

**SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY**  
**Rapid Creek, Pennington County**  
**02-0062-00**  
**1994**

Table 1. Population and Biomass Estimates for Rapid Creek

<b>Site Number:</b> 1412	<b>Date Sampled:</b> 09/29/1994	<b>Conductivity (umhos/cm):</b> 345
<b>Site Midpoint (Latitude, Longitude):</b> 44.07907606, -103.25491933	<b>Site Length (m):</b> 109	<b>pH:</b> 8.2
<b>Survey Completed by:</b> South Dakota Game, Fish and Parks	<b>Mean Width (m):</b> 7.6	<b>Water Temperature (C):</b> 15.0
<b>Stream Classification:</b> BR1	<b>Number of Pass:</b> 3	<b>Voltage:</b> 300

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)
Brown Trout	<200mm	223	314	383	245	4121	135	2881	1669	120.67	4635	129.5	32.8
Brown Trout	>=200mm	82	86	92	82	1129	173	789	457	154.89	1269	244.7	153.7
Brown Trout	All	305	380	426	334	4987	326	3486	2020	290.78	5609	160.5	65.3
Green Sunfish	All	1	1	2	1	13	0	9	5	0.05	15	65.0	4.0
Longnose Dace	All	9	12	25	9	157	1	110	64	0.91	177	83.2	6.5
Mountain Sucker	All	4	4	6	4	52	5	37	21	4.83	59	206.5	103.0
Rock Bass	All	1	1	1	1	13	0	9	5	0.05	15	60.0	4.0
White Sucker	All	75	76	79	75	997	459	697	404	409.71	1122	340.6	460.1

<b>Site Number:</b> 1434	<b>Date Sampled:</b> 11/10/1994	<b>Conductivity (umhos/cm):</b> 230
<b>Site Midpoint (Latitude, Longitude):</b> 44.06752736, -103.27112322	<b>Site Length (m):</b> 100	<b>pH:</b> 8.9
<b>Survey Completed by:</b> South Dakota Game, Fish and Parks	<b>Mean Width (m):</b> 11.4	<b>Water Temperature (C):</b> 10.0
<b>Stream Classification:</b> BR1, RB2	<b>Number of Pass:</b> 3	<b>Voltage:</b> 300

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)
Brown Trout	<200mm	335	335	336	335	2942	49	3350	1191	43.79	5390	113.3	16.7
Brown Trout	>=200mm	163	163	164	163	1431	212	1630	580	189.28	2623	245.4	148.1
Brown Trout	All	500	500	502	500	4391	262	5000	1778	234.34	8045	156.5	59.8
Longnose Dace	All	4	3	5	4	26	0	30	11	0.11	48	78.3	4.5
Rainbow Trout	>=200mm	2	2	2	2	18	7	20	7	6.37	32	332.5	406.0
Rainbow Trout	All	2	2	2	2	18	7	20	7	6.37	32	332.5	406.0
White Sucker	All	123	123	123	123	1080	568	1230	437	507.10	1979	344.5	525.8

**Site Number:** 1656  
**Site Midpoint (Latitude, Longitude):** 44.05452135, -103.40589571  
**Survey Completed by:** South Dakota Game, Fish and Parks  
**Stream Classification:** BR1

**Date Sampled:** 09/29/1994  
**Site Length (m):** 130  
**Mean Width (m):** 8.3  
**Number of Pass:** 3  
**Conductivity (umhos/cm):** 240  
**pH:** 8.6  
**Water Temperature (C):** 10.0  
**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)
Brown Trout	<200mm	290	361	405	317	4370	71	2777	1770	63.37	4468	106.2	16.2
Brown Trout	>=200mm	99	101	105	99	1223	145	777	495	129.88	1250	233.6	119.0
Brown Trout	All	389	448	480	416	5424	230	3446	2197	205.57	5545	138.7	42.4

**Site Number:** 1843  
**Site Midpoint (Latitude, Longitude):** 44.07203156, -103.47488319  
**Survey Completed by:** South Dakota Game, Fish and Parks  
**Stream Classification:** BK2, BR1

**Date Sampled:** 09/28/1994  
**Site Length (m):** 105  
**Mean Width (m):** 7.4  
**Number of Pass:** 3  
**Conductivity (umhos/cm):** 210  
**pH:** 8.3  
**Water Temperature (C):** 6.0  
**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	36	38	43	36	511	11	362	207	9.69	582	116.9	21.3
Brook Trout	>=200mm	7	7	7	7	94	10	67	38	9.36	107	220.1	111.4
Brook Trout	All	43	44	47	43	591	21	419	240	18.97	674	133.7	35.9
Brown Trout	<200mm	121	130	140	121	1747	36	1238	708	31.83	1992	119.5	20.4
Brown Trout	>=200mm	47	48	51	47	645	155	457	261	138.78	736	278.9	240.9
Brown Trout	All	168	178	188	168	2392	197	1695	969	176.15	2728	164.1	82.5
Rock Bass	All	1	1	2	1	13	2	10	5	1.62	15	233.0	135.0

**Site Number:** 1853  
**Site Midpoint (Latitude, Longitude):** 44.07655505, -103.48401117  
**Survey Completed by:** South Dakota Game, Fish and Parks  
**Stream Classification:** BR1, RB1

**Date Sampled:** 09/28/1994  
**Site Length (m):** 100  
**Mean Width (m):** 9.7  
**Number of Pass:** 3  
**Conductivity (umhos/cm):** 225  
**pH:** 8.2  
**Water Temperature (C):** 9.0  
**Voltage:** 300

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)
Brown Trout	<200mm	139	165	189	141	1698	38	1650	688	34.09	2655	90.5	22.5
Brown Trout	>=200mm	55	57	62	55	586	200	570	238	178.22	917	288.3	340.4
Brown Trout	All	194	220	241	199	2263	310	2200	917	276.72	3540	146.5	136.9
Rainbow Trout	<200mm	2	2	3	2	21	0	20	8	0.34	32	116.5	18.5
Rainbow Trout	>=200mm	5	13	87	5	134	87	130	54	77.57	209	385.0	649.6
Rainbow Trout	All	7	11	32	7	113	53	110	46	47.42	177	308.3	469.3

**Site Number:** 1930  
**Site Midpoint (Latitude, Longitude):** 44.08581700, -103.55549131  
**Survey Completed by:** South Dakota Game, Fish and Parks

**Date Sampled:** 09/26/1994  
**Site Length (m):** 114  
**Mean Width (m):** 5.7  
**Conductivity (umhos/cm):** 260  
**pH:** 7.4  
**Water Temperature (C):** 11.0

Stream Classification: BR1

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)
Brown Trout	<200mm	91	255	599	91	4505	126	2237	1825	112.63	3599	136.7	28.0
Brown Trout	>=200mm	25	25	27	25	442	66	219	179	58.51	353	252.8	148.4
Brown Trout	All	117	189	270	117	3339	180	1658	1352	160.29	2668	161.7	53.8
Cutthroat Trout	>=200mm	1	1	2	1	18	5	9	7	4.24	14	316.0	269.0
Cutthroat Trout	All	1	1	2	1	18	5	9	7	4.24	14	316.0	269.0
Hatchery Rainbow Trout	<200mm	2	2	2	2	35	2	18	14	2.05	28	194.0	65.0
Hatchery Rainbow Trout	>=200mm	3	3	6	3	53	9	26	21	8.35	42	257.0	176.3
Hatchery Rainbow Trout	All	5	5	7	5	88	12	44	36	10.40	71	231.8	131.8

Site Number: 2007

Date Sampled: 09/26/1994

Conductivity (umhos/cm): 262

Site Midpoint (Latitude, Longitude): 44.08387011, -103.60810831

Site Length (m): 105

pH: 7.8

Survey Completed by: South Dakota Game, Fish and Parks

Mean Width (m): 10.3

Water Temperature (C): 9.0

Stream Classification: BK3, BR1, RB0

Number of Pass: 3

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	1	1	1	1	10	1	10	4	0.88	15	225.0	101.0
Brook Trout	All	1	1	1	1	10	1	10	4	0.88	15	225.0	101.0
Brown Trout	<200mm	124	144	164	124	1404	41	1371	568	37.02	2207	135.6	29.5
Brown Trout	>=200mm	66	69	75	66	673	112	657	272	100.02	1057	265.8	166.6
Brown Trout	All	193	215	233	197	2096	162	2048	849	144.34	3295	180.8	77.1
Cutthroat Trout	>=200mm	1	1	1	1	10	1	10	4	0.97	15	246.0	111.0
Cutthroat Trout	All	1	1	1	1	10	1	10	4	0.97	15	246.0	111.0

Hatchery Rainbow Trout	>=200mm	1	1	1	1	10	1	10	4	0.85	15	239.0	98.0
Hatchery Rainbow Trout	All	1	1	1	1	10	1	10	4	0.85	15	239.0	98.0
Rainbow Trout	<200mm	5	5	5	5	49	0	48	20	0.16	77	73.4	3.7
Rainbow Trout	All	5	5	5	5	49	0	48	20	0.16	77	73.4	3.7
Rock Bass	All	4	4	6	4	39	2	38	16	2.13	61	150.3	61.3
White Sucker	All	3	3	3	3	29	0	29	12	0.21	46	97.0	8.0

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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 Rapid Creek, 1984-1994

**Site 1412**

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Oct 06, 1988	195	172-218	
	Oct 10, 1990	87	76-102	
	Oct 22, 1991	176	74-403	
	Oct 05, 1992	163	127-199	
	Sep 28, 1993	142	116-168	
	Sep 29, 1994	314	245-383	
Brown Trout >=200mm	Oct 06, 1988	140	136-146	BR3

Brown Trout >=200mm	Oct 10, 1990	176	175-179	BR3
	Oct 22, 1991	123	108-140	BR3
	Oct 05, 1992	116	111-123	BR1
	Sep 28, 1993	164	113-219	BR1
	Sep 29, 1994	86	82-92	BR1
Green Sunfish	Oct 10, 1990	1	1-1	
	Oct 05, 1992	1	1-5	
	Sep 28, 1993	2	2-2	
	Sep 29, 1994	1	1-2	
Longnose Dace	Oct 22, 1991	5	6-8	
	Oct 05, 1992	2	2-3	
	Sep 28, 1993	2	2-4	
	Sep 29, 1994	12	9-25	
Mountain Sucker	Oct 06, 1988	19	18-23	
	Oct 22, 1991	6	6-8	
	Oct 05, 1992	6	6-9	

Mountain Sucker	Sep 28, 1993	1	1-2
	Sep 29, 1994	4	4-6
Rainbow Trout <200mm	Oct 06, 1988	2	2-4
Rock Bass	Oct 10, 1990	3	3-3
	Sep 29, 1994	1	1-1
White Sucker	Oct 06, 1988	36	36-37
	Oct 22, 1991	73	61-91
	Oct 05, 1992	87	85-91
	Sep 28, 1993	56	56-58
	Sep 29, 1994	76	75-79

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**Site 1434**

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<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brown Trout <200mm	Oct 04, 1990	273	227-319	
	Nov 10, 1994	335	335-336	
Brown Trout >=200mm	Oct 04, 1990	249	240-258	BR3
	Nov 10, 1994	163	163-164	BR1

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Longnose Dace	Nov 10, 1994	3	4-5	
Rainbow Trout >=200mm	Nov 10, 1994	2	2-2	RB2
White Sucker	Oct 04, 1990	143	141-147	
	Nov 10, 1994	123	123-123	

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**Site 1656**

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<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brown Trout <200mm	Sep 10, 1990	367	343-391	
	Mar 25, 1991	264	239-289	
	Oct 17, 1991	237	201-273	
	Oct 13, 1992	269	235-303	
	Sep 30, 1993	229	172-286	
	Sep 29, 1994	361	317-405	
Brown Trout >=200mm	Sep 10, 1990	74	73-77	BR3
	Mar 25, 1991	70	68-74	BR3
	Oct 17, 1991	89	85-96	BR3
	Oct 13, 1992	75	74-78	BR1

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Brown Trout >=200mm	Sep 30, 1993	99	93-107	BR1
	Sep 29, 1994	101	99-105	BR1

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**Site 1843**


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<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brook Trout <200mm	Oct 07, 1988	12	12-12	
	Aug 03, 1990	20	14-41	
	Oct 06, 1992	55	47-68	
	Sep 29, 1993	228	63-776	
	Sep 28, 1994	38	36-43	
Brook Trout >=200mm	Oct 07, 1988	9	9-9	BK3
	Aug 03, 1990	2	2-2	BK3
	Oct 06, 1992	11	11-11	BK2
	Sep 29, 1993	6	6-8	BK2
	Sep 28, 1994	7	7-7	BK2
Brown Trout <200mm	Oct 07, 1988	28	28-28	
	Aug 03, 1990	23	22-27	

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Brown Trout <200mm	Sep 30, 1991	141	114-171	
	Oct 06, 1992	153	101-214	
	Sep 29, 1993	395	290-500	
	Sep 28, 1994	130	121-140	
Brown Trout >=200mm	Oct 07, 1988	28	28-28	BR3
	Aug 03, 1990	24	17-46	BR3
	Sep 30, 1991	27	27-28	BR3
	Oct 06, 1992	54	53-57	BR1
	Sep 29, 1993	85	80-93	BR1
	Sep 28, 1994	48	47-51	BR1
Rainbow Trout <200mm	Oct 06, 1992	1	1-1	
Rock Bass	Sep 28, 1994	1	1-2	

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**Site 1853**

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<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brown Trout <200mm	Oct 06, 1992	47	33-75	
	Sep 29, 1993	70	65-78	

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Brown Trout <200mm	Sep 28, 1994	165	141-189	
Brown Trout >=200mm	Oct 06, 1992	73	72-76	BR1
	Sep 29, 1993	64	58-73	BR1
	Sep 28, 1994	57	55-62	BR1
Rainbow Trout <200mm	Oct 06, 1992	19	15-31	
	Sep 28, 1994	2	2-3	
Rainbow Trout >=200mm	Oct 06, 1992	1	1-1	RB2
	Sep 29, 1993	7	7-8	RB1
	Sep 28, 1994	13	5-87	RB1

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**Site 1930**

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<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brown Trout <200mm	Sep 24, 1992	81	74-91	
	Sep 22, 1993	84	72-100	
	Sep 26, 1994	255	91-599	
Brown Trout >=200mm	Sep 24, 1992	26	26-27	BR1
	Sep 22, 1993	14	14-16	BR2

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Brown Trout >=200mm	Sep 26, 1994	25	25-27	BR1
Cutthroat Trout >=200mm	Sep 26, 1994	1	1-2	
Hatchery Rainbow Trout <200mm	Sep 22, 1993	1	1-1	
	Sep 26, 1994	2	2-2	
Hatchery Rainbow Trout >=200mm	Sep 22, 1993	1	1-1	
	Sep 26, 1994	3	3-6	
Rainbow Trout <200mm	Sep 24, 1992	48	35-73	
Rainbow Trout >=200mm	Sep 24, 1992	2	2-3	RB2
Rock Bass	Sep 22, 1993	3	3-3	

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**Site 2007**

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<b>Species/Size</b>	<b>Date</b>	<b>Pop Est.</b>	<b>(95% C.I.)</b>	<b>Stream Classification</b>
Brook Trout >=200mm	Sep 26, 1994	1	1-1	BK3
Brown Trout <200mm	Aug 02, 1990	180	150-210	
	Oct 11, 1991	164	119-214	
	Sep 25, 1992	194	177-211	
	Sep 27, 1993	232	217-247	

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Brown Trout <200mm	Sep 26, 1994	144	124-164	
Brown Trout >=200mm	Aug 02, 1990	37	37-39	BR3
	Oct 11, 1991	60	48-81	BR3
	Sep 25, 1992	78	77-81	BR1
	Sep 27, 1993	37	37-39	BR1
	Sep 26, 1994	69	66-75	BR1
Cutthroat Trout <200mm	Aug 02, 1990	1	1-4	
Cutthroat Trout >=200mm	Aug 02, 1990	3	3-3	
	Sep 25, 1992	1	1-1	
	Sep 27, 1993	5	5-6	
	Sep 26, 1994	1	1-1	
Hatchery Rainbow Trout <200mm	Sep 27, 1993	1	1-1	
Hatchery Rainbow Trout >=200mm	Sep 27, 1993	2	2-2	
	Sep 26, 1994	1	1-1	
Rainbow Trout <200mm	Sep 26, 1994	5	5-5	
Rock Bass	Sep 26, 1994	4	4-6	

White Sucker

Sep 27, 1993

1

1-1

Sep 26, 1994

3

3-3

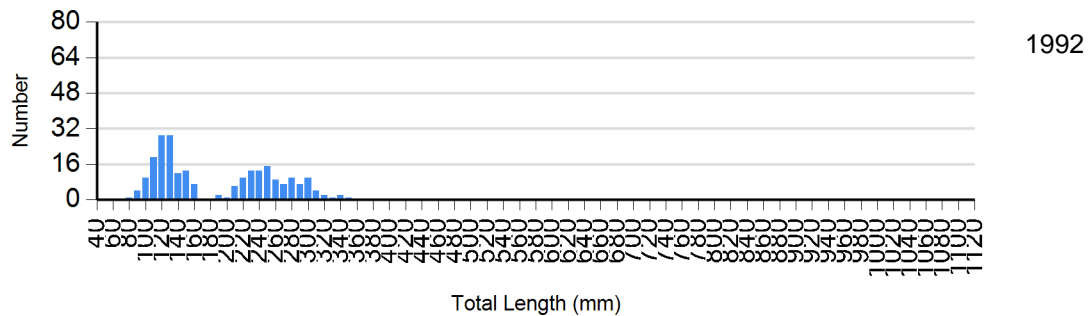
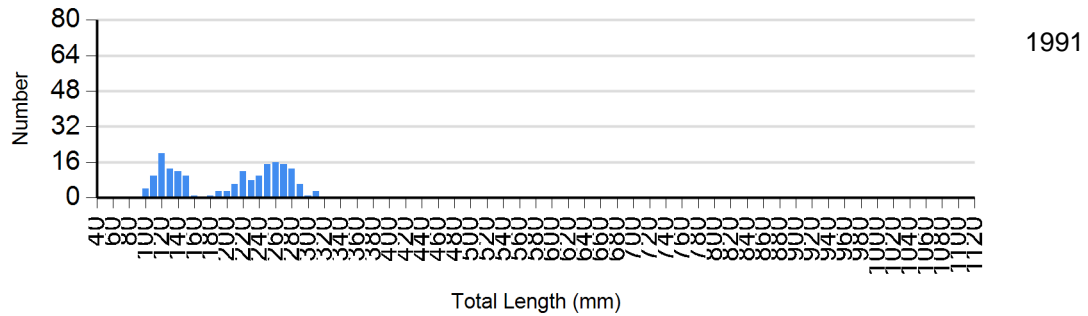
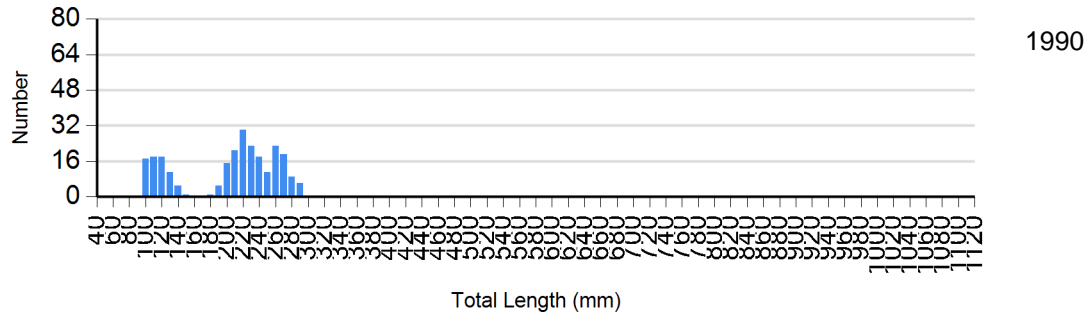
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# Length Frequency Distribution

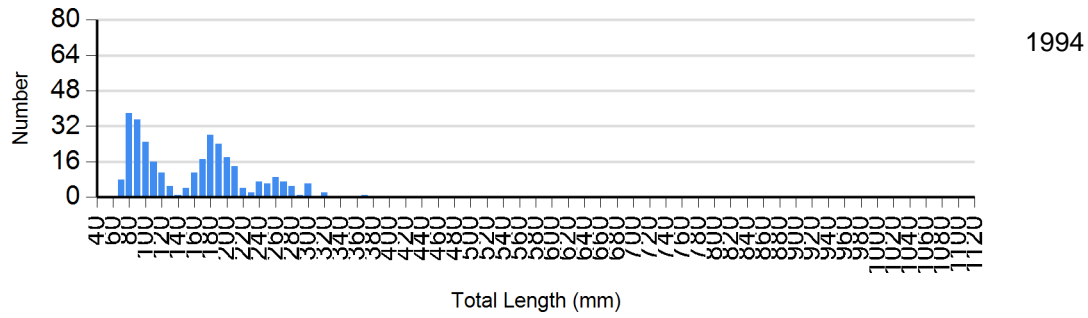
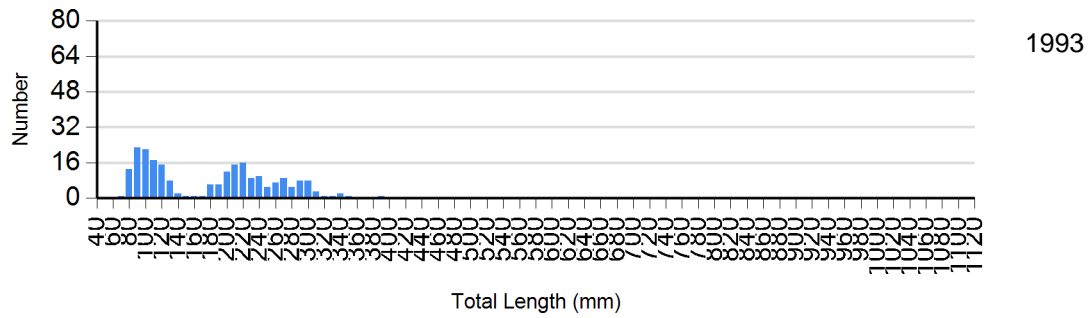
Length frequency histogram of species sampled by year.

Site: 1412

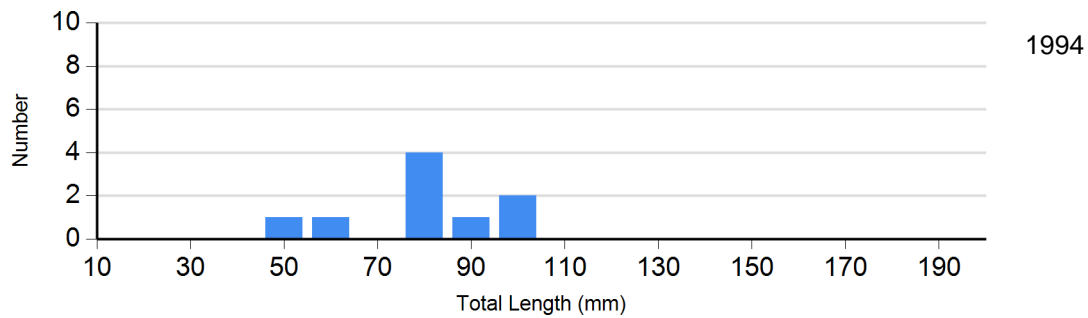
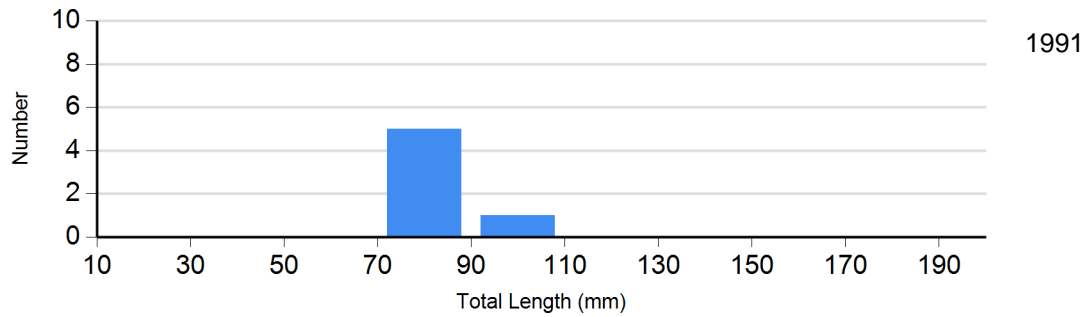
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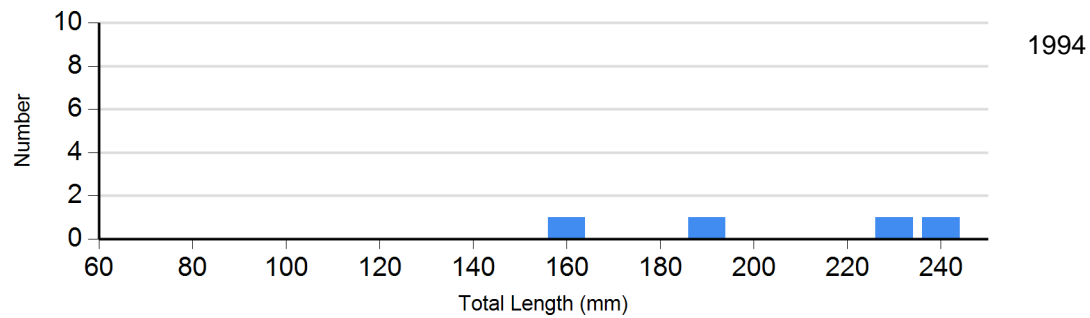
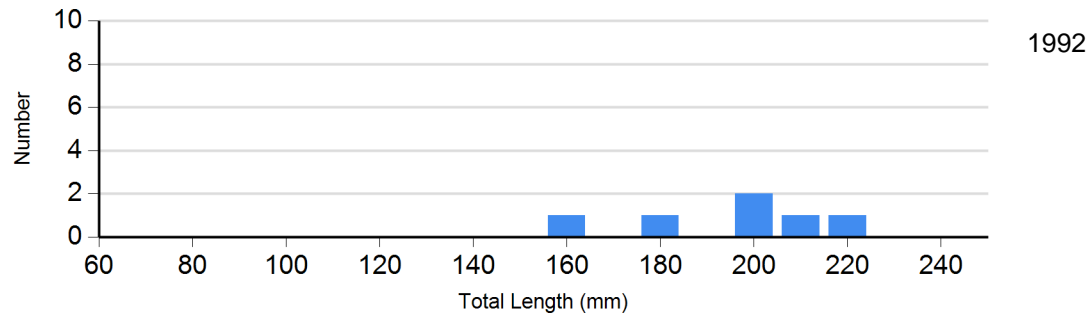
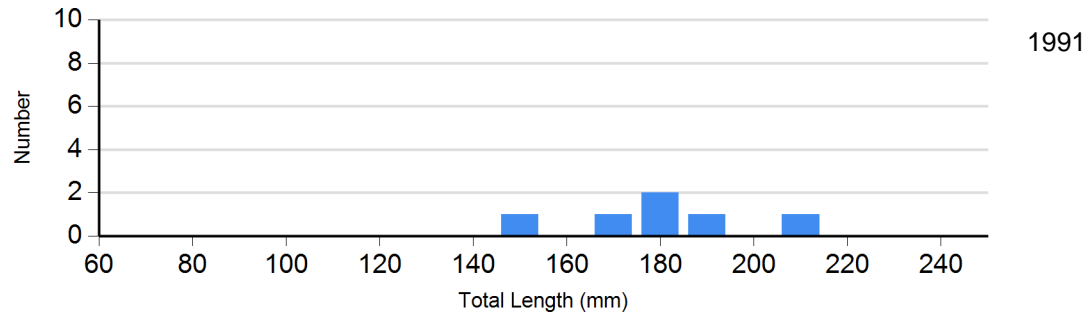
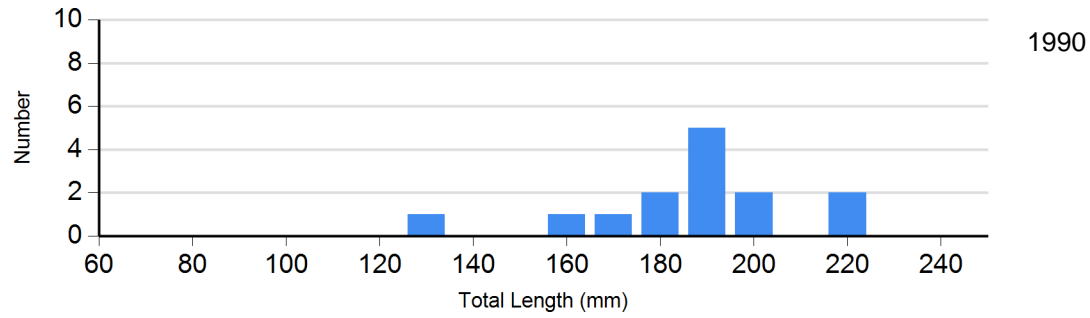




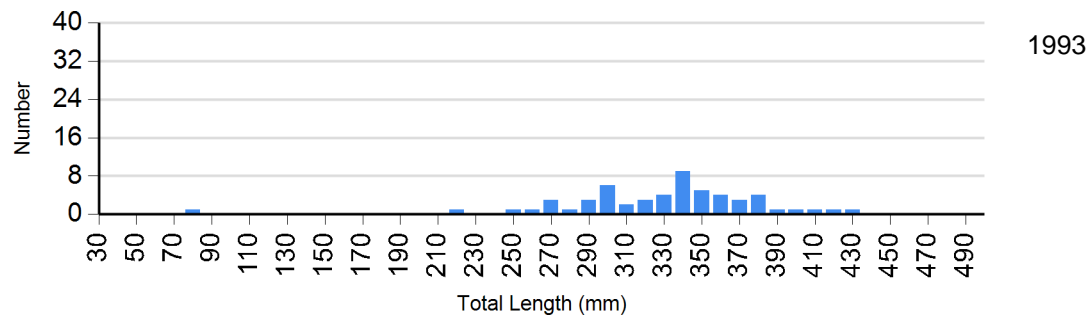
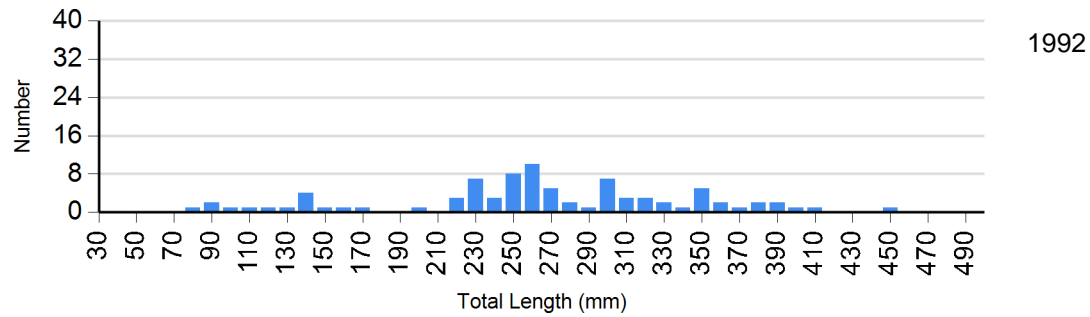
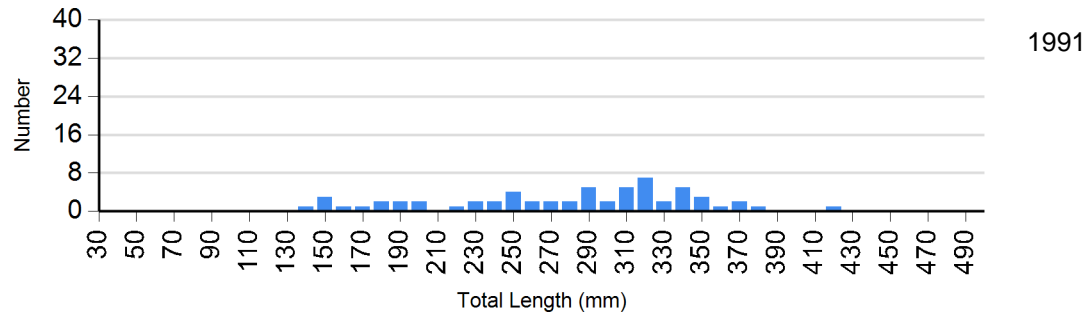
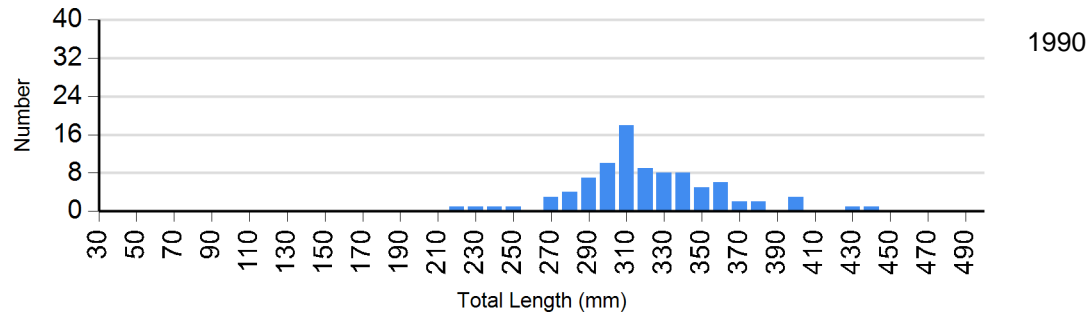
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Species: Longnose Dace

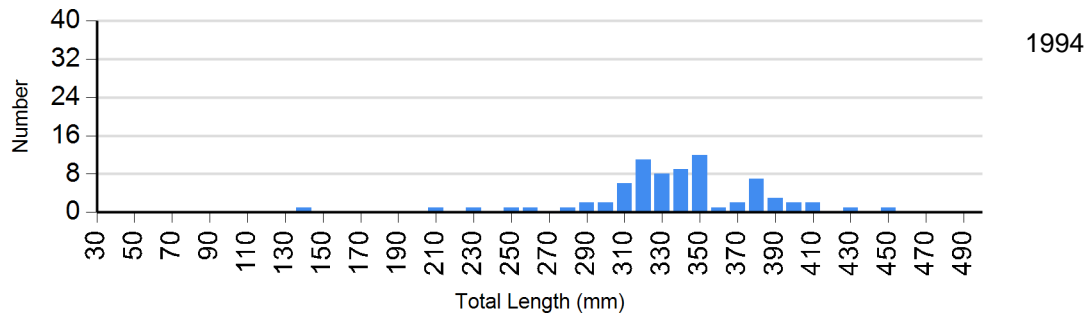


Site: 1412  
Species: Mountain Sucker

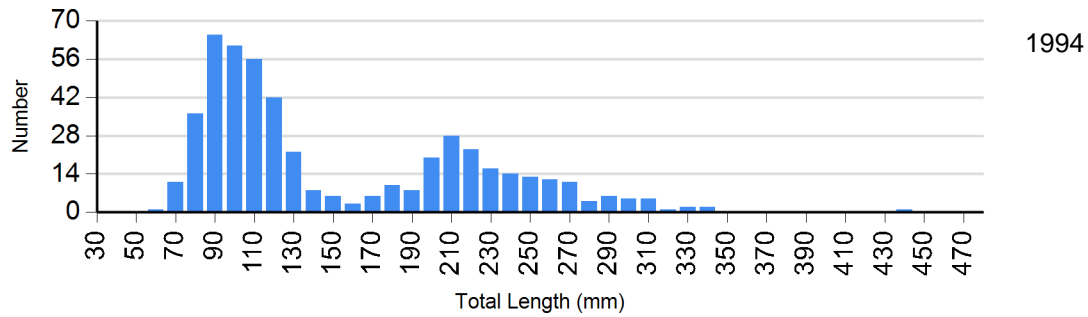
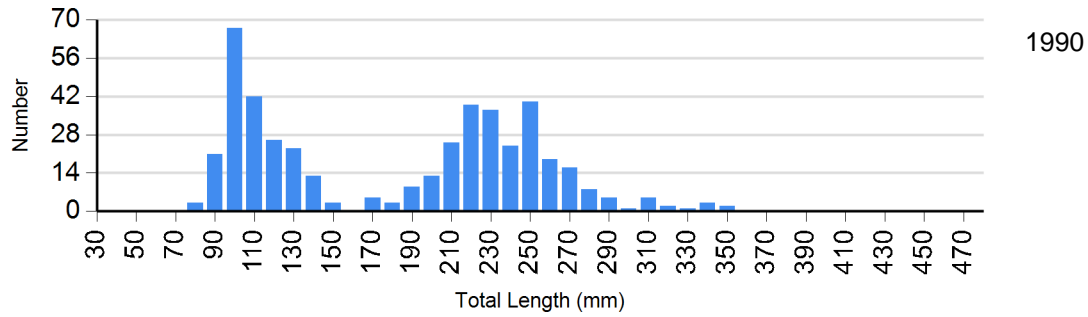


Site: 1412  
Species: White Sucker

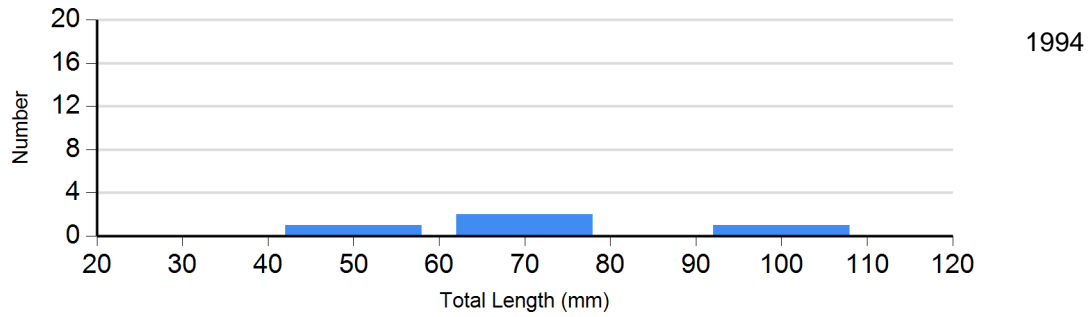
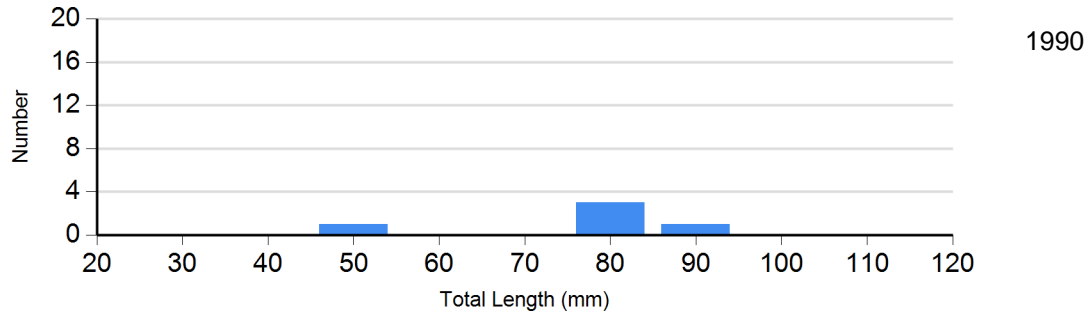




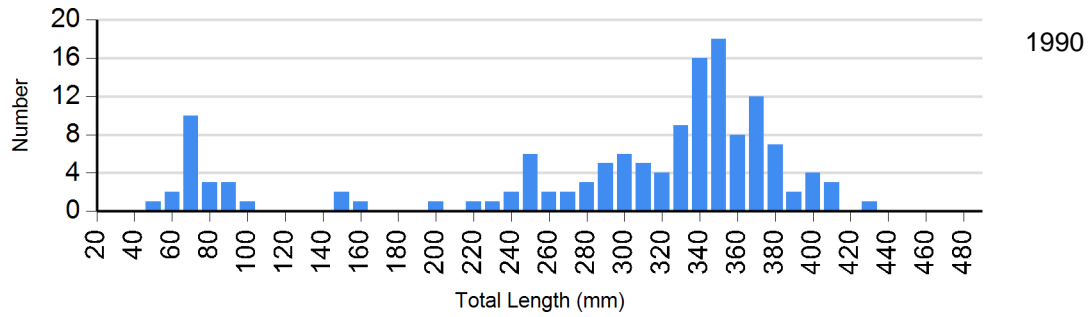
Site: 1434  
Species: Brown Trout

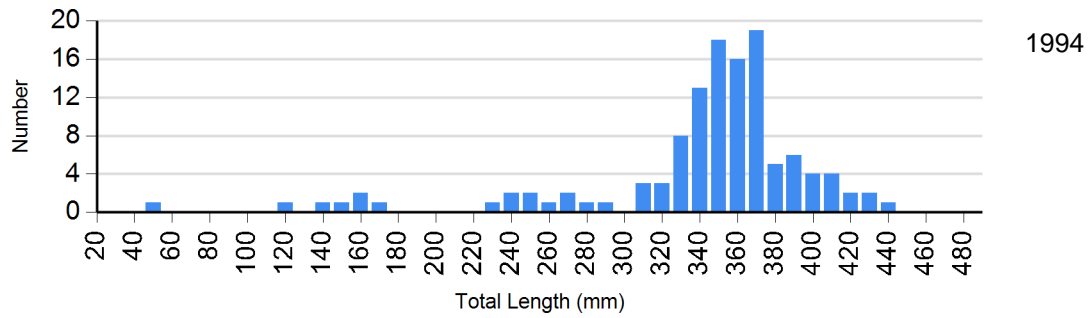


**Site:** 1434  
**Species:** Longnose Dace

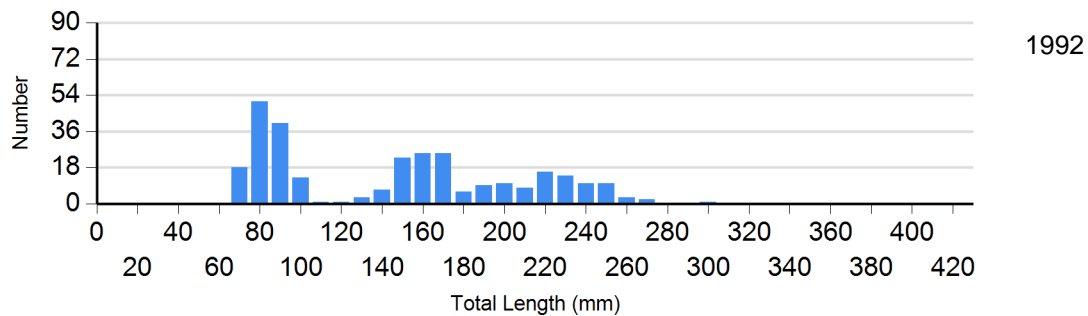
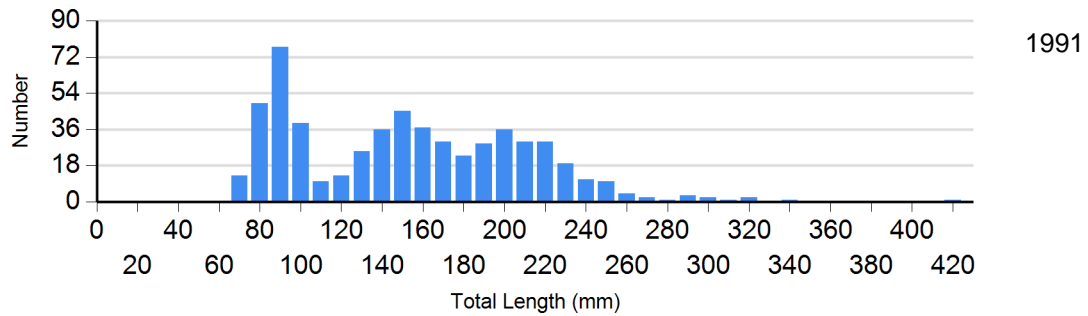
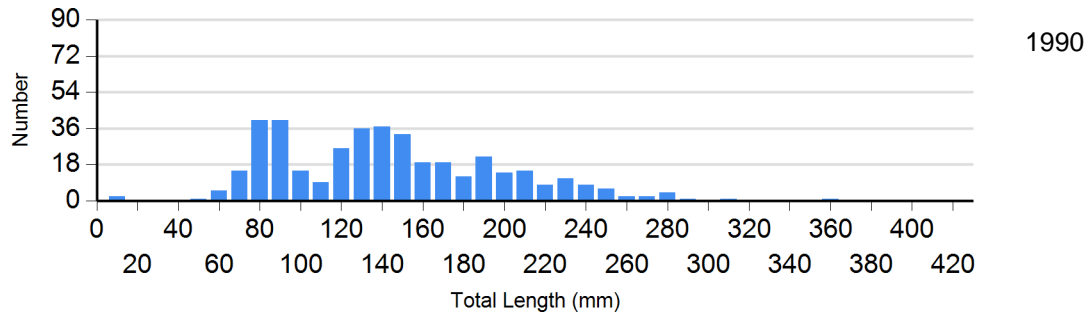


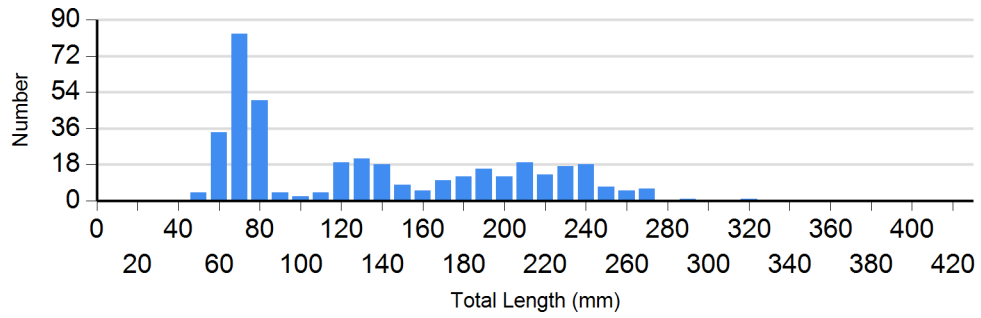
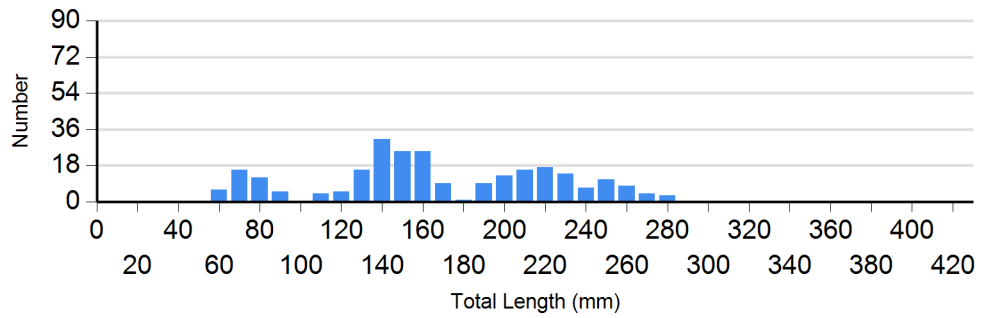
**Site:** 1434  
**Species:** White Sucker



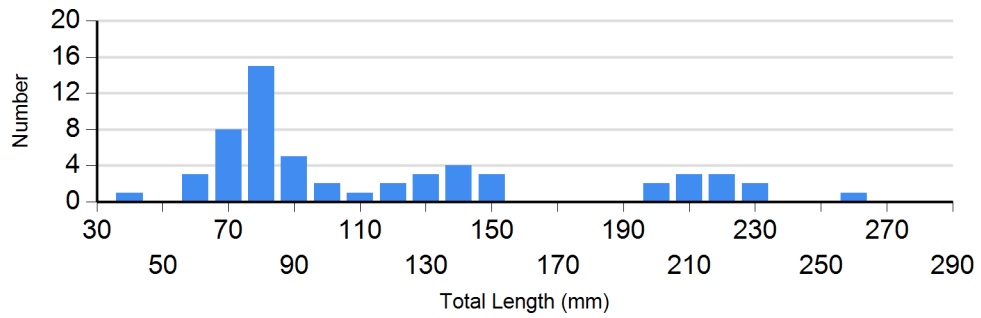
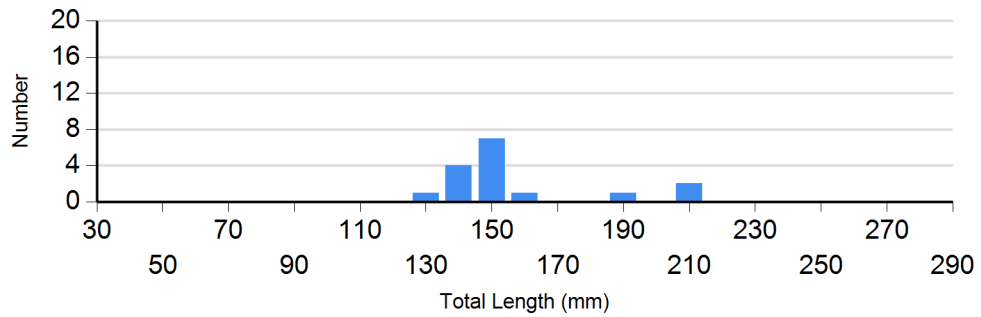


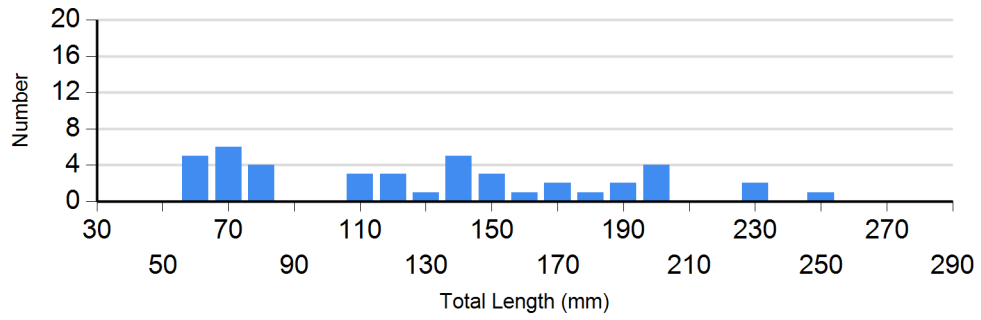
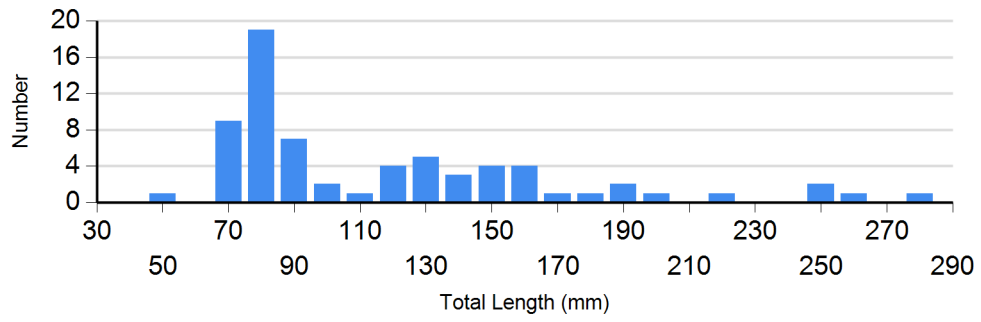
Site: 1656  
Species: Brown Trout



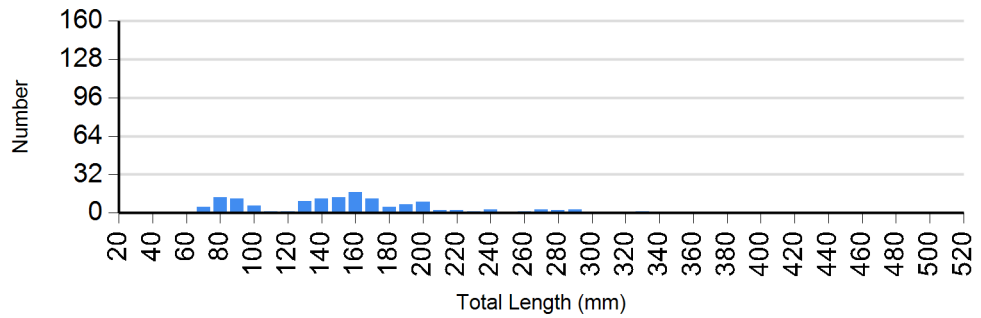
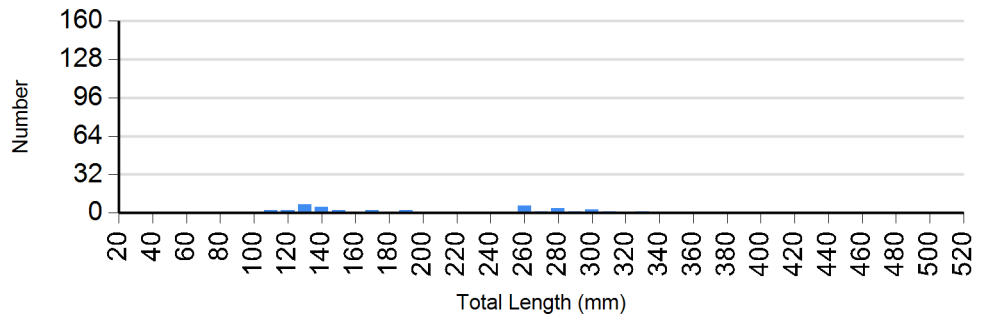


**Site:** 1843  
**Species:** Brook Trout

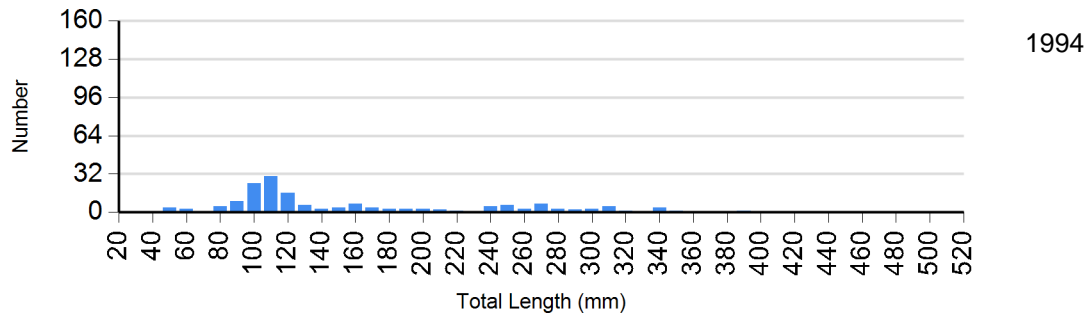
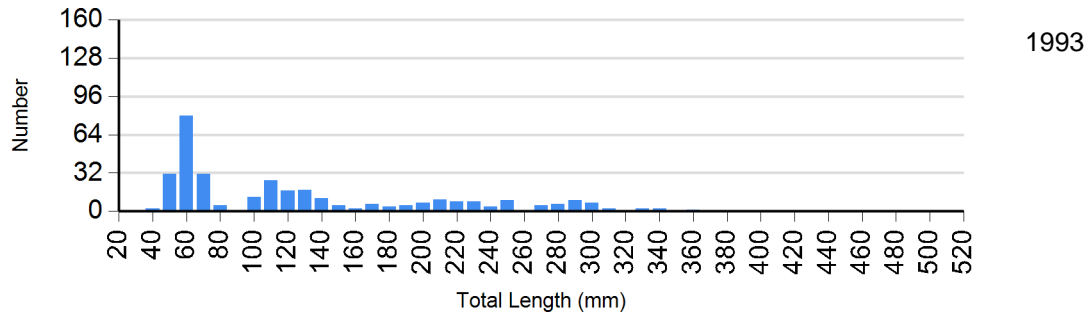
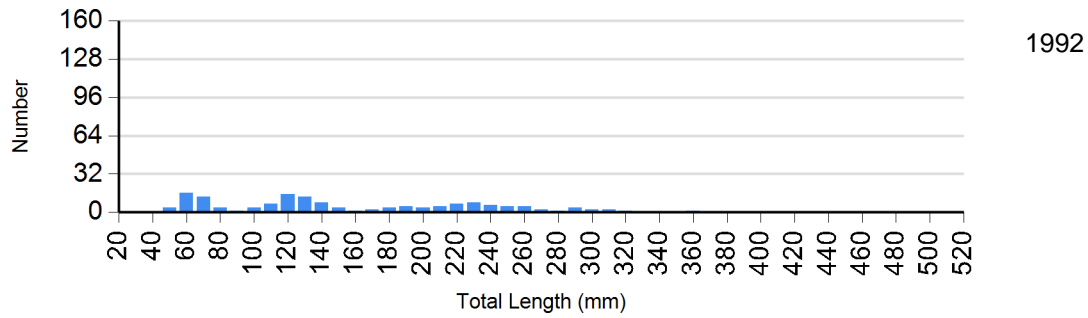




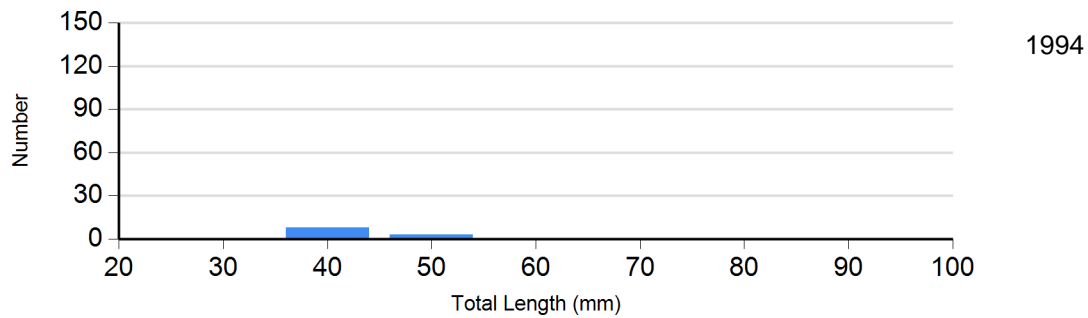
**Site:** 1843  
**Species:** Brown Trout



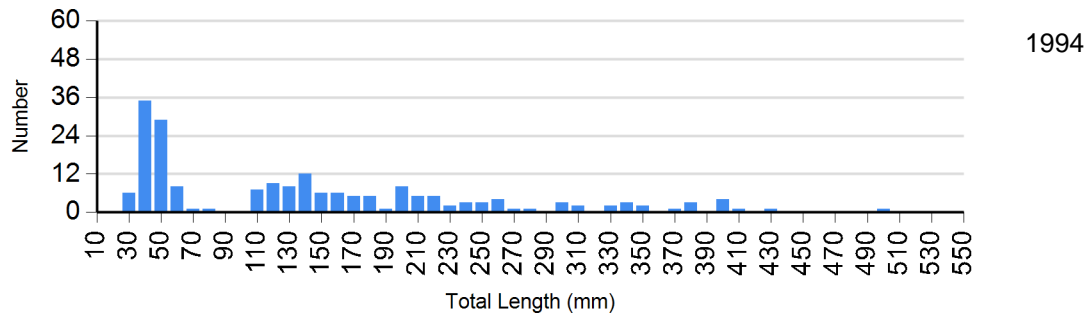
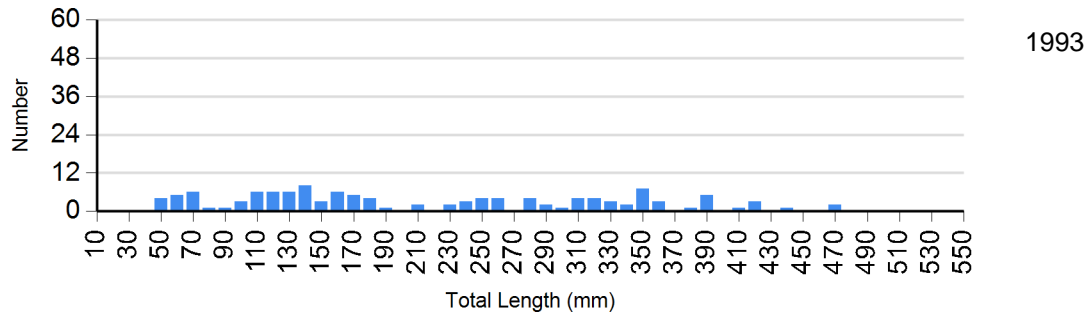
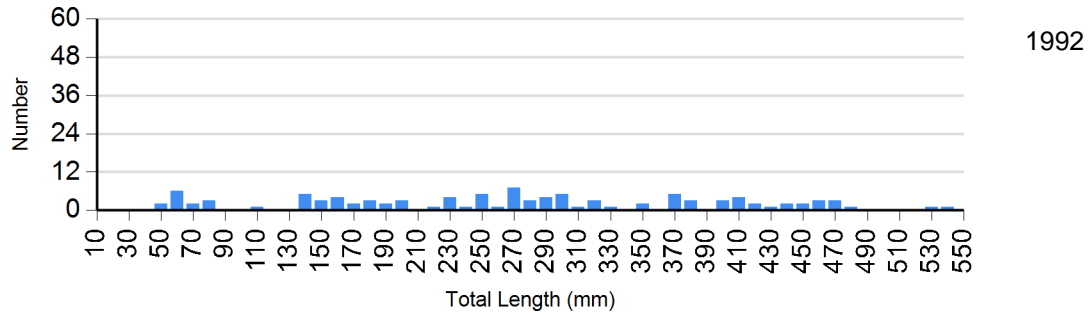




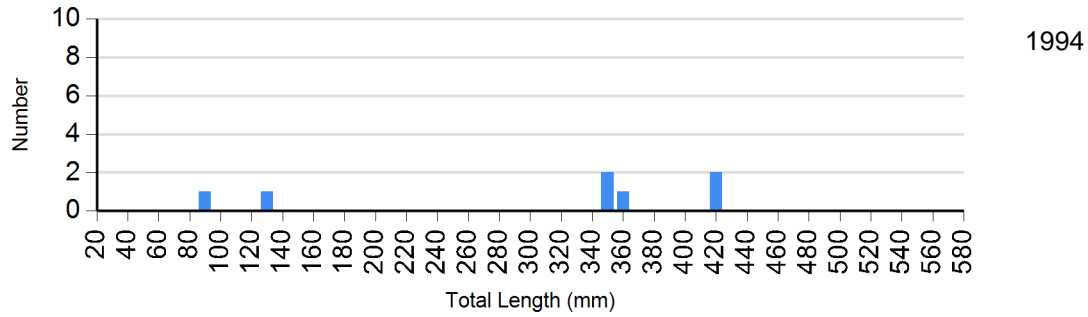
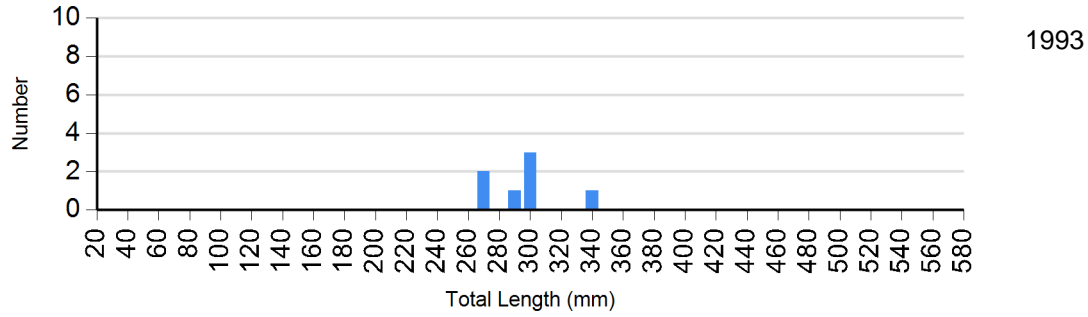
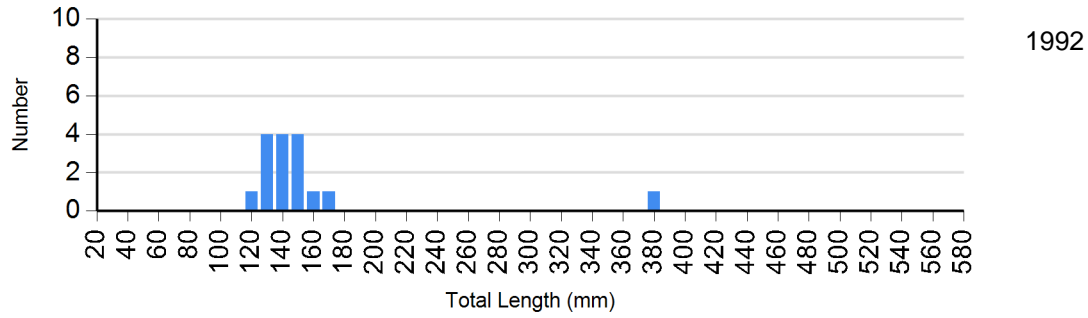
**Site:** 1843  
**Species:** Unidentified YOY Trout



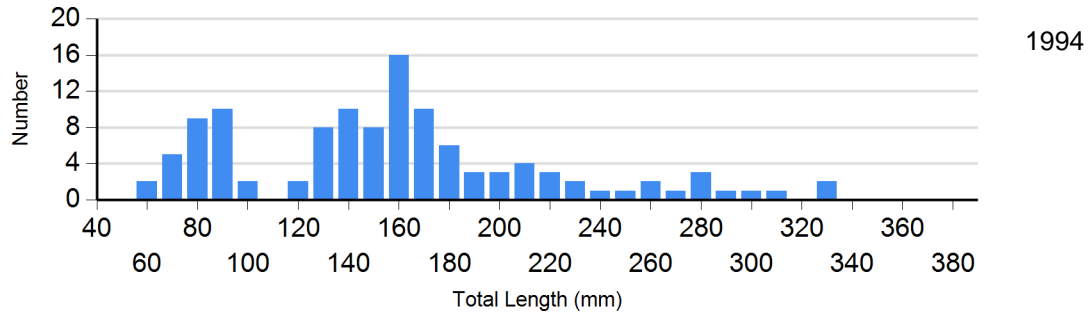
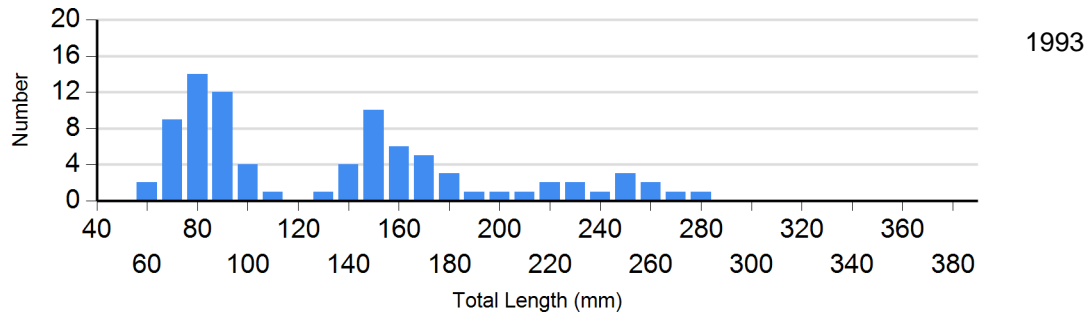
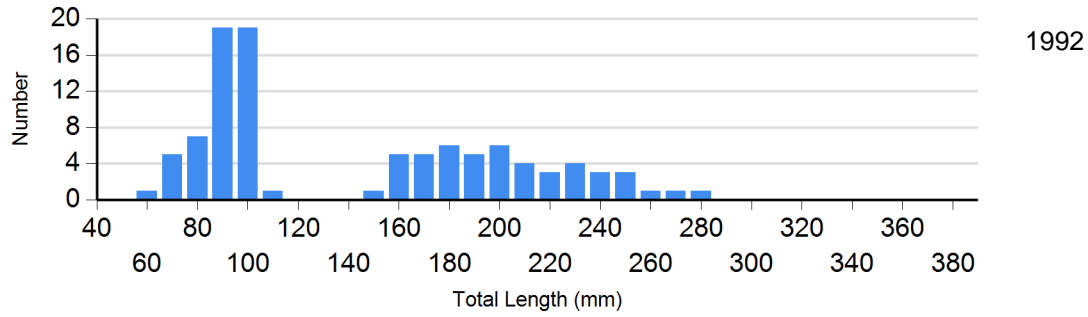
Site: 1853  
Species: Brown Trout



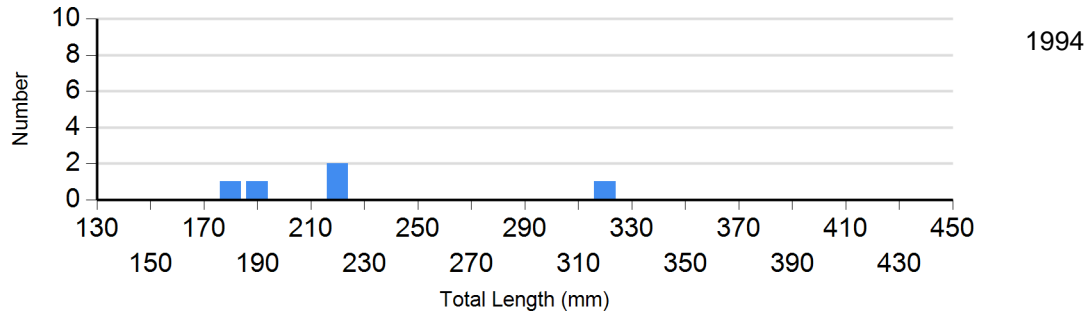
Site: 1853  
Species: Rainbow Trout



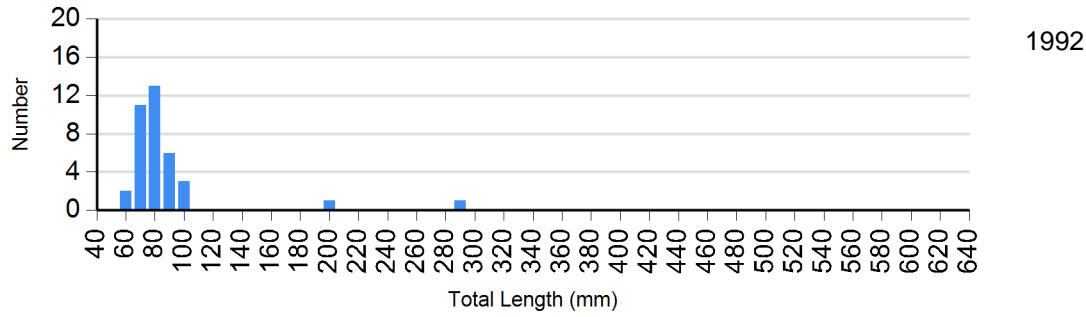
Site: 1930  
Species: Brown Trout



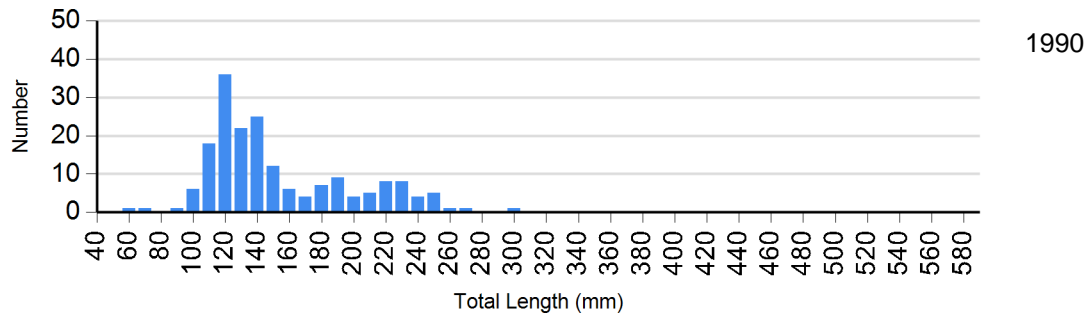
**Site:** 1930  
**Species:** Hatchery Rainbow Trout

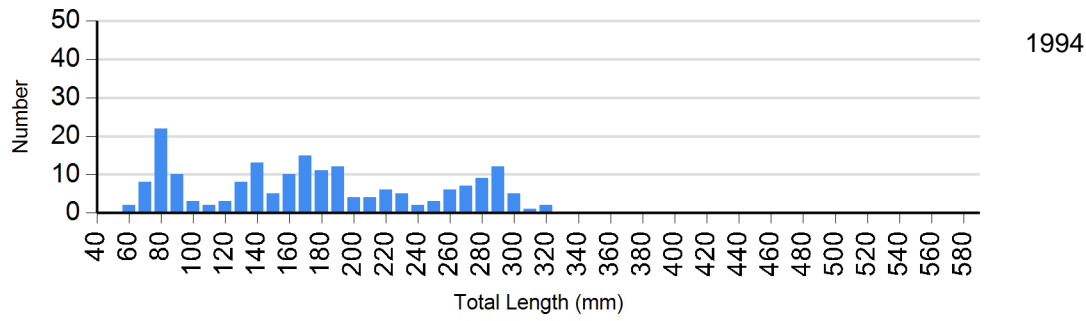
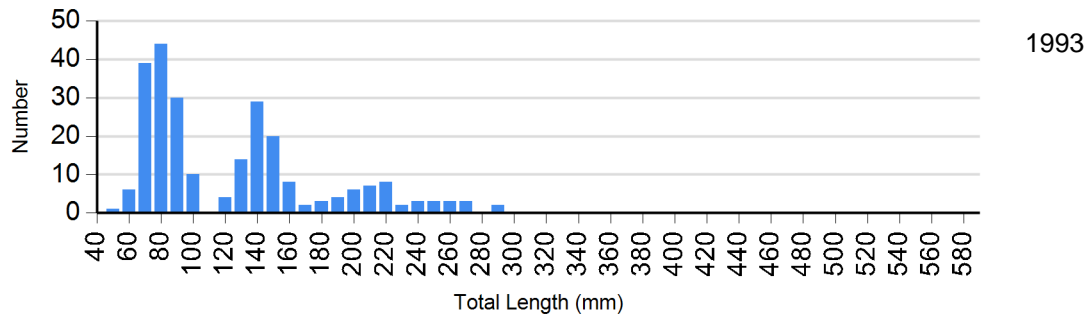
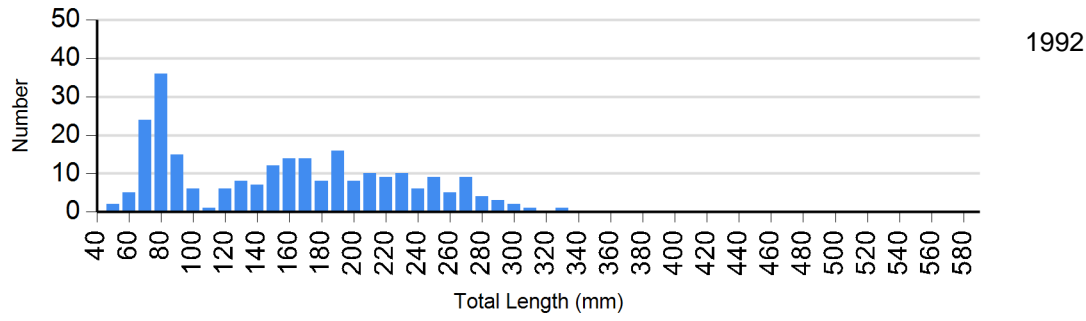
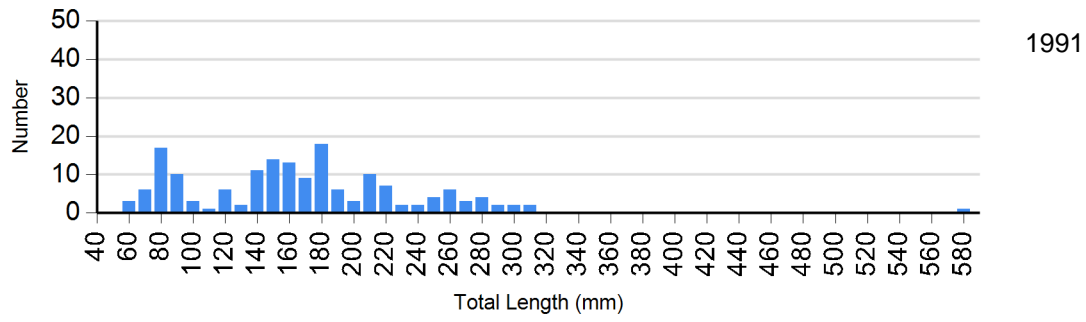


**Site:** 1930  
**Species:** Rainbow Trout

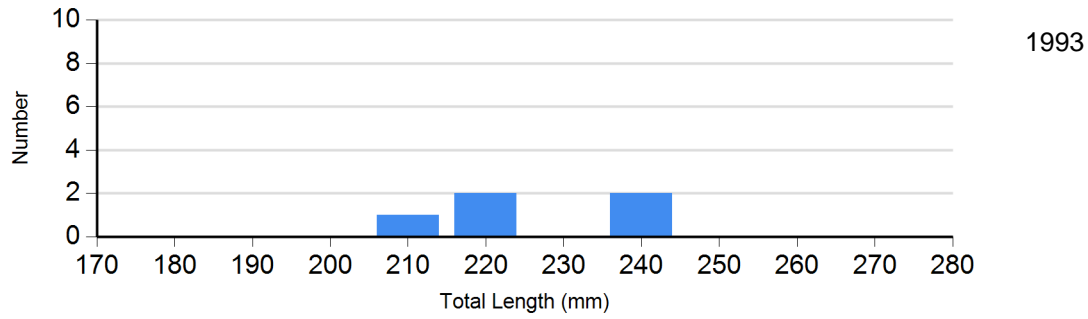
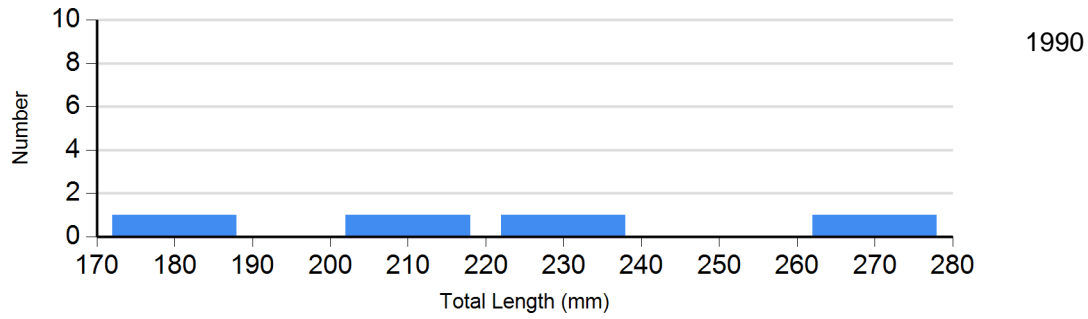


**Site:** 2007  
**Species:** Brown Trout

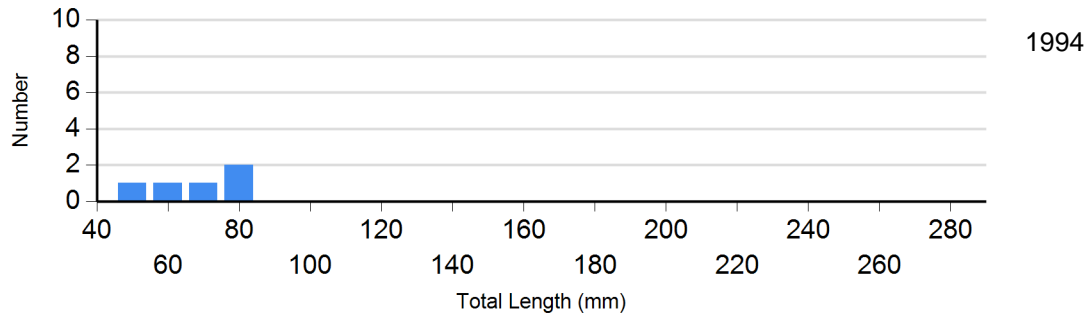




**Site:** 2007  
**Species:** Cutthroat Trout



**Site:** 2007  
**Species:** Rainbow Trout



Site: 2007  
Species: Rock Bass

