

**SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY**  
**Battle Creek (Trib of Cheyenne River), Pennington County**  
**21-0023-00**  
**1994**

Table 1. Population and Biomass Estimates for Battle Creek (Trib of Cheyenne River)

<b>Site Number:</b> 81	<b>Date Sampled:</b> 06/09/1994	<b>Conductivity (umhos/cm):</b> 241
<b>Site Midpoint (Latitude, Longitude):</b> 43.90099650, -103.45467365	<b>Site Length (m):</b> 100	<b>pH:</b> 8.2
<b>Survey Completed by:</b> South Dakota Game, Fish and Parks	<b>Mean Width (m):</b> 2.9	<b>Water Temperature (C):</b> 15.0
<b>Stream Classification:</b> BK1, RB0	<b>Number of Pass:</b> 3	<b>Voltage:</b> 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	103	104	107	103	3611	126	1040	1463	112.88	1673	149.8	35.0
Brook Trout	>=200mm	15	15	17	15	521	57	150	211	50.57	241	227.3	108.7
Brook Trout	All	118	120	124	118	4167	185	1200	1688	165.11	1931	159.7	44.4
Hatchery Rainbow Trout	>=200mm	1	1	1	1	35	6	10	14	5.55	16	273.0	179.0
Hatchery Rainbow Trout	All	1	1	1	1	35	6	10	14	5.55	16	273.0	179.0
Longnose Dace	All	6	6	8	6	208	2	60	84	1.64	97	101.5	8.8
Rainbow Trout	<200mm	1	1	2	1	35	1	10	14	0.65	16	125.0	21.0
Rainbow Trout	All	1	1	2	1	35	1	10	14	0.65	16	125.0	21.0
Unidentified YOY Trout	<200mm	95	110	127	95	3819	8	1100	1547	6.82	1770	49.4	2.0
Unidentified YOY Trout	All	95	110	127	95	3819	8	1100	1547	6.82	1770	49.4	2.0

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<b>Site Number:</b> 149	<b>Date Sampled:</b> 07/14/1994	<b>Conductivity (umhos/cm):</b> 241
<b>Site Midpoint (Latitude, Longitude):</b> 43.89872697, -103.40164588	<b>Site Length (m):</b> 100	<b>pH:</b> 8.2
<b>Survey Completed by:</b> South Dakota Game, Fish and Parks	<b>Mean Width (m):</b> 2.9	<b>Water Temperature (C):</b> 15.0
<b>Stream Classification:</b> BK2, BR0	<b>Number of Pass:</b> 3	<b>Voltage:</b> 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	10	10	10	10	347	14	100	141	12.15	161	153.3	39.2
Brook Trout	>=200mm	5	5	5	5	174	21	50	70	18.85	80	229.4	121.6
Brook Trout	All	15	15	16	15	521	35	150	211	31.00	241	178.7	66.7
Brown Trout	<200mm	17	19	25	17	660	2	190	267	1.49	306	66.3	2.5
Brown Trout	All	17	19	25	17	660	2	190	267	1.49	306	66.3	2.5
Creek Chub	All	7	7	7	7	243	1	70	98	1.18	113	78.6	5.4
Hatchery Brown Trout	>=200mm	12	13	18	12	451	75	130	183	67.21	209	253.4	166.8
Hatchery Brown Trout	All	12	13	18	12	451	75	130	183	67.21	209	253.4	166.8
Longnose Dace	All	893	1409	1619	1199	48924	175	14090	19814	156.57	22671	45.6	3.6
Mountain Sucker	All	1	1	1	1	35	0	10	14	0.03	16	58.0	1.0
White Sucker	All	86	92	100	86	3194	180	920	1294	161.05	1480	153.0	56.5

**Site Number:** 242  
**Site Midpoint (Latitude, Longitude):** 43.87666382, -103.34452995  
**Survey Completed by:** South Dakota Game, Fish and Parks  
**Stream Classification:** None

**Date Sampled:** 07/14/1994  
**Site Length (m):** 100  
**Mean Width (m):** 5.8  
**Number of Pass:** 3  
**Conductivity (umhos/cm):** 400  
**pH:** 9.1  
**Water Temperature (C):** 22.0  
**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)
Creek Chub	All	22	42	105	22	719	3	420	291	2.86	676	77.8	4.5
Fathead Minnow	All	4	4	5	4	68	0	40	28	0.10	64	65.5	1.7
Longnose Dace	All	38	78	178	38	1336	4	780	541	3.61	1255	72.9	3.0
White Sucker	All	56	63	74	56	1079	5	630	437	4.65	1014	76.0	4.8

Site Number: 269

Site Midpoint (Latitude, Longitude): 43.86317184, -103.33327401

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK3, BR1, RB1

Date Sampled: 06/27/1994

Site Length (m): 100

Mean Width (m): 5.9

Number of Pass: 3

Conductivity (umhos/cm): 292

pH: 8.5

Water Temperature (C): 16.0

Voltage: 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	2	2	2	2	34	8	20	14	6.76	32	277.5	224.0
Brook Trout	All	2	2	2	2	34	8	20	14	6.76	32	277.5	224.0
Brown Trout	<200mm	171	198	220	176	3345	20	1980	1355	17.53	3186	74.0	5.9
Brown Trout	>=200mm	34	34	35	34	574	226	340	233	201.76	547	326.0	393.4
Brown Trout	All	205	227	244	210	3834	273	2270	1553	243.44	3652	115.8	71.1
Fathead Minnow	All	8	9	14	8	152	0	90	62	0.27	145	58.4	2.0
Hatchery Brown Trout	>=200mm	1	1	1	1	17	3	10	7	2.79	16	266.0	185.0
Hatchery Brown Trout	All	1	1	1	1	17	3	10	7	2.79	16	266.0	185.0
Hatchery Rainbow Trout	>=200mm	1	1	1	1	17	2	10	7	2.14	16	252.0	142.0
Hatchery Rainbow Trout	All	1	1	1	1	17	2	10	7	2.14	16	252.0	142.0
Longnose Dace	All	197	851	2308	197	14375	36	8510	5822	32.09	13693	55.5	2.5
Mountain Sucker	All	9	9	9	9	152	0	90	62	0.25	145	61.7	1.9
Rainbow Trout	>=200mm	18	18	19	18	304	68	180	123	60.81	290	279.8	224.0
Rainbow Trout	All	18	18	19	18	304	68	180	123	60.81	290	279.8	224.0
Unidentified YOY Trout	<200mm	13	13	15	13	220	0	130	89	0.42	209	55.5	2.2
Unidentified YOY Trout	All	13	13	15	13	220	0	130	89	0.42	209	55.5	2.2
White Sucker	All	81	101	125	81	1706	173	1010	691	154.72	1625	153.2	101.6



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 Battle Creek (Trib of Cheyenne River), 1984-1994

**Site 81**

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Jun 09, 1994	104	103-107	
Brook Trout >=200mm	Jun 09, 1994	15	15-17	BK1
Hatchery Rainbow Trout >=200mm	Jun 09, 1994	1	1-1	
Longnose Dace	Jun 09, 1994	6	6-8	
Rainbow Trout <200mm	Jun 09, 1994	1	1-2	

**Site 149**

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Jul 14, 1994	10	10-10	

Brook Trout >=200mm	Jul 14, 1994	5	5-5	BK2
Brown Trout <200mm	Jul 14, 1994	19	17-25	
Creek Chub	Jul 14, 1994	7	7-7	
Hatchery Brown Trout >=200mm	Jul 14, 1994	13	12-18	
Longnose Dace	Jul 14, 1994	1409	1199-1619	
Mountain Sucker	Jul 14, 1994	1	1-1	
White Sucker	Jul 14, 1994	92	86-100	

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**Site 242**


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Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Creek Chub	Jul 14, 1994	42	22-105	
Fathead Minnow	Jul 14, 1994	4	4-5	
Longnose Dace	Jul 14, 1994	78	38-178	
White Sucker	Jul 14, 1994	63	56-74	

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**Site 269**


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Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout >=200mm	Jun 27, 1994	2	2-2	BK3
Brown Trout <200mm	Jun 27, 1994	198	176-220	

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Brown Trout >=200mm	Jun 27, 1994	34	34-35	BR1
Fathead Minnow	Jun 27, 1994	9	8-14	
Hatchery Brown Trout >=200mm	Jun 27, 1994	1	1-1	
Hatchery Rainbow Trout >=200mm	Jun 27, 1994	1	1-1	
Longnose Dace	Jun 27, 1994	851	197-2308	
Mountain Sucker	Jun 27, 1994	9	9-9	
Rainbow Trout >=200mm	Jun 27, 1994	18	18-19	RB1
White Sucker	Jun 27, 1994	101	81-125	

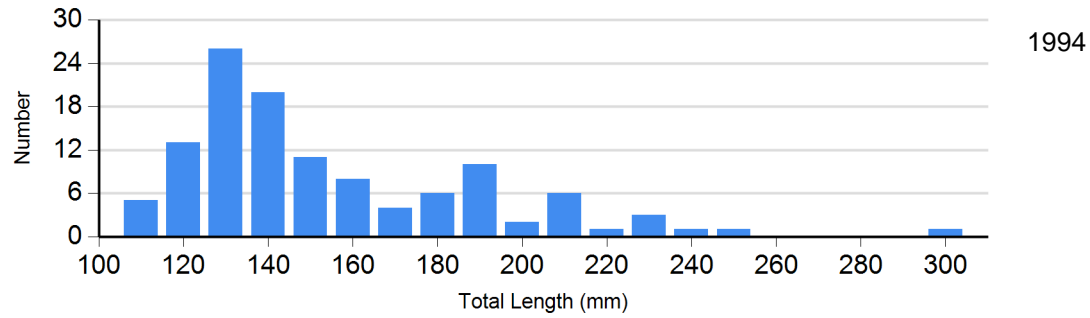
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## Length Frequency Distribution

Length frequency histogram of species sampled by year.

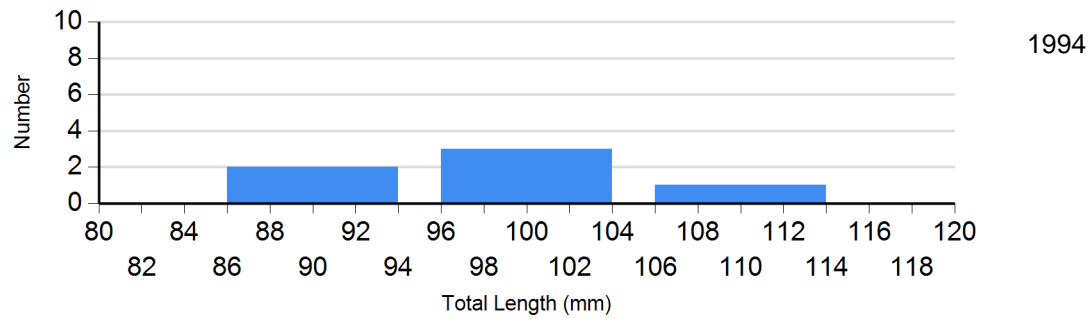
**Site:** 81

**Species:** Brook Trout



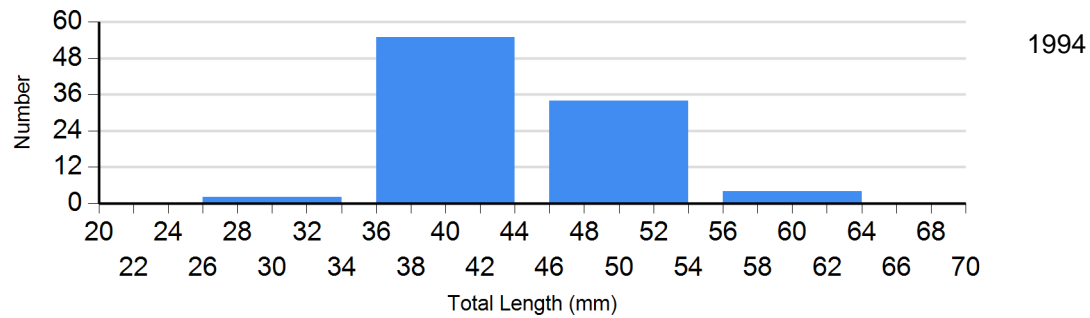
**Site:** 81

**Species:** Longnose Dace



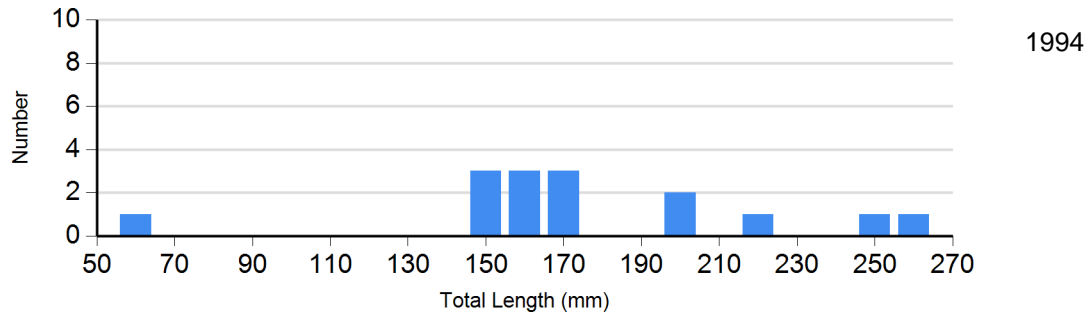
**Site:** 81

**Species:** Unidentified YOY Trout

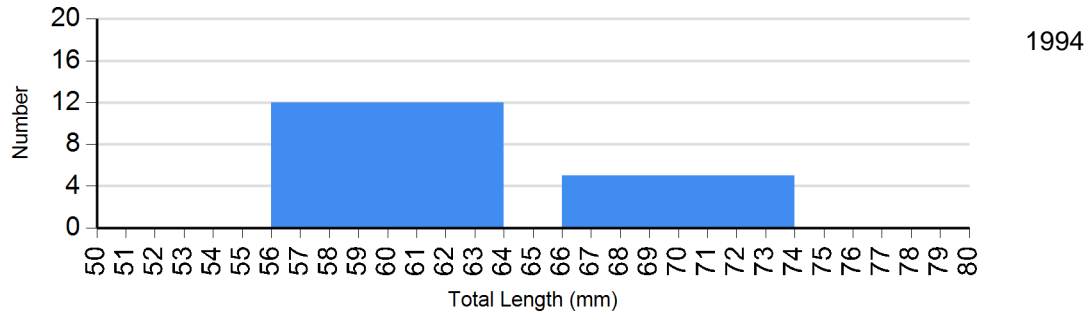




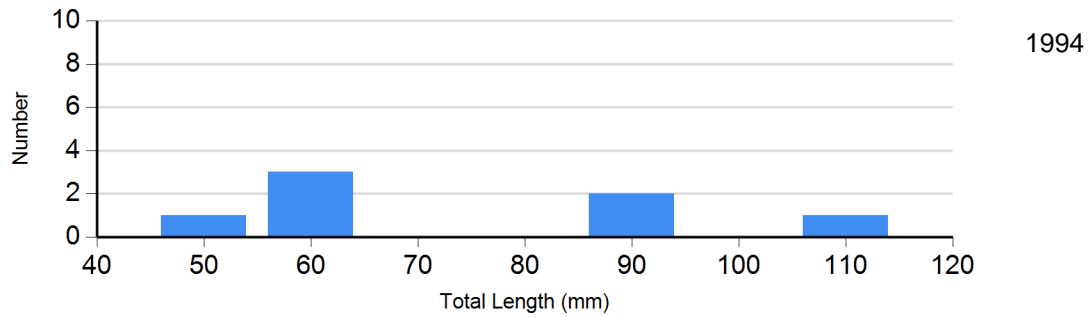
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**Species: Brook Trout**



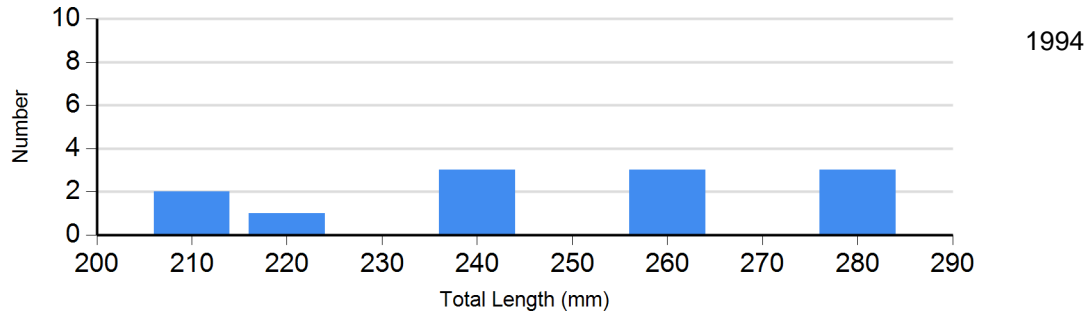
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**Species: Brown Trout**



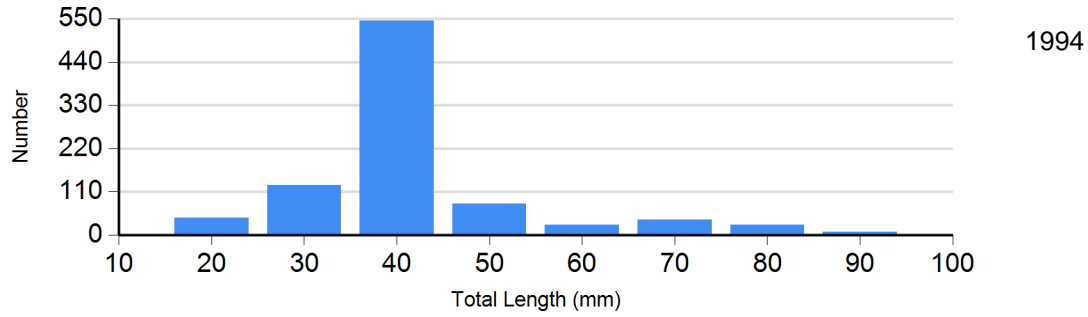
**Site: 149**  
**Species: Creek Chub**



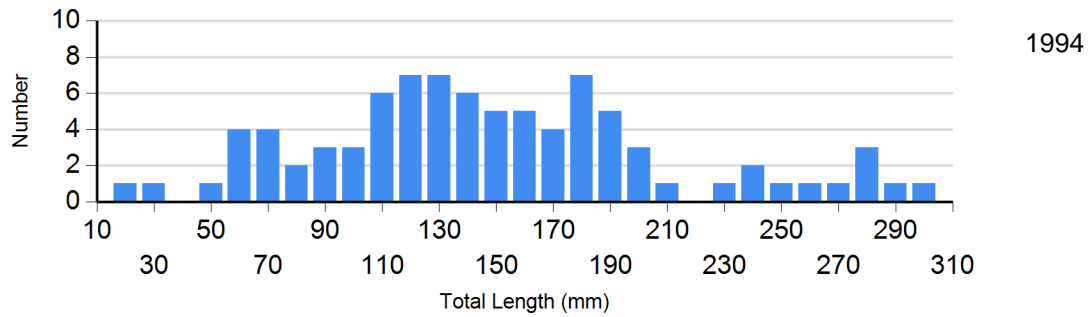
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**Species:** Hatchery Brown Trout



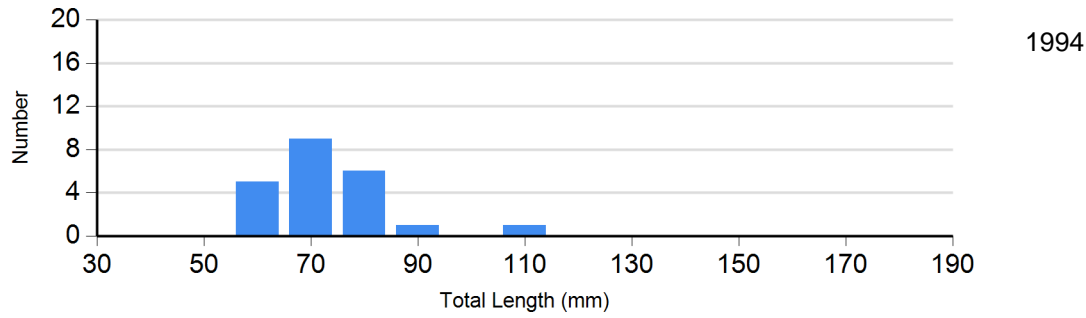
**Site:** 149  
**Species:** Longnose Dace



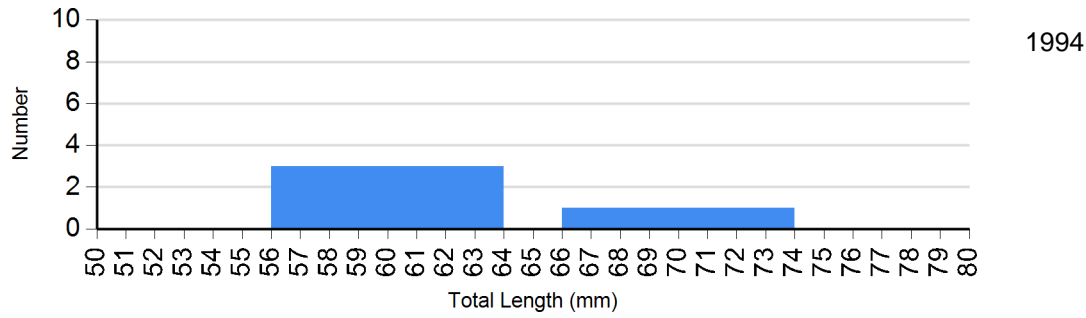
**Site:** 149  
**Species:** White Sucker



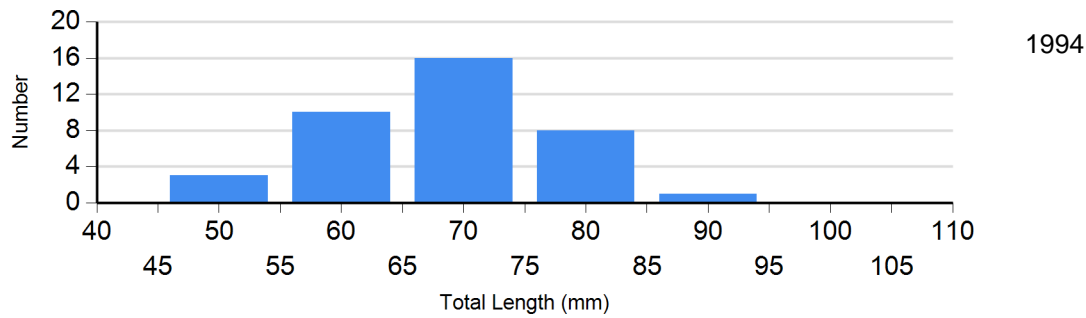
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**Species:** Creek Chub



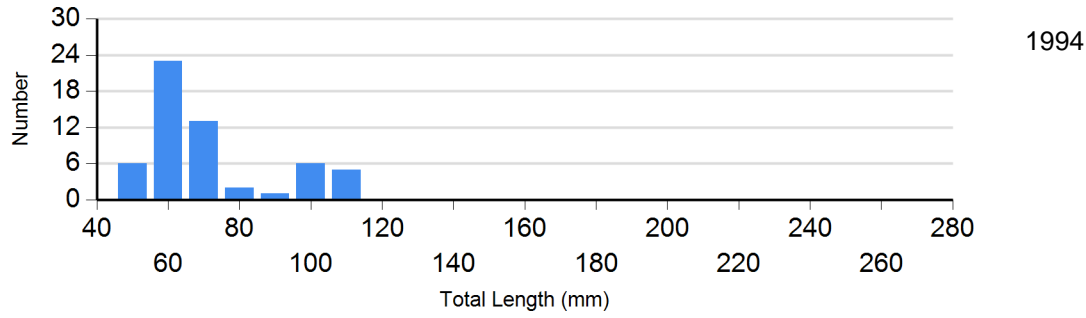
**Site:** 242  
**Species:** Fathead Minnow



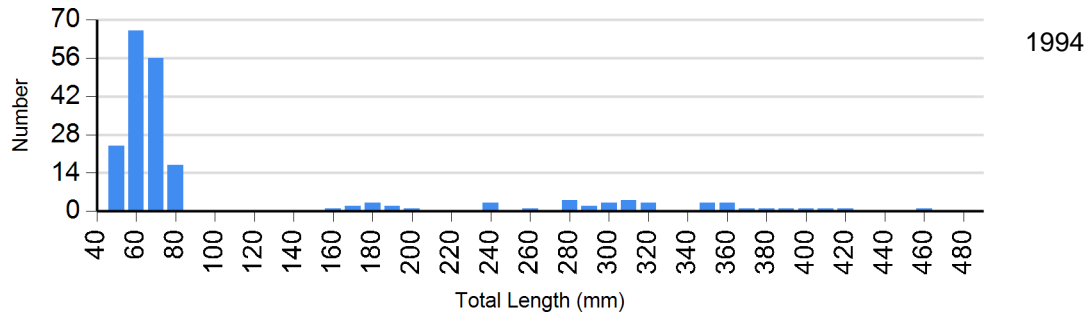
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**Species:** Longnose Dace



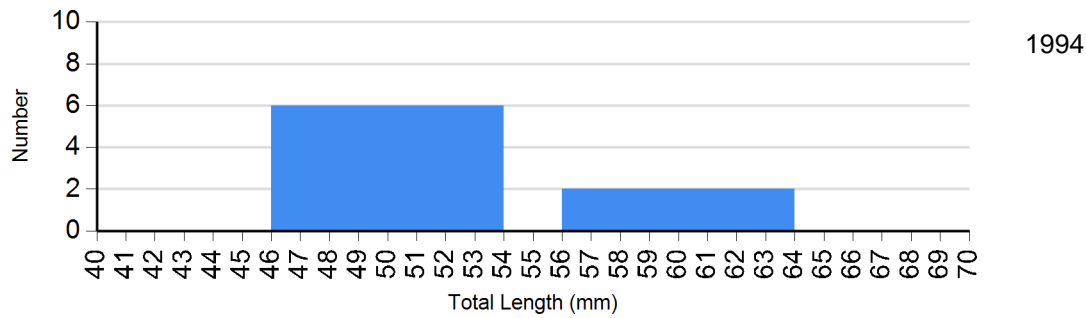
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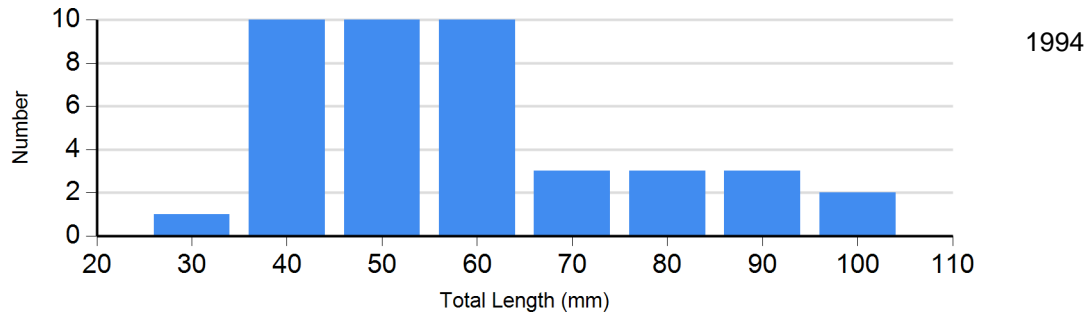
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**Species:** Brown Trout



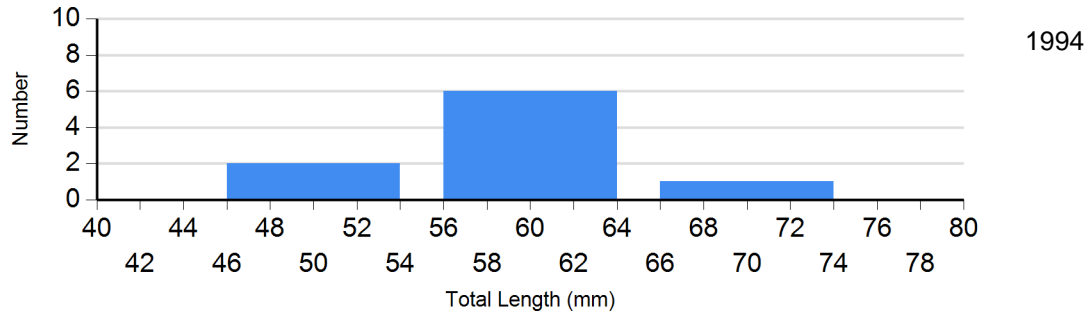
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**Species:** Fathead Minnow



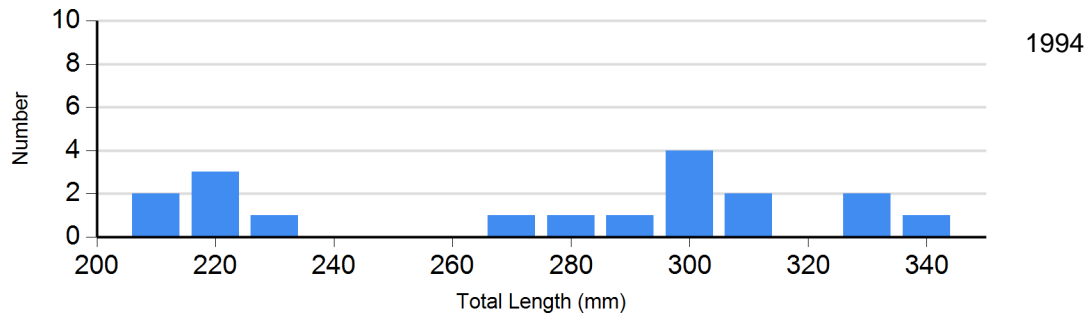
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**Species:** Longnose Dace



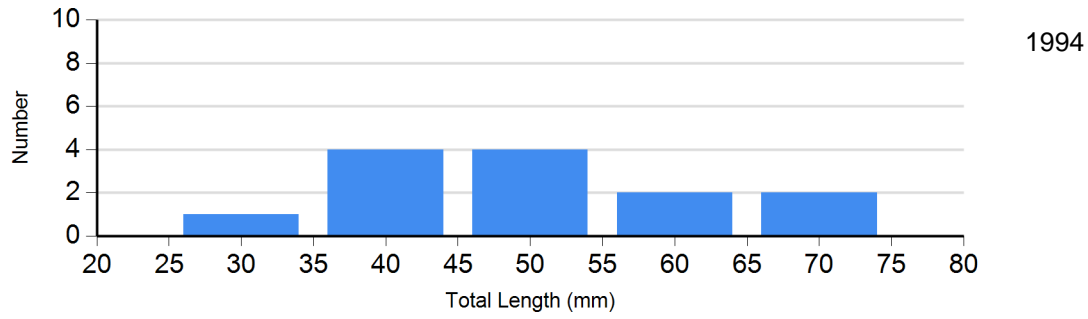
**Site:** 269  
**Species:** Mountain Sucker



**Site:** 269  
**Species:** Rainbow Trout



**Site:** 269  
**Species:** Unidentified YOY Trout



**Site:** 269  
**Species:** White Sucker

