

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Rapid Creek, Pennington County
02-0062-00
1998

Table 1. Population and Biomass Estimates for Rapid Creek

Site Number: 1817	Date Sampled: 10/26/1998	Conductivity (umhos/cm): 338
Site Midpoint (Latitude, Longitude): 44.07529329, -103.46727265	Site Length (m): 117	pH: 7.5
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 11.1	Water Temperature (C): 12.4
Stream Classification: BK0, BR1	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	9	0	9	4	0.06	14	92.0	7.0
Brook Trout	All	1	1	1	1	9	0	9	4	0.06	14	92.0	7.0
Brown Trout	<200mm	124	140	156	124	1266	27	1197	513	24.04	1925	118.4	21.3
Brown Trout	>=200mm	51	51	53	51	461	68	436	187	61.08	701	248.8	148.4
Brown Trout	All	175	189	202	176	1709	100	1615	692	88.96	2599	156.4	58.3

Site Number: 1820	Date Sampled: 10/26/1998	Conductivity (umhos/cm): 339
Site Midpoint (Latitude, Longitude): 44.07783791, -103.46747074	Site Length (m): 99	pH: 7.4
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 10.5	Water Temperature (C): 11.0
Stream Classification: BK0, BR1	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	2	1	10	0	10	4	0.08	16	103.0	9.0
Brook Trout	All	1	1	2	1	10	0	10	4	0.08	16	103.0	9.0
Brown Trout	<200mm	85	112	144	85	1071	39	1131	434	35.10	1820	150.2	36.7
Brown Trout	>=200mm	72	90	113	72	861	128	909	349	114.20	1463	254.3	148.6

Brown Trout All 157 205 247 163 1960 173 2071 794 154.08 3332 197.9 88.0

Site Number: 1833
Site Midpoint (Latitude, Longitude): 44.07611720, -103.47551527
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR1, RB0

Date Sampled: 10/23/1998
Site Length (m): 91
Mean Width (m): 10.1
Number of Pass: 3
Conductivity (umhos/cm): 341
pH: 7.5
Water Temperature (C): 12.2
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	66	76	90	66	750	20	835	304	17.77	1344	128.7	26.6
Brown Trout	>=200mm	65	66	69	65	651	118	725	264	105.37	1167	258.3	181.3
Brown Trout	All	131	140	150	131	1381	143	1538	559	127.40	2475	193.0	103.3
Rainbow Trout	<200mm	1	1	1	1	10	0	11	4	0.04	18	73.0	4.0
Rainbow Trout	All	1	1	1	1	10	0	11	4	0.04	18	73.0	4.0

Site Number: 1843
Site Midpoint (Latitude, Longitude): 44.07203156, -103.47488319
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR1, RB2

Date Sampled: 10/23/1998
Site Length (m): 129
Mean Width (m): 7.7
Number of Pass: 3
Conductivity (umhos/cm): 338
pH: 7.7
Water Temperature (C): 11.6
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	81	94	110	81	1218	39	729	493	35.22	1172	139.3	32.4
Brown Trout	>=200mm	117	152	187	117	1969	424	1178	797	378.21	1896	269.2	215.1
Brown Trout	All	198	247	284	210	3199	447	1915	1296	398.85	3081	216.1	139.6
Rainbow Trout	<200mm	7	7	7	7	91	0	54	37	0.14	87	62.0	1.7
Rainbow Trout	>=200mm	1	1	2	1	13	9	8	5	8.39	12	450.0	725.0
Rainbow Trout	All	8	8	9	8	104	10	62	42	8.52	100	110.5	92.1

Site Number: 1849
Site Midpoint (Latitude, Longitude): 44.07572600, -103.47938063
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BK3, BR1, RB2

Date Sampled: 10/22/1998
Site Length (m): 148
Mean Width (m): 9.6
Number of Pass: 3
Conductivity (umhos/cm): 336
pH: 7.5
Water Temperature (C): 12.7
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	40	50	67	40	519	4	338	210	3.98	544	97.8	8.6
Brook Trout	>=200mm	2	2	3	2	21	3	14	8	2.23	22	226.5	120.5
Brook Trout	All	43	54	72	43	560	8	365	227	6.89	587	103.9	13.8
Brown Trout	<200mm	140	156	171	141	1618	25	1054	655	22.01	1696	100.9	15.2
Brown Trout	>=200mm	48	55	67	48	571	144	372	231	128.18	598	284.2	251.6
Brown Trout	All	188	214	235	193	2220	168	1446	899	149.83	2327	147.7	75.6
Rainbow Trout	<200mm	1	1	1	1	10	0	7	4	0.07	11	95.0	8.0
Rainbow Trout	>=200mm	2	2	2	2	21	18	14	8	15.69	22	439.0	847.0
Rainbow Trout	All	3	3	3	3	31	18	20	13	15.76	33	324.3	567.3

Site Number: 1853
Site Midpoint (Latitude, Longitude): 44.07655505, -103.48401117
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BK3, BR1, RB2

Date Sampled: 10/22/1998
Site Length (m): 102
Mean Width (m): 11.7
Number of Pass: 3
Conductivity (umhos/cm): 335
pH: 7.6
Water Temperature (C): 11.6
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	13	16	26	13	137	1	157	55	1.22	252	101.1	10.0
Brook Trout	>=200mm	1	1	1	1	9	5	10	3	4.66	16	336.0	612.0
Brook Trout	All	14	16	23	14	137	7	157	55	6.46	252	117.9	53.0

Brown Trout	<200mm	94	148	216	94	1263	31	1451	511	27.97	2335	116.7	24.8
Brown Trout	>=200mm	53	76	113	53	648	192	745	263	171.80	1199	284.1	296.7
Brown Trout	All	147	230	313	147	1962	242	2255	795	216.42	3628	177.0	123.5
Rainbow Trout	<200mm	1	1	2	1	9	0	10	3	0.11	16	107.0	14.0
Rainbow Trout	>=200mm	4	4	7	4	34	44	39	14	39.65	63	503.0	1301.0
Rainbow Trout	All	5	6	13	5	51	53	59	21	47.70	95	423.8	1043.6

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	
Class BR1	Number of wild Brown Trout exceeds 150 per acre
Class BR2	Number of wild Brook Trout ranges from 25 to 150 per acre
Class BR3	Number of wild Brown Trout is less than 25 per acre
Class BK1	Number of wild Brook Trout exceeds 150 per acre
Class BK2	Number of wild Brook Trout ranges from 25 to 150 per acre
Class BK3	Number of wild Brook Trout is less than 25 per acre
Class RB1	Number of wild Rainbow Trout exceeds 25 per acre
Class RB2	Number of wild Rainbow Trout is less than 25 per acre

Table 2. Species composition and population estimates on Rapid Creek, 1988-1998

Site 1817

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 30, 1996	2	2-2	
	Oct 26, 1998	1	1-1	
Brown Trout <200mm	Sep 30, 1996	588	539-637	
	Oct 27, 1997	97	98-111	
	Oct 26, 1998	140	124-156	
Brown Trout >=200mm	Sep 30, 1996	33	31-38	BR2
	Oct 27, 1997	67	46-103	BR1

Brown Trout >=200mm	Oct 26, 1998	51	51-53	BR1
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Site 1820

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 28, 1997	5	3-24	
	Oct 26, 1998	1	1-2	
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	
	Oct 26, 1998	112	85-144	
Brown Trout >=200mm	Sep 30, 1996	58	54-65	BR1
	Oct 28, 1997	42	41-46	BR1
	Oct 26, 1998	90	72-113	BR1

Site 1833

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	

Brook Trout <200mm	Oct 16, 1996	2	2-4	
	Oct 28, 1997	2	2-2	
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	
	Oct 23, 1998	76	66-90	
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

Brown Trout >=200mm	Oct 16, 1996	30	30-31	BR2
	Oct 28, 1997	32	32-33	BR2
	Oct 23, 1998	66	65-69	BR1
Rainbow Trout <200mm	Nov 13, 1992	1	1-2	
	Oct 23, 1998	1	1-1	

Site 1843

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

Brook Trout >=200mm	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
	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	
	Oct 23, 1998	94	81-110	

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
	Oct 04, 1995	28	28-28	BR1
	Sep 27, 1996	11	10-16	BR2
	Oct 22, 1997	46	42-53	BR1
	Oct 23, 1998	152	117-187	BR1
Rainbow Trout <200mm	Oct 06, 1992	1	1-1	
	Sep 27, 1996	1	1-5	
	Oct 23, 1998	7	7-7	
Rainbow Trout >=200mm	Oct 23, 1998	1	1-2	RB2

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 01, 1996	26	24-32	
	Oct 27, 1997	50	12-378	
	Oct 22, 1998	50	40-67	
Brook Trout >=200mm	Oct 27, 1997	10	9-15	BK2
	Oct 22, 1998	2	2-3	BK3
Brown Trout <200mm	Oct 01, 1996	623	559-687	
	Oct 27, 1997	187	188-206	
	Oct 22, 1998	156	141-171	
Brown Trout >=200mm	Oct 01, 1996	30	23-46	BR2
	Oct 27, 1997	101	75-134	BR1
	Oct 22, 1998	55	48-67	BR1
Rainbow Trout <200mm	Oct 01, 1996	1	1-4	
	Oct 22, 1998	1	1-1	
Rainbow Trout >=200mm	Oct 01, 1996	1	1-1	RB2
	Oct 27, 1997	4	4-6	RB2

Rainbow Trout >=200mm

Oct 22, 1998

2

2-2

RB2

Site 1853

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 22, 1998	16	13-26	
Brook Trout >=200mm	Oct 22, 1998	1	1-1	BK3
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	
	Oct 22, 1998	148	94-216	
	Brown Trout >=200mm	Oct 06, 1992	73	72-76
Sep 29, 1993		64	58-73	BR1
Sep 28, 1994		57	55-62	BR1
Oct 04, 1995		27	27-28	BR2

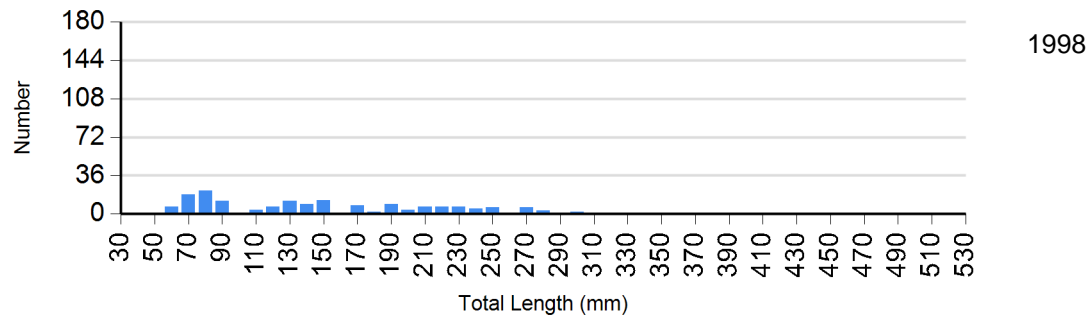
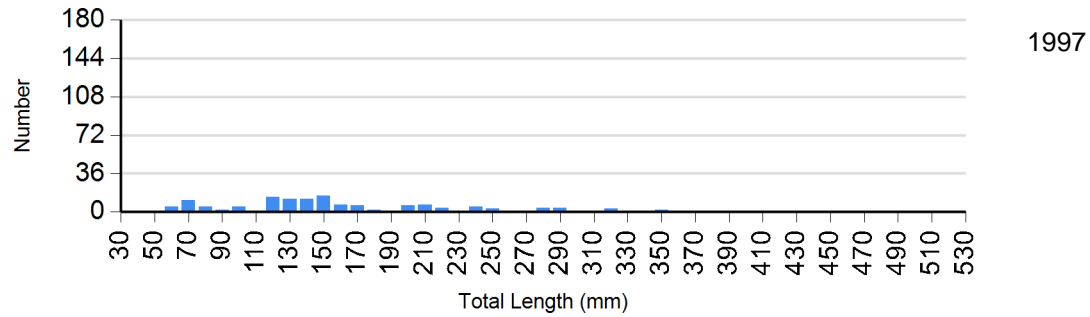
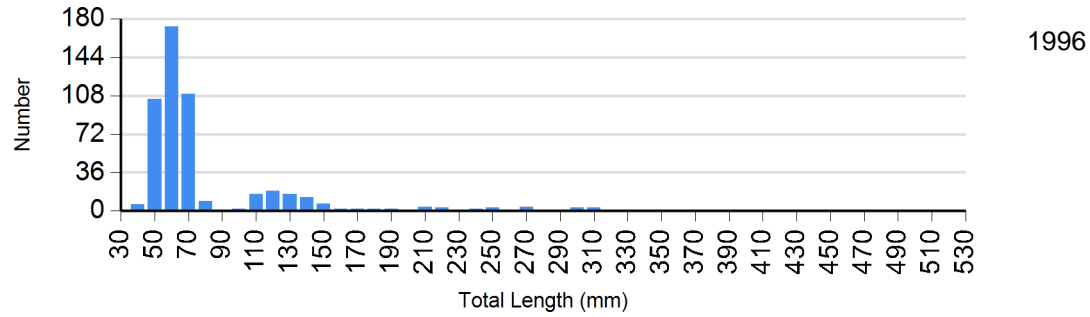
Brown Trout >=200mm	Oct 02, 1996	17	17-19	BR2
	Oct 22, 1997	44	39-54	BR1
	Oct 22, 1998	76	53-113	BR1
Rainbow Trout <200mm	Oct 06, 1992	19	15-31	
	Sep 28, 1994	2	2-3	
	Oct 04, 1995	25	24-29	
	Oct 02, 1996	28	28-29	
	Oct 22, 1997	2	2-2	
	Oct 22, 1998	1	1-2	
Rainbow Trout >=200mm	Oct 06, 1992	1	1-1	RB2
	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
	Oct 22, 1998	4	4-7	RB2

Length Frequency Distribution

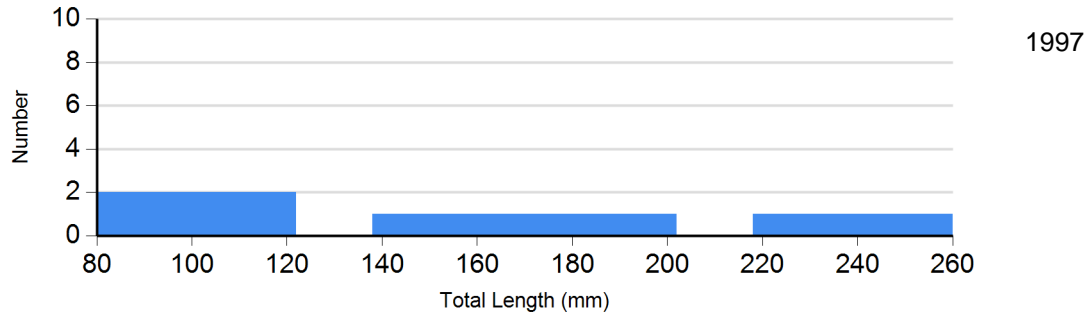
Length frequency histogram of species sampled by year.

Site: 1817

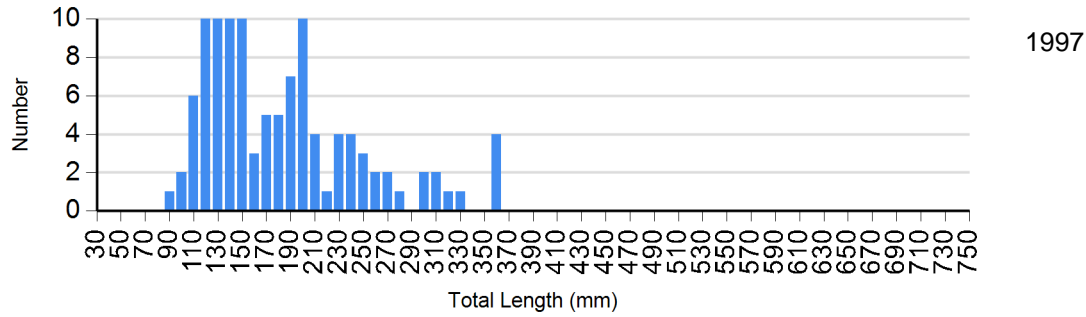
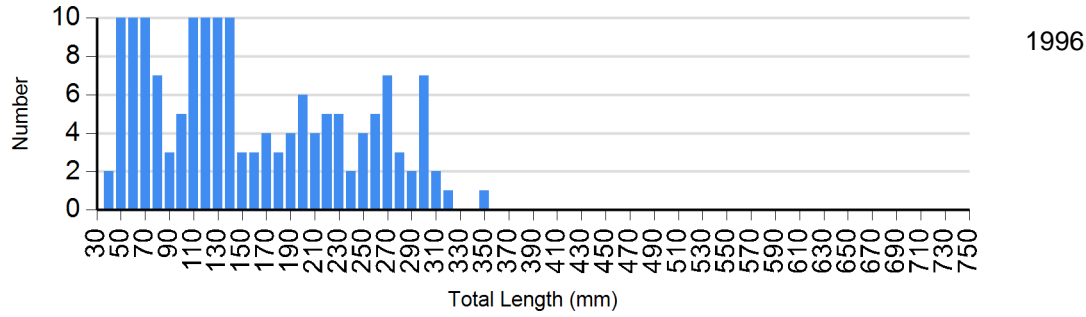
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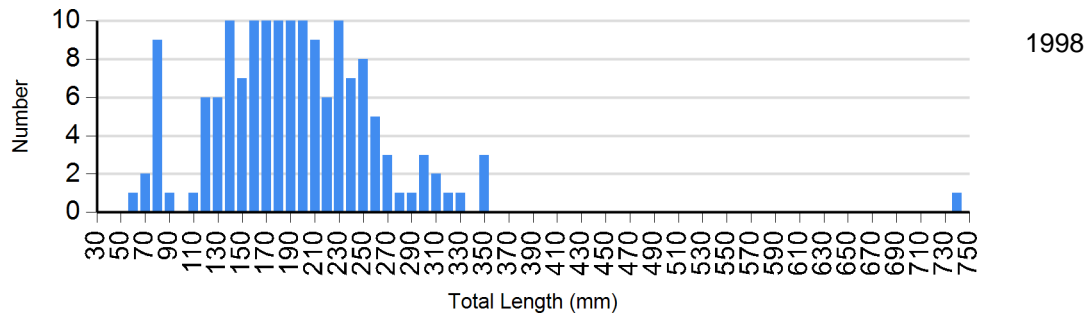


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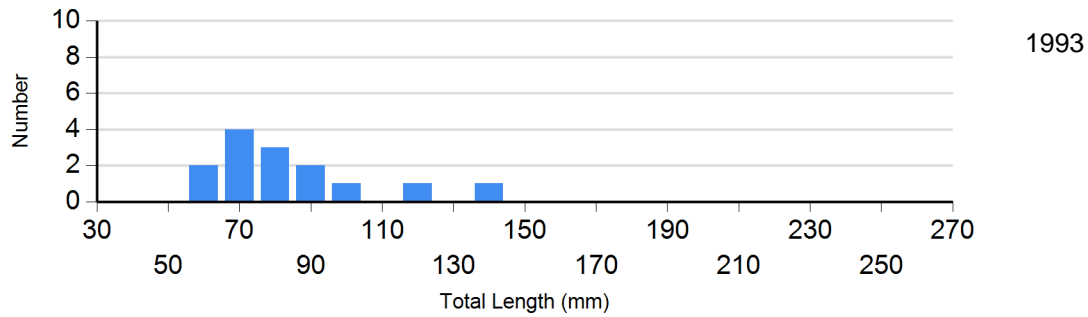


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Species: Brown Trout

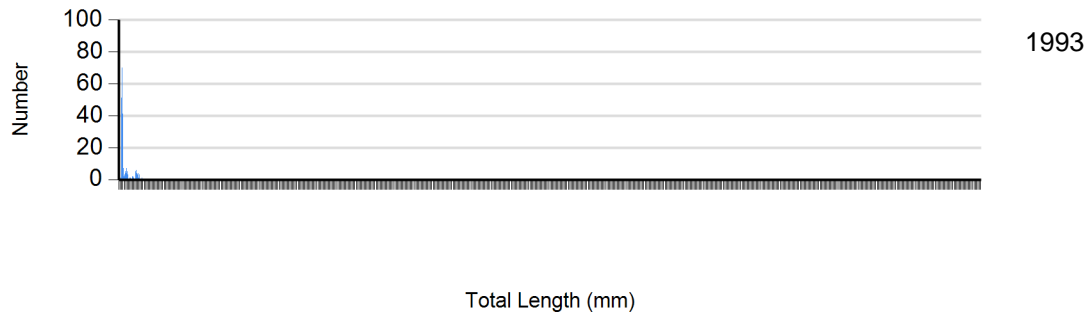


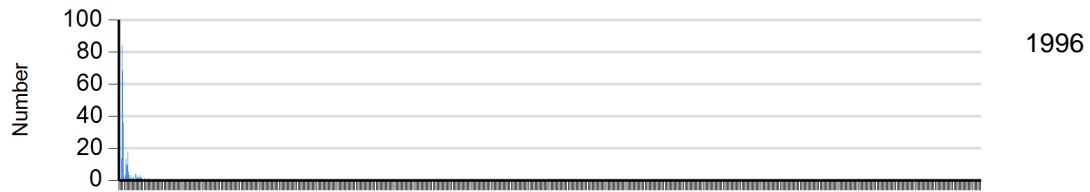


Site: 1833
Species: Brook Trout



Site: 1833
Species: Brown Trout

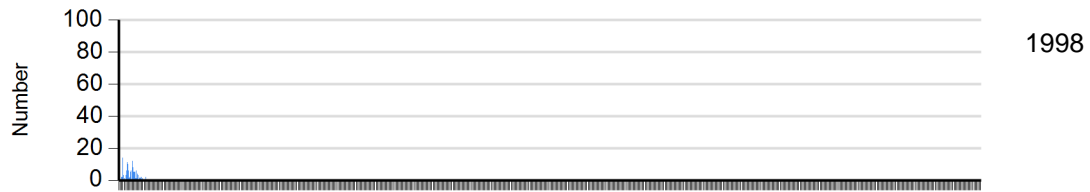




Total Length (mm)

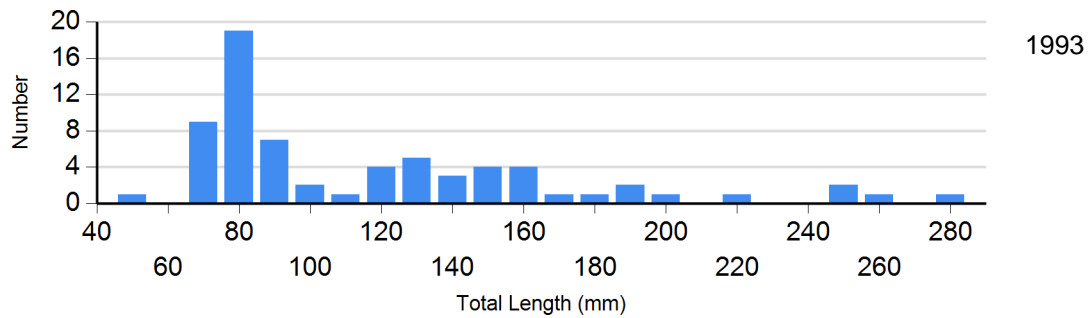


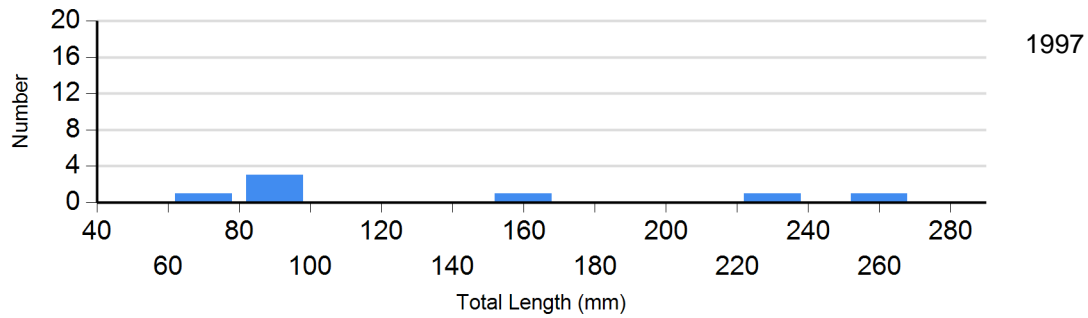
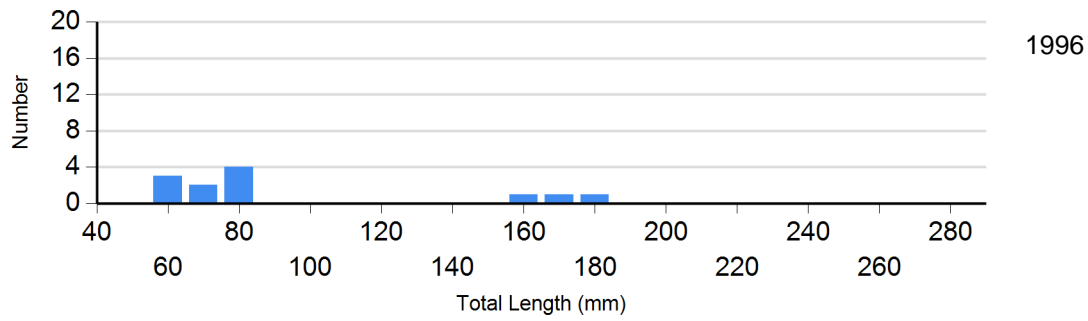
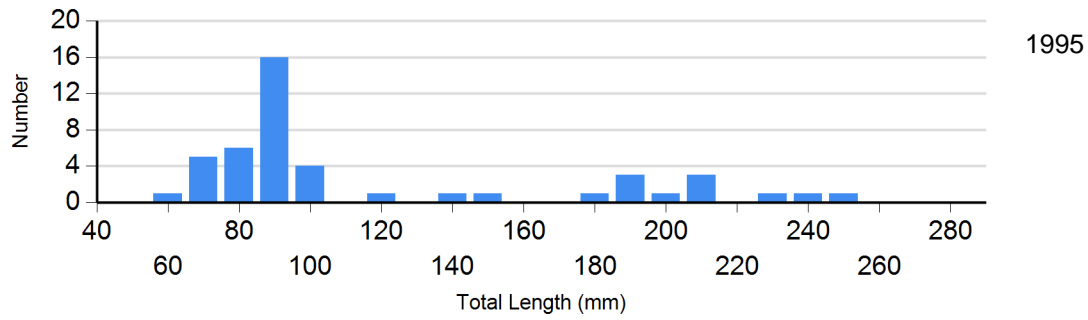
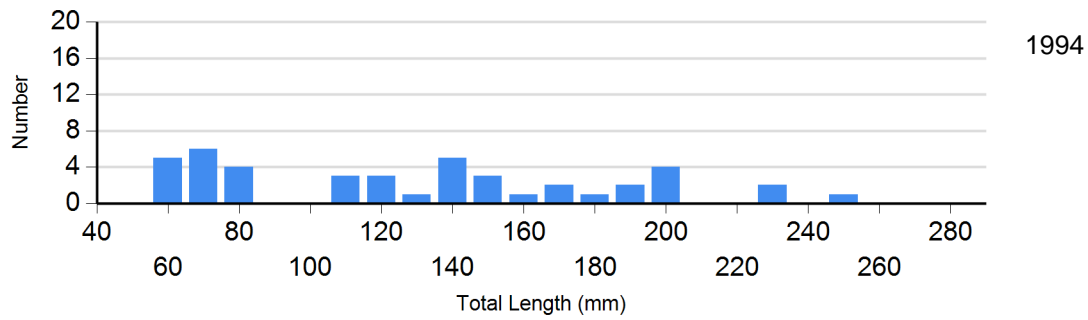
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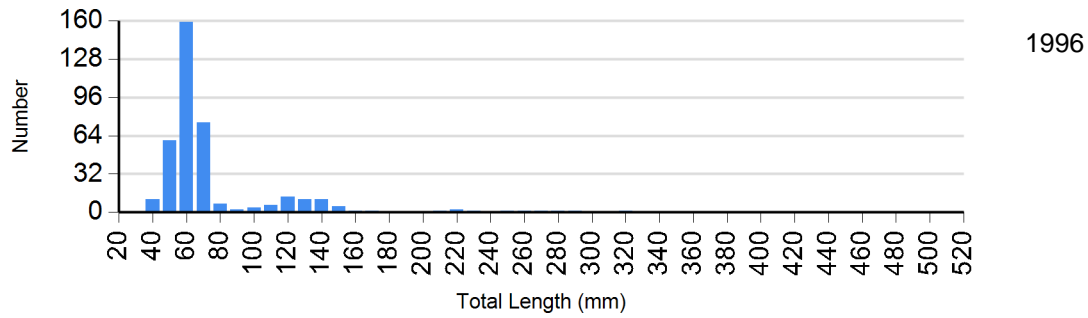
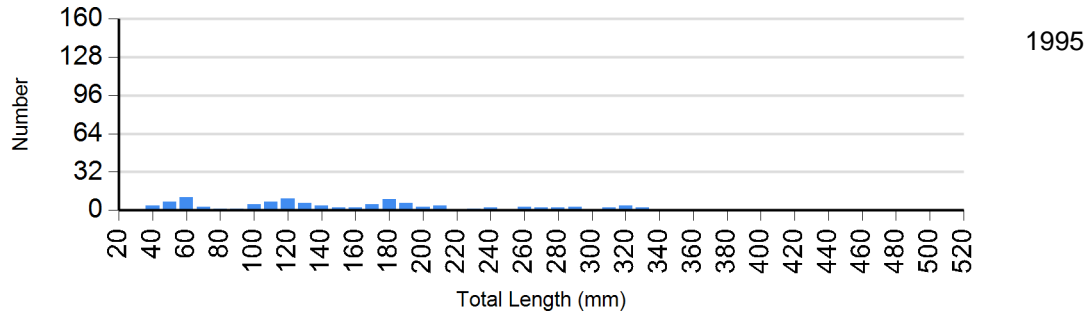
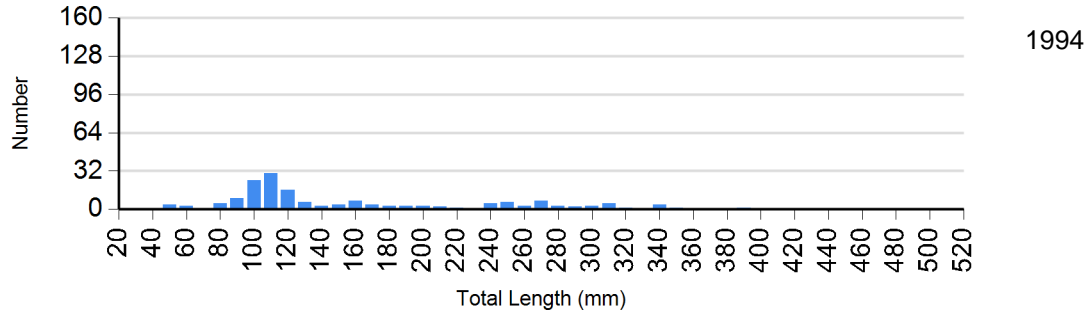
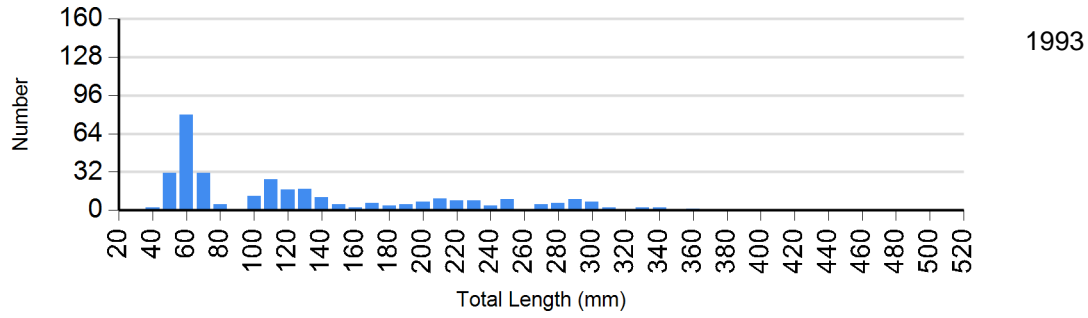
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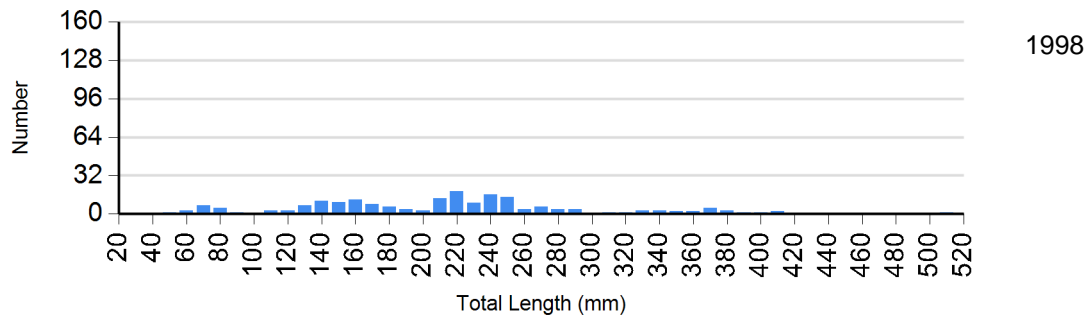
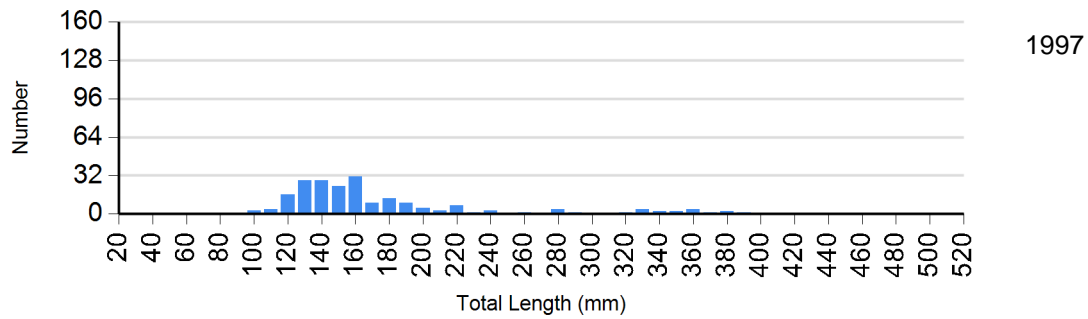
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Species: Brook Trout



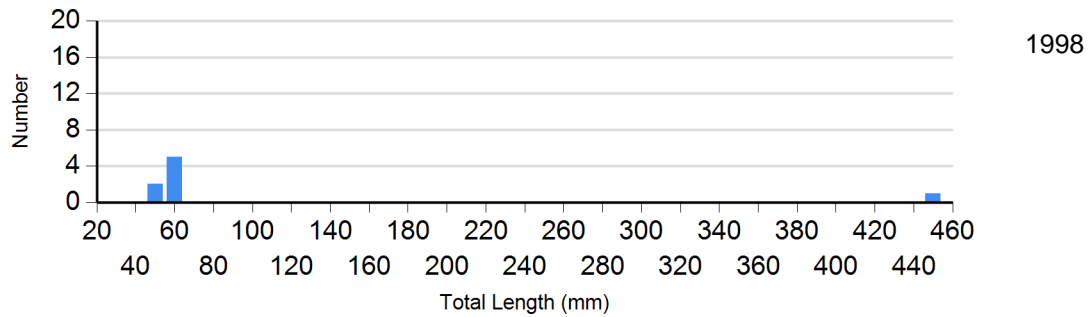


Site: 1843
Species: Brown Trout

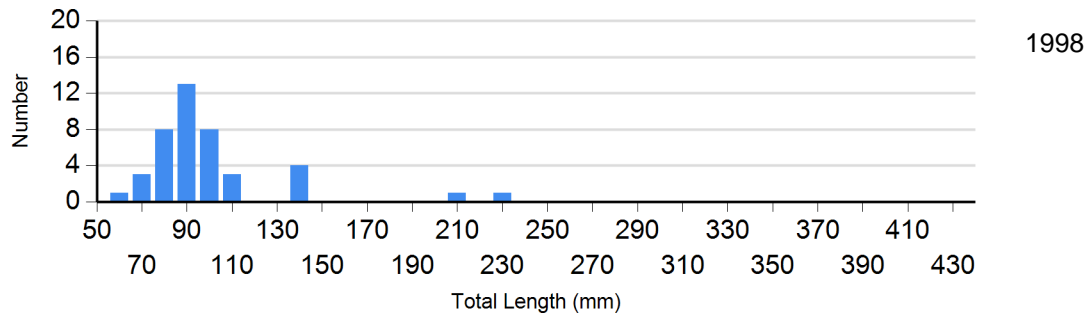
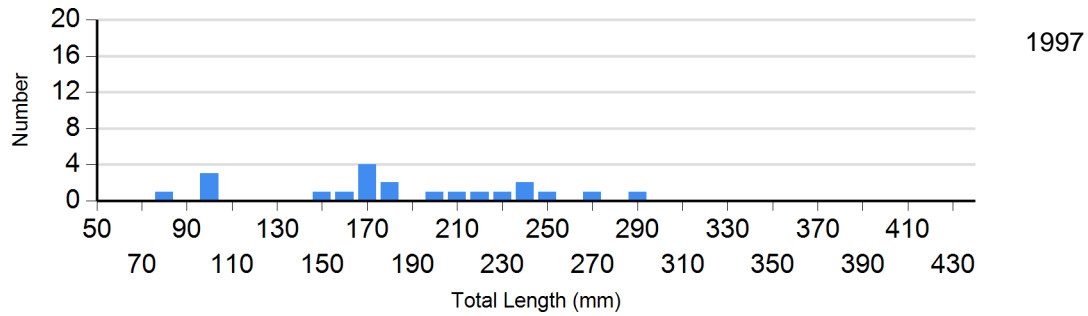
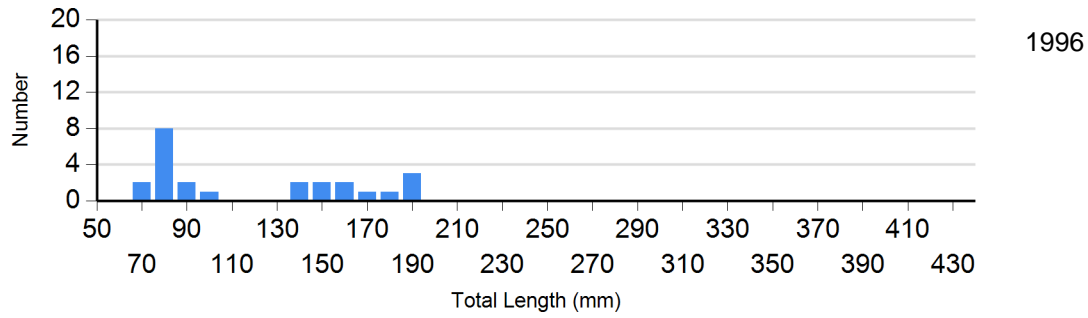




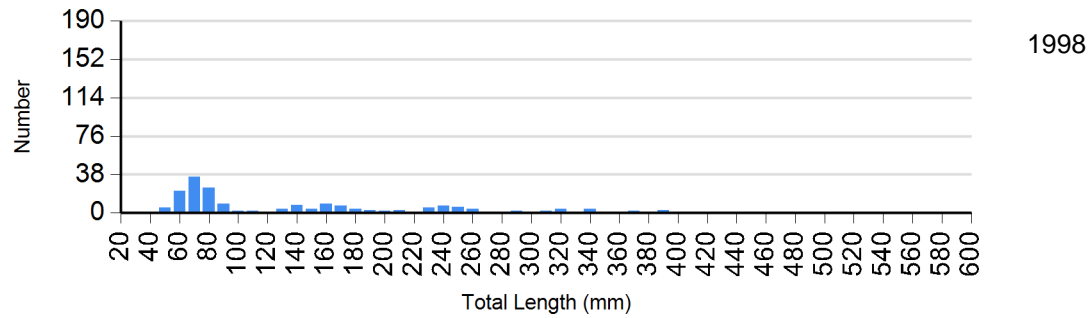
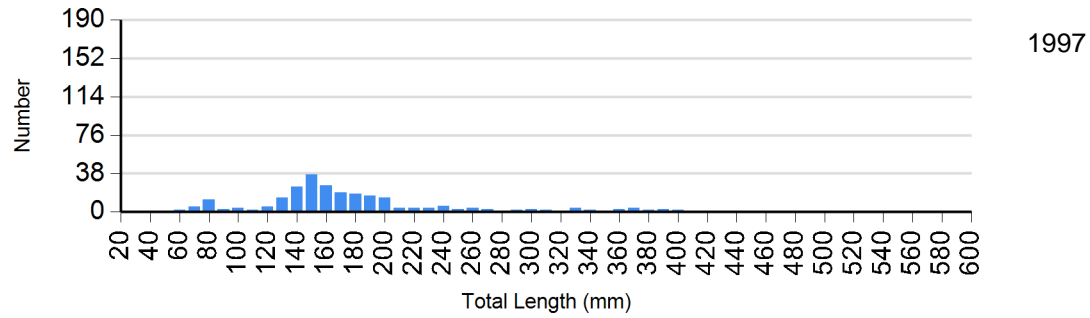
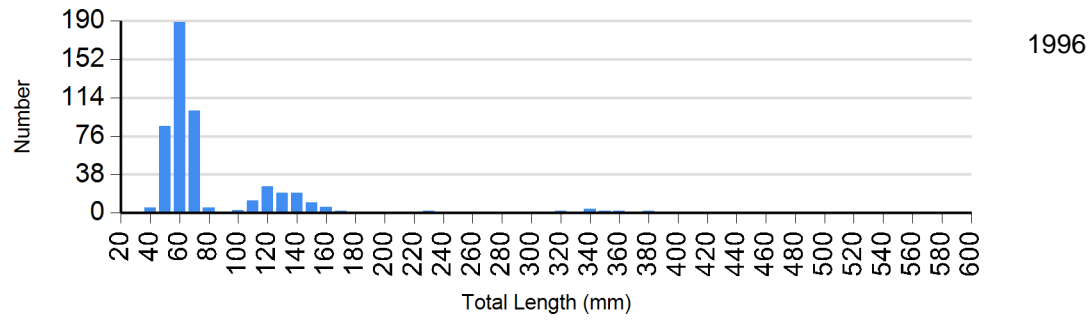
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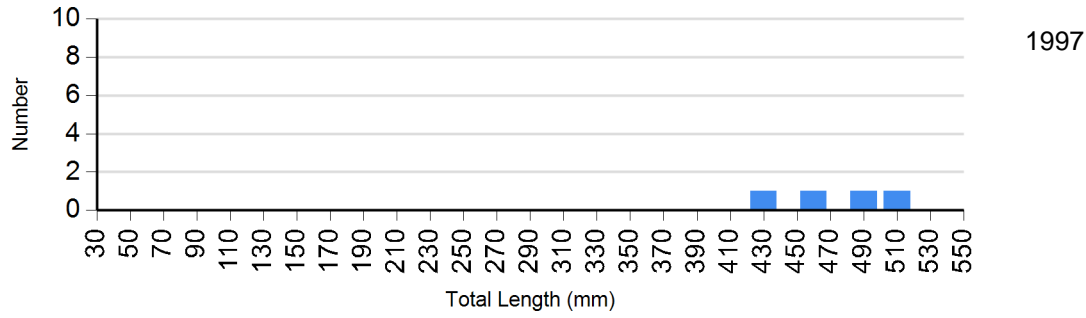
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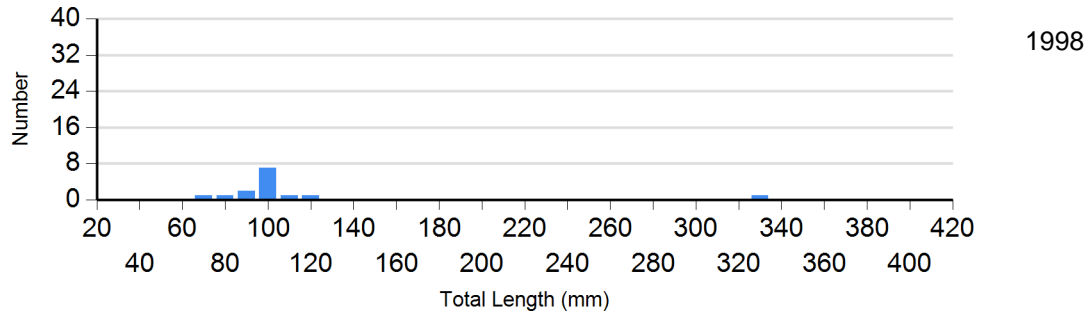
Site: 1849
Species: Brown Trout



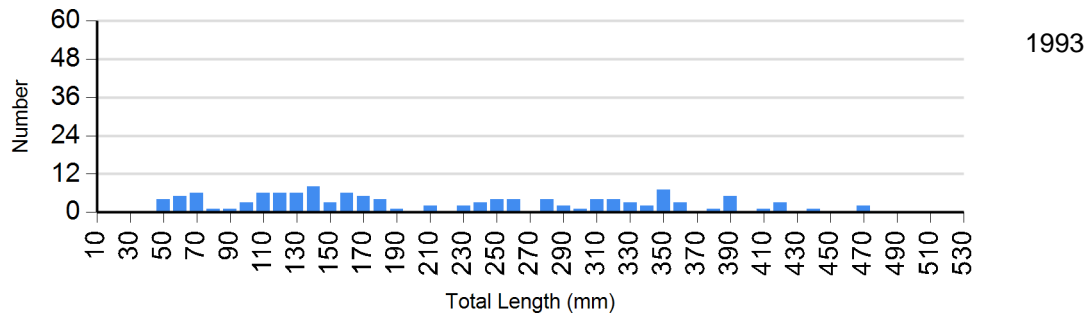
Site: 1849
Species: Rainbow Trout

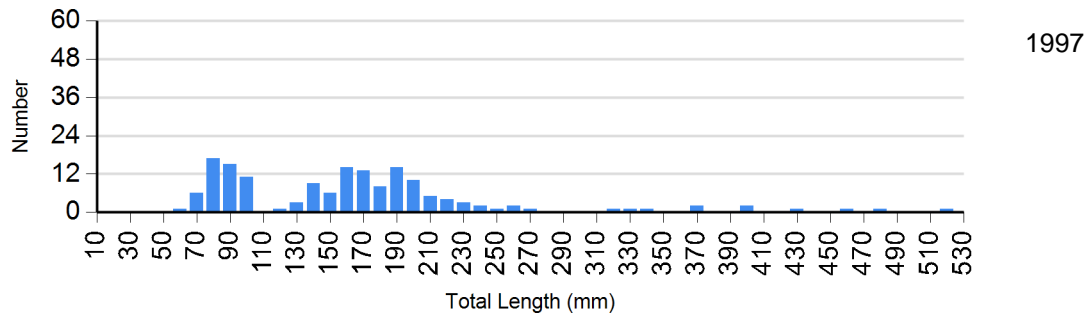
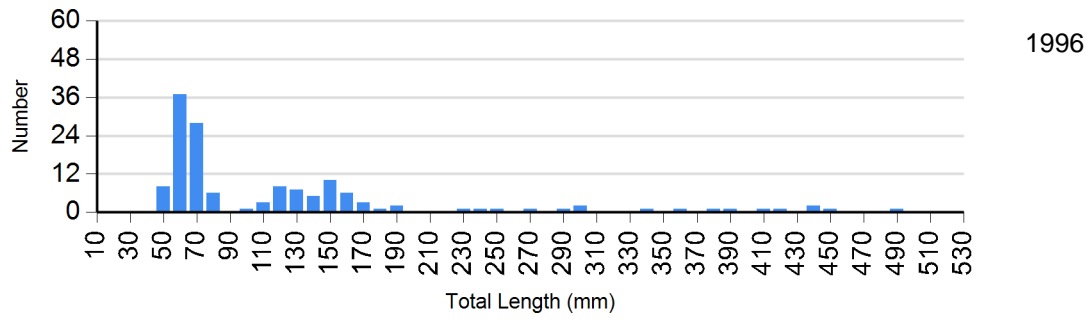
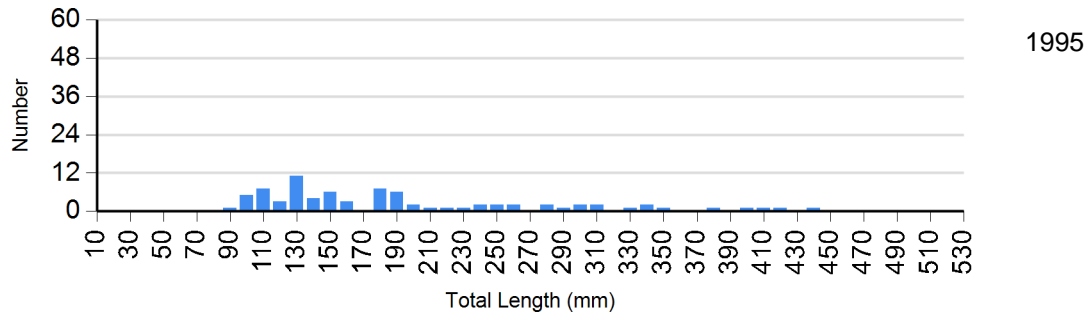
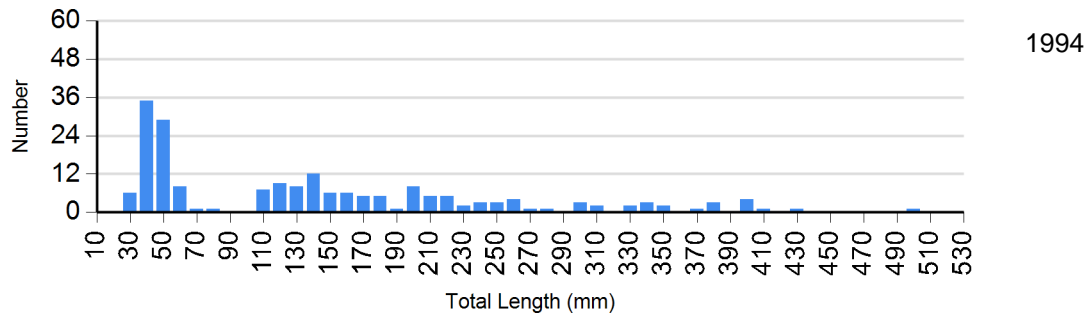


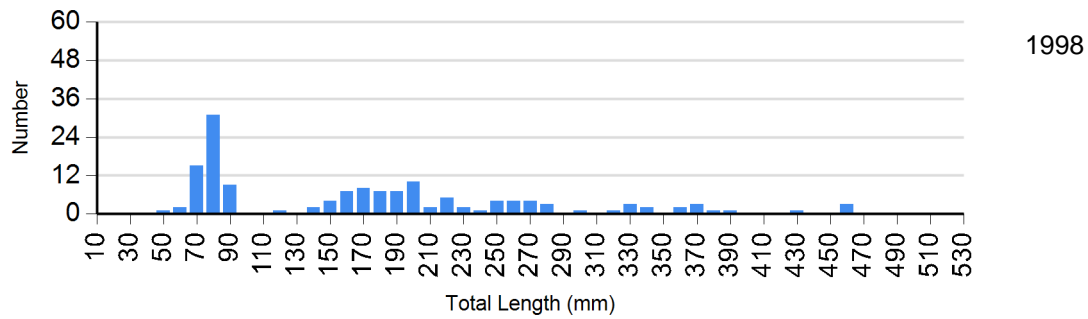
Site: 1853
Species: Brook Trout



Site: 1853
Species: Brown Trout







Site: 1853
Species: Rainbow Trout

