

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Spearfish Creek, Lawrence County
09-0021-00
1999

Table 1. Population and Biomass Estimates for Spearfish Creek

Site Number: 23	Date Sampled: 11/04/1999	Conductivity (umhos/cm):
Site Midpoint (Latitude, Longitude): 44.59132610, -103.88718786	Site Length (m):	pH:
Survey Completed by: Chadwick Ecological Services	Mean Width (m): 0.0	Water Temperature (C):
Stream Classification: BR3, RB0	Number of Pass: 3	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	66	67	70	66	0	0	0	0	0.00	0	107.8	27.0
Brown Trout	>=200mm	43	44	47	43	0	0	0	0	0.00	0	283.8	242.5
Brown Trout	All	109	111	115	109	0	0	0	0	0.00	0	177.3	145.8
Rainbow Trout	<200mm	1	1	2	1	0	0	0	0	0.00	0	153.0	38.0
Rainbow Trout	All	1	1	2	1	0	0	0	0	0.00	0	153.0	38.0

Site Number: 190	Date Sampled: 10/26/1999	Conductivity (umhos/cm): 457
Site Midpoint (Latitude, Longitude): 44.48929462, -103.86435821	Site Length (m): 100	pH: 9.2
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 8.3	Water Temperature (C): 6.1
Stream Classification: BR1	Number of Pass: 3	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	30	31	34	30	373	5	310	151	4.37	499	99.6	13.1
Brown Trout	>=200mm	129	144	159	129	1731	379	1440	701	338.43	2317	273.4	219.0
Brown Trout	All	159	175	190	160	2103	379	1750	852	338.34	2816	240.6	180.2

Site Number: 205
Site Midpoint (Latitude, Longitude): 44.47880965, -103.85669154
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR1, RB0

Date Sampled: 10/26/1999 **Conductivity (umhos/cm):** 442
Site Length (m): 100
Mean Width (m): 12.9 **pH:** 9.4
Number of Pass: 3 **Water Temperature (C):** 6.8
 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	217	338	437	239	2620	23	3380	1061	20.86	5438	90.2	8.9
Brown Trout	>=200mm	73	73	75	73	566	127	730	229	113.37	1175	278.5	224.4
Brown Trout	All	290	358	401	315	2775	175	3580	1124	156.49	5760	137.6	63.2
Rainbow Trout	<200mm	14	14	16	14	109	0	140	44	0.12	225	57.1	1.3
Rainbow Trout	All	14	14	16	14	109	0	140	44	0.12	225	57.1	1.3

Site Number: 340
Site Midpoint (Latitude, Longitude): 44.40182261, -103.89476328
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR1, RB1

Date Sampled: 10/25/1999 **Conductivity (umhos/cm):** 451
Site Length (m): 100
Mean Width (m): 9.9 **pH:** 9.3
Number of Pass: 3 **Water Temperature (C):** 5.2
 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	76	116	171	76	1169	27	1160	474	24.45	1866	119.3	23.4
Brown Trout	>=200mm	85	98	113	85	988	144	980	400	128.96	1577	240.4	146.2
Brown Trout	All	161	207	246	168	2087	184	2070	845	164.41	3331	183.2	88.2
Rainbow Trout	<200mm	15	22	44	15	222	7	220	90	6.60	354	126.7	33.3
Rainbow Trout	>=200mm	37	39	44	37	393	74	390	159	65.97	628	258.8	187.9
Rainbow Trout	All	52	59	70	52	595	85	590	241	76.12	949	220.7	143.3

Site Number: 344

Site Midpoint (Latitude, Longitude): 44.39843255, -103.89618603

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK3, BR1, RB1

Date Sampled: 10/25/1999

Site Length (m): 100

Mean Width (m): 12.3

Number of Pass: 3

Conductivity (umhos/cm): 446

pH: 9.2

Water Temperature (C): 6.2

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)
Brook Trout	>=200mm	1	1	2	1	8	1	10	3	0.55	16	216.0	76.0
Brook Trout	All	1	1	2	1	8	1	10	3	0.55	16	216.0	76.0
Brown Trout	<200mm	184	267	337	197	2164	33	2670	876	29.09	4296	103.0	15.1
Brown Trout	>=200mm	123	139	155	123	1126	173	1390	456	154.35	2237	242.5	153.5
Brown Trout	All	307	394	447	341	3193	225	3940	1293	201.03	6339	158.9	70.5
Rainbow Trout	<200mm	3	3	4	3	24	0	30	10	0.02	48	53.0	1.0
Rainbow Trout	>=200mm	27	31	40	27	251	52	310	102	46.16	499	267.5	205.8
Rainbow Trout	All	30	34	43	30	276	51	340	112	45.59	547	246.0	185.3

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 Spearfish Creek, 1989-1999

Site 23

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Nov 04, 1999	67	66-70	
Brown Trout >=200mm	Nov 04, 1999	44	43-47	BR3
Rainbow Trout <200mm	Nov 04, 1999	1	1-2	

Site 190

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Jul 31, 1990	226	149-307	
	Sep 24, 1991	75	70-83	
	Oct 05, 1993	62	58-69	

Brown Trout <200mm	Oct 09, 1996	190	176-204	
	Oct 14, 1998	92	83-103	
	Oct 26, 1999	31	30-34	
Brown Trout >=200mm	Jul 31, 1990	200	187-213	BR3
	Sep 24, 1991	220	205-235	BR3
	Oct 05, 1993	209	209-211	BR1
	Oct 09, 1996	58	53-66	BR1
	Oct 14, 1998	219	207-231	BR1
	Oct 26, 1999	144	129-159	BR1

Site 205

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 31, 1995	4	4-4	
	Oct 07, 1996	4	4-5	
	Oct 14, 1998	1	1-2	
Brown Trout <200mm	Jul 31, 1990	103	78-137	
	Sep 24, 1991	65	61-72	

Brown Trout <200mm	Sep 30, 1992	55	54-58	
	Oct 05, 1993	70	68-74	
	Oct 11, 1994	73	70-79	
	Oct 31, 1995	31	29-36	
	Oct 07, 1996	1085	806-1364	
	Oct 14, 1998	124	125-141	
	Oct 26, 1999	338	239-437	
Brown Trout >=200mm	Jul 31, 1990	108	102-116	BR3
	Sep 24, 1991	175	132-219	BR3
	Sep 30, 1992	95	93-99	BR1
	Oct 05, 1993	99	98-102	BR1
	Oct 11, 1994	82	82-84	BR1
	Oct 31, 1995	68	68-69	BR1
	Oct 07, 1996	60	61-72	BR1
	Oct 14, 1998	147	144-152	BR1
	Oct 26, 1999	73	73-75	BR1

Rainbow Trout <200mm	Oct 11, 1994	1	1-2	
	Oct 31, 1995	8	4-42	
	Oct 07, 1996	6	6-7	
	Oct 14, 1998	1	1-1	
	Oct 26, 1999	14	14-16	
Rainbow Trout >=200mm	Jul 31, 1990	15	12-27	RB2
	Sep 24, 1991	11	11-12	RB2
	Sep 30, 1992	2	2-2	RB2
	Oct 31, 1995	1	1-1	RB2

Site 340

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 02, 1992	10	10-12	
	Oct 07, 1993	6	6-8	
	Oct 12, 1994	7	7-9	
	Oct 17, 1995	3	3-5	
	Oct 08, 1996	5	5-7	

Brook Trout >=200mm	Oct 02, 1992	6	6-9	BK2
	Oct 07, 1993	3	3-4	BK3
	Oct 17, 1995	1	1-2	BK3
	Oct 08, 1996	2	2-3	BK3
Brown Trout <200mm	Sep 26, 1991	67	66-70	
	Oct 02, 1992	84	66-108	
	Oct 07, 1993	77	47-133	
	Oct 12, 1994	49	44-58	
	Oct 17, 1995	30	29-34	
	Oct 08, 1996	165	130-200	
	Oct 25, 1999	116	76-171	
Brown Trout >=200mm	Sep 26, 1991	23	21-29	BR3
	Oct 02, 1992	67	67-69	BR1
	Oct 07, 1993	73	73-74	BR1
	Oct 12, 1994	40	39-43	BR1
	Oct 17, 1995	51	51-52	BR1

Brown Trout >=200mm	Oct 08, 1996	48	48-49	BR1
	Oct 25, 1999	98	85-113	BR1
Rainbow Trout <200mm	Sep 26, 1991	75	39-166	
	Oct 02, 1992	135	104-168	
	Oct 07, 1993	52	50-56	
	Oct 12, 1994	137	88-200	
	Oct 17, 1995	33	34-41	
	Oct 08, 1996	27	25-33	
	Oct 25, 1999	22	15-44	
Rainbow Trout >=200mm	Sep 26, 1991	26	23-34	RB2
	Oct 02, 1992	43	41-48	RB1
	Oct 07, 1993	48	48-49	RB1
	Oct 12, 1994	38	37-42	RB1
	Oct 17, 1995	27	27-29	RB1
	Oct 08, 1996	34	31-41	RB1
	Oct 25, 1999	39	37-44	RB1

Site 344

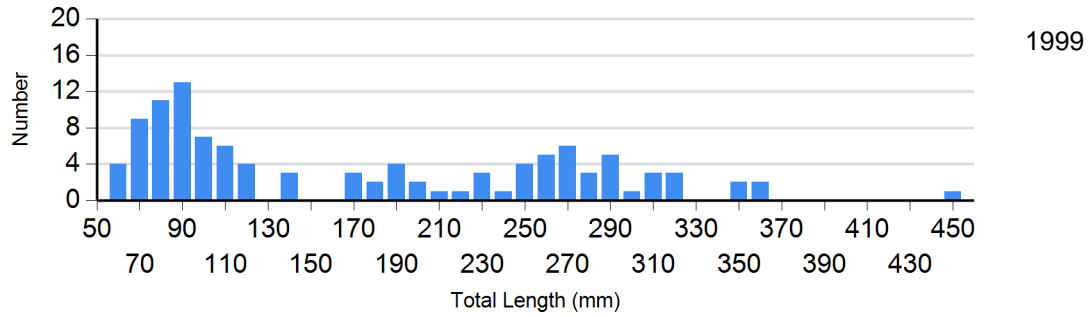
Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout >=200mm	Oct 25, 1999	1	1-2	BK3
Brown Trout <200mm	Oct 25, 1999	267	197-337	
Brown Trout >=200mm	Jun 25, 1992	10	10-10	BR3
	Oct 26, 1992	10	10-10	BR3
	Oct 25, 1999	139	123-155	BR1
Rainbow Trout <200mm	Oct 25, 1999	3	3-4	
Rainbow Trout >=200mm	Oct 25, 1999	31	27-40	RB1

Length Frequency Distribution

Length frequency histogram of species sampled by year.

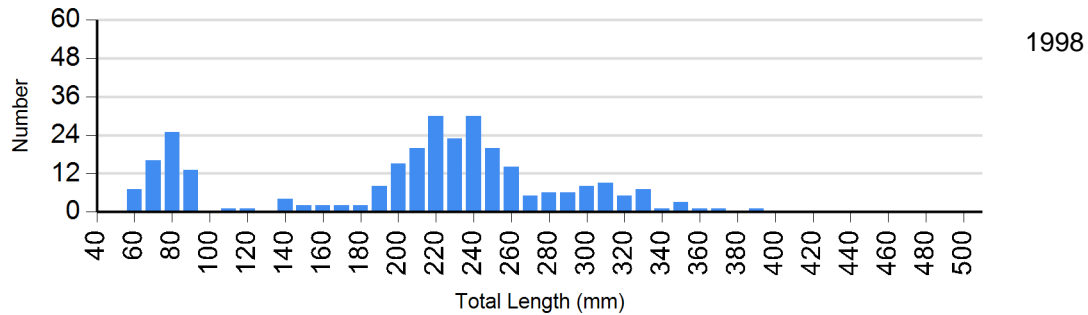
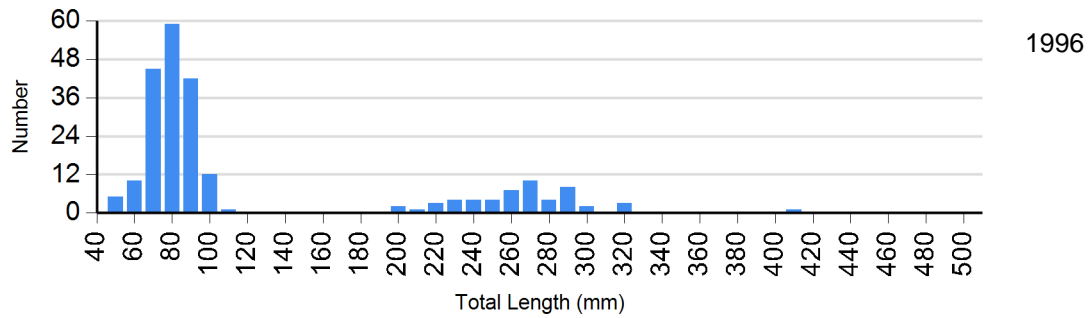
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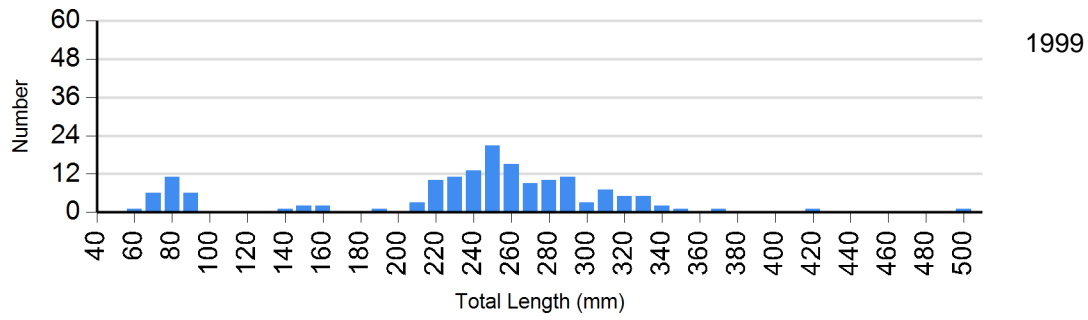
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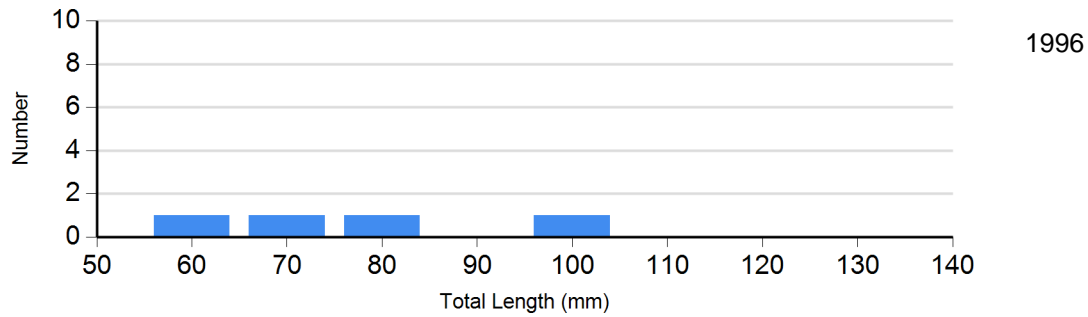
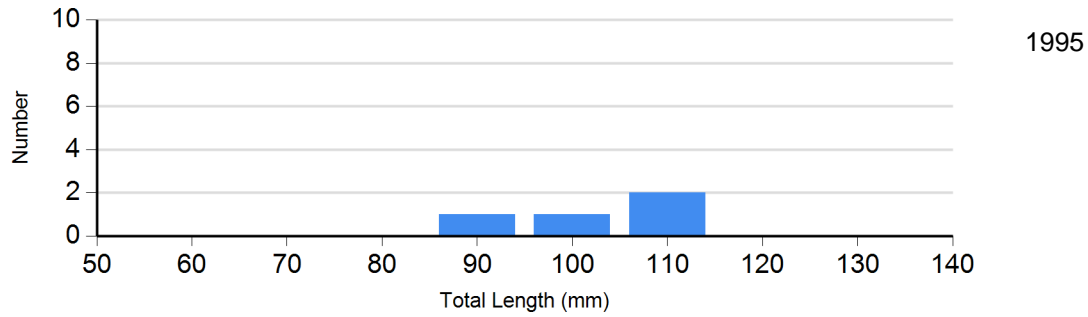
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Species: Brown Trout

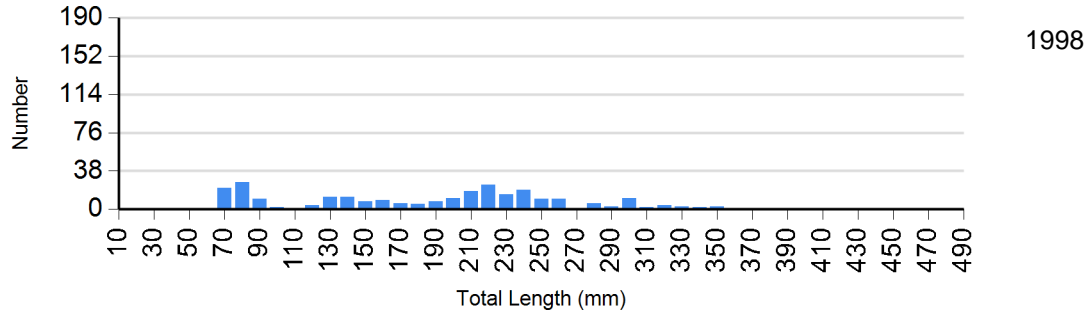
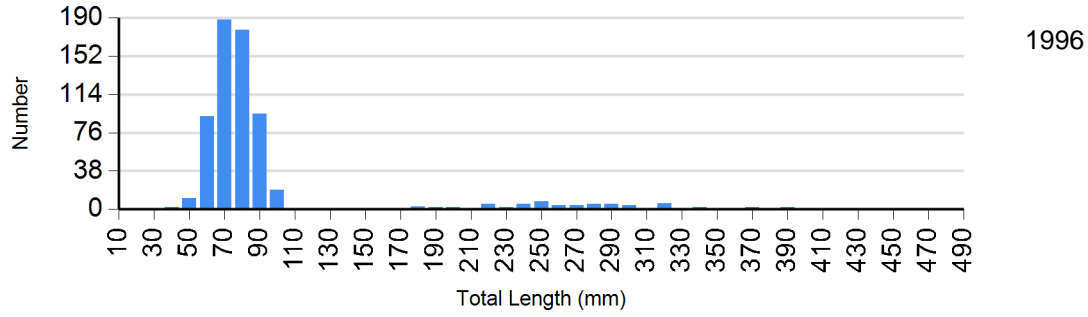
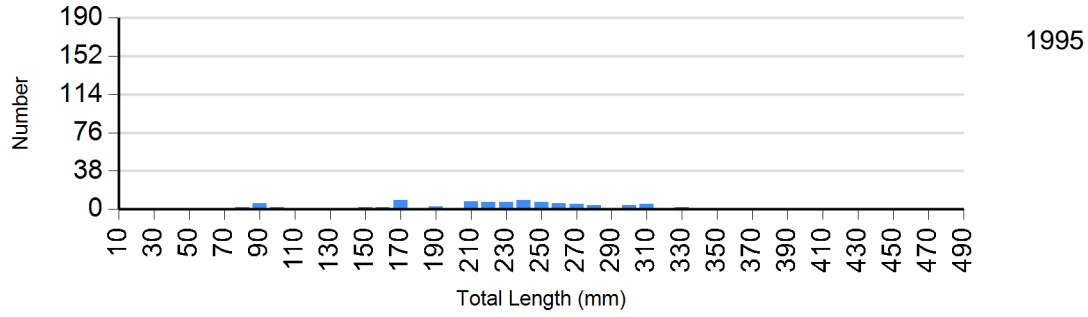
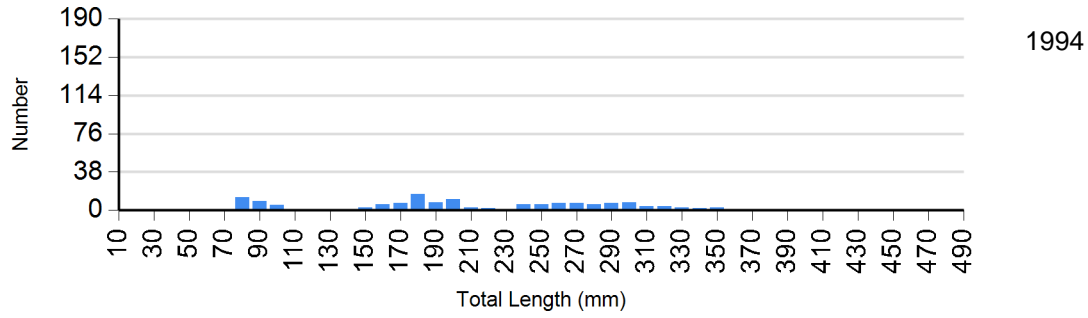


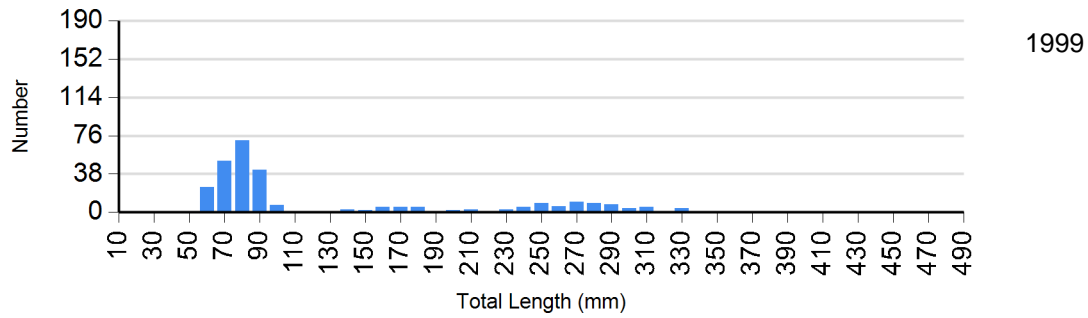


Site: 205
Species: Brook Trout

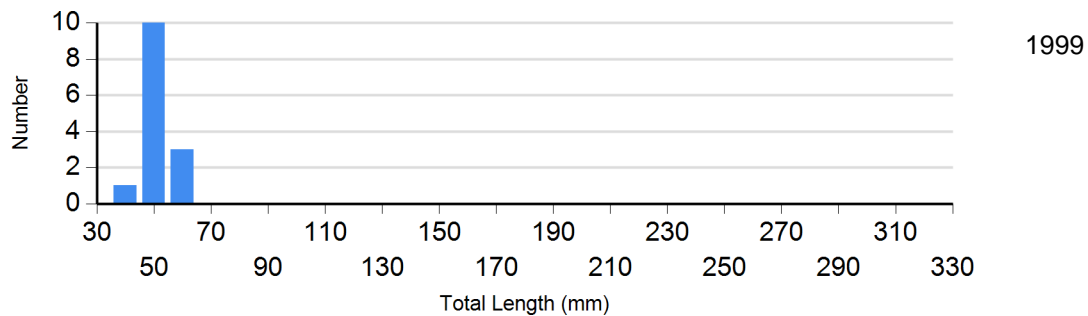
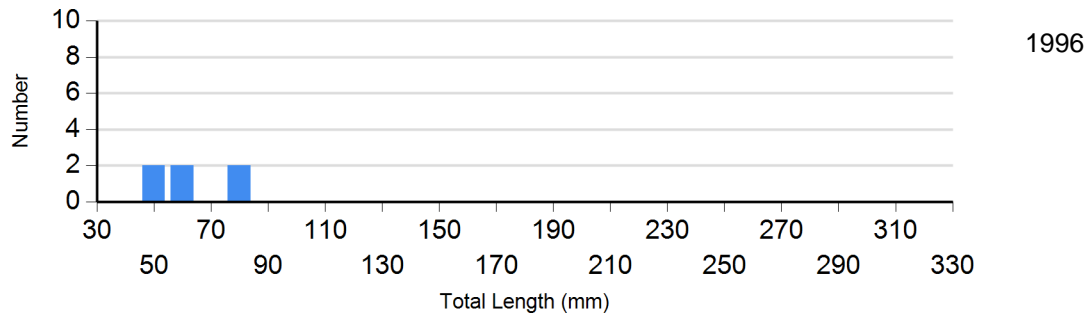
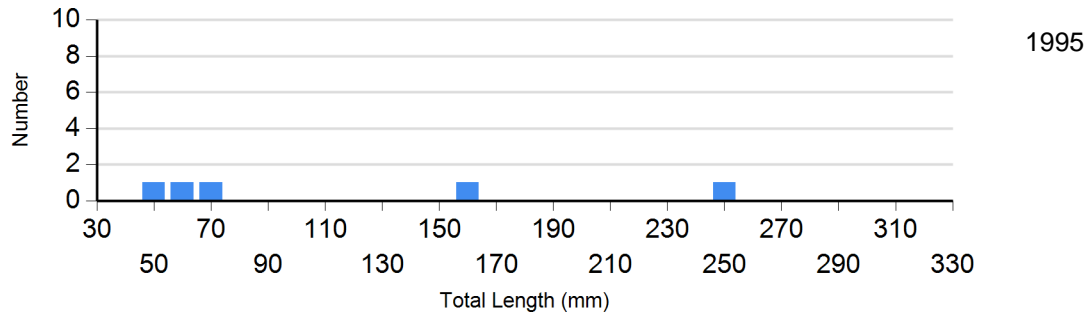


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Species: Brown Trout

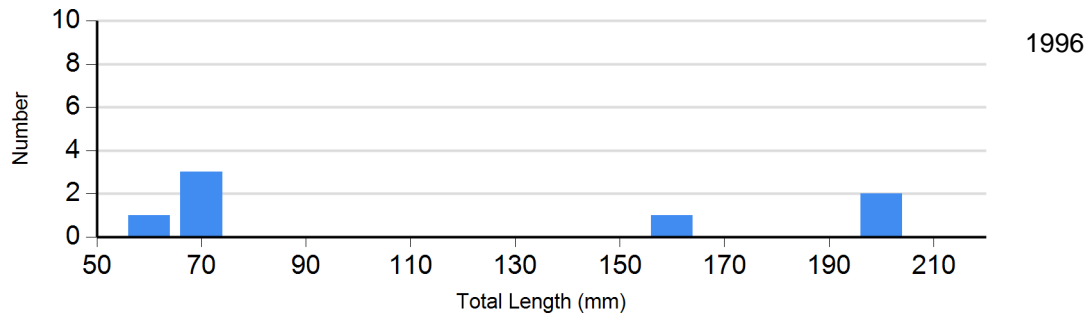
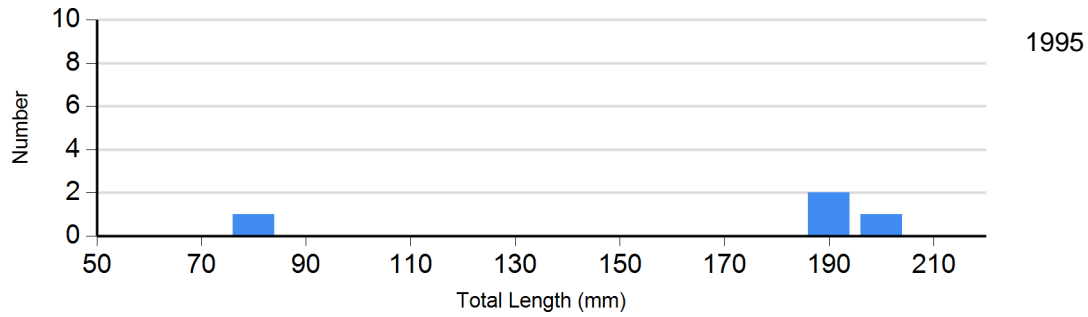
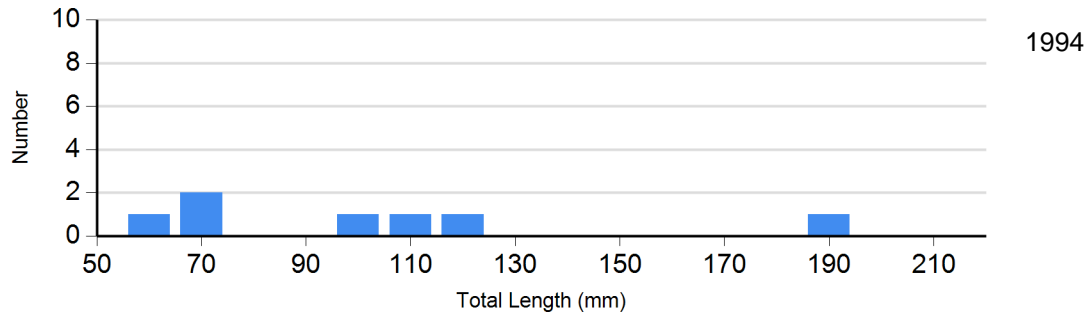




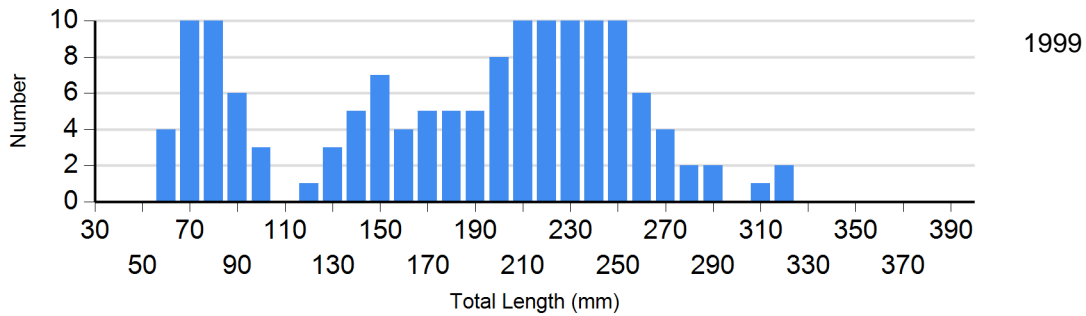
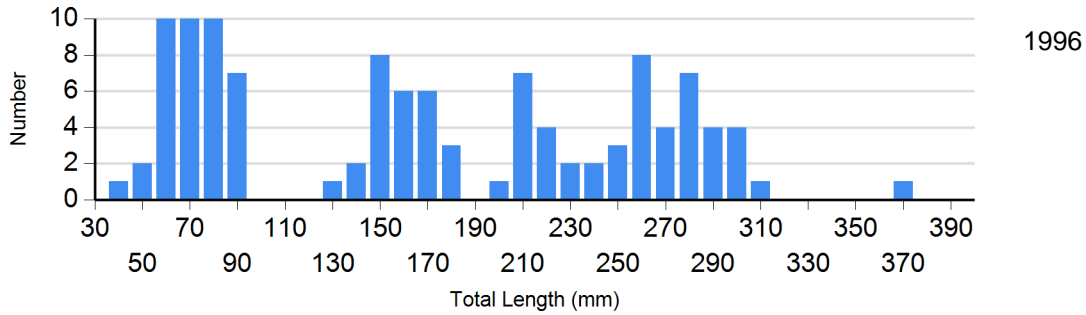
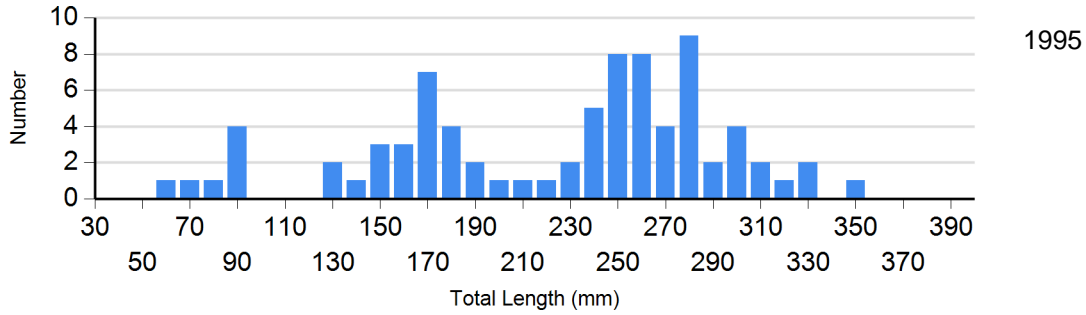
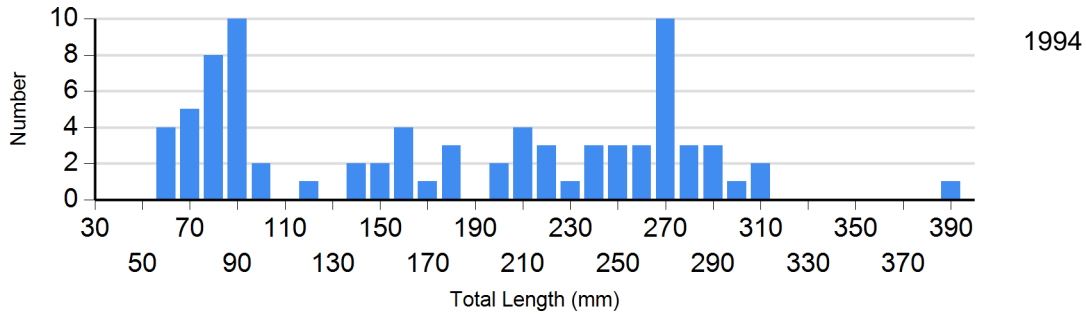
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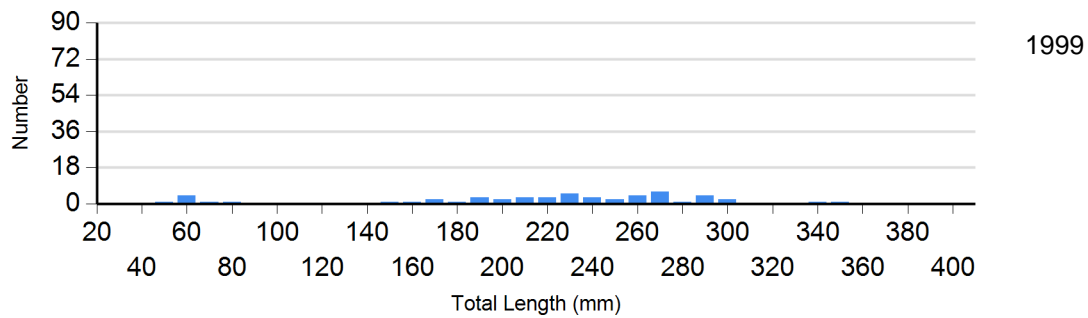
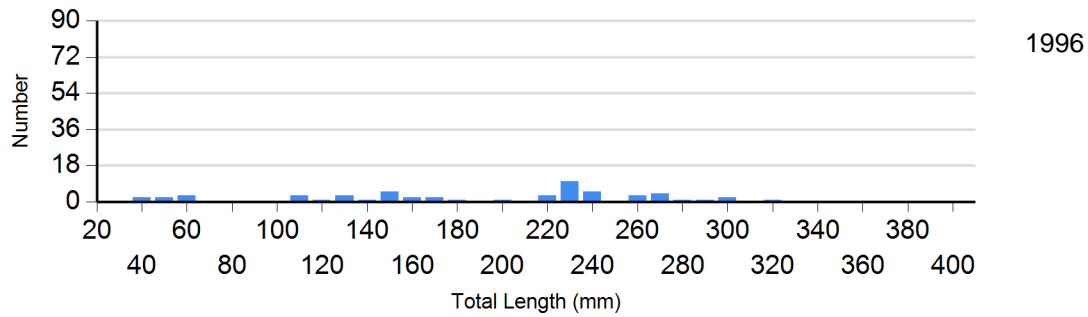
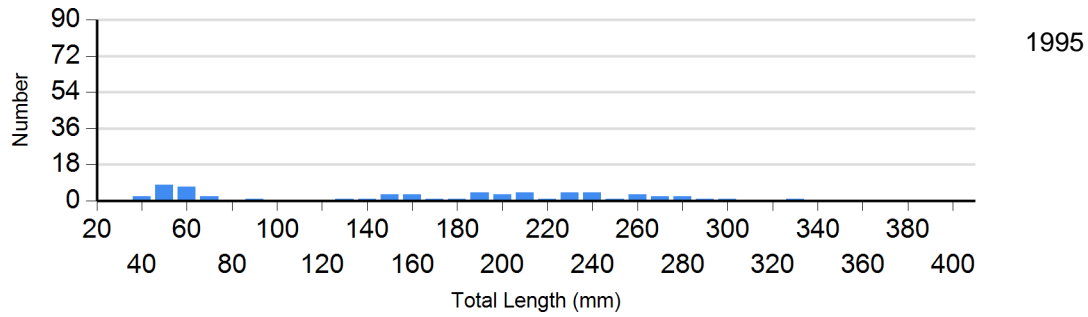
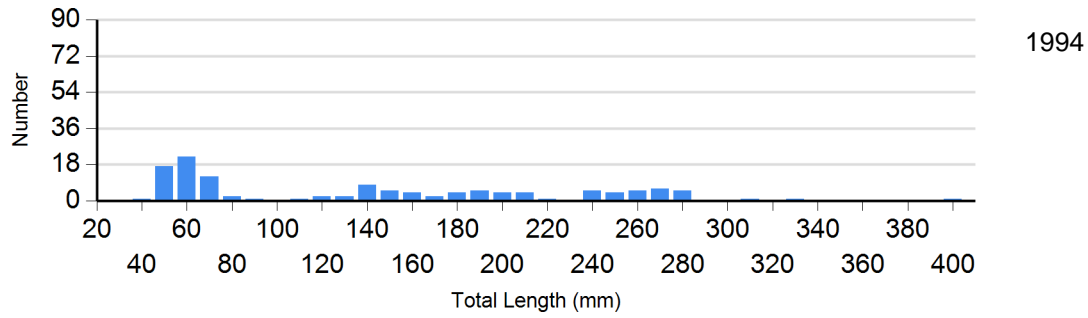
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Species: Brook Trout



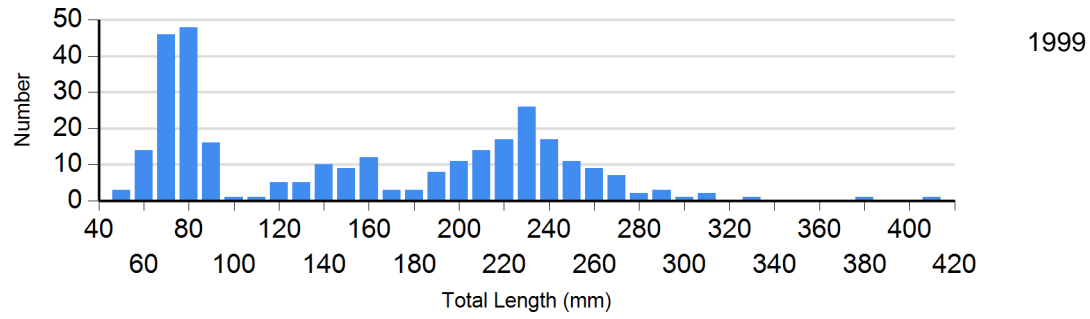
Site: 340
Species: Brown Trout



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Species: Rainbow Trout



Site: 344
Species: Brown Trout



Site: 344
Species: Rainbow Trout

