

**SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY**  
**Bear Butte Creek, Meade County**  
**49-0023-00**  
**1993**

Table 1. Population and Biomass Estimates for Bear Butte Creek

<b>Site Number:</b> 733	<b>Date Sampled:</b> 09/15/1993	<b>Conductivity (umhos/cm):</b> 950
<b>Site Midpoint (Latitude, Longitude):</b> 44.41383075, -103.49230179	<b>Site Length (m):</b> 100	<b>pH:</b> 8.3
<b>Survey Completed by:</b> South Dakota Game, Fish and Parks	<b>Mean Width (m):</b> 4.5	<b>Water Temperature (C):</b> 12.0
<b>Stream Classification:</b> BK3, BR1	<b>Number of Pass:</b> 3	<b>Voltage:</b> 200

Species	Size Class	Total Number Captured	Est. # in site	Upper 95% CI	Lower 95% CI	# per Hectacre	Kg per Hectacre	# per Km	# per Acre	lb. per Acre	# per Mile	Mean Length (mm)	Mean Weight (grams)
Brook Trout	<200mm	11	11	13	11	243	10	110	99	9.01	177	158.7	41.5
Brook Trout	>=200mm	2	2	2	2	44	5	20	18	4.35	32	221.0	110.0
Brook Trout	All	13	13	15	13	288	15	130	116	13.35	209	168.3	52.0
Brown Trout	<200mm	23	23	24	23	509	26	230	206	23.45	370	166.3	51.6
Brown Trout	>=200mm	19	23	34	19	509	55	230	206	48.81	370	216.1	107.4
Brown Trout	All	43	44	48	43	973	75	440	394	66.80	708	188.8	76.9
Fathead Minnow	All	1	1	1	1	22	0	10	9	0.04	16	58.0	2.0
Hatchery Brown Trout	>=200mm	32	32	33	32	708	126	320	287	112.79	515	261.0	178.4
Hatchery Brown Trout	All	32	32	33	32	708	126	320	287	112.79	515	261.0	178.4
Longnose Dace	All	166	165	180	166	3650	10	1650	1478	9.05	2655	67.8	2.8
Mountain Sucker	All	9	9	11	9	199	4	90	81	3.77	145	128.2	21.2
White Sucker	All	14	14	15	14	310	56	140	125	50.06	225	238.1	181.0

**Site Number:** 862  
**Site Midpoint (Latitude, Longitude):** 44.38006268, -103.59667359

**Date Sampled:** 07/14/1993  
**Site Length (m):** 100

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: None

Mean Width (m): 4.3

Number of Pass: 3

Conductivity (umhos/cm): 222

pH: 9.4

Water Temperature (C): 12.0

Voltage: 400

Species	Size Class	Total Number Captured	Est. # in site	Upper 95% CI	Lower 95% CI	# per Hectacre	Kg per Hectacre	# per Km	# per Acre	lb. per Acre	# per Mile	Mean Length (mm)	Mean Weight (grams)
Unidentified YOY Trout	<200mm	1	1	1	1	23	0	10	9	0.04	16	63.0	2.0
Unidentified YOY Trout	All	1	1	1	1	23	0	10	9	0.04	16	63.0	2.0

Site Number: 976

Site Midpoint (Latitude, Longitude): 44.32812906, -103.64456485

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK0, RB0

Date Sampled: 04/16/1993

Site Length (m): 102

Mean Width (m): 3.5

Number of Pass: 4

Conductivity (umhos/cm): 130

pH: 6.7

Water Temperature (C): 4.0

Voltage: 250

Species	Size Class	Total Number Captured	Est. # in site	Upper 95% CI	Lower 95% CI	# per Hectacre	Kg per Hectacre	# per Km	# per Acre	lb. per Acre	# per Mile	Mean Length (mm)	Mean Weight (grams)
Brook Trout	<200mm	2	2	2	2	56	1	20	23	0.71	32	111.5	14.0
Brook Trout	All	2	2	2	2	56	1	20	23	0.71	32	111.5	14.0
Longnose Dace	All	71	323	1282	71	9124	21	3167	3695	18.47	5095	63.3	2.3
Mountain Sucker	All	2	2	4	2	56	1	20	23	0.71	32	116.5	14.0
Rainbow Trout	<200mm	1	1	3	1	28	0	10	11	0.30	16	105.0	12.0
Rainbow Trout	All	1	1	3	1	28	0	10	11	0.30	16	105.0	12.0
White Sucker	All	2	2	5	2	56	1	20	23	1.21	32	131.0	24.0

Site Number: 976

Site Midpoint (Latitude, Longitude): 44.32812906, -103.64456485

Survey Completed by: OEA Research Inc.

Date Sampled: 06/10/1993

Site Length (m): 100

Conductivity (umhos/cm):

pH:

Stream Classification: BK0, RB2

Mean Width (m): 0.0

Water Temperature (C):

Number of Pass: 4

Voltage:

Species	Size Class	Total Number Captured	Est. # in site	Upper 95% CI	Lower 95% CI	# per Hectacre	Kg per Hectacre	# per Km	# per Acre	lb. per Acre	# per Mile	Mean Length (mm)	Mean Weight (grams)
Brook Trout	<200mm	6	6	7	6	0	0	60	0	0.00	97	139.8	28.8
Brook Trout	All	6	6	7	6	0	0	60	0	0.00	97	139.8	28.8
Longnose Dace	All	59	79	107	59	0	0	790	0	0.00	1271	68.2	3.3
Rainbow Trout	<200mm	1	1	1	1	0	0	10	0	0.00	16	192.0	87.0
Rainbow Trout	>=200mm	2	2	2	2	0	0	20	0	0.00	32	215.0	121.0
Rainbow Trout	All	3	3	3	3	0	0	30	0	0.00	48	207.3	109.7

Site Number: 977

Date Sampled: 04/16/1993

Conductivity (umhos/cm): 140

Site Midpoint (Latitude, Longitude): 44.32765077, -103.64555220

Site Length (m): 100

pH: 6.0

Survey Completed by: South Dakota Game, Fish and Parks

Mean Width (m): 4.6

Water Temperature (C): 4.0

Stream Classification: None

Number of Pass: 3

Voltage: 250

Species	Size Class	Total Number Captured	Est. # in site	Upper 95% CI	Lower 95% CI	# per Hectacre	Kg per Hectacre	# per Km	# per Acre	lb. per Acre	# per Mile	Mean Length (mm)	Mean Weight (grams)
Longnose Dace	All	66	128	239	66	2795	6	1280	1132	5.68	2060	64.6	2.3
Mountain Sucker	All	13	16	26	13	349	4	160	141	3.17	257	98.5	10.2
White Sucker	All	1	1	1	1	22	2	10	9	1.44	16	199.0	74.0

Site Number: 977

Date Sampled: 06/10/1993

Conductivity (umhos/cm):

Site Midpoint (Latitude, Longitude): 44.32765077, -103.64555220

Site Length (m): 100

pH:

Survey Completed by: OEA Research Inc.

Mean Width (m): 0.0

Water Temperature (C):

Stream Classification: BK0, RB2

Number of Pass: 4

Voltage:

Species	Size Class	Total Number Captured	Est. # in site	Upper 95% CI	Lower 95% CI	# per Hectacre	Kg per Hectacre	# per Km	# per Acre	lb. per Acre	# per Mile	Mean Length (mm)	Mean Weight (grams)
Brook Trout	<200mm	8	8	8	8	0	0	80	0	0.00	129	131.5	34.8
Brook Trout	All	8	8	8	8	0	0	80	0	0.00	129	131.5	34.8
Longnose Dace	All	44	68	111	44	0	0	680	0	0.00	1094	71.5	3.6
Rainbow Trout	<200mm	1	1	1	1	0	0	10	0	0.00	16	194.0	97.0
Rainbow Trout	>=200mm	2	2	2	2	0	0	20	0	0.00	32	215.0	134.0
Rainbow Trout	All	3	3	3	3	0	0	30	0	0.00	48	208.0	121.7
White Sucker	All	2	2	4	2	0	0	20	0	0.00	32	120.5	20.5

Site Number: 986

Site Midpoint (Latitude, Longitude): 44.32485945, -103.65187821

Survey Completed by: OEA Research Inc.

Stream Classification: BK3, RB2

Date Sampled: 05/10/1993

Site Length (m): 100

Mean Width (m): 0.0

Number of Pass: 3

Conductivity (umhos/cm):

pH:

Water Temperature (C):

Voltage:

Species	Size Class	Total Number Captured	Est. # in site	Upper 95% CI	Lower 95% CI	# per Hectacre	Kg per Hectacre	# per Km	# per Acre	lb. per Acre	# per Mile	Mean Length (mm)	Mean Weight (grams)
Brook Trout	<200mm	9	9	10	9	0	0	90	0	0.00	145	129.9	29.8
Brook Trout	>=200mm	1	1	2	1	0	0	10	0	0.00	16	222.0	88.0
Brook Trout	All	10	10	11	10	0	0	100	0	0.00	161	139.1	36.2
Longnose Dace	All	3	3	5	3	0	0	30	0	0.00	48	73.3	3.0
Rainbow Trout	>=200mm	2	2	2	2	0	0	20	0	0.00	32	230.0	151.0
Rainbow Trout	All	2	2	2	2	0	0	20	0	0.00	32	230.0	151.0
White Sucker	All	6	6	7	6	0	0	60	0	0.00	97	122.2	18.2

Site Number: 988

Site Midpoint (Latitude, Longitude): 44.32359378, -103.65026058

Survey Completed by: OEA Research Inc.

Stream Classification: BK3, RB2

Date Sampled: 05/10/1993

Site Length (m): 100

Mean Width (m): 0.0

Number of Pass: 5

Conductivity (umhos/cm):

pH:

Water Temperature (C):

Voltage:

Species	Size Class	Total Number Captured	Est. # in site	Upper 95% CI	Lower 95% CI	# per Hectacre	Kg per Hectacre	# per Km	# per Acre	lb. per Acre	# per Mile	Mean Length (mm)	Mean Weight (grams)
Brook Trout	<200mm	15	15	16	15	0	0	150	0	0.00	241	128.1	27.1
Brook Trout	>=200mm	1	1	4	1	0	0	10	0	0.00	16	203.0	83.0
Brook Trout	All	16	16	17	16	0	0	160	0	0.00	257	132.8	30.6
Longnose Dace	All	389	388	420	389	0	0	3880	0	0.00	6243	56.8	2.7
Rainbow Trout	<200mm	1	1	1	1	0	0	10	0	0.00	16	194.0	118.0
Rainbow Trout	>=200mm	1	1	1	1	0	0	10	0	0.00	16	214.0	124.0
Rainbow Trout	All	2	2	2	2	0	0	20	0	0.00	32	204.0	121.0
White Sucker	All	28	48	97	28	0	0	480	0	0.00	772	101.4	10.5

Site Number: 1048

Site Midpoint (Latitude, Longitude): 44.29859320, -103.67654526

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK3

Date Sampled: 06/28/1993

Site Length (m): 100

Mean Width (m): 3.1

Number of Pass: 3

Conductivity (umhos/cm):

pH:

Water Temperature (C):

Voltage:

110

8.0

18.0

350

Species	Size Class	Total Number Captured	Est. # in site	Upper 95% CI	Lower 95% CI	# per Hectacre	Kg per Hectacre	# per Km	# per Acre	lb. per Acre	# per Mile	Mean Length (mm)	Mean Weight (grams)
Brook Trout	>=200mm	1	1	1	1	33	6	10	13	5.37	16	252.0	184.0
Brook Trout	All	1	1	1	1	33	6	10	13	5.37	16	252.0	184.0
Fathead Minnow	All	2	2	4	2	65	0	20	26	0.09	32	60.5	1.5
Longnose Dace	All	1158	2049	2398	1700	66961	105	20490	27119	93.40	32968	47.0	1.6

Mountain Sucker	All	308	411	475	347	13431	117	4110	5440	104.71	6613	83.7	8.7
White Sucker	All	26	30	39	26	980	5	300	397	4.24	483	74.2	4.8

---

Stream sites are classified based on the estimates of adult trout over eight inches that exist within the site. Estimates are derived from 3-pass backpack electrofishing surveys at 100-meter sites within streams. While all fish in the site are collected and measured, only trout species are used for classifications. Sites are numbered in accordance for the distance (m) from the stream confluence of a higher order stream/river.

Based on number of trout in excess of eight inches	
<b>Class BR1</b>	Number of wild Brown Trout exceeds 150 per acre
<b>Class BR2</b>	Number of wild Brook Trout ranges from 25 to 150 per acre
<b>Class BR3</b>	Number of wild Brown Trout is less than 25 per acre
<b>Class BK1</b>	Number of wild Brook Trout exceeds 150 per acre
<b>Class BK2</b>	Number of wild Brook Trout ranges from 25 to 150 per acre
<b>Class BK3</b>	Number of wild Brook Trout is less than 25 per acre
<b>Class RB1</b>	Number of wild Rainbow Trout exceeds 25 per acre
<b>Class RB2</b>	Number of wild Rainbow Trout is less than 25 per acre

Table 2. Species composition and population estimates on Bear Butte Creek, 1983-1993

**Site 733**

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 15, 1993	11	11-13	
Brook Trout >=200mm	Sep 15, 1993	2	2-2	BK3
Brown Trout <200mm	Sep 15, 1993	23	23-24	
Brown Trout >=200mm	Sep 15, 1993	23	19-34	BR1
Fathead Minnow	Sep 15, 1993	1	1-1	
Hatchery Brown Trout >=200mm	Sep 15, 1993	32	32-33	
Longnose Dace	Sep 15, 1993	165	166-180	

Mountain Sucker	Sep 15, 1993	9	9-11
White Sucker	Sep 15, 1993	14	14-15

---

**Site 976**


---

<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brook Trout <200mm	Apr 16, 1993	2	2-2	
	Jun 10, 1993	6	6-7	
Longnose Dace	Apr 16, 1993	323	71-1282	
	Jun 10, 1993	79	59-107	
Mountain Sucker	Apr 16, 1993	2	2-4	
Rainbow Trout <200mm	Apr 16, 1993	1	1-3	
	Jun 10, 1993	1	1-1	
Rainbow Trout >=200mm	Jun 10, 1993	2	2-2	RB2
White Sucker	Apr 16, 1993	2	2-5	

---

**Site 977**


---

<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brook Trout <200mm	Jun 10, 1993	8	8-8	
Longnose Dace	Apr 16, 1993	128	66-239	

---



Longnose Dace	Jun 10, 1993	68	44-111	
Mountain Sucker	Apr 16, 1993	16	13-26	
Rainbow Trout <200mm	Jun 10, 1993	1	1-1	
Rainbow Trout >=200mm	Jun 10, 1993	2	2-2	RB2
White Sucker	Apr 16, 1993	1	1-1	
	Jun 10, 1993	2	2-4	

---

**Site 986**

---

<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brook Trout <200mm	Sep 10, 1992	6	6-6	
	May 10, 1993	9	9-10	
Brook Trout >=200mm	May 10, 1993	1	1-2	BK3
Longnose Dace	Sep 10, 1992	537	256-818	
	May 10, 1993	3	3-5	
Mountain Sucker	Sep 10, 1992	33	19-77	
Rainbow Trout >=200mm	May 10, 1993	2	2-2	RB2
White Sucker	Sep 10, 1992	1	1-5	

---

White Sucker

May 10, 1993

6

6-7

**Site 988**

<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brook Trout <200mm	Sep 10, 1992	14	12-21	
	May 10, 1993	15	15-16	
Brook Trout >=200mm	May 10, 1993	1	1-4	BK3
Longnose Dace	May 10, 1993	388	389-420	
Rainbow Trout <200mm	Sep 10, 1992	2	2-2	
	May 10, 1993	1	1-1	
Rainbow Trout >=200mm	May 10, 1993	1	1-1	RB2
White Sucker	Sep 10, 1992	1	1-1	
	May 10, 1993	48	28-97	

**Site 1048**

<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brook Trout >=200mm	Jun 28, 1993	1	1-1	BK3
Fathead Minnow	Jun 28, 1993	2	2-4	
Longnose Dace	Jun 28, 1993	2049	1700-2398	

Mountain Sucker	Jun 28, 1993	411	347-475
White Sucker	Jun 28, 1993	30	26-39

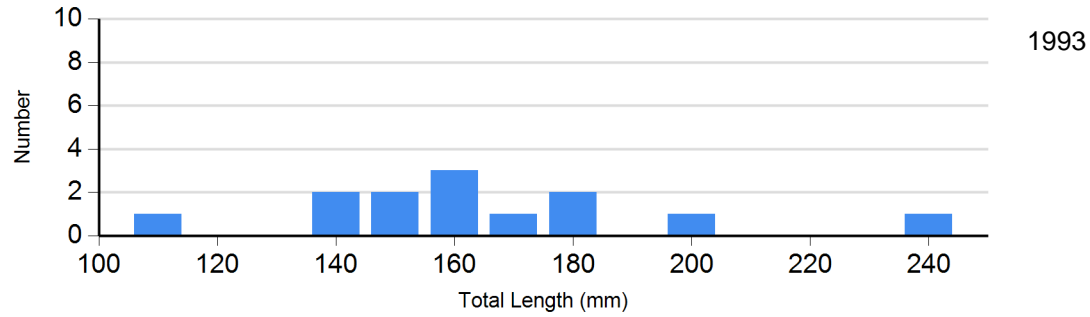
---

## Length Frequency Distribution

Length frequency histogram of species sampled by year.

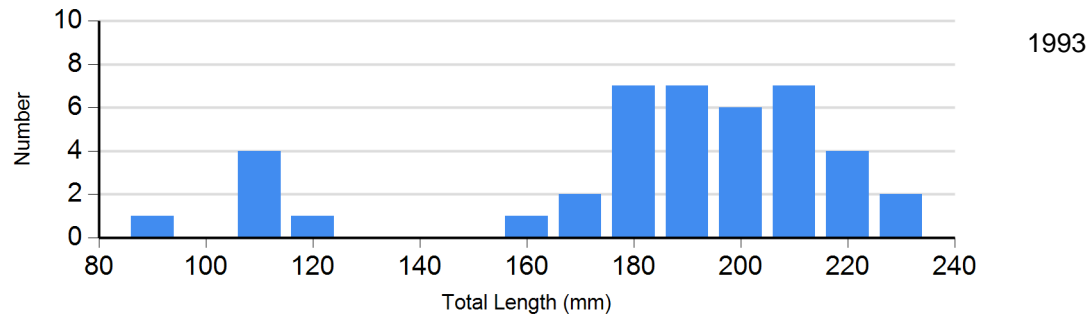
**Site:** 733

**Species:** Brook Trout



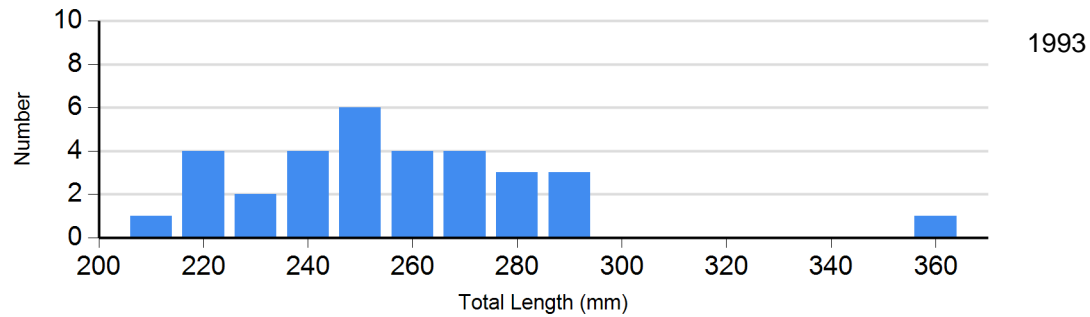
**Site:** 733

**Species:** Brown Trout

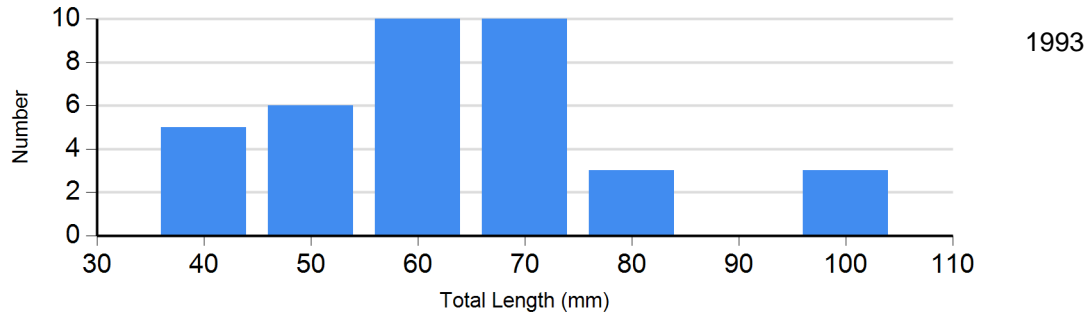


**Site:** 733

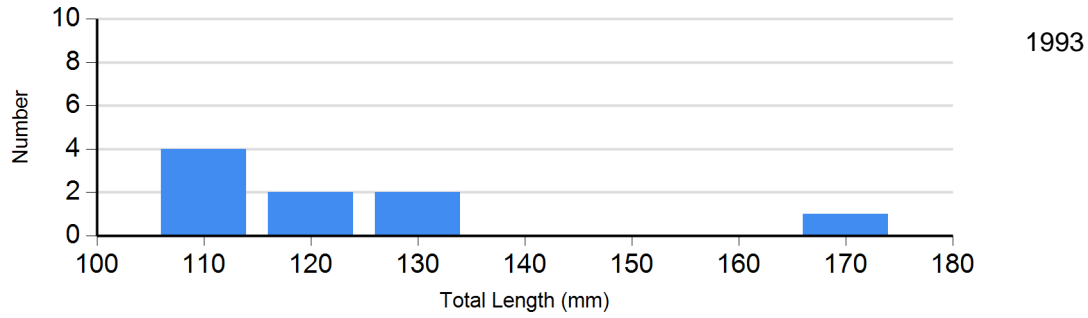
**Species:** Hatchery Brown Trout



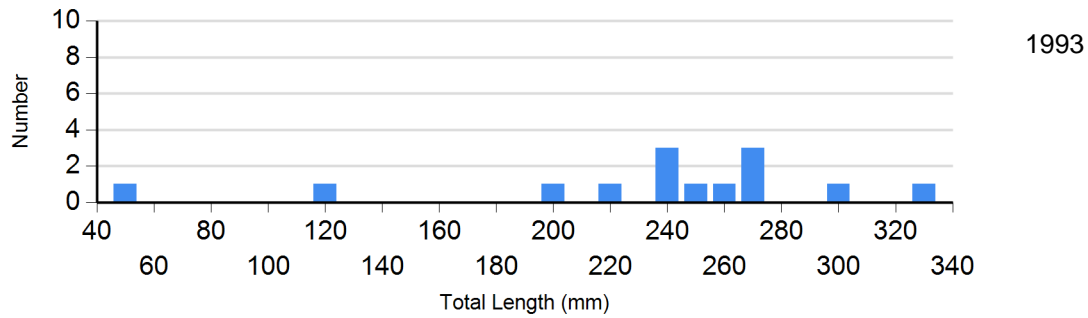
**Site:** 733  
**Species:** Longnose Dace



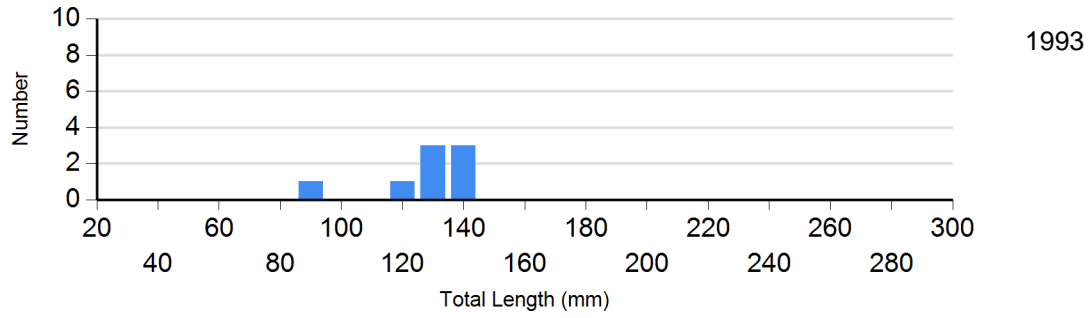
**Site:** 733  
**Species:** Mountain Sucker



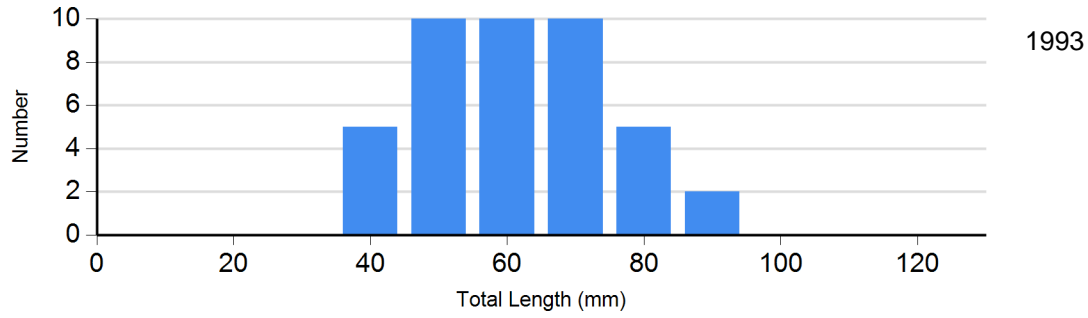
**Site:** 733  
**Species:** White Sucker



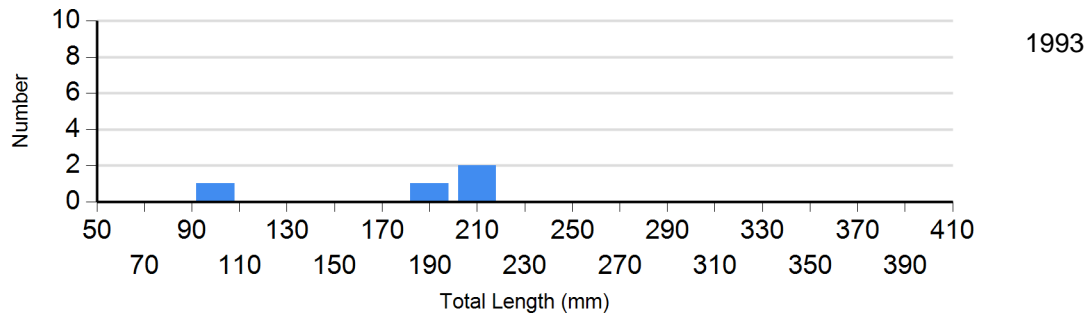
**Site:** 976  
**Species:** Brook Trout



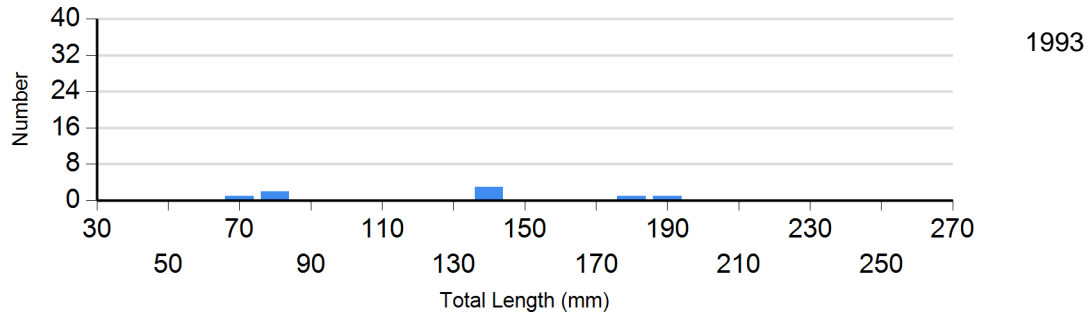
**Site:** 976  
**Species:** Longnose Dace



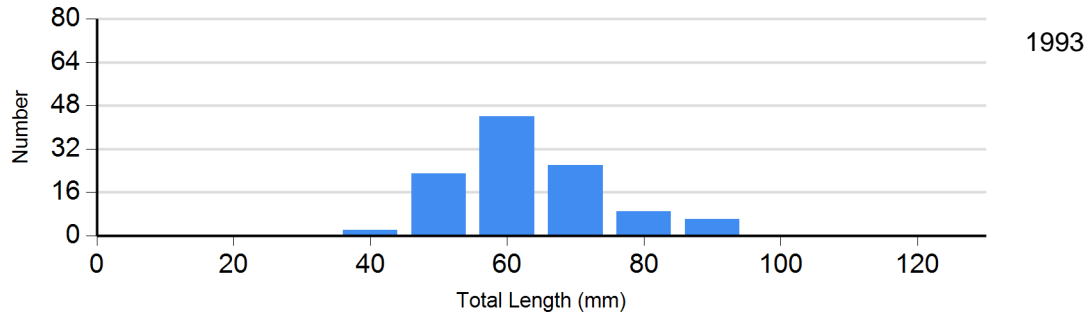
**Site:** 976  
**Species:** Rainbow Trout



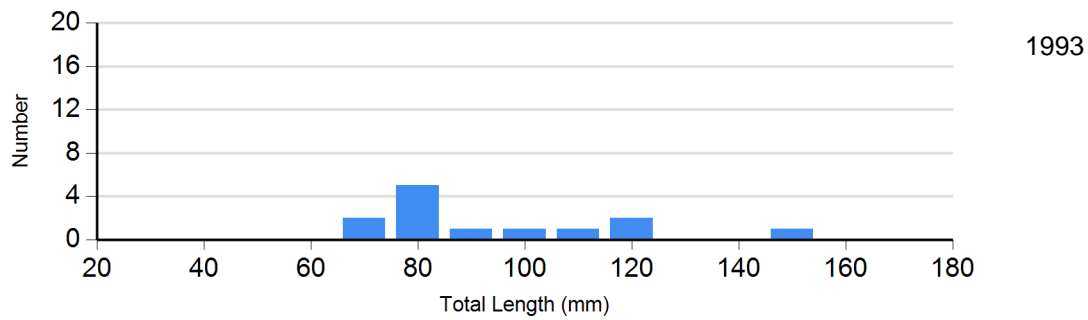
**Site:** 977  
**Species:** Brook Trout



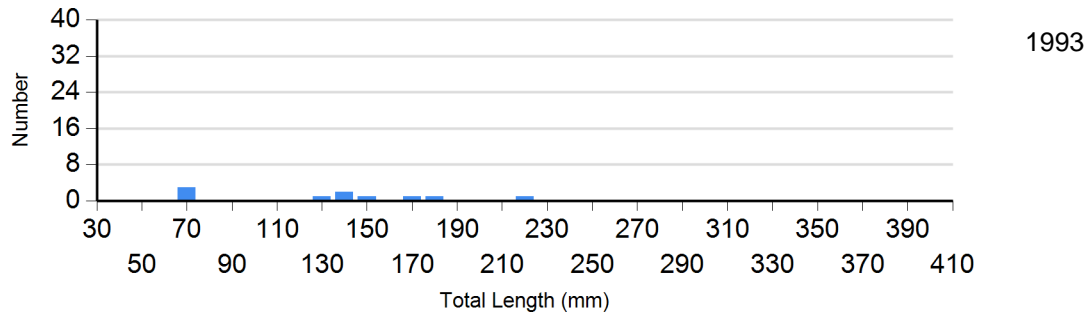
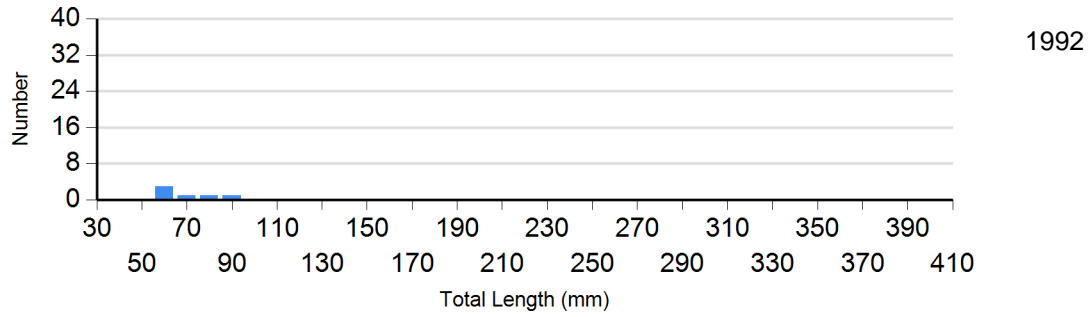
**Site:** 977  
**Species:** Longnose Dace



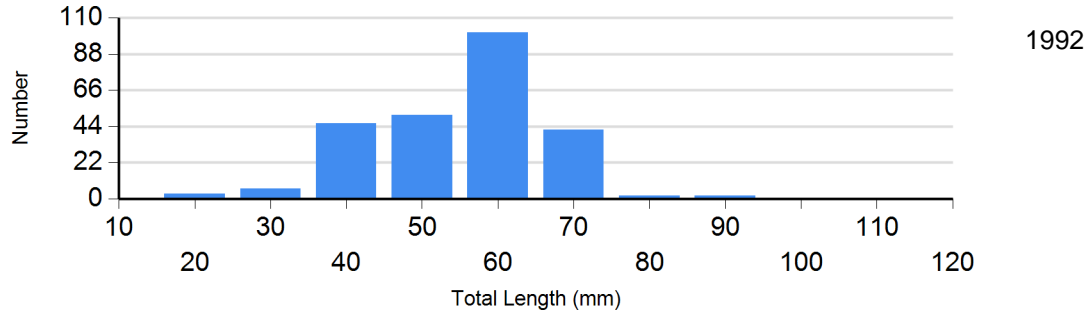
**Site:** 977  
**Species:** Mountain Sucker



**Site:** 986  
**Species:** Brook Trout

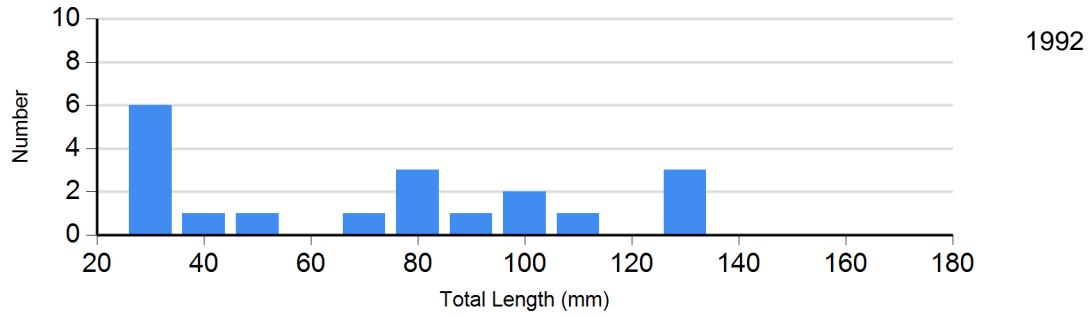


**Site:** 986  
**Species:** Longnose Dace

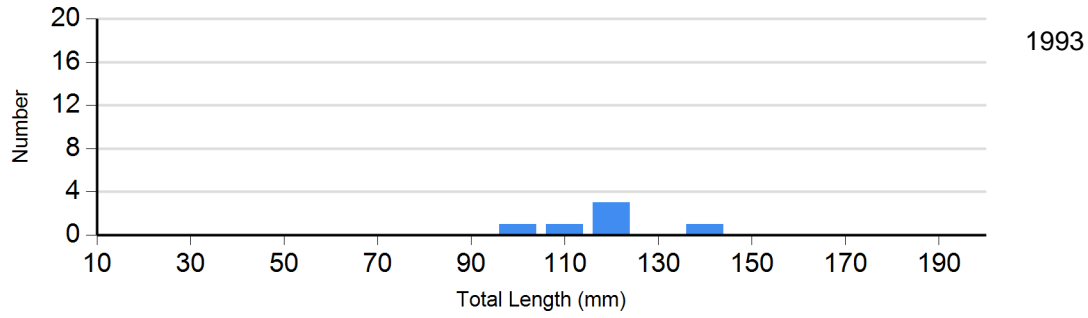




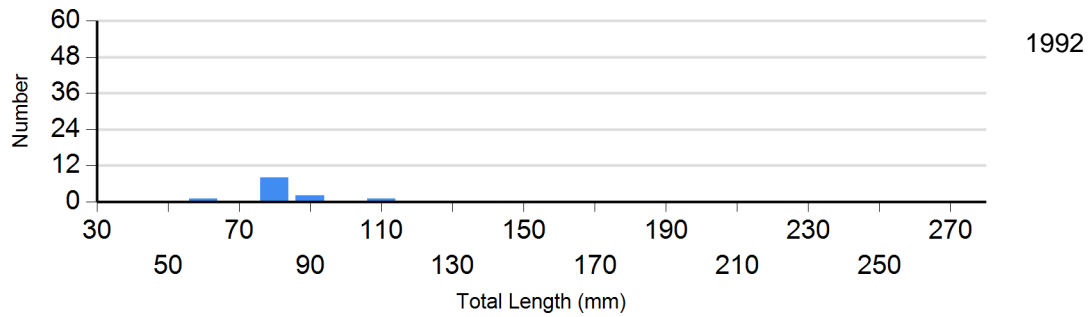
**Site:** 986  
**Species:** Mountain Sucker

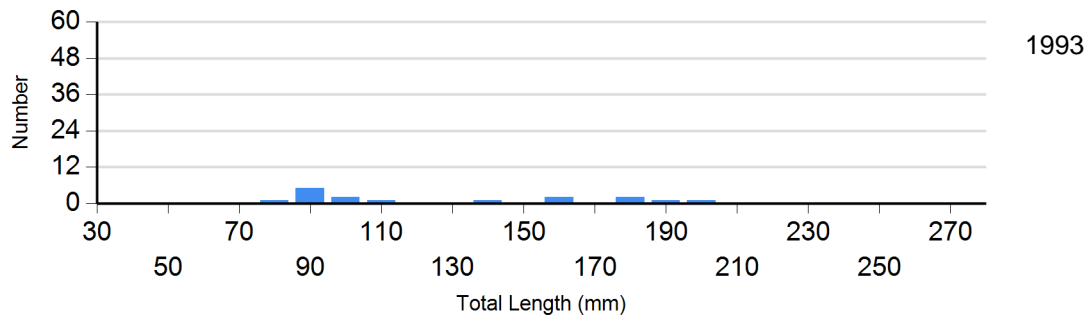


**Site:** 986  
**Species:** White Sucker

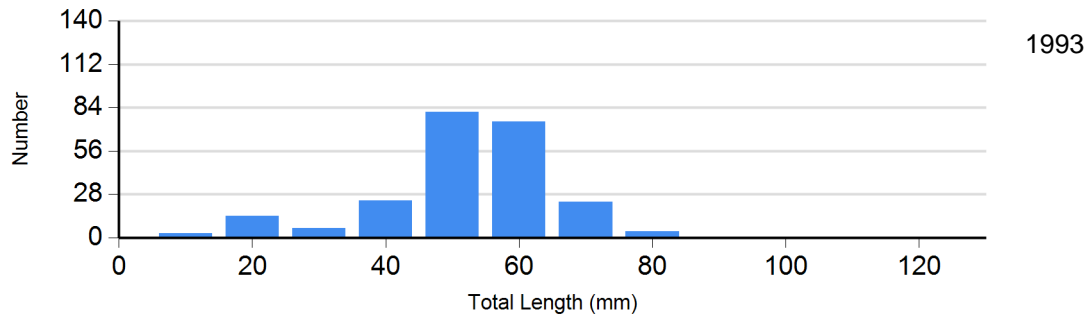
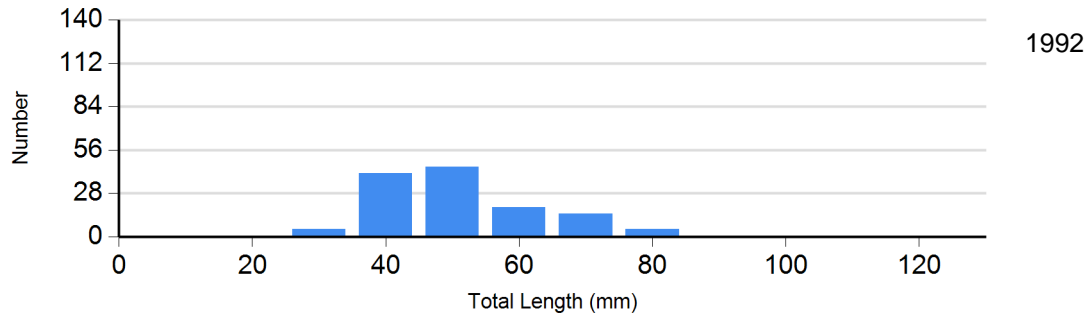


**Site:** 988  
**Species:** Brook Trout

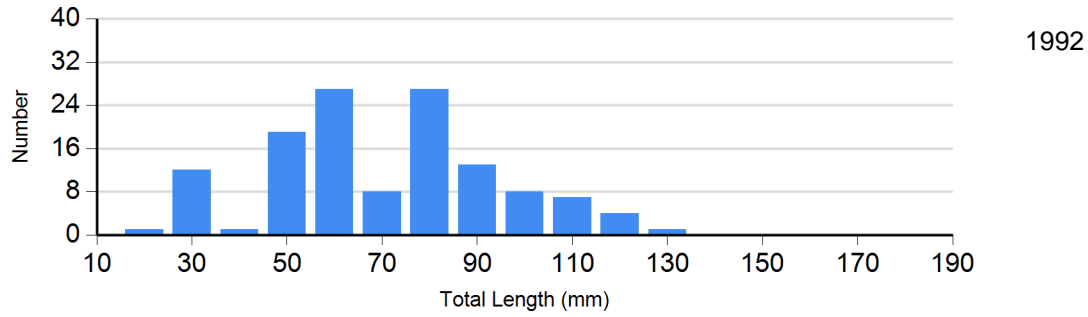




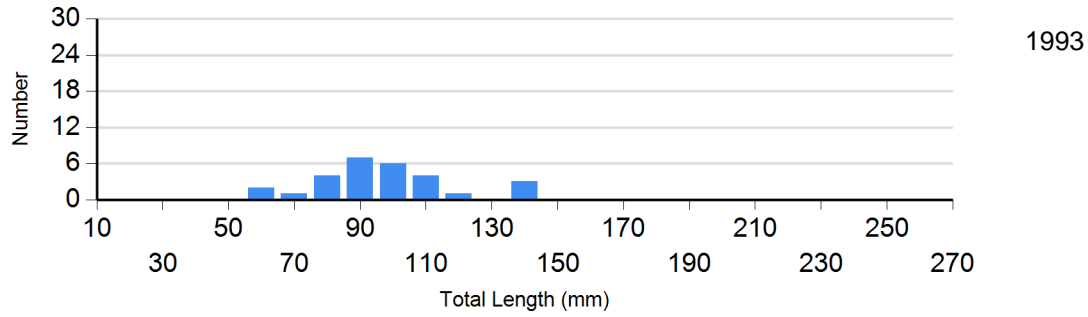
**Site:** 988  
**Species:** Longnose Dace



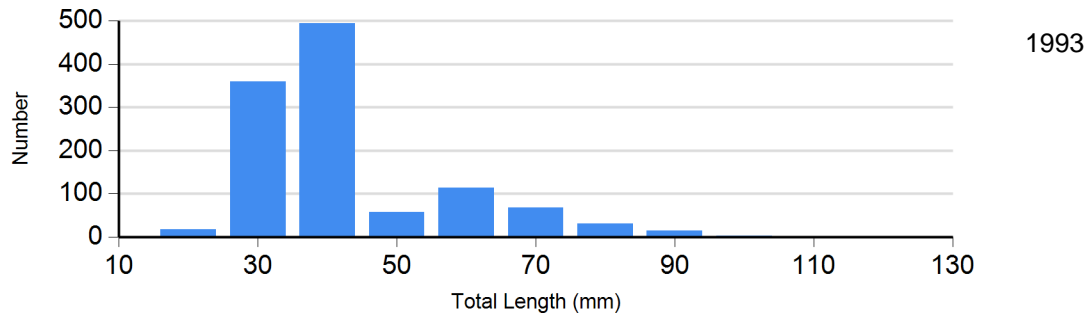
**Site:** 988  
**Species:** Mountain Sucker



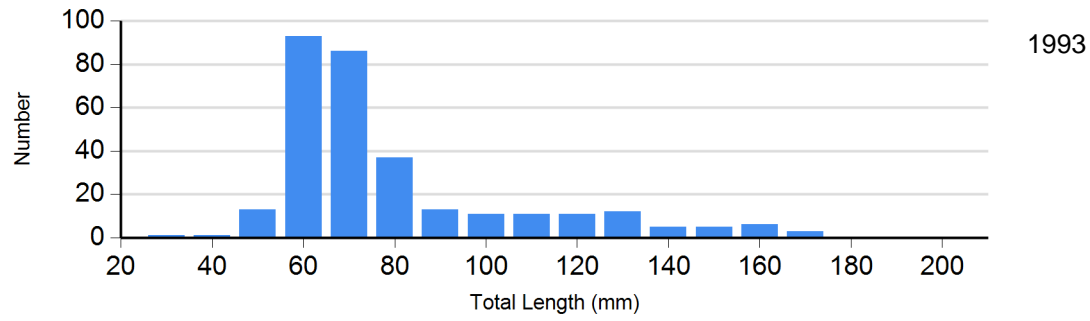
**Site:** 988  
**Species:** White Sucker



**Site:** 1048  
**Species:** Longnose Dace



**Site:** 1048  
**Species:** Mountain Sucker



**Site:** 1048  
**Species:** White Sucker

