44gm	3 23gm	4 10gm	5	6	7	8
Total L.	250	198	130	95	196	194	158	144
Standard L.	208	159	116	74	166	169	136	121
Body D								
Head L	57	45	31	22	51	47	38	36
Orbit L								
Upper Jaw L	31	24	17	11	31	28	22	19
Dors. Orig. to Snt. tip	106	81	55	41	85	88	70	64
Dorsal fin basal L	24	19	13	9	22	21	15	15
Dorsal fin depressed L	36	29	23	16	36	33	27	22
Adip. fin depressed L	15	12	8	5	12	13	10	10
Caudal peduncle D	19	16	10	8	15	15	14	14
Caudal peduncle L	31	25	17	13	26	24	20	18
Vertebrae								
1st Arch gillrakers (up)	10	11	10	10	10	10	10	10
(lower)	17	16	16	17	15	15	15	14
(total)	27	27	26	27	25	25	25	24
Branchiostegal rays right	11	11	10	10	10	10	10	9
(left)	12	11	11	10	11	11	11	10
Dorsal rays								
Anal rays	12	14			12		13	13
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	38	36	38	36	38	38	35	35
Scales 2 rows above lat.	148	152	137	134	148	145	147	137
Pelvic fin rays	9	9	9	9	8	9	9	9
Pyloric caeca	68	66	60	58	61	57	72	58
Dentition	10	9	4	7	8	4	2	3
Anal fin length	34	27	18	14	27	26	21	21
							my	
							36	
							147	
	♀	♂	♀	?	♂	♀	♂	♂

73
69
62
75
77
72
58
66
70

4 | 69.1
3 | 9
622 | 19

500 | 62.5

66.0

5.4
17 | 92
85
70

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. C LOCALITY Pilot Peak Range Donner Creek (South of Bett-ridge

COLLECTED BY Hickman + Duff DATE June 1977

Cat. # _____ Measurements by _____ DATE Aug 1977

Specimen # 17

	9	10	11	12	13	14	15	16	17
Total L.	175	150	153	128	120	127	111	115	98
Standard L.	149	127	131	110	104	109	94	98	77
Body D									
Head L	44	36	35	32	30	31	27	28	22
Oroit L									
Upper Jaw L	23	20	19	17	16	17	14	16	12
Dors. Orig. to Snt. tip	75	66	69	57	55	56	47	52	40
Dorsal fin basal L	20	15	16	15	12	13	12	10	9
Dorsal fin depressed L	33	25	25	21	20	22	17	19	15
Adip. fin depressed L	12	10	8	8	8	8	6	8	6
Caudal peduncle D	13	13	14	12	10	11	9	10	8
Caudal peduncle L	24	20	20	18	17	18	16	18	14
Vertebrae									
1st Arch gillrakers (up)	11	10	12	10	13	11	11	12	9
(lower)	16	15	16	15	16	15	16	15	15
(total)	27	25	28	25	29	24	27	27	24
Branchiostegal rays right	10	10	11	9	11	10	11	10	11
(left)	11	11	12	9	10	11	12	10	11
Dorsal rays	10	10	10		10		10	10	
Anal rays	13	13	13	12	11	12	11	13	13
Pectoral fin rays									
Scales in lateral line									
Scales above lateral line	38	36	37	36	36	35	38	38	37
Scales 2 rows above lat.	145	142	152	133	143	136	149	154	160
Pelvic fin rays	9	9	9	9	9	9	10	9	9
Pyloric caeca	73	69	62	75	77	72	58	66	70
Dentition	9	9	4	4	3	4	9	8	2
Anal fin length	27	21	21	18	18	18	17	18	13
	♀	♂	♂	♂	♂	♀	♀	♂	♀

parr marks as redband

ca 12 0 0 0 0 0

rakers

24	25	26	27	28	29
2	5	2	6	1	1

N=17

24-29 (26.1)

9	10	11	12	13
1	9	4	2	1

upper 10.6

lower 15.5

14	15	16	17
1	8	6	2

caeca : N=17 57-77 (66.0)

teeth N=17 2-10 ~~(6.8)~~ ~~(6.4)~~, 5.5

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. c. h. LOCALITY Donner Crk. Pilot Peak Range

COLLECTED BY DATE June 1977

Cat. # ~~Measurements~~ Conversions by Hickman DATE Aug 1977

Specimen # 17

	1	2	3	4	5	6	7	8	9
Total L.									
Standard L.									
Body D									
Head L	274	283	267	297	307	278	279	298	295
Oroit L									
Upper Jaw L	149	151	147	149	187	166	162	157	154
Dors. Orig. to Snt. tip	509	509	474	554	512	521	515	529	503
Dorsal fin basal L	115	119	112	122	133	124	110	124	134
Dorsal fin depressed L	173	182	198	216	216	195	199	182	221
Adip. fin depressed L	072	075	069	068	072	077	074	082	081
Caudal peduncle D	091	101	086	108	090	089	103	116	087
Caudal peduncle L	149	157	147	176	157	142	147	149	161
Vertebrae									
1st Arch gillrakers (up)									
(lower)									
(total)									
Branchiostegal rays right									
(left)									
Dorsal rays									
Anal rays									
Pectoral fin rays									
Scales in lateral line									
Scales above lateral line									
Scales 2 rows above lat.									
Pelvic fin rays									
Pyloric caeca									
Dentition									
Anal fin length	163	170	155	189	163	154	154	174	181

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. c. h. LOCALITY Donner Crk Pilot Peak Range

COLLECTED BY DATE June 2 1977

Cat. # Measurements by Hickman DATE Aug. 1977

Specimen # 17 CONVERSION

	10	11	12	13	14	15	16	17	AVG.
Total L.									
Standard L.									
Body D									
Head L	283	267	290	288	284	287	286	286	285
Oroit L									
Upper Jaw L	157	145	156	154	156	149	163	156	156
Dors. Orig. to Snt. tip	520	527	518	529	514	500	530	519	517
Dorsal fin basal L	118	122	136	115	119	128	102	117	121
Dorsal fin depressed L	197	191	191	192	202	181	194	195	196
Adip. fin depressed L	079	061	073	077	073	064	081	078	074
Caudal peduncle D	102	107	109	096	101	096	102	104	099
Caudal peduncle L	157	153	164	163	165	170	184	182	160
Vertebrae									
1st Arch gillrakers (up)								9-13	10.6
(lower)								14-17	15.5
(total)								24-29	26.1
Branchiostegal rays right									
(left)									
Dorsal rays									
Anal rays									
Pectoral fin rays									
Scales in lateral line									
Scales above lateral line								35-38	37
Scales 2 rows above lat.								133-160	145
Pelvic fin rays								8-10	9
Pyloric caeca								57-77	66
Dentition								2-10	5.5
Anal Fin Length	165	160	164	173	165	181	184	169	168

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY _____

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	Range	$\bar{X}$				
Total L.	(95-250)	129.5				
Standard L.	(74-208)	128.8				
Body D						
Head L.	(22-57)	36				
Orbit L						
Upper Jaw L	(11-31)	19.8				
Dors. Orig. to Snt. tip	(40-106)	65.1				
Dorsal fin basal L	(9-24)	15.3				
Dorsal fin depressed L	(15-36)	24.6				
Adip. fin depressed L	(5-15)	9.3				
Caudal peduncle D	(8-19)	12.4				
Caudal peduncle L	(13-31)	19.9				
Vertebrae						
1st Arch gillrakers (up)	(9-13)	10.6				
(lower)	(14-17)	15.5				
(total)	(24-29)	26				
Branchiostegal rays right	(9-11)	10.2				
(left)	(9-12)	11.8				
Dorsal rays						
Anal rays						
Pectoral fin rays						
Scales in lateral line						
Scales above lateral line	(35-38)	36.8				
Scales 2 rows above lat.	(133-160)	144.8				
Pelvic fin rays	8-10	9				
Pyloric caeca	(57-77)	66				
Dentition	(2-10)	5.5				
Anal Fin length	13-34	21.1				

Mt. Moriah

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt. Wheeler Cutthroat LOCALITY Hendry's Hendry's creek - recounted Headwater at upstream limit of trout.

COLLECTED BY Frank Dodge DATE 1972

Cat. # _____ Measurements by _____ DATE _____

Specimen # 20

	1	2	3	4	5	6	7	8
Total L.								
Standard L.	232	195	146	185	195	150	133	193
Body D								
Head L	65	54	40	54	61	42	36	55
Oroit L								
Upper Jaw L	37	27	20	27	31	21	19	28
Dors. Orig. to Snt. tip	118	96	71	88	101	76	65	96
Dorsal fin basal L								
Dorsal fin depressed L	53	48	36	41	48	39	35	47
Adip. fin depressed L	23	18	13	20	21	13	11	17
Caudal peduncle D	30	25	19	23	25	19	16	23
Caudal peduncle L	39	30	23	30	32	24	23	30
Vertebrae								
1st Arch gillrakers (up)	7	8	8	7	8	8	8	8
(lower)	11	12	15	12	12	13	13	13
(total)	18	20	23	19	20	21	21	21
Branchiostegal rays right	12	11	12	11	11	11	11	12
(left)	12	11	11	10	10	10	11	12
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	45	41	44	43	38	35	41	35
Scales 2 rows above lat.	154	146	146	159	142	135	144	163
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	46	39	35	40	44	33	37	31
Dentition	25	20	18	18	38	23	30	49

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Hendry's creek near + conversion

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	1	2	3	4	5	6	7	8
Total L.								
Standard L.								
Body D								
Head L	280	277	274	292	313	267	271	285
Oroit L								
Upper Jaw L	159	138	137	146	159	140	143	145
Dors. Orig. to Snt. tip	509	492	486	476	518	507	489	497
Dorsal fin basal L								
Dorsal fin depressed L	228	246	247	222	246	260	263	244
Adip. fin depressed L	099	092	089	108	108	087	083	088
Caudal peduncle D	129	128	130	124	128	127	120	119
Caudal peduncle L	168	154	158	162	164	160	173	155
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt. Wheeler Cutthroat LOCALITY Hendry's creek - recounted

COLLECTED BY Frank Dodge DATE 1972

Cat. # _____ Measurements by _____ DATE _____

Specimen # 20

	9	10	11	12	13	14	15	16
Total L.								
Standard L.	180	177	187	148	161	205	150	152
Body D								
Head L	58	49	48	40	45	56	42	44
Oroit L								
Upper Jaw L	33	24	25	19	23	28	20	22
Dors. Orig. to Snt. tip	94	91	94	75	82	103	78	75
Dorsal fin basal L								
Dorsal fin depressed L	42	42	44	37	39	48	38	37
Adip. fin depressed L	17	16	18	13	15	20	15	15
Caudal peduncle D	24	22	25	20	21	27	19	19
Caudal peduncle L	32	29	30	24	27	32	24	23
Vertebrae								
1st Arch gillrakers (up)	8	8	7	8	8	8	8	7
(lower)	13	13	13	14	13	13	13	14
(total)	21	21	20	22	21	21	21	21
Branchiostegal rays right	11	10	11	11	10	10	11	10
(left)	12	11	10	11	11	11	10	11
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	39	39	36	37	39	36	36	39
Scales 2 rows above lat.	158	138	158	146	129	154	151	151
Pelvic fin rays	9	9	9	9	~~8~~ 10	9	9	9
Pyloric caeca	44	38	36	29	38	40	32	43
Dentition	31	23	25	23	22	20	23	0

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Hendry's creek - recent conversion

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	9	10	11	12	13	14	15	16
Total L.								
Standard L.								
Body D								
Head L	322	277	257	270	280	273	280	289
Oroit L								
Upper Jaw L	183	136	134	128	143	137	133	145
Dors. Orig. to Snt. tip	522	514	503	507	509	502	520	493
Dorsal fin basal L								
Dorsal fin depressed L	233	237	235	250	242	234	253	243
Adip. fin depressed L	094	090	096	088	093	098	100	099
Caudal peduncle D	133	124	134	135	130	132	127	125
Caudal peduncle L	178	164	160	162	168	156	160	151
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt Wheeler Cutthroat LOCALITY Hendry's creek - recounted

COLLECTED BY _____ DATE 1972

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	17	18	19	20	21	22		
Total L.								
Standard L.	176	145	212	185				
Body D								
Head L	50	37	65	52				
Oroit L								
Upper Jaw L	26	18	37	30				
Dors. Orig. to Snt. tip	89	73	111	93				
Dorsal fin basal L								
Dorsal fin depressed L	45	36	51	45				
Adip. fin depressed L	16	12	20	20				
Caudal peduncle D	24	18	28	24				
Caudal peduncle L	28	23	33	28				
Vertebrae								
1st Arch gillrakers (up)	8	8	8	8				
(lower)	14	13	13	14				
(total)	22	21	21	22				
Branchiostegal rays right	11	11	10	10				
(left)	11	11	11	11				
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	42	38	42	38				
Scales 2 rows above lat.	158	159	161	146				
Pelvic fin rays	9	9	9	9				
Pyloric caeca	38	37	38	44				
Dentition	28	29	14	31				

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Hendry's creek - recent conversion

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	17	18	19	20				
Total L.								
Standard L.								
Body D								
Head L	284	255	307	281				
Oroit L								
Upper Jaw L	148	124	175	162				
Dors. Orig. to Snt. tip	506	503	524	503				
Dorsal fin basal L								
Dorsal fin depressed L	256	248	241	243				
Adip. fin depressed L	091	083	094	108				
Caudal peduncle D	136	124	132	130				
Caudal peduncle L	159	159	156	151				
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt. Wheeler Cutthroat LOCALITY Goshute creek - recounted

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	1	2	3	4	5	6	7	8
Total L.								
Standard L.	153	143	135	140	143	157	150	179
Body D								
Head L	43	45	39	40	38	44	44	52
Oroit L								
Upper Jaw L	21	27	19	20	17	20	20	27
Dors. Orig. to Snt. tip	80	77	70	73	73	76	76	92
Dorsal fin basal L								
Dorsal fin depressed L	37	35	31	35	33	37	36	44
Adip. fin depressed L	14	13	9	13	13	14	15	18
Caudal peduncle D	19	18	15	17	17	19	18	22
Caudal peduncle L	25	21	21	23	23	26	25	28
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt. Wheeler Cutthroat LOCALITY Goshute Creek - recent Conversions

COLLECTED BY _____ DATE 1972

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	1	2	3	4	5	6	7	8
Total L.								
Standard L.								
Body D								
Head L	281	315	289	286	266	280	293	281
Oroit L								
Upper Jaw L	137	189	141	143	119	127	133	151
Dors. Orig. to Snt. tip	523	538	519	521	510	484	507	514
Dorsal fin basal L								
Dorsal fin depressed L	242	245	230	250	231	236	240	246
Adip. fin depressed L	092	091	067	093	091	089	100	101
Caudal peduncle D	124	126	111	121	119	121	120	123
Caudal peduncle L	163	147	156	164	161	166	167	156
Vertebrae								
1st Arch gillrakers (up)	6	7	7	6	7	7	6	7
(lower)	13	14	13	13	14	14	13	13
(total)	19	21	20	19	21	21	19	20
Branchiostegal rays right	11	11	10	10	10	10	11	11
(left)	10	13	10	11	11	11	10	11
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	43	45	38	41	40	42	35	40
Scales 2 rows above lat.	162	150	143	151	152	145	138	140
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	35	45	38	35	36	35	34	35
Dentition	17	26	18	25	22	25	46	24

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt. Wheeler Cutthroat LOCALITY Goshute creek-recounted

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	9	10	11	12	13	14	15	16
Total L.								
Standard L.	161	158	166	161	127	180	140	200
Body D								
Head L	50	48	43	43	32	53	42	57
Oroit L								
Upper Jaw L	26	25	21	20	16	26	22	29
Dors. Orig. to Snt. tip	88	86	80	79	62	98	74	103
Dorsal fin basal L								
Dorsal fin depressed L	41	40	39	37	30	42	37	47
Adip. fin depressed L	16	18	15	16	13	17	15	17
Caudal peduncle D	21	19	18	19	15	22	17	23
Caudal peduncle L	25	25	25	26	21	26	22	31
Vertebrae								
1st Arch gillrakers (up)	7	8	7	7	7	8	7	8
(lower)	13	13	14	13	13	14	12	14
(total)	20	21	21	20	20	22	19	22
Branchiostegal rays right	10	11	10	11	11	11	10	11
(left)	11	12	10	11	11	11	10	12
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	38	39	36	37	39	42	36	36
Scales 2 rows above lat.	147	149	154	135	145	143	137	137
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	39	35	32	36	36	32	35	36
Dentition	22	28	37	31	8	22	22	46

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt. Wheeler Cutthroat LOCALITY goshute creek recent conversions

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	9	10	11	12	13	14	15	16
Total L.								
Standard L.								
Body D								
Head L	311	304	259	267	252	294	300	285
Oroit L								
Upper Jaw L	161	158	127	124	126	144	157	145
Dors. Orig. to Snt. tip	547	544	492	491	488	544	529	515
Dorsal fin basal L								
Dorsal fin depressed L	255	253	235	230	236	233	264	235
Adip. fin depressed L	099	114	090	099	102	094	107	085
Caudal peduncle D	130	120	109	118	118	122	121	113
Caudal peduncle L	155	158	151	161	165	144	157	155
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt. Wheeler Cutthroat LOCALITY Goshute creek - recounted

COLLECTED BY _____ DATE 1972

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	~~17~~	~~18~~	19	20	21			
Total L.								
Standard L.	141	147	167	210	184		287	43
Body D								
Head L	42	45	51	56	53		287	43
Oroit L								
Upper Jaw L	20	24	26	29	26		143	97
Dors. Orig. to Snt. tip	73	78	89	105	96		517	10
Dorsal fin basal L								
Dorsal fin depressed L	34	37	40	47	41		239	95
Adip. fin depressed L	14	15	16	17	14		93	75
Caudal peduncle D	18	19	20	25	21		120	44
Caudal peduncle L	22	22	26	33	28		157	04
Vertebrae								
1st Arch gillrakers (up)	6	6	7	6	7			
(lower)	13	14	13	11	14			
(total)	19	20	20	17	21			
Branchiostegal rays right	11	11	10	10	11			
(left)	11	11	11	9	11			
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	42	36	38	39	38			
Scales 2 rows above lat.	141	128	134	148	144			
Pelvic fin rays	9	10	9	9	9			
Pyloric caeca	40	37	36	35	43			
Dentition	34	12	19	26	10			

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt. Wheeler Cutthroat LOCALITY goshute creek research conservation

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	17	18	19	20	21			
Total L.								
Standard L.								
Body D								
Head L	298	306	305	267	288			
Orbit L								
Upper Jaw L	142	163	156	138	141			
Dors. Orig. to Snt. tip	518	531	533	500	522			
Dorsal fin basal L								
Dorsal fin depressed L	241	252	240	224	223			
Adip. fin depressed L	098	102	096	081	076			
Caudal peduncle D	128	129	120	119	114			
Caudal peduncle L	156	150	156	157	152			
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line								
Scales 2 rows above lat.								
Pelvic fin rays								
Pyloric caeca								
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES mt Whites LOCALITY Pine creek secondtid

COLLECTED BY _____ DATE 1972

Cat. # _____ Measurements by _____ DATE _____

Specimen #	1	2	3	4	5	6	7	8
Total L.	260	204	242	172	176	139	164	176
Standard L.	219	170	206	143	143	116	138	148
Body D								
Head L	63	52	62	43	44	33	41	43
Oroit L								
Upper Jaw L	28	26	33	21	23	15	23	23
Dors. Orig. to Snt. tip	115	90	107	74	75	59	70	76
Dorsal fin basal L								
Dorsal fin depressed L	49	33	45	35	34	28	31	33
Adip. fin depressed L	18	16	15	12	13	12	10	11
Caudal peduncle D	24	20	22	18	18	14	16	16
Caudal peduncle L	32	26	32	22	23	17	22	22
Vertebrae								
1st Arch gillrakers (up)	8	9	9	8	7	8	8	7
(lower)	13	15	14	14	13	13	13	12
(total)	21	24	23	22	20	21	21	19
Branchiostegal rays right	10	11	11	11	10	10	11	11
(left)	11	11	12	11	10	10	11	10
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	43	39	34	38	35	37	38	33
Scales 2 rows above lat.	175	152	151	140	142	149	149	140
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	40	35	34	41	35	36	29	30
Dentition	31	45	32	50	27	17	36	21

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Mt. Wheeler Cut LOCALITY Pine creek - recounted

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	9	10	11	12	13	14	15	16
Total L.	178	177	178	143	149	148	166	136
Standard L.	148	148	149	121	125	124	135	113
Body D								
Head L	42	44	46	35	35	37	42	33
Oroit L								
Upper Jaw L	21	21	23	17	17	18	20	17
Dors. Orig. to Snt. tip	76	79	81	60	63	63	71	58
Dorsal fin basal L								
Dorsal fin depressed L	34	33	33	29	29	30	31	27
Adip. fin depressed L	13	14	16	12	11	11	13	13
Caudal peduncle D	18	18	19	14	15	15	15	14
Caudal peduncle L	23	25	23	20	18	19	20	18
Vertebrae								
1st Arch gillrakers (up)	8	8	7	9	9	8	8	9
(lower)	13	14	13	15	16	14	14	14
(total)	21	22	20	24	25	23	22	23
Branchiostegal rays right	9	10	10	11	10	11	11	10
(left)	11	11	11	12	11	11	10	11
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	44	38	40	40	37	38	40	39
Scales 2 rows above lat.	156	136	141	142	144	142	136	143
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	38	31	34	34	25	39	28	32
Dentition	13	10	32	29	39	28	9	34

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY pine creek - recounted

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	17	18	19	20				
Total L.	126	136	116	122				
Standard L.	105	113	97	102				
Body D			27					
Head L	31	33	27	29				
Oroit L								
Upper Jaw L	14	15	13	14				
Dors. Orig. to Snt. tip	54	57	46	50				
Dorsal fin basal L								
Dorsal fin depressed L	25	26	23	23				
Adip. fin depressed L	About AVERAGE	9	10	9				
Caudal peduncle D	13	13	12	12				
Caudal peduncle L	17	17	17	17				
Vertebrae								
1st Arch gillrakers (up)	8	10	7	8				
(lower)	15	14	13	14				
(total)	23	24	20	22				
Branchiostegal rays right	11	11	10	11				
(left)	10	12	11	11				
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	34	46	43	41				
Scales 2 rows above lat.	154	149	142	176				
Pelvic fin rays	9	9	9	9				
Pyloric caeca	39	27	32	32				
Dentition	25	35	8	25				

CHARACTER ANALYSIS SHEET

Species *Salmo clarki (pleuriticus?)*

Locality *Reservoir Canyon, near Pine Valley Utah (headwaters)*

Field No. *GBS-3* Coll. by *Gard, Behnke, Seegrist*

Date of Coll. *9-13-58* ~~Measurements~~ conversions by *Middleton* Date *2-24-59*

Jar No. *1* No. of Jars *1* No. of Spec. *18* Specimen No.

Measurements in thousandths of standard length

	1	2	3	4	5	6	7
- Standard L ✓	144	149	181	142	157	118	141
- Body D	271	262	237	253	242	254	248
- Head L ✓	298	275	282	282	254	288	284
Head D	187	188	177	183	165	195	184
Head W	153	148	144	148	134	152	149
Least interorbital bony W	76	67	72	70	64	68	71
- Occiput to snout tip	194	195	182	190	172	195	184
Snout L	69	60	66	63	57	68	64
- Orbit L	76	74	66	70	64	85	71
- Upper Jaw L ✓	174	168	177	169	146	169	170
- Dorsal origin to snout tip ✓	521	517	519	514	496	517	510
Depressed dorsal to insertion of adipose	125	127	99	113	146	102	128
Dorsal origin to anal o	354	349	342	338	356	364	355
- Dorsal fin basal L	153	154	132	148	146	152	156
- Dorsal fin depressed L ✓	250	248	221	246	242	263	248
- Adipose fin depressed L	104	101	105	106	95	110	106
- Caudal peduncle D	118	121	116	120	114	127	121
- Caudal peduncle L	167	161	166	162	159	161	163
- Vertebrae	63	62	62	62	61	61	62
- First arch gill rakers (upper)	7	6	7	8	7	8	6
- (lower)	12	13	12	13	12	12	12
- (total)	19	19	19	21	19	20	18
Basibranchial teeth	3	2	0	6	1	4	8
- Branchiostegal rays (right)	11	10	11	10	10	11	11
- (left)	12	12	11	11	11	12	11
- Pectoral fin rays	15	14	14	14	14	14	14
- Pelvic fin rays	9	9	10	9	9	10	9
- Scales in lateral line	120	120	124	118	122	120	124
- Scales above lateral line	43	39	42	—	42	41	42
2 rows above Frank Reed	160	167	165	159	165	144	133
Mike	152	158	155	—	—	—	162

- All exhibit parr marks
- scales deeply imbedded, counts difficult.

CHARACTER ANALYSIS SHEET

Species Salmo clarki (pleuriticus)

Locality Reservoir Canyon, near Pine Valley Utah {headwaters}

Field No. GBS-3 Coll. by Gard, Behnke, Seegrist

Date of Coll. 9-13-58 Measurements by Behnke Date 9-24-58

Jar No. 1 No. of Jars 1 No. of Spec. 18 ~~Specimen No.~~

	1	2	3	4	5	6	7
Standard L	144	149	181	142	157	118	141
Body D	39	39	43	36	38	30	35
Head L	43	41	51	40	40	34	40
Head D	27	28	32	26	26	23	26
Head W	22	22	26	21	21	18	21
Least interorbital bony W	11	10	13	10	10	8	10
Occiput to snout tip	28	29	33	27	27	23	26
Snout L	10	9	12	9	9	8	9
Orbit L	11	11	12	10	10	10	10
Upper Jaw L	25	25	32	24	23	20	24
Dorsal origin to snout tip	75	77	94	73	78	61	72
Depressed dorsal to insertion of adipose	18	19	18	16	23	12	18
Dorsal origin to anal o	51	52	62	48	56	43	50
Dorsal fin basal L	22	23	24	21	23	18	22
Dorsal fin depressed L	36	37	40	35	38	31	35
Adipose fin depressed L	15	15	19	15	15	13	15
Caudal peduncle D	17	18	21	17	18	15	17
Caudal peduncle L	24	24	30	23	25	19	23

CHARACTER ANALYSIS SHEET

Species *Salmo clarki*

Locality *Reservoir Canyon Utah*

Field No. *GBS-3* Coll. by *Gard, Behnke, Seegrist*

Date of Coll. *9-13-58* ~~Measurements~~ conversions by *Middleton* Date *2-24-59*

Jar No. *1* No. of Jars *1* No. of Spec. *18* Specimen No.

Measurements in thousands of standard length

	8	9	10	11	12	13	14
Standard L	142	174	166	159	161	133	130
Body D	239	253	259	251	255	240	238
Head L	260	287	289	295	273	263	269
Head D	169	178	181	182	193	173	177
Head W	141	144	144	138	155	143	154
Least interorbital bony W	63	69	72	69	75	68	69
Occiput to snout tip	176	195	187	201	186	180	185
Snout L	56	75	72	69	62	60	69
Orbit L	70	69	72	75	68	75	69
Upper Jaw L	155	178	181	182	161	150	154
Dorsal origin to snout tip	500	522	512	534	509	488	500
Depressed dorsal to insertion of adipose	134	121	132	126	124	128	131
Dorsal origin to anal o	352	339	343	345	354	338	346
Dorsal fin basal L	141	155	151	151	143	143	138
Dorsal fin depressed L	232	247	235	245	236	240	238
Adipose fin depressed L	106	92	108	107	118	105	100
Caudal peduncle D	120	121	120	126	130	120	115
Caudal peduncle L	162	155	157	157	161	165	169
Vertebrae	62	62	63	62	63	62	63
First arch gill rakers (upper)	6	7	7	7	6	8	7
(lower)	11	13	13	13	12	13	12
(total)	17	20	20	20	18	21	19
Basibranchial teeth	4	7	9	1	6	9	4
Branchiostegal rays (right)	11	11	10	11	11	11	10
(left)	11	12	12	11	11	12	11
Pectoral fin rays	15	14	14	14	14	15	14
Pelvic fin rays	9	9	9	9	9	9	9
Scales in lateral line	120	123	124	119	120	120	122
Scales above lateral line	39	—	—	42	41	42	44
2 rows above	148	171	163	171	154	161	162
	154	165	159	152	162	—	167

CHARACTER ANALYSIS SHEET

Species *Salmo clarki*

Locality *Reservoir Canyon, Utah*

Field No. *GBS-3* Coll. by *Gard, Behnke, Seegrist*

Date of Coll. *9-13-58* Measurements by *Behnke* Date *9-25-58*

Jar No. *1* No. of Jars *1* No. of Spec. *18* Specimen No.

	8	9	10	11	12	13	14
Standard L	142	174	166	159	161	133	130
Body D	34	44	43	40	41	32	31
Head L	37	50	48	47	44	35	35
Head D	24	31	30	29	31	23	23
Head W	20	25	24	22	25	19	20
Least interorbital bony W	9	12	12	11	12	9	9
Occiput to snout tip	25	34	31	32	30	24	24
Snout L	8	13	12	11	10	8	9
Orbit L	10	12	12	12	11	10	9
Upper Jaw L	22	31	30	29	26	20	20
Dorsal origin to snout tip	71	91	85	85	82	65	65
Depressed dorsal to insertion of adipose	19	21	22	20	20	17	17
Dorsal origin to anal o	50	59	57	55	57	45	45
Dorsal fin basal L	20	27	25	24	23	19	18
Dorsal fin depressed L	33	43	39	39	38	32	31
Adipose fin depressed L	15	16	18	17	19	14	13
Caudal peduncle D	17	21	20	20	21	16	15
Caudal peduncle L	23	27	26	25	26	22	22

CHARACTER ANALYSIS SHEET

Species *Salmo clarki*

Locality *Utah*

Field No. *GBS-3* Coll. by *Gard, et al*

Date of Coll. *9-13-58* ~~Measurements~~ conversions by *Middleton* Date *2-24-59*

Jar No. *1* No. of Jars *1* No. of Spec. *18* Specimen No.

Measurements in thousands of standard length

	15	~~16~~	~~17~~	~~18~~			
Standard L	178	155	109	135			
Body D	236	258	257	252			
Head L	281	284	293	281			
Head D	185	181	193	185			
Head W	146	155	147	148			
Least interorbital bony W	73	66	64	67			
Occiput to snout tip	185	187	202	185			
Snout L	67	65	64	67			
Orbit L	67	71	83	74			
Upper Jaw L	168	174	174	170			
Dorsal origin to snout tip	511	516	532	503			
Depressed dorsal to insertion of adipose	135	123	119	133			
Dorsal origin to anal o	353	355	339	355			
Dorsal fin basal L	151	161	156	148			
Dorsal fin depressed L	241	252	257	252			
Adipose fin depressed L	101	110	110	104			
Caudal peduncle D	118	123	119	126			
Caudal peduncle L	163	155	156	170			
Vertebrae	63	62	61	64			
First arch gill rakers (upper)	7	6	7	7			
(lower)	13	13	12	12			
(total)	20	19	19	19			
Basibranchial teeth	9	3	3	0			
Branchiostegal rays (right)	11	11	11	11			
(left)	11	11	11	11			
Pectoral fin rays	14	15	14	14			
Pelvic fin rays	8	10	9	9			
Scales in lateral line	122	121	120	124			
Scales above lateral line	39	42	42	43			
2 rows above	152	161	138	163			
	153	159	139	166			

CHARACTER ANALYSIS SHEET

Species Salmo clarki

Locality Utah

Field No. GBS-3 Coll. by Gard et al

Date of Coll. 9-13-58 Measurements by Behnke Date 9-26-58

Jar No. 1 No. of Jars 1 No. of Spec. 18 ~~Specimen No.~~

	15	16	17	18			
Standard L	178	155	109	135			
Body D	42	40	28	34			
Head L	50	44	32	38			
Head D	33	28	21	25			
Head W	26	24	16	20			
Least interorbital bony W	13	10	7	9			
Occiput to snout tip	33	29	22	25			
Snout L	12	10	7	9			
Orbit L	12	11	9	10			
Upper Jaw L	30	27	19	23			
Dorsal origin to snout tip	91	80	58	68			
Depressed dorsal to insertion of adipose	24	19	13	18			
Dorsal origin to anal o	63	55	37	48			
Dorsal fin basal L	27	25	17	20			
Dorsal fin depressed L	43	39	28	34			
Adipose fin depressed L	18	17	12	14			
Caudal peduncle D	21	19	13	17			
Caudal peduncle L	29	24	17	23			

CHARACTER ANALYSIS SHEET

Species Salmo gairdneri (fall spawning)

Locality Ruby Valley Fish Hatchery - Nevada

Field No. Fall Coll. by P.R. Needham

Date of Coll. 8-19-58 Measurements by Behnke Date 10-31-58

Jar No. 1 No. of Jars 1 No. of Spec. 3D ~~Specimen No.~~

	1	2	3	4	5	6	7
Standard L	234	229	221	282	202	245	274
Body D	55	52	50	65	48	61	61
Head L	53	52	50	63	49	57	57
Head D	40	38	38	48	35	42	43
Head W	30	29	28	34	26	32	33
Least interorbital bony W	17	16	16	21	14	18	19
Occiput to snout tip	37	38	37	44	34	39	41
Snout L	13	12	12	15	12	14	13
Orbit L	13	13	13	15	13	14	13
Upper Jaw L	26	26	25	31	24	29	29
Dorsal origin to snout tip	113	109	105	130	98	117	131
Depressed dorsal to insertion of adipose	clipped	—	—	—	—	—	—
Dorsal origin to anal o	81	78	74	100	68	88	97
Dorsal fin basal L	33	30	30	41	28	31	39
Dorsal fin depressed L	clipped	—	—	—	—	—	—
Adipose fin depressed L	16	14	17	21	15	18	17
Caudal peduncle D	25	23	22	30	21	25	28
Caudal peduncle L	41	40	38	48	34	44	44
Vertebrae	61	64	64	62	64	61	63
First arch gill rakers (upper)	8	7	8	8	7	8	7
(lower)	12	12	13	13	12	13	12
(total)	20	19	21	21	19	21	19
Basibranchial teeth	0	0	0	0	0	0	0
Branchiostegal rays (right)	12	11	12	12	10	11	10
(left)	12	12	12	12	10	12	11
Pectoral fin rays	15	15	15	16	14	15	14
Pelvic fin rays	10	10	10	10	10	9	9
Scales in lateral line	121	120	123	124	122	120	123
Scales above lateral line	27	26	27	29	27	30	33
2 rows above	125	126	111	130	119	123	130
Dentition	8	7	8	8	7	8	7

CHARACTER ANALYSIS SHEET

Species Salmo gairdneri (fall spawning)

Locality Ruby Valley Fish Hatchery, Nevada

Field No. Fall Coll. by

Date of Coll. ~~Measurements~~ Conversions by C. F. Reid Date Oct. 6, 1959

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

Measurements in thousands of standard length

	1	2	3	4	5	6	7
Standard L	234 |427	229 |437	221 |452	282 |355	202 |495	245 |408	274 |365
Body D	235	227	226	231	238	249	223
Head L	226	227	226	224	243	233	208
Head D	171	166	172	170	173	171	157
Head W	128	127	127	121	129	131	120
Least interorbital bony W	73	70	72	75	69	73	69
Occiput to snout tip	158	166	167	156	168	159	150
Snout L	56	52	54	53	59	57	47
Orbit L	56	57	59	53	64	57	47
Upper Jaw L	111	114	113	110	119	118	106
Dorsal origin to snout tip	483	476	475	462	485	477	478
Depressed dorsal to insertion of adipose	clipped	—	—	—	—	—	—
Dorsal origin to anal o	346	341	334	355	337	359	354
Dorsal fin basal L	141	131	136	146	139	126	142
Dorsal fin depressed L	clipped	—	—	—	—	—	
Adipose fin depressed L	68	61	77	75	74	73	62
Caudal peduncle D	107	101	99	107	104	102	102
Caudal peduncle L	175	175	172	170	168	180	161

CHARACTER ANALYSIS SHEET

Species S. gairdneri - fall spawning

Locality Ruby Valley Fish Hatchery, Nevada

Field No. Fall Coll. by P.R. Needham

Date of Coll. 8-19-58 Measurements by Behnke Date 10-31-58

Jar No. 1 No. of Jars 1 No. of Spec. 30 ~~Specimen No.~~

	8	9	10	11	12	13	14
Standard L	232	259	230	208	208	270	211
Body D	57	58	54	45	48	63	49
Head L	54	61	53	47	50	60	47
Head D	41	45	38	34	37	46	36
Head W	30	33	29	26	30	34	26
Least interorbital bony W	17	19	17	13	15	20	14
Occiput to snout tip	38	42	38	33	35	43	32
Snout L	12	14	12	11	11	14	11
Orbit L	13	14	13	13	13	14	12
Upper Jaw L	27	30	26	23	26	30	23
Dorsal origin to snout tip	111	124	109	99	96	128	98
Depressed dorsal to insertion of adipose	—	—	—	—	—	—	—
Dorsal origin to anal o	83	90	79	70	71	96	73
Dorsal fin basal L	29	33	30	26	29	38	29
Dorsal fin depressed L	17	—	—	—	—	—	—
Adipose fin depressed L	17	18	18	14	17	20	16
Caudal peduncle D	25	27	23	21	21	29	21
Caudal peduncle L	42	47	39	36	37	46	37
Vertebrae	62	63	65	63	63	62	62
First arch gill rakers (upper)	7	7	7	9	9	8	9
(lower)	13	12	12	12	12	14	13
(total)	20	19	19	21	19	22	22
Basibranchial teeth	0	0	0	0	0	0	0
Branchiostegal rays (right)	11	11	11	11	11	12	11
(left)	12	11	11	11	12	12	12
Pectoral fin rays	16	/	/	16	/	13	15
Pelvic fin rays	10	10	10	10	10	10	10
Scales in lateral line	119	119	121	118	119	123	121
Scales above lateral line	28	30	24	/	26	32	29
2 rows above	123	130	109	131	104	137	121
	0	0	0	0	0	0	0

CHARACTER ANALYSIS SHEET

Species Salmo gairdneri (fall spawning)

Locality Ruby Valley Fish Hatchery, Nevada

Field No. Fall Coll. by

Date of Coll. ~~Measurements~~ Conversions by C. F. Reid Date Oct. 6, 1959

Jar No. ____ No. of Jars ____ No. of Spec. ____ Specimen No. ____

Measurements in thousands of standard length

	8	9	10	11	12	13	14
Standard L	232 |431	259 |386	230 |435	208 |481	208 |481	270 |370	211 |474
Body D	246	224	235	216	231	233	232
Head L	233	235	231	226	240	222	223
Head D	177	174	165	164	178	170	171
Head W	129	127	126	125	144	126	123
Least interorbital bony W	73	73	74	63	72	74	66
Occiput to snout tip	163	162	165	159	168	159	152
Snout L	52	54	52	53	53	52	52
Orbit L	56	54	57	63	63	52	57
Upper Jaw L	116	116	113	111	125	111	109
Dorsal origin to snout tip	478	479	474	476	462	474	465
Depressed dorsal to insertion of adipose	—	—	—	—	—	—	—
Dorsal origin to anal o	358	347	344	337	342	355	346
Dorsal fin basal L	125	127	130	125	139	141	137
Dorsal fin depressed L	—	—	—	—	—	—	—
Adipose fin depressed L	73	69	78	67	82	74	76
Caudal peduncle D	108	104	100	101	101	107	100
Caudal peduncle L	181	181	170	173	178	170	175

CHARACTER ANALYSIS SHEET

Species Salmo gairdneri

Locality Ruby Valley Fish Hatchery, Nevada

Field No. Fall Coll. by P.R. Needham

Date of Coll. 8-19-58 Measurements by Behnke Date 11-3-58

Jar No. 1 No. of Jars 1 No. of Spec. 30 ~~Specimen No.~~

	15	16	17	18	19	20	21
Standard L	221	201	199	233	268	227	252
Body D	51	50	43	58	59	55	60
Head L	53	50	45	53	60	52	57
Head D	37	38	32	38	41	37	41
Head W	30	27	23	31	33	28	30
Least interorbital bony W	15	14	13	16	18	16	18
Occiput to snout tip	36	33	32	35	42	36	40
Snout L	11	12	11	11	14	12	13
Orbit L	13	14	12	13	14	14	14
Upper Jaw L	25	26	23	26	29	26	29
Dorsal origin to snout tip	107	97	100	116	127	109	120
Depressed dorsal to insertion of adipose	—	—	—	—	—	—	—
Dorsal origin to anal o	73	71	66	83	92	81	88
Dorsal fin basal L	28	28	28	31	33	31	34
Dorsal fin depressed L	—	—	—	—	—	—	—
Adipose fin depressed L	15	18	12	17	20	19	20
Caudal peduncle D	21	21	19	25	26	24	26
Caudal peduncle L	38	35	34	38	48	40	46
Vertebrae	61	64	65	62	64	62	61
First arch gill rakers (upper)	7	8	7	8	7	8	7
(lower)	12	12	10	12	11	12	11
(total)	19	20	17	20	18	20	18
Basibranchial teeth	0	0	0	0	0	0	0
Branchiostegal rays (right)	11	11	11	11	11	12	10
(left)	11	12	11	11	10	12	12
Pectoral fin rays	14	—	15	15	14	15	15
Pelvic fin rays	10	10	10	10	10	10	10
Scales in lateral line	120	119	125	120	123	119	113
Scales above lateral line	26	29	29	27	28	32	—
2 rows above	122	124	131	132	109	134	127
	0	0	0	0	0	0	0

CHARACTER ANALYSIS SHEET

Species Salmo gairdneri (fall spawning)

Locality Ruby Valley Fish Hatchery, Nevada

Field No. Fall Coll. by

Date of Coll. ~~Measurements~~ Conversions by C. F. Reid Date Oct. 6, 1959

Jar No. ____ No. of Jars ____ No. of Spec. ____ Specimen No. ____

Measurements in thousands of standard length

	15	16	17	18	19	20	21
Standard L	221 |452	201 |498	199 |503	233 |429	268 |373	227 |441	252 |397
Body D	231	249	216	249	220	243	238
Head L	240	249	226	227	224	229	226
Head D	167	189	161	163	153	163	163
Head W	136	134	116	133	123	123	119
Least interorbital bony W	68	70	65	69	67	71	71
Occiput to snout tip	163	164	161	150	157	159	159
Snout L	50	60	55	47	52	53	52
Orbit L	59	70	60	56	52	62	56
Upper Jaw L	113	129	116	112	108	115	115
Dorsal origin to snout tip	484	483	503	498	474	481	476
Depressed dorsal to insertion of adipose	—	—	—	—	—	—	—
Dorsal origin to anal o	330	354	332	356	343	357	349
Dorsal fin basal L	127	139	141	133	123	137	135
Dorsal fin depressed L	—	—	—	—	—	—	—
Adipose fin depressed L	68	90	60	73	75	84	79
Caudal peduncle D	95	105	96	107	97	106	103
Caudal peduncle L	172	174	171	163	179	176	183

CHARACTER ANALYSIS SHEET

Species Salmo gairdneri

Locality Ruby Valley Fish Hatchery, Nevada

Field No. Fall Coll. by P. R. Needham

Date of Coll. 8-19-58 Measurements by Behnke Date 11-3-58

Jar No. 1 No. of Jars 1 No. of Spec. 30 ~~Specimen No.~~

	22	23	24	25	26	27	28
Standard L	232	238	179	274	246	257	211
Body D	51	54	42	64	60	63	49
Head L	51	53	44	65	58	57	50
Head D	38	40	30	46	40	42	34
Head W	27	31	23	34	32	32	26
Least interorbital bony W	15	16	12	19	17	18	14
Occiput to snout tip	37	39	30	47	40	40	36
Snout L	12	14	10	16	13	12	12
Orbit L	13	14	12	16	13	14	12
Upper Jaw L	27	28	22	34	28	29	26
Dorsal origin to snout tip	111	112	87	135	125	125	106
Depressed dorsal to insertion of adipose	—	—	—	—	—	—	—
Dorsal origin to anal o	76	81	60	95	84	89	74
Dorsal fin basal L	28	33	25	40	32	33	26
Dorsal fin depressed L	—	—	—	—	—	—	—
Adipose fin depressed L	17	17	15	20	18	19	15
Caudal peduncle D	22	24	19	29	25	27	21
Caudal peduncle L	44	40	30	45	42	45	38
Vertebrae	64	64	65				
First arch gill rakers (upper)	8	7	7	8	8	8	8
(lower)	11	12	11	12	12	13	12
(total)	19	19	18	20	20	21	20
Basibranchial teeth	0	0	0	0	0	0	0
Branchiostegal rays (right)	10	10	10	12	11	11	11
(left)	10	10	10	12	11	11	12
Pectoral fin rays	—	15	13	15	15	14	15
Pelvic fin rays	10	10	10	11	11	10	11
Scales in lateral line	120	126	119	124	120	119	120
Scales above lateral line	26	29	—	31	28	27	31
2 rows above	121	131	119	127	122	113	128
	0	0	0	0	0	0	0

CHARACTER ANALYSIS SHEET

Species Salmo gairdneri (fall spawning)

Locality Ruby Valley Fish Hatchery, Nevada

Field No. Fall Coll. by

Date of Coll. ~~Measurements~~ Conversions by C. F. Reid Date Oct. 6, 1959

Jar No. ____ No. of Jars ____ No. of Spec. ____ Specimen No. ____

Measurements in thousands of standard length

	22	23	24	25	26	27	28
Standard L	232 |431	238 |420	179 |559	274 |365	246 |406	257 |389	211 |474
Body D	220	227	235	234	245	245	232
Head L	220	223	246	237	235	222	237
Head D	164	168	168	168	162	163	161
Head W	116	130	129	124	130	124	123
Least interorbital bony W	65	67	67	69	69	70	66
Occiput to snout tip	159	164	168	172	162	156	171
Snout L	52	59	56	58	53	47	57
Orbit L	56	59	67	58	53	54	57
Upper Jaw L	116	118	123	124	114	113	123
Dorsal origin to snout tip	478	470	486	493	508	486	502
Depressed dorsal to insertion of adipose	—	—	—	—	—	—	—
Dorsal origin to anal o	328	340	335	347	341	346	351
Dorsal fin basal L	121	139	140	146	130	128	123
Dorsal fin depressed L	—	—	—	—	—	—	—
Adipose fin depressed L	73	71	84	73	73	74	71
Caudal peduncle D	95	101	106	106	102	105	100
Caudal peduncle L	190	168	168	164	171	175	180

CHARACTER ANALYSIS SHEET

Species Salmo gairdneri

Locality Ruby Valley Fish Hatchery - Nevada

Field No. Fall Coll. by P.R. Needham

Date of Coll. 8-19-58 Measurements by Behnke Date 10-4-58

Jar No. 1 No. of Jars 1 No. of Spec. 30 Specimen No.

	29	30		Range		$\bar{X}$
Standard L	223	213		199 - 282		240.4
Body D	52	53		42 - 65		54.3
Head L	51	50		44 - 65		49.6
Head D	37	38		30 - 48		37.6
Head W	28	28		23 - 34		28.4
Least interorbital bony W	15	15		12 - 20		15.7
Occiput to snout tip	35	36		30 - 44		41.2
Snout L	12	12		10 - 16		12.0
Orbit L	14	13		12 - 16		12.9
Upper Jaw L	25	25		22 - 34		25.9
Dorsal origin to snout tip	107	103		96 - 135		108.1
Depressed dorsal to	—	—		—	—	—
insertion of adipose				—	—	—
Dorsal origin to anal o	80	78		100 - 60		77.9
Dorsal fin basal L	33	32		25 - 40		37.1
Dorsal fin depressed L	~~15~~	—		—	—	—
Adipose fin depressed L	15	—		12 - 20		
Caudal peduncle D	22	23				
Caudal peduncle L	37	38				
Vertebrae						
First arch gill rakers (upper)	8	9		7 - 9		7.4
(lower)	12	12		10 - 14		11.6
(total)	20	21		18 - 22		18.5
Basibranchial teeth	0	0		0		0
Branchiostegal rays (right)	11	11		10 - 12		10.6
(left)	11	11				
Pectoral fin rays	15	14				
Pelvic fin rays	10	10				
Scales in lateral line	123	122				
Scales above lateral line	30	30				
2 rows above	131	124	139			
	0	0				

CHARACTER ANALYSIS SHEET

Species Salmo gairdneri (fall spawning)

Locality Ruby Valley Fish Hatchery, Nevada

Field No. Fall Coll. by

Date of Coll. ~~Measurements~~ Conversions by C. F. Reid Date Oct. 6, 1959

Jar No. ____ No. of Jars ____ No. of Spec. ____ Specimen No. ____

Measurements in thousands of standard length

	29	30					
Standard L	223 1448	213 1462					
Body D	233	249					
Head L	228	235					
Head D	166	178					
Head W	125	131					
Least interorbital bony W	67	70					
Occiput to snout tip	157	169					
Snout L	54	56					
Orbit L	63	61					
Upper Jaw L	112	117					
Dorsal origin to snout tip	479	483					
Depressed dorsal to insertion of adipose	—	—					
Dorsal origin to anal o	358	366					
Dorsal fin basal L	148	150					
Dorsal fin depressed L	—	—					
Adipose fin depressed L	67	—					
Caudal peduncle D	99	108					
Caudal peduncle L	166	178					

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

Species Salmo clarki Locality Little South Poudre

Collected by Miller & Walters Date Aug 11, 1965

Cat. # Measurements by G.W. Date May 26, 1970

Specimen #	1	2	3	4	5	6		
Total L.	229	224	166	230	202	123		
Standard L	220	188	138	194	177	106		
Body D								
Head L	49	51	36	56	47	27		
Orbit L								
Upper Jaw L	27	27	19	32	27	15		
Dors. Orig. to Snt. tip	98	99	72	98	84	49		
Dorsal fin basal L								
Dorsal fin depressed L	38	40	28	42	37	24		
Adip. fin depressed L	17	18	12	17	17	11		
Caudal peduncle D								
Caudal peduncle L								
Vertebrae								
1st Arch gill rakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal Rays								
Anal rays								
Pectoral fin rays								
Pelvic fin rays								
Scales in lateral line								
Scales above lateral line	54	55	56	52	52	50		
Scales 2 rows above lat.	224	220	212	211	203	208		
~~Scales 2 rows below lat.~~ COUNT	59	58	61	–	54	57		
~~(around)~~ 1976 ER.	223	219	214	212	195	222		
Pyloric caeca								
Dentition								
Anal fin base								
Anal fin depressed								
Dors. Origin - caudal								
P fin - snout								
P fin caudal								
Pre orbital - Post orbital								

VERTEBRAE N = 6 $\bar{x}$ = 62.0

61	62	63
2	2	2

SCALES

Above l.l.	N = 6	Range = 50-56	$\bar{x}$ = 53.2
lat. series	N = 6	Range = 203-224	$\bar{x}$ = 213.0
J.R. 1972 counts	N = 5	54-61	$\bar{x}$ = 57.8
	N = 6	195-223	$\bar{x}$ = 214.2

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Salmo Clarki LOCALITY Little South Poudre

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	(Range)			$\bar{x}$				
Total L.	(123	229)		195.7				
Standard L.	(106	220)		170.5				
Body D								
Head L	(27	51)		44.3				
Orbit L								
Upper Jaw L	(15	32)		24.5				
Dors. Orig. to Snt. tip	(49	99)		83.3				
Dorsal fin basal L								
Dorsal fin depressed L	(24	42)		34.8				
Adip. fin depressed L	(11	18)		15.3				
Caudal peduncle D								
Caudal peduncle L								
Vertebrae								
1st Arch gillrakers (up)								
(lower)								
(total)								
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	(50	56)		53.2				
Scales 2 rows above lat.	(203	224)		213.0				
Pelvic fin rays								
Pyloric caeca								
Dentition								

South Platte River

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

Species Salmo clarki Locality Little South Poudre River Pingree Park above Starkey's Ponds

Collected by NEHRING, TROJNAR, & WERNSMAN Date July 28, 1970

Cat. # Measurements by Date

Specimen #	1	2	3	4	5	6	7	8
Total L.	257	266	299	276	321	251	187	323
Standard L	223	231	260	243	277	215	163	280
Body D								
Head L	58	59	71	61	75	55	45	74
Orbit L	14	15	17	14	17	14	12	17
Upper Jaw L	32	34	44	34	46	33	24	46
Dors. Orig. to Snt. tip								
Dorsal fin basal L								
Dorsal fin depressed L	47	46	51	49	55	48	36	55
Adip. fin depressed L	22	22	31	21	28	22	15	27
Caudal peduncle D								
Caudal peduncle L								
Vertebrae								
1st Arch gill rakers (up)	10	8	9	7	9	8	9	9
(lower)	13	12	12	12	14	12	14	13
(total)	23	20	21	19	23	20	23	22
Branchiostegal rays right								
(left)								
Dorsal Rays								
Anal rays								
Pectoral fin rays								
Pelvic fin rays	9	9	9	9	9	9	9	9
Scales in lateral line								
Scales above lateral line	57	56	7	59	?	53	60?	7
Scales 2 rows above lat.	264	208		242	251?	223	229	
~~Scales 2 rows below lat.~~	62	52	—	54	—	54	54	
1972 LOUNTS ~~(around)~~ JR	236	208	—	231	—	208	220	
Pyloric caeca	34	42	29	38	31	27	40	31
Dentition	14	2	14	15	7	10	11	13
Anal fin base								
Anal fin depressed								
Dors. Origin - caudal								
P fin - snout								
P fin caudal								
Pre orbital - Post orbital								

COUNTS 1972 N = 11 $\bar{X}$ = 61.8

60	61	62	63
2	3	1	5

VERTEBRAE

60	61	62	63
1	4	2	5

N = 12 $\bar{X}$ = 61.9

GILL RAKERS

19	20	21	22	23
1	3	3	1	4

N = 12 $\bar{X}$ = 21.3

BRANCHIOSTEGAL RAYS ~~N=~~

R. N = Range = $\bar{X}$ =

L. N = Range = $\bar{X}$ =

PELVIC FIN RAYS N = 12 Range = 8-9 $\bar{X}$ = 8.9

PYLORIC CAECA N = 12 RANGE = 27-50 $\bar{X}$ = 35.2

SCALES

Above LL. N = 8 RANGE = ~~205-264~~ 53-60 $\bar{X}$ = 56.7

LAT. SERIES N = 9 Range = 208-264 $\bar{X}$ = 231.8

J.R. 1972 counts N = 7 52-62 $\bar{X}$ = 55.6

N = 8 205-236 $\bar{X}$ = 216.5

DENTITION N = RANGE = $\bar{X}$ = 11.1

South Platte River

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

Species Salmo clarki Locality Little South Poudre River, Pingree Park above Starkey's Ponds

Collected by Nehring, Trojnar & Wernsman Date July 28, 1970

Cat. # _____ Measurements by _____ Date _____

Specimen #	9	10	11	12				
Total L.	229	296	287	275				
Standard L	197	256	252	246				
Body D								
Head L	56	69	64	64				
Orbit L	14	16	15	16				
Upper Jaw L	31	36	38	37				
Ders. Orig. to Snt. tip								
Dorsal fin basal L								
Dorsal fin depressed L	35	52	50	54				
Adip. fin depressed L	19	27	22	25				
Caudal peduncle D								
Caudal peduncle L								
Vertebrae								
1st Arch gill rakers (up)	8	8	9	8				
(lower)	13	13	14	12				
(total)	21	21	23	20				
Branchiostegal rays right								
(left)								
Dorsal Rays								
Anal rays								
Pectoral fin rays								
Pelvic fin rays	9	8	9	9				
Scales in lateral line								
Scales above lateral line	57?	56	?	56				
Scales 2 rows above lat.	246	211		212				
~~Scales 2 rows below lat.~~	—	57		56				
1972 counts ~~(around)~~ J.R.	218	206		205				
Pyloric caeca	50	31	35	34				
Dentition	8	17	17	5				
Anal fin base								
Anal fin depressed								
Dors. Origin - caudal								
P fin - snout								
P fin caudal								
Pre orbital - Post orbital								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Salmo Clarki LOCALITY South Platte River

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	(Range)			$\bar{X}$				
Total L.	(187	- 323)		272.3				
Standard L.	(163	- 280)		236.9				
Body D								
Head L	(45	- 71)		62.6				
Orbit L	(12	- 17)		15.1				
Upper Jaw L	(24	- 46)		36.3				
Dors. Orig. to Snt. tip								
Dorsal fin basal L								
Dorsal fin depressed L	(35	- 55)		48.2				
Adip. fin depressed L	(15	- 31)		23.4				
Caudal peduncle D								
Caudal peduncle L								
Vertebrae								
1st Arch gillrakers (up)	(7	- 10)		8.5				
(lower)	(12	- 14)		12.8				
(total)	(19	- 23)		21.3				
Branchiostegal rays right								
(left)								
Dorsal rays								
Anal rays								
Pectoral fin rays	(8	- 9)		8.9				
Scales in lateral line								
Scales above lateral line	(53	- 60)		56.7				
Scales 2 rows above lat.	(208	- 264)		231.8				
Pelvic fin rays	(8	- 9)		8.9				
Pyloric caeca	(27	- 50)		35.2				
Dentition								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY _____

COLLECTED BY _____ DATE _____

Cat. # _____ ~~Measurements~~ Clear, by _____ DATE _____

Specimen #	1	2	3	4	5	6	7	8
Total L.								
Standard L.								
Body D								
Head L	260	255	273	251	271	256	276	264
Orbit L	063	065	065	058	061	065	074	061
Upper Jaw L	143	147	169	140	166	153	147	164
Dors. Orig. to Snt. tip	505	490	514	510	499	500	500	518
Dorsal fin basal L								
Dorsal fin depressed L	211	199	196	202	199	223	221	196
Adip. fin depressed L	099	095	119	086	101	102	092	096
Caudal peduncle D	122	130	120	124	118	114	128	125
Caudal peduncle L	168	170	160	178	164	173	168	172
Vertebrae								
1st Arch gillrakers (up)	10	8	9	7	9	8	9	9
(lower)	13	12	12	12	14	12	14	13
(total)	23	20	21	19	23	20	23	22
Branchiostegal rays right	10	10	10	10	10	10	10	10
(left)	10	10	10	10	10	11	11	11
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	62	52	57	54	56	54	54	53
Scales 2 rows above lat.	236	208	221	231	208	208	220	223
Pelvic fin rays	9	9	9	9	9	9	9	9
Pyloric caeca	34	42	29	38	31	27	40	31
Dentition	14	2	14	15	7	10	11	13

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY _____

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by Consensus _____ DATE _____

Specimen #	9	10	11	12	13	14	15	16
Total L.								
Standard L.								
Body D								
Head L	284	270	254	260	223	271	261	289
Orbit L	071	063	060	065				
Upper Jaw L	157	141	151	150	123	144	138	165
Dors. Orig. to Snt. tip	562	500	499	508	445	527	522	505
Dorsal fin basal L								
Dorsal fin depressed L	178	203	198	220	173	213	203	216
Adip. fin depressed L	096	105	087	102	077	096	087	088
Caudal peduncle D	124	126	121	120	123	116	125	124
Caudal peduncle L	170	169	168	165	129	163	164	173
Vertebrae								
1st Arch gillrakers (up)	8	8	9	8	8	7	9	9
(lower)	13	13	14	12	12	12	13	14
(total)	21	21	23	20	20	19	22	23
Branchiostegal rays right	10	10	10	10	10	10	10	10
(left)	10	11	10	11	11	10	10	10
Dorsal rays	10	11	10	11	11	10	10	10
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	57	57	56	56	59	58	61	52
Scales 2 rows above lat.	218	206	211	205	223	219	214	212
Pelvic fin rays	9	8	9	9	9	9	9	9
Pyloric caeca	50	31	35	34	38	31	27	34
Dentition	8	17	17	5	15	13	14	14

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY _____

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #	17	18						
Total L.								
Standard L.								
Body D	266							
Head L	266	255						
Orbit L								
Upper Jaw L	153	142						
Dors. Orig. to Snt. tip	475	462						
Dorsal fin basal L								
Dorsal fin depressed L	209	226						
Adip. fin depressed L	096	104						
Caudal peduncle D	132	113						
Caudal peduncle L	167	168						
Vertebrae								
1st Arch gillrakers (up)	10	8						
(lower)	13	13						
(total)	23	21						
Branchiostegal rays right	10	10						
(left)	10	11						
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	54	57						
Scales 2 rows above lat.	195	208						
Pelvic fin rays	9	9						
Pyloric caeca	42	40						
Dentition	2	11						

Fm. R. R. Miller, U. Mich.

CHARACTER ANALYSIS SHEET

Page ____ of ____ pages

Species *Salmo clarkii stomias*

Locality Colo., Albion Ck., Trib. Boulder Ck., Boulder Co. below Albion

UMMZ ~~Field~~ No. 170949 Coll. by Tanner, Hayes, Bassett, & Powel

Date of Coll. XI:16:55 Measurements by Behnke Date 12-1-59

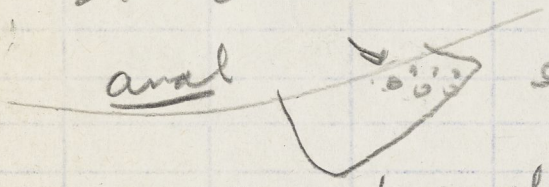
Jar No. ____ No. of Jars ____ No. of Spec. 9 Specimen No. ____

	1	2	3	4	5	6	7
Standard L	166	164	158	121	114	151	106
Body D	45	41	41	30	29	38	28
Head L	44	43	41	34	30	39	28
Head D	29	28	28	22	21	27	19
Head W							
Least interorbital bony W	12	11	11	8	8	10	7
Occiput to snout tip	30	32	30	25	23	23	21
Snout L	9	10	10	8	7	9	7
Orbit L	12	12	12	9	8	11	8
Upper Jaw L	25	23	24	20	17	27	15
Dorsal origin to snout tip	83	82	79	62	57	76	52
Depressed dorsal to insertion of adipose							
Dorsal origin to anal o							
Dorsal fin basal L	24	23	22	19	18	23	17
Dorsal fin depressed L	39	41	36	30	31	37	27
Adipose fin depressed L	15	15	17	12	12	15	10
Caudal peduncle D	21	19	19	15	15	17	13
Caudal peduncle L	27	27	26	21	19	25	19
Vertebrae	60	60	60	60	61	61	59
First arch gill rakers (upper)	8	8	7	9	8	9	7
(lower)	12	11	11	12	11	13	11
(total)	20	19	18	21	19	22	18
Basibranchial teeth	5 very small	23	4	4	1	7	4
Branchiostegal rays (right)	10	10	10	10	10	10	10
(left)	10	10	10	10	11	11	11
Pectoral fin rays	14	14	14	15	15	15	15
Pelvic fin rays	9	9	9	10	9	9	9
Scales in lateral line	119	128	121	118	118	120	120
Scales above lateral line	apx 46	apx 45	48	47	50	51	48
2 rows above	189	195	178	192	188	205	197
Miller —	192	197	190	192	185	205	190

These are typical stomias

- very large, round, black spot, sparsely to fairly heavily scattered on sides of body. Few spots on side of head in some specimens. most have no head spots. spots both above & below lat. line - but largest & most numerous spots on caudal peduncle.

No. spots on pectoral or pelvic fins - no spots on abdomen - dorsal, adipose & post ½ anal spotted - tail heavily spotted



- Some of smaller specimens have only few spots on base of anal - as in ~~[illegible]~~ hershaui.

- Preserved colors - dark - brownish gray - parr marks faintly developed.

- chunky body like Pine Valley Utah.

1

CHARACTER ANALYSIS SHEET

Species Salmo clarkii stomias

Locality Albion Creek, Colo.

~~Field No.~~ UMMZ 170949 Coll. by

Date of Coll. _____ ~~Measurements~~ Conversions by C. F. Reid Date Dec. 2, 1949

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

Measurements in thousands of standard length

	1	2	3	4	5	6	7
Standard L	166 |602	164 |610	158 |633	121 |826	114 |877	151 |662	106 |943
Body D	271	250	260	248	254	252	264
Head L	265	262	260	281	263	258	264
Head D	175	171	177	182	184	179	179
Head W							
Least interorbital bony W	72	67	70	66	70	66	66
Occiput to snout tip	181	195	190	206	202	152	198
Snout L	54	61	63	66	61	60	66
Orbit L	72	73	76	74	70	73	75
Upper Jaw L	150	140	152	165	149	179	141
Dorsal origin to snout tip	500	500	500	512	500	503	490
Depressed dorsal to insertion of adipose							
Dorsal origin to anal o							
Dorsal fin basal L	144	140	139	157	158	152	160
Dorsal fin depressed L	235	250	228	248	272	245	255
Adipose fin depressed L	90	92	108	99	105	99	94
Caudal peduncle D	126	116	120	124	132	113	123
Caudal peduncle L	163	165	165	173	167	166	179

CHARACTER ANALYSIS SHEET

Species Salmo clarkii stomias

Locality Albion Creek, Colo.

~~Field No.~~ UMMZ 170949 Coll. by

Date of Coll. ~~Measurements~~ Calculations by C. F. Reid Date Dec. 2, 1959

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

	N	Range	Mean	S.D.^{2}	S.D.	C.D.	SEM
Standard L	9	72-166	128				
Body D	7	248-271	257.0				
Head L		258-281	264.7				
Head D		171-184	178.1				
Head W							
Least interorbital bony W		66-72	68.1				
Occiput to snout tip		152-206	189.1				
Snout L		54-66	61.6				
Orbit L		70-76	73.3				
Upper Jaw L		140-179	153.7				
Dorsal origin to snout tip		490-512	500.7				
Depressed dorsal to insertion of adipose							
Dorsal origin to anal o							
Dorsal fin basal L		139-160	150.0				
Dorsal fin depressed L		228-272	247.6				
Adipose fin depressed L		90-108	98.1				
Caudal peduncle D		113-132	122.0				
Caudal peduncle L		163-179	168.3				
Vertebrae	9	59-61	60.1				
First arch gill rakers (upper)	9	7-9	7.8	.695	.834		.278
(lower)	9	11-13	11.7	.501	.708		.236
(total)	9	18-22	19.4	1.780	1.334		.445
Basibranchial teeth	7	1-23	6.9				
Branchiostegal rays (right)	9	9-10	9.9	0.111	0.334		0.111
(left)	9	9-11	10.3	0.501	0.708		0.236
Pectoral fin rays	9	14-15	14.6				
Pelvic fin rays	9	9-10	9.1				
Scales in lateral line	9	116-128	120.1				
Scales above lateral line	9	44-51	47.2	5.195	2.279		0.760
2 rows above	9	178-205	191.2				

X1:28:1960

THE UNIVERSITY OF MICHIGAN • MUSEUM OF ZOOLOGY • ANN ARBOR, MICHIGAN, U. S. A.

Dear Bob:

No doubt you have found this out already but Albion Creek is a tributary of Boulder Creek in Boulder Co. Colo., 1/2 mile below Lake Albion. Boulder Creek eventually reaches the South Platte drainage. Albion Creek is separated from the rest of the watershed by waterfalls. Dr. Howard Tanner could no doubt give you more details, probably including a map showing the precise locality where the trout were taken.

Regards -

R. R. Miller

ANN ARBOR, MICH.
NOV 28
11 30 AM
19 61

THIS SIDE OF CARD IS FOR ADDRESS

Mr. Robert Behnke
Dept. of Zoology
University of California
Berkeley 4,
CALIFORNIA

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Salmo clarki LOCALITY Water Canyon - Utah

COLLECTED BY Behnke, Slonaker, Claire, Roscoe, Murphy DATE Sept 1973

Cat. # _____ Measurements by Murphy DATE _____

Specimen # 13 total

	001	002	003	004	005	006	007	008
Total L.								
Standard L. 047	145	155	176	205	175	156	126	116
Body D								
Head L	270	290	290	288	309	288	286	284
Oroit L								
Upper Jaw L	148	168	159	166	166	154	159	138
Dors. Orig. to Snt. tip	504	490	534	493	509	500	524	491
Dorsal fin basal L								
Dorsal fin depressed L	270	245	256	244	274	256	262	259
Adip. fin depressed L	104	123	114	112	120	128	103	121
Caudal peduncle D	130	123	136	132	131	135	119	129
Caudal peduncle L	165	148	153	151	154	167	159	172
Vertebrae								
1st Arch gillrakers (up)	008	006	007	008	007	007	008	006
(lower)	012	013	012	011	012	013	013	012
(total)	020	019	019	019	019	020	021	018
Branchiostegal rays right	010	009	009	010	010	009	009	010
(left)	010	010	009	011	011	010	010	011
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	039	039	041	041	038	043	040	038
Scales 2 rows above lat.	153	161	167	149	165	148	152	148
Pelvic fin rays								
Pyloric caeca	035	039	029	038	035	040	037	031
Dentition	006	012	015	014	016	013	019	011

(1)
73 Sept

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Salmo clarki LOCALITY water canyon utah.

COLLECTED BY Behnke, Slonaker, claire DATE

Cat. # Measurements by DATE

Specimen #	1	2	3 (Faint belly spots)	4 (belly spots)	5	6 (No spots)	7	8
Total L.	142	185	210	234	209	183	152	139
Standard L.	115	155	176	205	175	156	126	116
Body D	~~21~~	~~45~~						
Head L	31	45	51	59	54	45	36	33
Oroit L								
Upper Jaw L	17	26	28	34	29	24	20	16
Dors. Orig. to Snt. tip	58	76	94	101	89	78	66	57
Dorsal fin basal L								
Dorsal fin depressed L	31	38	45	50	48	40	33	30
Adip. fin depressed L	12	19	20	23	21	20	13	14
Caudal peduncle D	15	19	24	27	23	21	15	15
Caudal peduncle L	19	23	27	31	27	26	20	20
Vertebrae								

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES Salmo clarki LOCALITY Water canyon Conversion

COLLECTED BY DATE

Cat. # Conversion Measurements by DATE

Specimen #

	009	010	011	012	013	MEANS		
Total L. 047								
Standard L.	~~116~~	~~119~~	~~133~~	~~127~~	~~124~~			
Body D								
Head L	284	286	278	281	276	286		
Oroit L								
Upper Jaw L	147	134	150	154	149	153		
Dors. Orig. to Snt. tip	483	487	504	488	477	499		
Dorsal fin basal L								
Dorsal fin depressed L	259	261	271	252	247	258		
Adip. fin depressed L	121	126	105	130	126	118		
Caudal peduncle D	129	126	128	122	121	128		
Caudal peduncle L	172	168	180	163	155	162		
Vertebrae								
1st Arch gillrakers (up)	007	008	007	006	006			
(lower)	012	011	012	013	011			
(total)	019	019	019	019	017	19.08		
Branchiostegal rays right	009	010	009	009	008	9.31		
(left)	011	010	010	010	010	10.23		
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	042	041	042	040	040	40.31		
Scales 2 rows above lat.	166	158	162	169	158	158.15		
Pelvic fin rays								
Pyloric caeca	036	035	033	033	038	35.31		
Dentition	010	007	007	006	010	11.23		

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES salmo clarki LOCALITY water Canyon

COLLECTED BY Behnke, Slonaker, claire DATE

Cat. # Measurements by DATE

Specimen #	9	10	ck again 11	12	13			
Total L.	137	144	160	147	201			
Standard L.	116	119	133	123	174			
Body D								
Head L	33	34	37	35	48			
Oroit L		~~60~~						
Upper Jaw L	17	16	20	19	26			
Dors. Orig. to Snt. tip	56	58	67	60	83			
Dorsal fin basal L								
Dorsal fin depressed L	30	31	36	31	43			
Adip. fin depressed L	14	15	14	16	22			
Caudal peduncle D	15	15	17	15	21			
Caudal peduncle L	20	20	24	20	27			
Vertebrae								

60	61	62	63	64
1	3	2	1	1

vent

$n = 8$

$\bar{X} = 61.75$

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES S. C. UTAH LOCALITY Birch crk - near Beaver UTAH

COLLECTED BY Behnke, Slowaker, Roscoe Murphy DATE Sept 1973

Cat. # _____ Measurements by _____ DATE _____

Specimen # 12

044

	001	002	003	004	005	006	007	008
Total L.								
Standard L.								
Body D								
Head L	260	275	290	275	277	297	295	296
Oroit L								
Upper Jaw L	126	133	151	143	157	148	163	148
Dors. Orig. to Snt. tip	486	496	515	505	506	549	512	496
Dorsal fin basal L								
Dorsal fin depressed L	220	212	218	214	217	236	223	237
Adip. fin depressed L	113	102	103	088	096	110	108	126
Caudal peduncle D	100	110	115	110	108	115	102	119
Caudal peduncle L	160	165	164	159	163	170	145	156
Vertebrae								
1st Arch gillrakers (up)	008	007	007	008	007	007	007	008
(lower)	012	012	012	012	012	012	011	011
(total)	020	019	019	020	019	019	018	019
Branchiostegal rays right	010	010	011	011	010	010	010	010
(left)	011	011	011	010	009	010	010	011
Dorsal rays								
Anal rays								
Pectoral fin rays								
Scales in lateral line								
Scales above lateral line	039	036	038	039	036	040	040	039
Scales 2 rows above lat.	155	151	156	163	153	163	151	155
Pelvic fin rays								
Pyloric caeca	024	037	039	034	043	036	035	40
Dentition	018	009	019	011	015	010	012	010

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Beechcreek, Wyo

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	001	002	003	004	005	006	007	008
Total L.	177	150	196	215	197	221	199	161
Standard L.	150	127	165	182	166	182	166	135
Body D								
Head L	39	35	48	50	46	54	49	40
Oroit L								
Upper Jaw L	19	17	25	26	26	27	27	20
Dors. Orig. to Snt. tip	73	63	85	92	84	100	85	67
Dorsal fin basal L								
Dorsal fin depressed L	33	27	36	39	36	43	37	32
Adip. fin depressed L	17	13	17	16	16	20	18	17
Caudal peduncle D	15	14	19	20	18	21	17	16
Caudal peduncle L	24	21	27	29	27	31	24	21

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Birch ck - Near Beaver, UTAH

COLLECTED BY Behnke, Slovakey, Roscoe, murphy DATE Sept 73

Cat. # _____ Measurements by _____ DATE _____

Specimen #	044	009	010	011	012				
Total L.									
Standard L.									
Body D									
Head L		266	291	275	267				
Oroit L									
Upper Jaw L		125	158	130	133				
Dors. Orig. to Snt. tip		533	519	506	492				
Dorsal fin basal L									
Dorsal fin depressed L		216	232	232	233				
Adip. fin depressed L		100	098	116	100				
Caudal peduncle D		116	113	109	108				
Caudal peduncle L		158	153	159	167				
Vertebrae									
1st Arch gillrakers (up)		008	008	007	008				
(lower)		010	011	013	011				
(total)		018	019	020	019				
Branchiostegal rays right		010	011	010	011				
(left)		010	011	011	011				
Dorsal rays									
Anal rays									
Pectoral fin rays									
Scales in lateral line									
Scales above lateral line		042	039	037	036				
Scales 2 rows above lat.		156	154	161	158				
Pelvic fin rays									
Pyloric caeca		040	042	031	034				
Dentition		004	001	015	010				

CHARACTER ANALYSIS SHEET - COLORADO COOPERATIVE FISHERY UNIT

SPECIES _____ LOCALITY Birch creek

COLLECTED BY _____ DATE _____

Cat. # _____ Measurements by _____ DATE _____

Specimen #

	009	010	011	012	13	14	15	16
Total L.	141	241	162	143				
Standard L.	120	203	138	120		$\bar{x}$		
Body D								
Head L	32	59	38	32		280		
Oroit L								
Upper Jaw L	15	32	18	16		143		
Dors. Orig. to Snt. tip	64	105	69	59		509		
Dorsal fin basal L				2				
Dorsal fin depressed L	26	47	32	28		224		
Adip. fin depressed L	12	20	16	12		105		
Caudal peduncle D	14	23	15	13		111		
Caudal peduncle L	19	31	22	20		159		
Vertebrae								

62	63	64
4	3	1

vert

$\bar{x} = 62.63$

These specimens taken from above barrier, should

CHARACTER ANALYSIS SHEET

Species Salmo clarki (pleuriticus?)

Locality Reservoir Canyon, near Pine Valley Utah

Field No. GBS-2A Coll. by Gard, Behnke, Seegrist

Date of Coll. 9-58 ~~Measurements~~ conversions by Middleton Date 2-20-59

Jar No. 1 No. of Jars 1 No. of Spec. 13 Specimen No.

	1	2	3	4	5	6	7
	Measurements in thousands of standard length						
Standard L	222	209	225	186	172	157	164
Body D	234	244	222	226	238	248	256
Head L	275	277	262	258	267	273	280
Head D	171	182	164	166	168	184	177
Head W	126	139	133	134	128	127	152
Least interorbital bony W	72	67	67	64	70	64	73
Occiput to snout tip	180	186	178	166	180	178	183
Snout L	68	72	62	59	64	64	73
Orbit L	59	62	62	64	64	70	67
Upper Jaw L	171	172	160	150	157	159	164
Dorsal origin to snout tip	504	521	502	483	488	483	493
Depressed dorsal to insertion of adipose	153	153	164	161	134	114	140
Dorsal origin to anal o	324	330	346	338	331	343	347
Dorsal fin basal L	135	124	147	145	134	146	134
Dorsal fin depressed L	207	201	213	215	215	229	213
Adipose fin depressed L	86	96	93	91	87	95	91
Caudal peduncle D	113	115	111	113	116	114	122
Caudal peduncle L	144	148	151	156	163	172	171
Vertebrae	64	63	63	62	61	62	61
First arch gill rakers (upper)	6	7	8	8	8	7	8
(lower)	13	12	11	12	11	12	13
(total)	19	19	19	20	19	19	21
Basibranchial teeth	2	1	4	3	1	3	1 (+6)
Branchiostegal rays (right)	10	11	10	10	10	11	11
(left)	12	11	10	12	11	11	11
Pectoral fin rays	15	14	14	14	14	14	14
Pelvic fin rays	9	9	9	9	9	9	9
Scales in lateral line	125	125	120	124	120	118	120
Scales above lateral line	—	—	40	40	43	44	46
	158	182	176	148	150	157	156

(+) = no. of root marks on basibranchials

basibranchials indicate teeth have fallen out; very fragile

These specimens taken from above barrier, should be pure strain of clarki.

CHARACTER ANALYSIS SHEET

Species Salmo clarki (pleuriticus)

Locality Reservoir Canyon, near Pine Valley Utah

Field No. GBS-2A Coll. by Gard, Behnke, Seegrist

Date of Coll. 9- -58 Measurements by Behnke Date 9-26-58

Jar No. 1 No. of Jars 1 No. of Spec. 13 ~~Specimen No.~~

	1	2	3	4	5	6	7
Standard L	222	209	225	186	172	157	164
Body D	52	51	50	42	41	39	42
Head L	61	58	59	48	46	43	46
Head D	38	38	37	31	29	29	29
Head W	28	29	30	25	22	20	25
Least interorbital bony W	16	14	15	12	12	10	12
Occiput to snout tip	40	39	40	31	31	28	30
Snout L	15	15	14	11	11	10	12
Orbit L	13	13	14	12	11	11	11
Upper Jaw L	38	36	36	28	27	25	27
Dorsal origin to snout tip	112	109	113	90	84	76	81
Depressed dorsal to insertion of adipose	34	32	37	30	23	18	23
Dorsal origin to anal o	72	69	78	63	57	54	57
Dorsal fin basal L	30	26	33	27	23	23	22
Dorsal fin depressed L	46	42	48	40	37	36	35
Adipose fin depressed L	19	20	21	17	15	15	15
Caudal peduncle D	25	24	25	21	20	18	20
Caudal peduncle L	32	31	34	29	28	27	28

CHARACTER ANALYSIS SHEET

Species *Salmo clarki*

Locality *Reservoir Canyon, Pine Valley Mtns. Utah*

Field No. *GBS-2A* Coll. by *Gard, Behnke, Seegrist*

Date of Coll. *9-12-58* ~~Measurements~~ conversions by *Middleton* Date *2-20-59*

Jar No. *1* No. of Jars *1* No. of Spec. *13* Specimen No.

Measurements in thousandths of standard length

	8	9	10	11	12	13
Standard L	176	170	120	176	137	142
Body D	273	253	258	244	241	260
Head L	290	282	275	267	270	260
Head D	187	182	192	187	182	190
Head W	142	141	133	142	139	141
Least interorbital bony W	68	71	58	68	66	63
Occiput to snout tip	187	194	192	182	190	183
Snout L	74	76	58	68	58	58
Orbit L	68	76	75	68	66	63
Upper Jaw L	176	165	150	165	146	148
Dorsal origin to snout tip	540	512	491	494	503	507
Depressed dorsal to insertion of adipose	159	147	125	142	146	141
Dorsal origin to anal o	352	341	333	341	335	345
Dorsal fin basal L	142	147	142	136	146	155
Dorsal fin depressed L	222	223	217	216	219	239
Adipose fin depressed L	102	94	100	102	95	92
Caudal peduncle D	119	118	125	119	117	127
Caudal peduncle L	159	171	183	176	160	155
Vertebrae	62	62	62	62	61	61
First arch gill rakers (upper)	8	8	8	8	7	7
(lower)	12	12	13	12	13	12
(total)	20	20	21	20	20	19
Basibranchial teeth	1	1 (+4 or 5)	7	0 (+4-5)	1	5
Branchiostegal rays (right)	11	11	11	11	12	11
(left)	11	11	10	11	11	11
Pectoral fin rays	14	14	14	14	14	14
Pelvic fin rays	9	9	9	9	9	9
Scales in lateral line	122	127	121	123	119	119
Scales above lateral line	—	42	40	45	38	43
	166	155	145	168	—	149

CHARACTER ANALYSIS SHEET

Species *Salmo clarki*

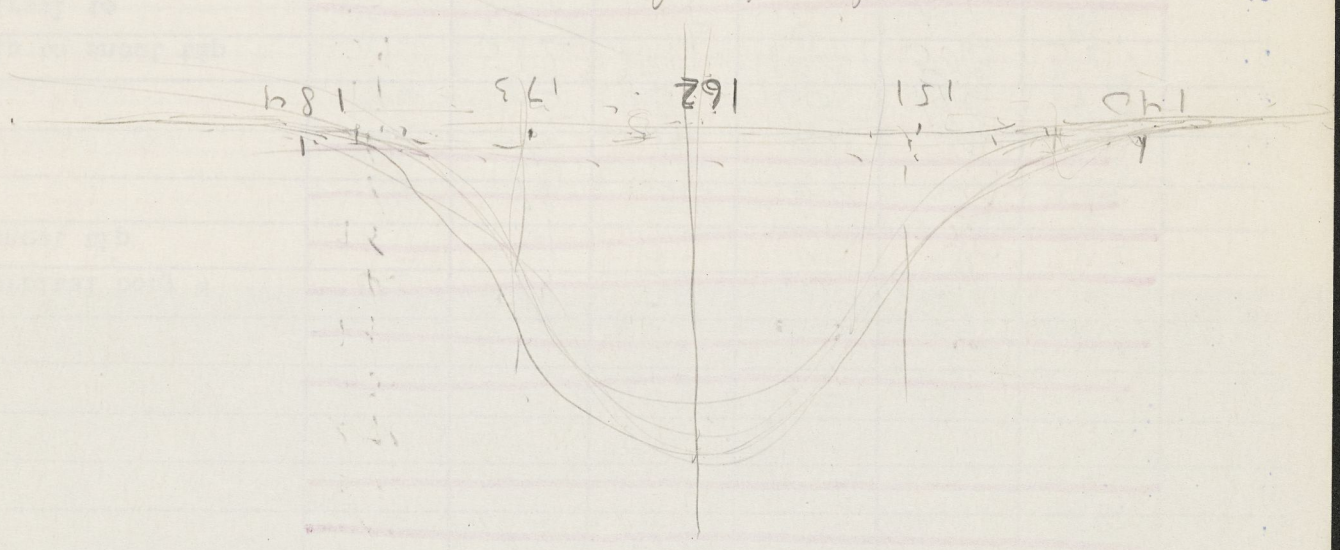
Locality *Reservoir Canyon, Pine Valley Mtns. Utah*

Field No. *GBS-2A* Coll. by *Gard, Behnke, Seegrist*

Date of Coll. *9-12-58* Measurements by *Behnke* Date *9-30-58*

Jar No. *1* No. of Jars *1* No. of Spec. *13* ~~Specimen No.~~

	8	9	10	11	12	13
Standard L	176	170	120	186	137	142
Body D	48	43	31	43	33	37
Head L	51	48	33	47	37	37
Head D	33	31	23	33	25	27
Head W	25	24	16	25	19	20
Least interorbital bony W	12	12	7	12	9	9
Occiput to snout tip	33	33	23	32	26	26
Snout L	13	13	7	12	8	8
Orbit L	12	13	9	12	9	9
Upper Jaw L	31	28	18	29	20	21
Dorsal origin to snout tip	95	87	59	87	69	72
Depressed dorsal to insertion of adipose	28	25	15	25	20	20
Dorsal origin to anal o	62	58	40	60	46	49
Dorsal fin basal L	25	25	17	24	20	22
Dorsal fin depressed L	39	38	26	38	30	34
Adipose fin depressed L	18	16	12	18	13	13
Caudal peduncle D	21	20	15	21	16	18
Caudal peduncle L	28	29	22	31	22	22



122.
168

	1	2	3	4	5	6	7	8	9	10		
Card. Ped D	122	130	120	124	118	114	128	125	124		126	
Card. Ped L	168	170	160	178	164	173	168	172	170		169	
			(1)		(2)	(3)		(4)	(5)	(6)		
	11	12	13	14	15	16	17	18				
Card. Ped D	121	120	123	116		125	124	132	113			
Card. Ped. L	168	165	179	163		164	173	167	168			
Dors. Org. Sut. tip	505	490	514	510	499	500	500	518		502		500
	499	508	498	499	501	512	500	512				

498-512

SU

S.V