

**SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY**  
**Rapid Creek, Pennington County**  
**02-0062-00**  
**1997**

Table 1. Population and Biomass Estimates for Rapid Creek

<b>Site Number:</b> 1444	<b>Date Sampled:</b> 10/29/1997	<b>Conductivity (umhos/cm):</b> 242
<b>Site Midpoint (Latitude, Longitude):</b> 44.06406624, -103.27603653	<b>Site Length (m):</b> 110	<b>pH:</b> 9.5
<b>Survey Completed by:</b> South Dakota Game, Fish and Parks	<b>Mean Width (m):</b> 13.1	<b>Water Temperature (C):</b> 9.2
<b>Stream Classification:</b> BR1, RB2	<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)
Brown Trout	<200mm	34	39	49	34	298	16	355	121	14.40	570	174.8	54.2
Brown Trout	>=200mm	200	231	255	207	1763	328	2100	714	292.64	3379	263.3	185.9
Brown Trout	All	471	634	716	552	4840	820	5764	1960	731.89	9274	250.4	169.4
Longnose Dace	All	3	3	5	3	23	0	27	9	0.14	44	80.7	7.0
Mountain Sucker	All	1	1	2	1	8	1	9	3	0.48	15	180.0	71.0
Rainbow Trout	>=200mm	1	1	1	1	8	3	9	3	2.32	15	308.0	341.0
Rainbow Trout	All	1	1	1	1	8	3	9	3	2.32	15	308.0	341.0
White Sucker	All	18	18	18	18	137	78	164	56	69.70	263	363.2	568.1

<b>Site Number:</b> 1449	<b>Date Sampled:</b> 10/29/1997	<b>Conductivity (umhos/cm):</b> 238
<b>Site Midpoint (Latitude, Longitude):</b> 44.06128245, -103.28022267	<b>Site Length (m):</b> 105	<b>pH:</b> 9.5
<b>Survey Completed by:</b> South Dakota Game, Fish and Parks	<b>Mean Width (m):</b> 9.8	<b>Water Temperature (C):</b> 8.0
<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	94	126	162	94	1286	19	1200	521	17.06	1931	114.2	14.9
Brown Trout	>=200mm	51	54	60	51	551	99	514	223	88.62	827	259.4	180.1
Brown Trout	All	145	175	202	148	1786	130	1667	723	116.37	2682	165.3	73.0
White Sucker	All	14	14	15	14	143	80	133	58	71.27	215	362.6	558.7

Site Number: 1817

Site Midpoint (Latitude, Longitude): 44.07529329, -103.46727265

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BR1

Date Sampled: 10/27/1997

Site Length (m): 102

Mean Width (m): 10.9

Number of Pass: 3

Conductivity (umhos/cm):

pH:

Water Temperature (C):

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	98	97	111	98	893	21	951	362	18.46	1530	127.3	23.1
Brown Trout	>=200mm	46	67	103	46	617	143	657	250	127.64	1057	271.4	231.7
Brown Trout	All	226	318	387	249	2928	263	3118	1186	234.70	5016	173.3	89.8

Site Number: 1820

Site Midpoint (Latitude, Longitude): 44.07783791, -103.46747074

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK3, BR1

Date Sampled: 10/28/1997

Site Length (m): 109

Mean Width (m): 11.1

Number of Pass: 3

Conductivity (umhos/cm):

pH:

Water Temperature (C):

Voltage:

239

9.5

11.0

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	3	5	24	3	45	1	46	18	0.80	74	121.0	20.0
Brook Trout	>=200mm	1	1	5	1	9	2	9	4	1.49	15	258.0	186.0
Brook Trout	All	4	3	5	4	27	2	28	11	1.48	44	155.3	61.5

Brown Trout	<200mm	87	110	137	87	989	31	1009	401	27.83	1624	145.7	31.5
Brown Trout	>=200mm	41	42	46	41	378	67	385	153	59.77	620	256.0	177.2
Brown Trout	All	169	206	237	175	1853	145	1890	750	129.33	3041	181.0	78.2

**Site Number:** 1833  
**Site Midpoint (Latitude, Longitude):** 44.07611720, -103.47551527  
**Survey Completed by:** South Dakota Game, Fish and Parks  
**Stream Classification:** BK3, BR2

**Date Sampled:** 10/28/1997  
**Site Length (m):** 94  
**Mean Width (m):** 9.2  
**Number of Pass:** 4  
**Conductivity (umhos/cm):** 288  
**pH:** 9.5  
**Water Temperature (C):** 11.0  
**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	2	2	2	2	22	0	21	9	0.15	34	100.0	8.0
Brook Trout	>=200mm	1	1	2	1	11	2	11	4	1.68	17	260.0	173.0
Brook Trout	All	3	3	3	3	33	2	32	13	1.83	51	153.3	63.0
Brown Trout	<200mm	105	128	152	105	1388	46	1362	562	41.48	2191	149.8	33.5
Brown Trout	>=200mm	32	32	33	32	347	69	340	141	61.95	548	262.4	199.9
Brown Trout	All	257	294	319	269	3189	231	3128	1291	205.97	5032	176.1	72.3

**Site Number:** 1843  
**Site Midpoint (Latitude, Longitude):** 44.07203156, -103.47488319  
**Survey Completed by:** South Dakota Game, Fish and Parks  
**Stream Classification:** BK3, BR1

**Date Sampled:** 10/22/1997  
**Site Length (m):** 138  
**Mean Width (m):** 8.1  
**Number of Pass:** 3  
**Conductivity (umhos/cm):** 250  
**pH:** 8.7  
**Water Temperature (C):** 13.0  
**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	5	13	87	5	160	2	94	65	1.85	152	104.6	13.0
Brook Trout	>=200mm	2	2	4	2	25	4	14	10	3.36	23	247.0	153.0
Brook Trout	All	7	24	190	7	295	16	174	119	13.95	280	145.3	53.0

Brown Trout	<200mm	164	241	311	171	2961	107	1746	1199	95.54	2810	152.0	36.1
Brown Trout	>=200mm	42	46	53	42	565	147	333	229	131.04	536	283.4	259.7
Brown Trout	All	418	524	579	469	6437	526	3797	2607	469.72	6110	178.7	81.7

**Site Number:** 1849  
**Site Midpoint (Latitude, Longitude):** 44.07572600, -103.47938063  
**Survey Completed by:** South Dakota Game, Fish and Parks  
**Stream Classification:** BK2, BR1, RB2

**Date Sampled:** 10/27/1997  
**Site Length (m):** 153  
**Mean Width (m):** 10.4  
**Number of Pass:** 4  
**Conductivity (umhos/cm):** 238  
**pH:** 9.6  
**Water Temperature (C):** 11.0  
**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)
Brook Trout	<200mm	12	50	378	12	480	17	327	194	14.92	526	148.9	34.8
Brook Trout	>=200mm	9	10	15	9	96	14	65	39	12.42	105	242.2	145.0
Brook Trout	All	21	41	105	21	393	32	268	159	28.83	431	188.9	82.0
Brown Trout	<200mm	188	187	206	188	1795	67	1222	727	59.57	1967	150.7	37.2
Brown Trout	>=200mm	75	101	134	75	969	287	660	393	256.30	1062	287.1	296.1
Brown Trout	All	530	615	654	576	5902	655	4020	2390	585.09	6468	189.6	111.0
Rainbow Trout	>=200mm	4	4	6	4	38	47	26	16	42.10	42	478.0	1228.3
Rainbow Trout	All	4	4	6	4	38	47	26	16	42.10	42	478.0	1228.3

**Site Number:** 1853  
**Site Midpoint (Latitude, Longitude):** 44.07655505, -103.48401117  
**Survey Completed by:** South Dakota Game, Fish and Parks  
**Stream Classification:** BR1, RB2

**Date Sampled:** 10/22/1997  
**Site Length (m):** 97  
**Mean Width (m):** 10.7  
**Number of Pass:** 3  
**Conductivity (umhos/cm):** 246  
**pH:** 8.4  
**Water Temperature (C):** 13.0  
**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	118	263	483	118	2463	79	2711	997	70.90	4363	135.7	32.2

Brown Trout	>=200mm	39	44	54	39	412	137	454	167	122.00	730	274.9	331.7
Brown Trout	All	157	266	378	157	2491	266	2742	1009	237.11	4412	170.3	106.6
Rainbow Trout	<200mm	2	2	2	2	19	0	21	8	0.13	33	87.0	7.5
Rainbow Trout	>=200mm	3	3	4	3	28	38	31	11	34.21	50	448.3	1364.0
Rainbow Trout	All	5	5	6	5	47	38	52	19	34.34	83	303.8	821.4

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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, 1987-1997

**Site 1444**

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Aug 23, 1996	45	41-53	
	Oct 29, 1997	39	34-49	
Brown Trout >=200mm	Aug 23, 1996	133	122-145	BR1
	Oct 29, 1997	231	207-255	BR1
Longnose Dace	Aug 23, 1996	9	9-11	
	Oct 29, 1997	3	3-5	
Mountain Sucker	Oct 29, 1997	1	1-2	

Rainbow Trout >=200mm	Oct 29, 1997	1	1-1	RB2
White Sucker	Aug 23, 1996	22	22-23	
	Oct 29, 1997	18	18-18	

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**Site 1449**


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Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Aug 23, 1996	42	34-57	
	Oct 29, 1997	126	94-162	
Brown Trout >=200mm	Aug 23, 1996	91	77-108	BR1
	Oct 29, 1997	54	51-60	BR1
Longnose Dace	Aug 23, 1996	2	2-3	
White Sucker	Aug 23, 1996	32	31-36	
	Oct 29, 1997	14	14-15	

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**Site 1817**


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Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 30, 1996	2	2-2	
Brown Trout <200mm	Sep 30, 1996	588	539-637	
	Oct 27, 1997	97	98-111	

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Brown Trout >=200mm	Sep 30, 1996	33	31-38	BR2
	Oct 27, 1997	67	46-103	BR1

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**Site 1820**


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Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 28, 1997	5	3-24	
Brook Trout >=200mm	Oct 28, 1997	1	1-5	BK3
Brown Trout <200mm	Sep 30, 1996	414	383-445	
	Oct 28, 1997	110	87-137	
Brown Trout >=200mm	Sep 30, 1996	58	54-65	BR1
	Oct 28, 1997	42	41-46	BR1

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**Site 1833**


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Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 07, 1988	8	7-14	
	Nov 13, 1992	10	10-12	
	Sep 30, 1993	20	14-40	
	Oct 16, 1996	2	2-4	
	Oct 28, 1997	2	2-2	

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Brook Trout >=200mm	Oct 28, 1997	1	1-2	BK3
Brown Trout <200mm	Oct 07, 1988	116	86-155	
	Aug 03, 1990	90	85-98	
	Oct 17, 1991	174	98-286	
	Nov 13, 1992	281	232-330	
	Sep 30, 1993	474	201-808	
	Oct 16, 1996	293	275-311	
	Oct 28, 1997	128	105-152	
Brown Trout >=200mm	Oct 07, 1988	59	56-65	BR3
	Aug 03, 1990	40	39-43	BR3
	Oct 17, 1991	43	41-48	BR3
	Nov 13, 1992	50	50-51	BR1
	Sep 30, 1993	34	32-39	BR2
	Oct 16, 1996	30	30-31	BR2
	Oct 28, 1997	32	32-33	BR2
Rainbow Trout <200mm	Nov 13, 1992	1	1-2	

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
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	
	Oct 04, 1995	40	39-43	
	Sep 27, 1996	14	12-21	
	Oct 22, 1997	13	5-87	
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
	Oct 04, 1995	7	7-7	BK2

Brook Trout >=200mm	Oct 22, 1997	2	2-4	BK3
Brown Trout <200mm	Oct 07, 1988	28	28-28	
	Aug 03, 1990	23	22-27	
	Sep 30, 1991	141	114-171	
	Oct 06, 1992	153	101-214	
	Sep 29, 1993	395	290-500	
	Sep 28, 1994	130	121-140	
	Oct 04, 1995	125	83-180	
	Sep 27, 1996	810	431-1189	
	Oct 22, 1997	241	171-311	
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

Brown Trout >=200mm	Oct 04, 1995	28	28-28	BR1
	Sep 27, 1996	11	10-16	BR2
	Oct 22, 1997	46	42-53	BR1
Rainbow Trout <200mm	Oct 06, 1992	1	1-1	
	Sep 27, 1996	1	1-5	

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**Site 1849**

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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 01, 1996	26	24-32	
	Oct 27, 1997	50	12-378	
Brook Trout >=200mm	Oct 27, 1997	10	9-15	BK2
Brown Trout <200mm	Oct 01, 1996	623	559-687	
	Oct 27, 1997	187	188-206	
Brown Trout >=200mm	Oct 01, 1996	30	23-46	BR2
	Oct 27, 1997	101	75-134	BR1
Rainbow Trout <200mm	Oct 01, 1996	1	1-4	
Rainbow Trout >=200mm	Oct 01, 1996	1	1-1	RB2

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Rainbow Trout &gt;=200mm

Oct 27, 1997

4

4-6

RB2

**Site 1853**

<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	
	Sep 28, 1994	165	141-189	
	Oct 04, 1995	56	53-62	
	Oct 02, 1996	156	126-186	
	Oct 22, 1997	263	118-483	
Brown Trout >=200mm	Oct 06, 1992	73	72-76	BR1
	Sep 29, 1993	64	58-73	BR1
	Sep 28, 1994	57	55-62	BR1
	Oct 04, 1995	27	27-28	BR2
	Oct 02, 1996	17	17-19	BR2
	Oct 22, 1997	44	39-54	BR1
Rainbow Trout <200mm	Oct 06, 1992	19	15-31	

Rainbow Trout <200mm	Sep 28, 1994	2	2-3	
	Oct 04, 1995	25	24-29	
	Oct 02, 1996	28	28-29	
	Oct 22, 1997	2	2-2	
Rainbow Trout >=200mm	Oct 06, 1992	1	1-1	RB2
	Sep 29, 1993	7	7-8	RB1
	Sep 28, 1994	13	5-87	RB1
	Oct 04, 1995	1	1-2	RB2
	Oct 02, 1996	5	3-24	RB2
	Oct 22, 1997	3	3-4	RB2

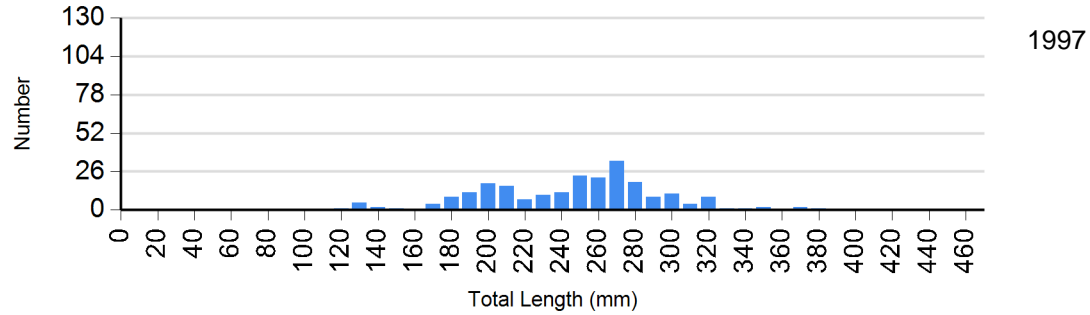
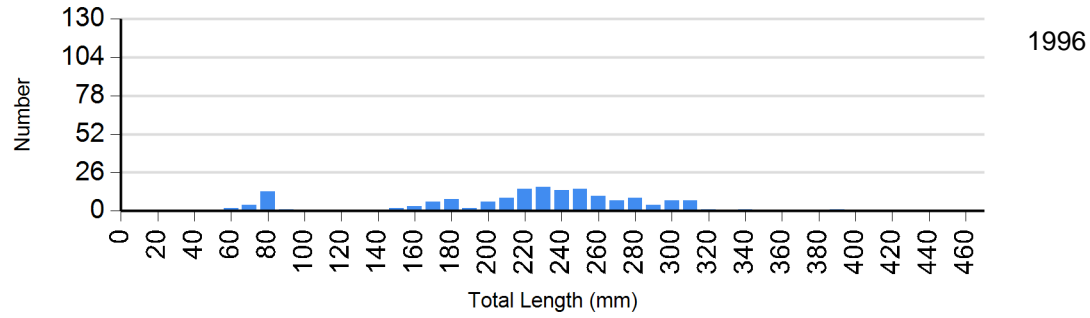
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## Length Frequency Distribution

Length frequency histogram of species sampled by year.

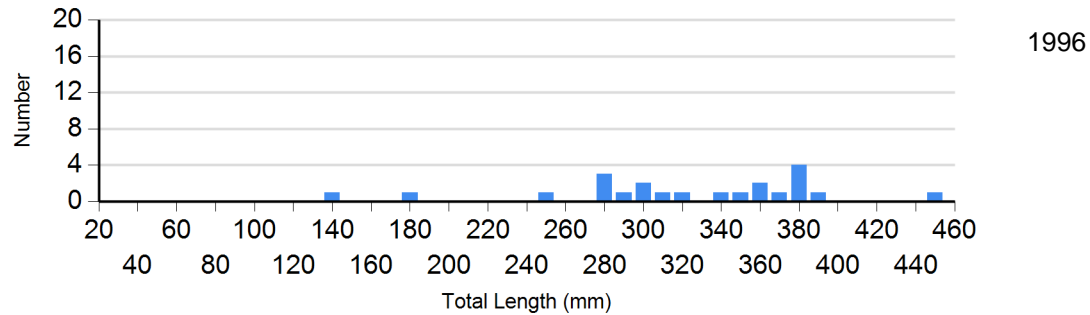
**Site:** 1444

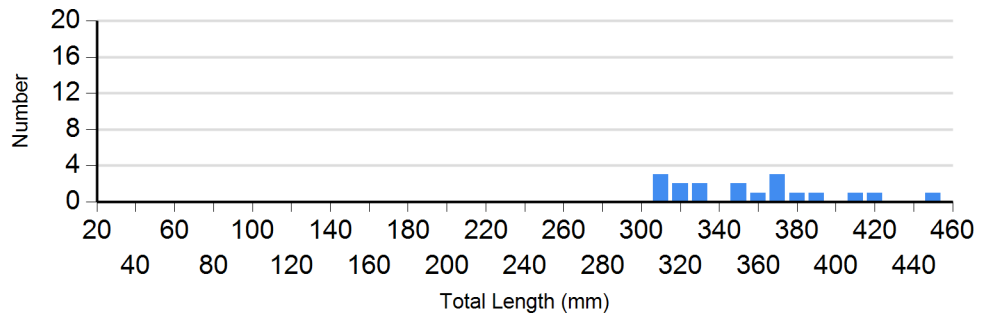
**Species:** Brown Trout



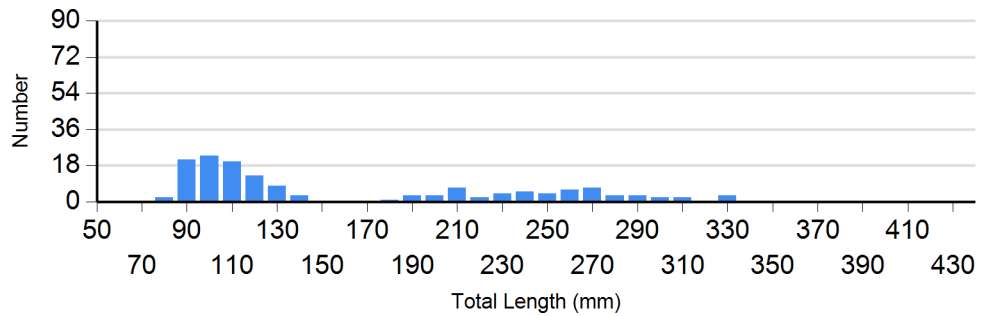
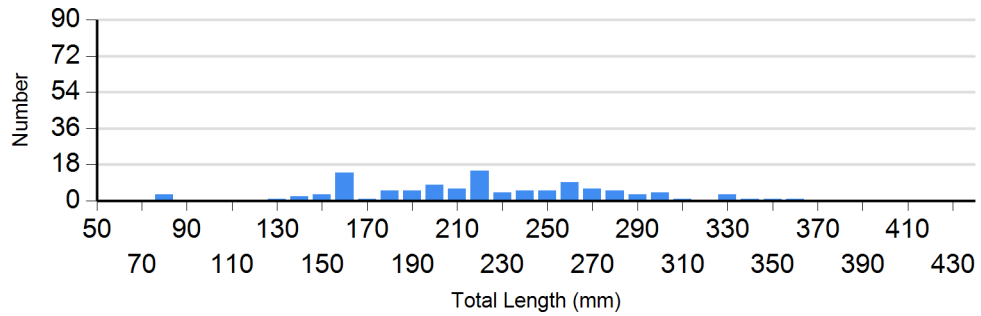
**Site:** 1444

**Species:** White Sucker



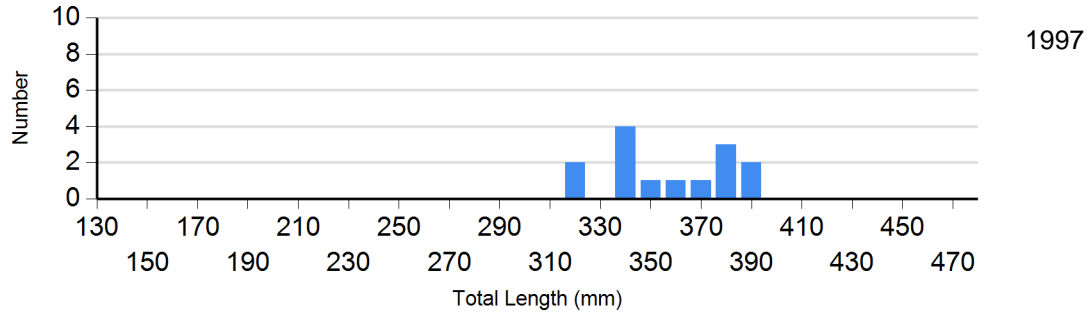
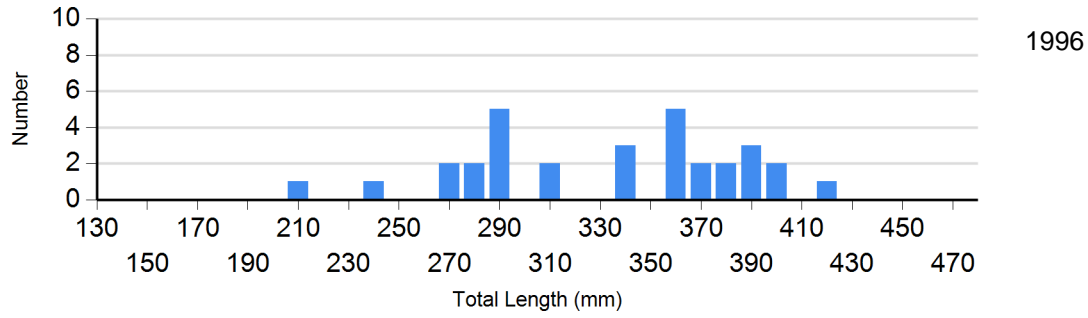


Site: 1449  
Species: Brown Trout

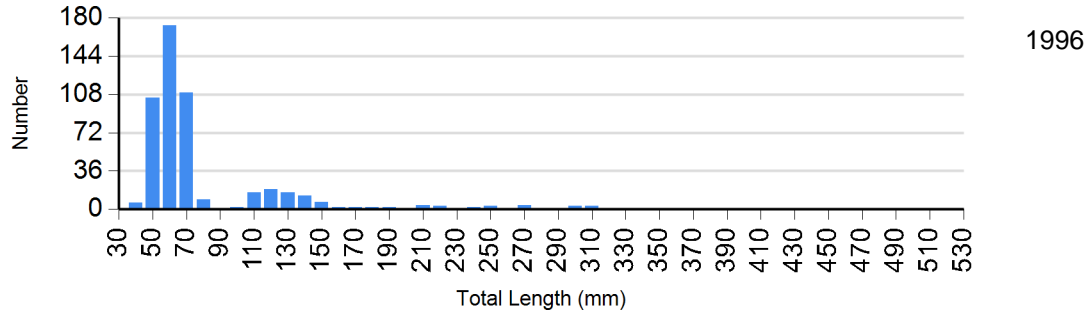


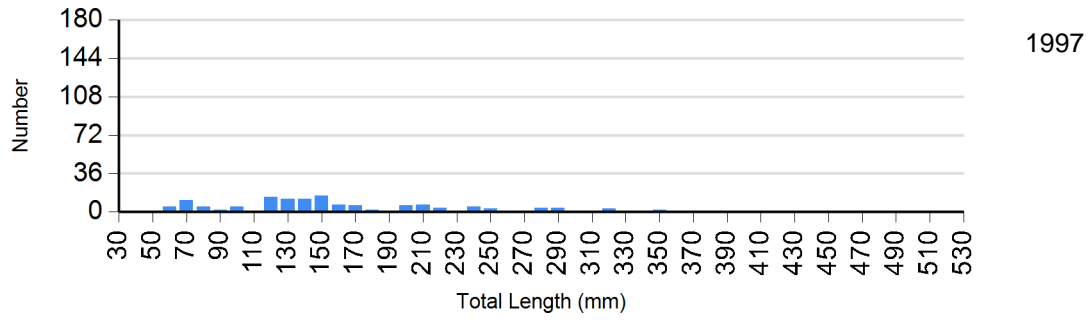


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**Species:** White Sucker

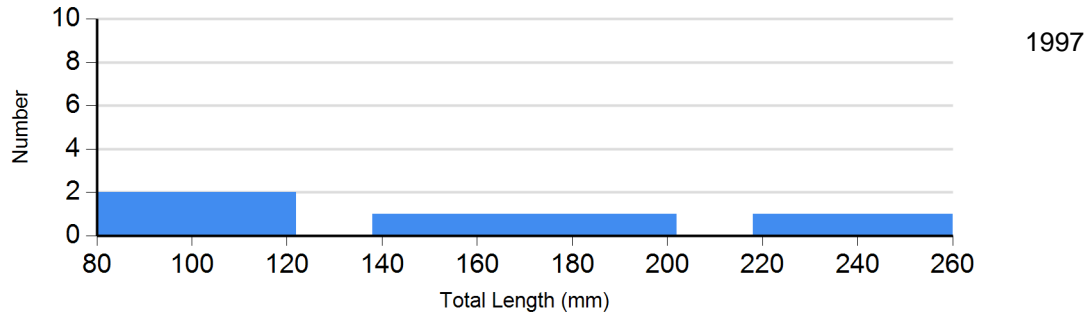


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**Species:** Brown Trout

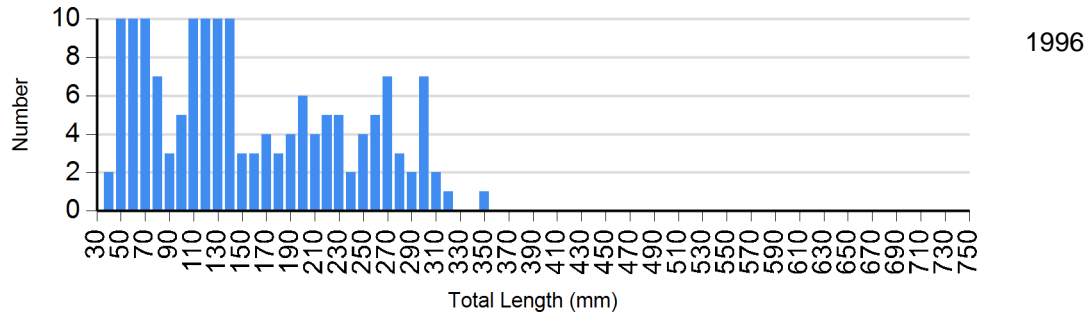


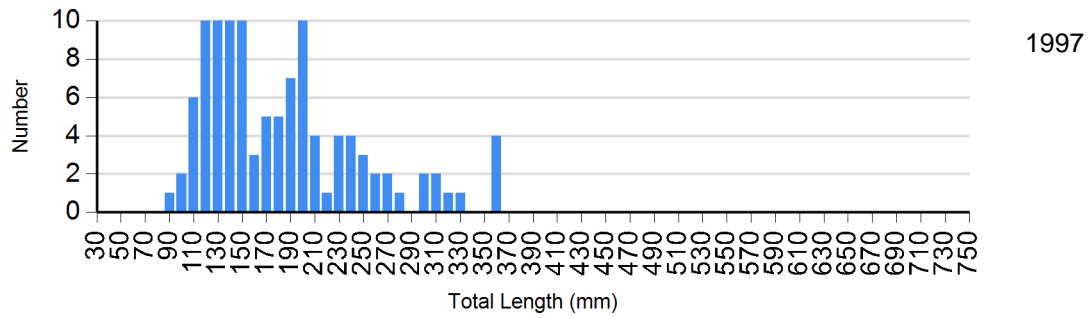


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Species: Brook Trout

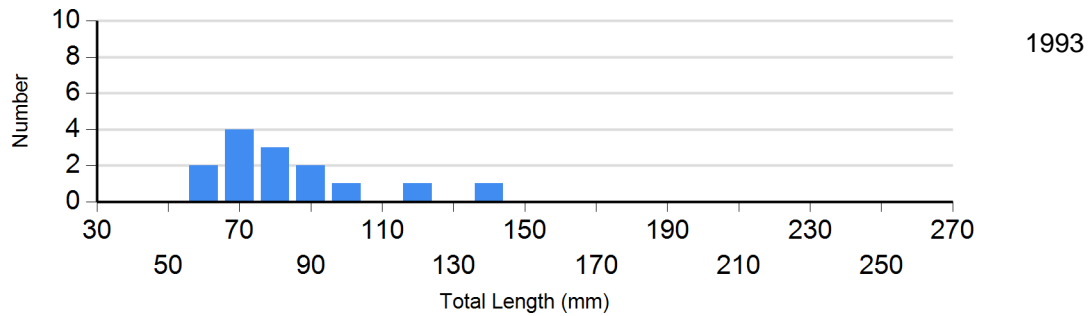
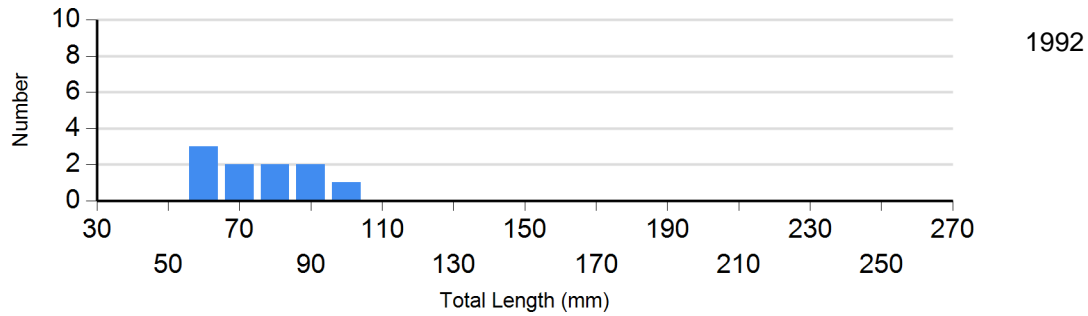


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Species: Brown Trout

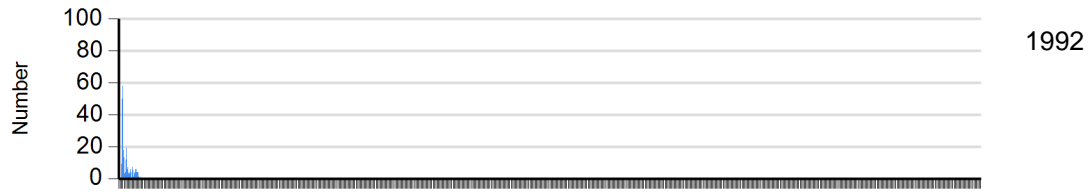




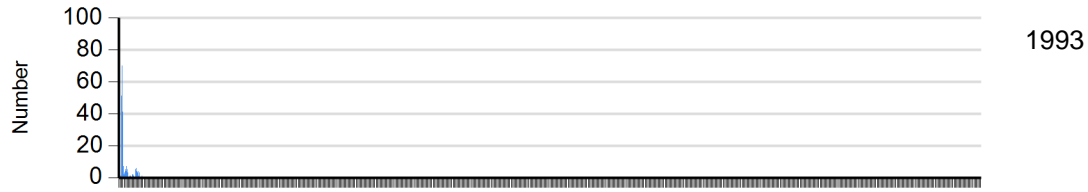
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Species: Brook Trout



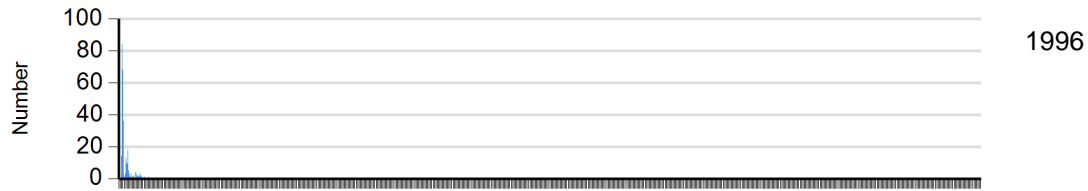
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Species: Brown Trout



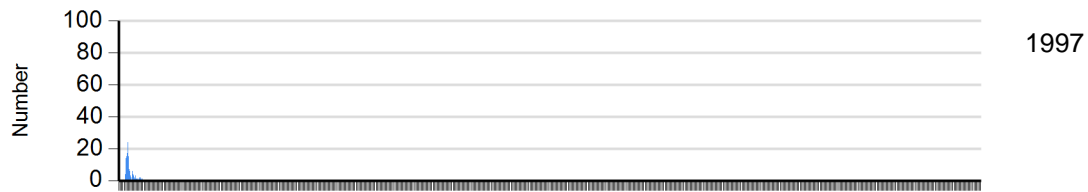
Total Length (mm)



Total Length (mm)

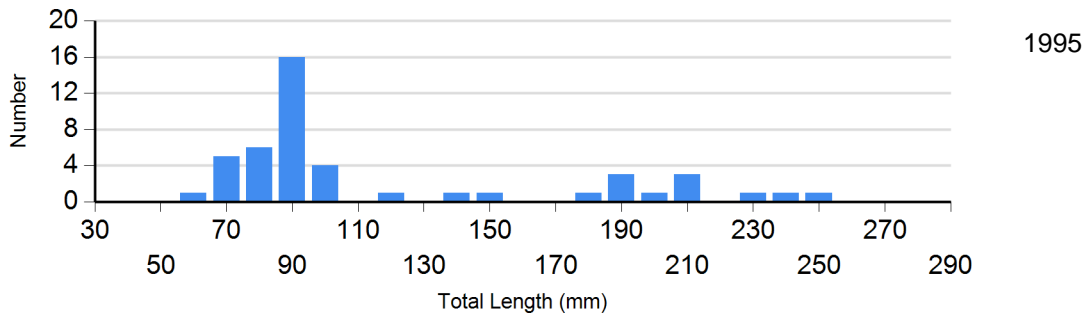
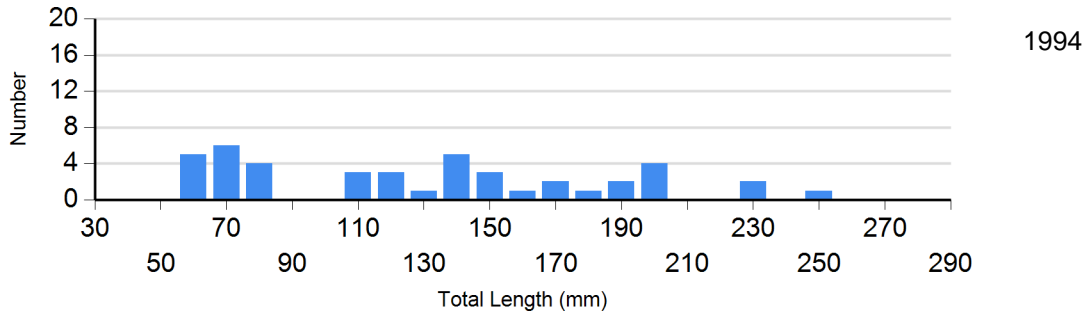
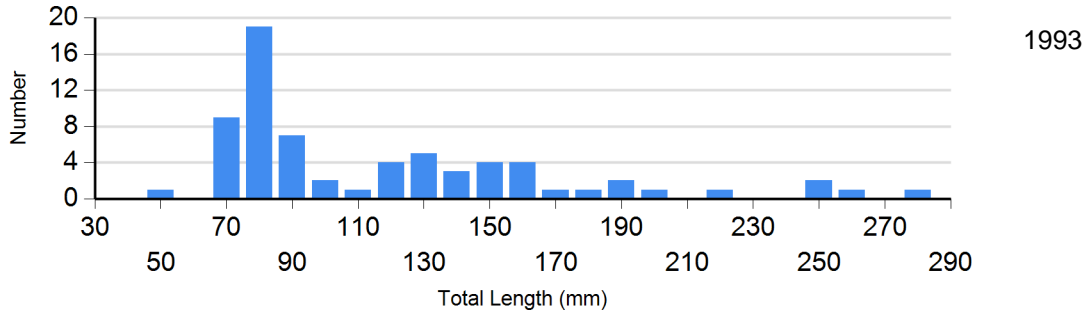
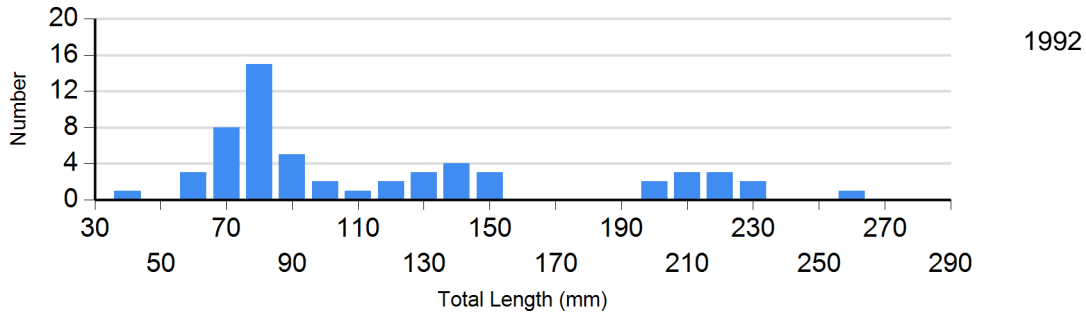


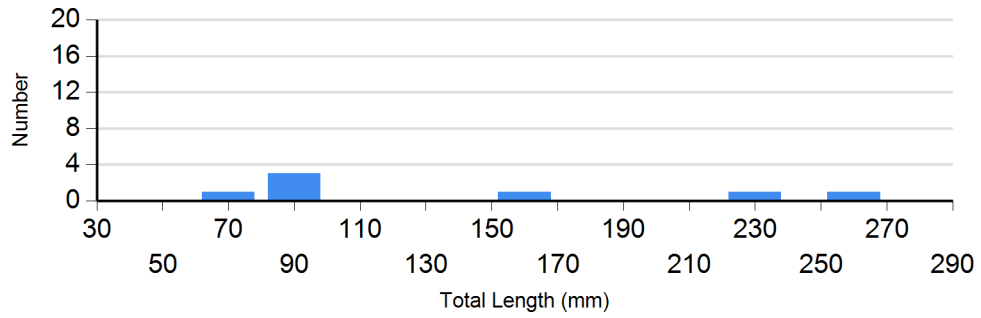
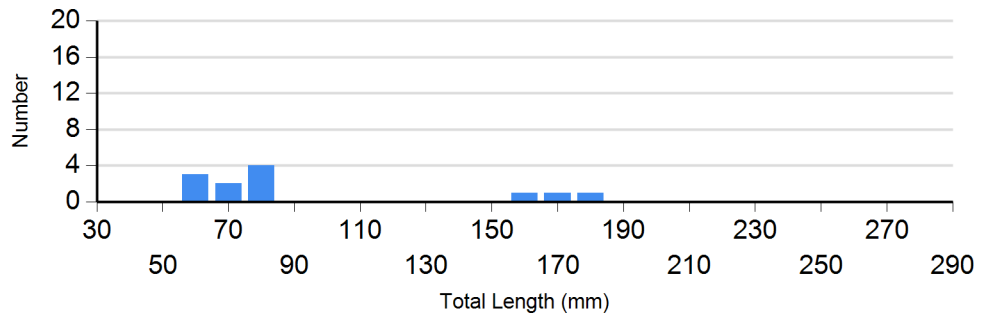
Total Length (mm)



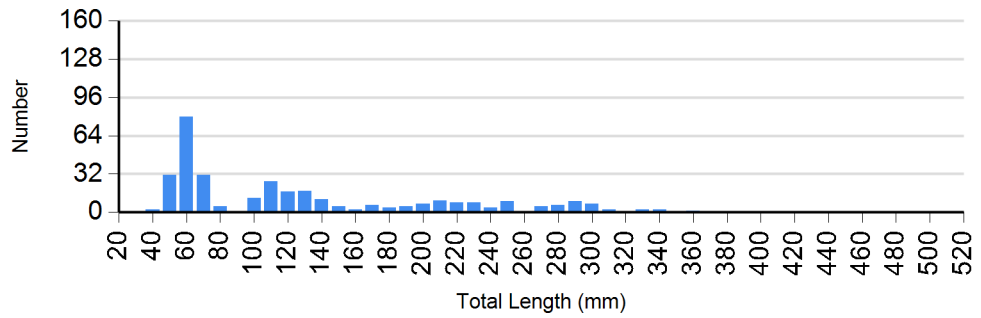
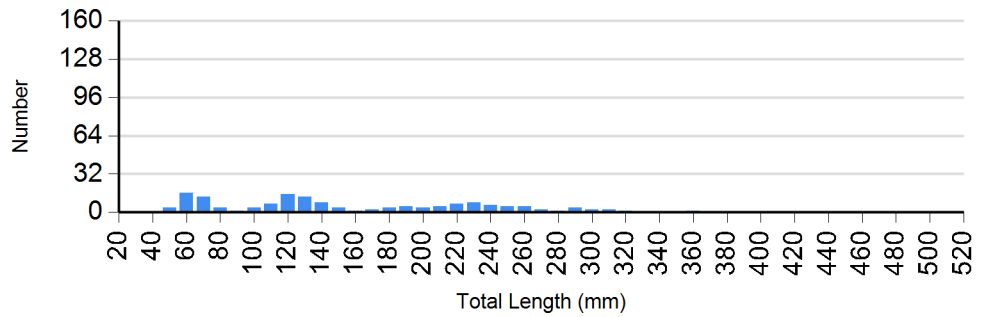
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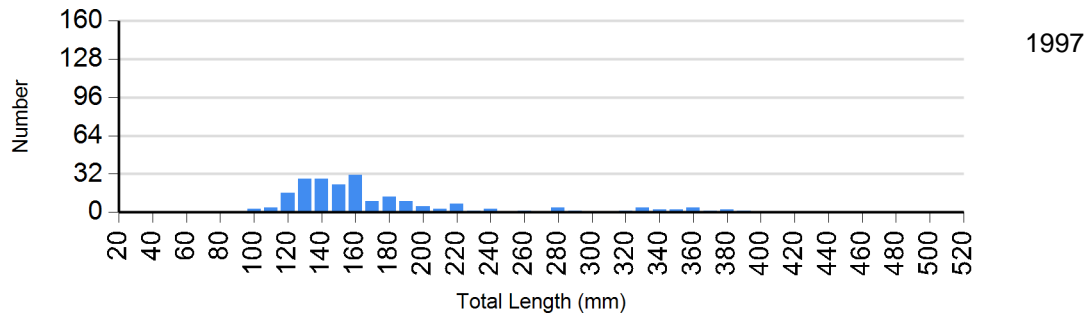
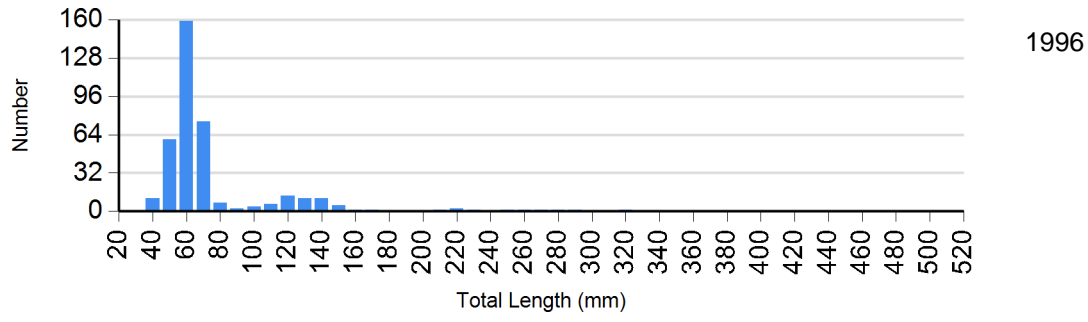
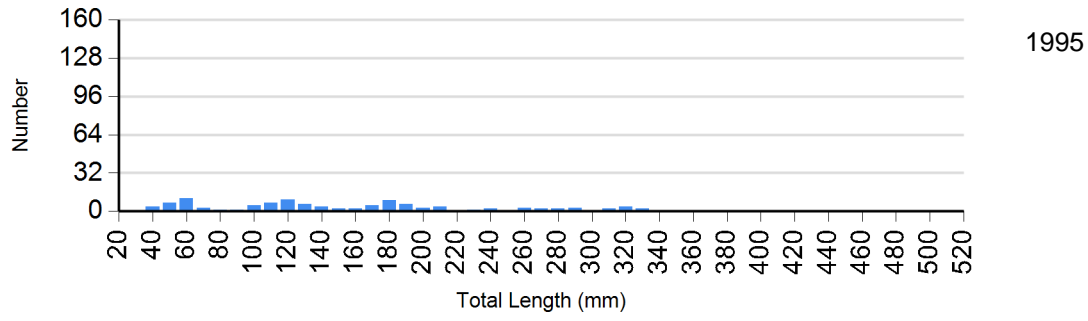
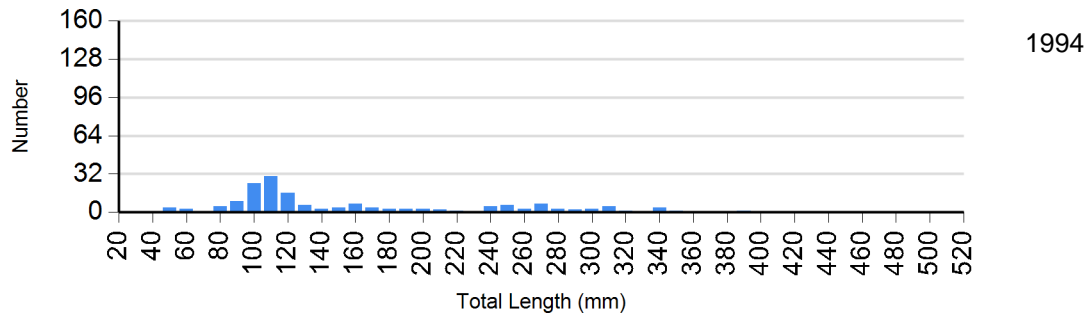
Site: 1843  
Species: Brook Trout



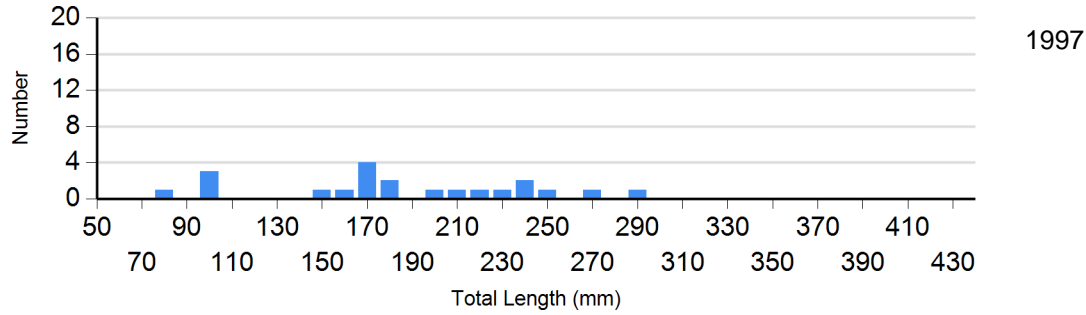
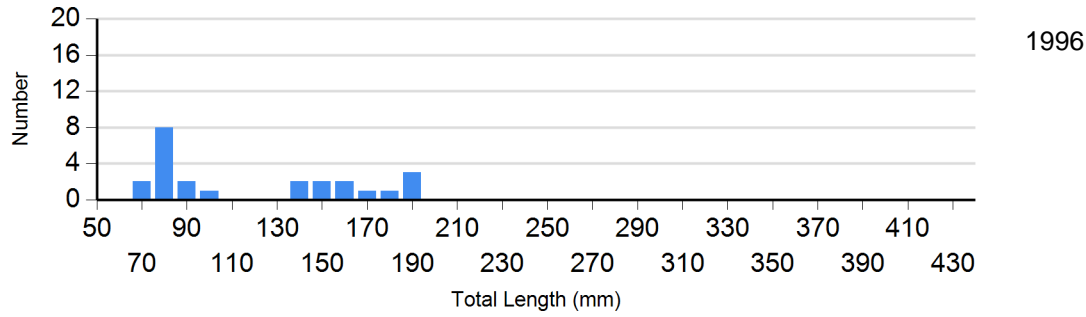


**Site:** 1843  
**Species:** Brown Trout

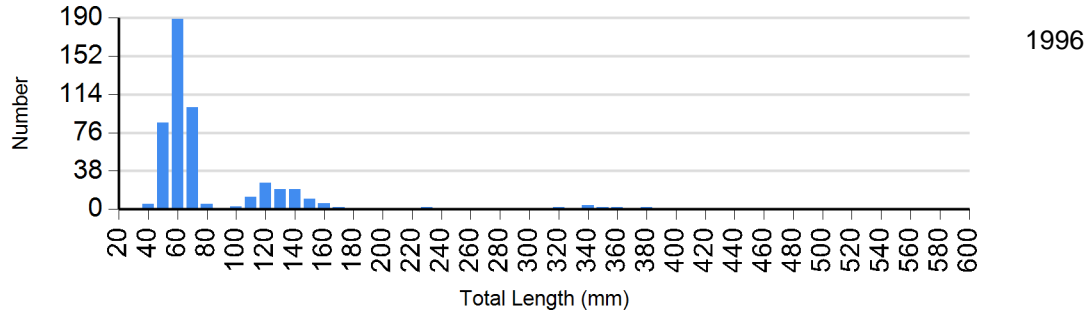




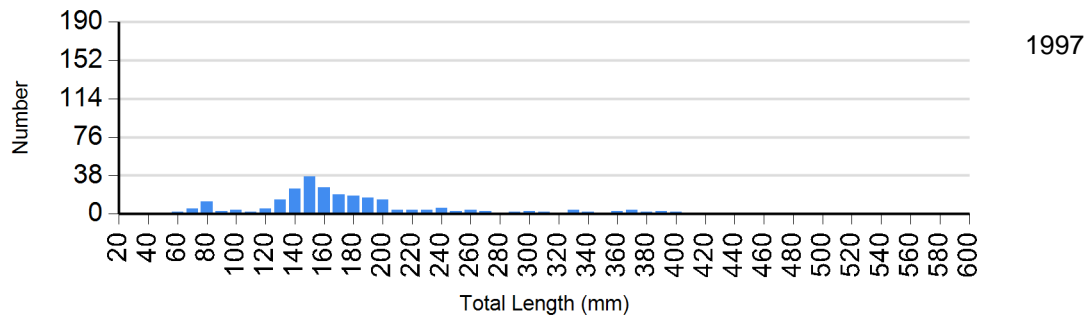
**Site: 1849**  
**Species: Brook Trout**



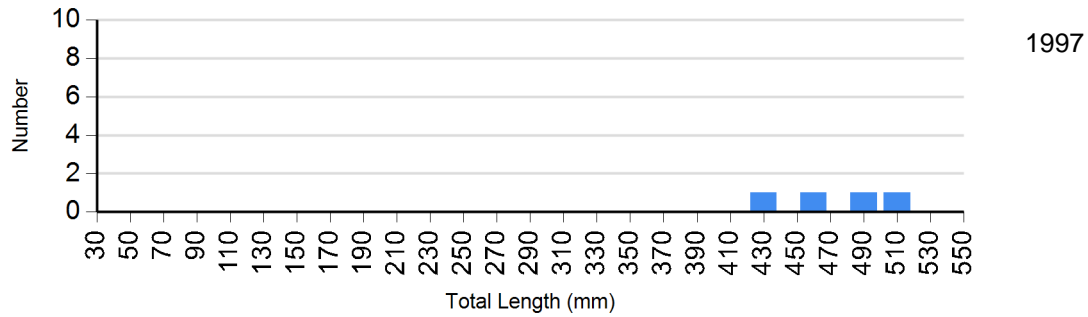
**Site: 1849**  
**Species: Brown Trout**



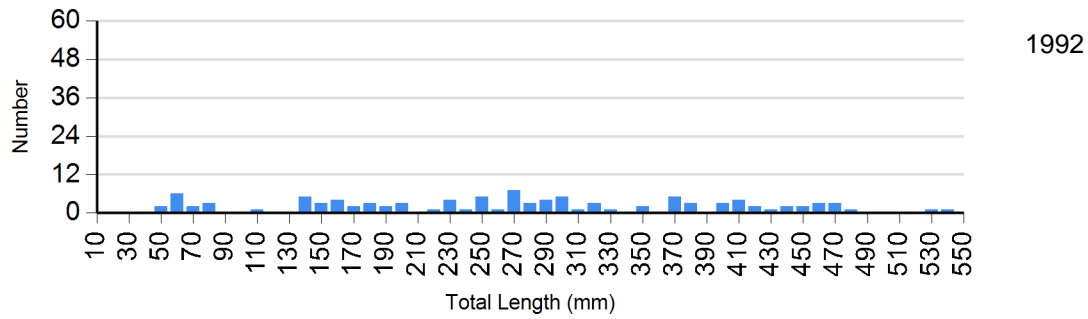


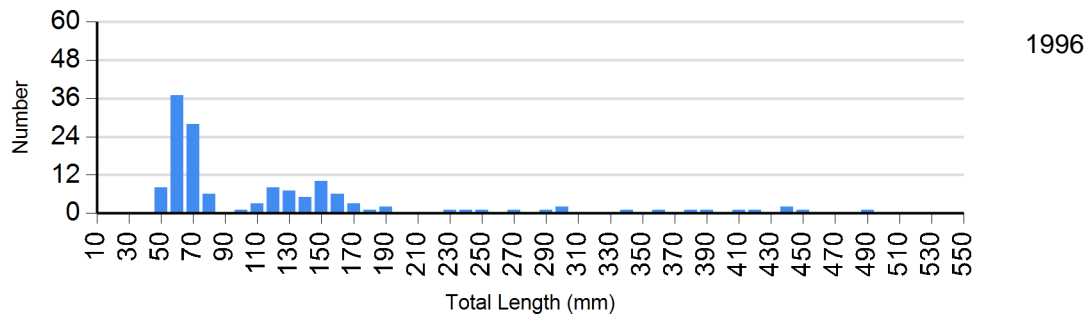
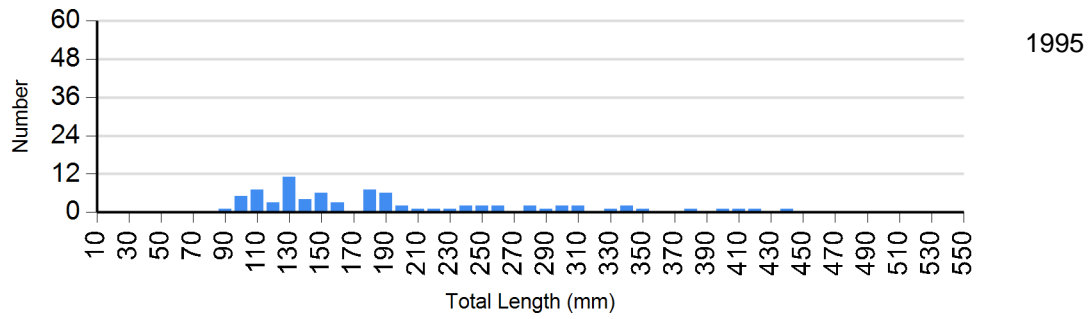
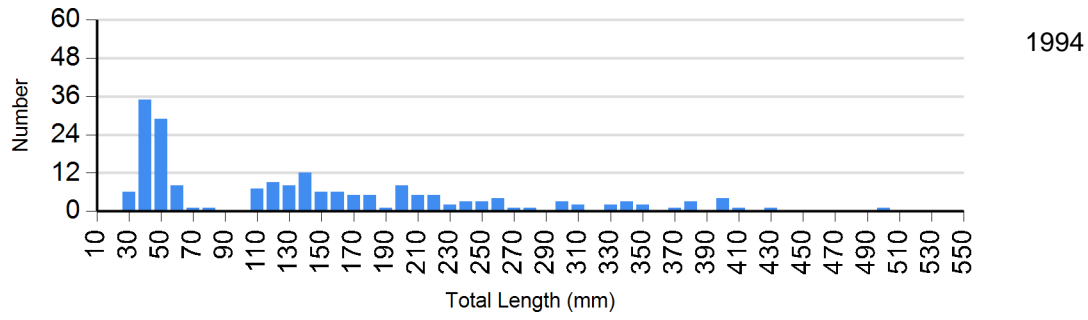
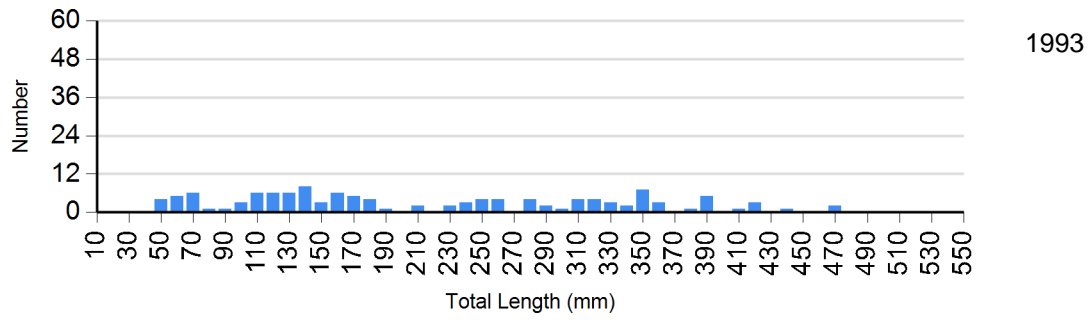


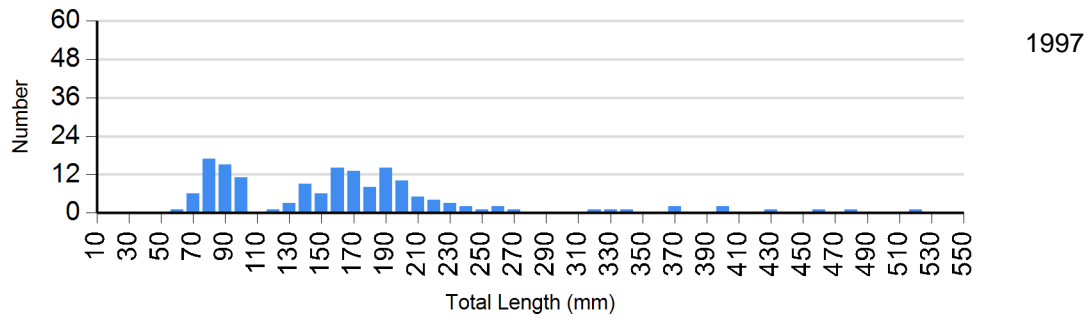
**Site: 1849**  
**Species: Rainbow Trout**



**Site: 1853**  
**Species: Brown Trout**







Site: 1853  
Species: Rainbow Trout

