

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Spearfish Creek, Lawrence County
09-0021-00
1994

Table 1. Population and Biomass Estimates for Spearfish Creek

Site Number: 174	Date Sampled: 10/11/1994	Conductivity (umhos/cm): 295
Site Midpoint (Latitude, Longitude): 44.50196266, -103.86743501	Site Length (m): 99	pH: 8.9
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 5.2	Water Temperature (C): 8.0
Stream Classification: 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)
Brown Trout	<200mm	48	54	64	48	1031	21	545	417	18.73	878	115.6	20.4
Brown Trout	>=200mm	33	35	40	33	668	130	354	271	115.99	569	262.2	194.5
Brown Trout	All	82	90	101	82	1718	157	909	696	140.01	1463	175.3	91.3

Site Number: 205	Date Sampled: 10/11/1994	Conductivity (umhos/cm): 285
Site Midpoint (Latitude, Longitude): 44.47880965, -103.85669154	Site Length (m): 108	pH: 8.9
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 10.4	Water Temperature (C): 7.0
Stream Classification: 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)
Brown Trout	<200mm	70	73	79	70	701	25	676	284	22.41	1088	142.5	35.8
Brown Trout	>=200mm	82	82	84	82	787	188	759	319	167.44	1222	276.2	238.3
Brown Trout	All	152	155	160	152	1488	216	1435	602	192.65	2309	214.7	145.1
Hatchery Rainbow Trout	>=200mm	1	1	1	1	10	4	9	4	3.46	15	344.0	404.0
Hatchery Rainbow Trout	All	1	1	1	1	10	4	9	4	3.46	15	344.0	404.0

Rainbow Trout	<200mm	1	1	2	1	10	1	9	4	0.63	15	192.0	73.0
Rainbow Trout	All	1	1	2	1	10	1	9	4	0.63	15	192.0	73.0

Site Number: 334

Site Midpoint (Latitude, Longitude): 44.40606069, -103.89803263

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK0, BR1, RB1

Date Sampled: 10/12/1994

Site Length (m): 124

Mean Width (m): 9.5

Number of Pass: 3

Conductivity (umhos/cm): 285

pH: 8.5

Water Temperature (C): 6.0

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	6	6	9	6	63	2	48	26	1.34	78	131.3	23.8
Brook Trout	All	6	6	9	6	63	2	48	26	1.34	78	131.3	23.8
Brown Trout	<200mm	89	96	105	89	1011	24	774	409	21.78	1246	123.2	24.1
Brown Trout	>=200mm	81	85	91	81	895	188	685	362	167.46	1103	264.8	209.6
Brown Trout	All	170	183	195	171	1926	217	1476	780	193.52	2375	190.7	112.5
Rainbow Trout	<200mm	66	78	94	66	821	17	629	333	15.26	1012	103.8	20.8
Rainbow Trout	>=200mm	56	56	58	56	589	111	452	239	98.72	727	256.4	187.6
Rainbow Trout	All	122	130	139	122	1368	133	1048	554	118.96	1687	173.9	97.4

Site Number: 340

Site Midpoint (Latitude, Longitude): 44.40182261, -103.89476328

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK0, BR1, RB1

Date Sampled: 10/12/1994

Site Length (m): 98

Mean Width (m): 9.5

Number of Pass: 3

Conductivity (umhos/cm): 290

pH: 8.5

Water Temperature (C): 7.0

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	7	7	9	7	74	1	71	30	0.92	115	106.7	13.9
Brook Trout	All	7	7	9	7	74	1	71	30	0.92	115	106.7	13.9

Brown Trout	<200mm	44	49	58	44	518	9	500	210	7.62	805	108.2	16.5
Brown Trout	>=200mm	39	40	43	39	423	82	408	171	72.87	657	263.0	193.0
Brown Trout	All	83	90	99	83	951	95	918	385	84.46	1478	180.9	99.4
Rainbow Trout	<200mm	88	137	200	88	1448	32	1398	587	28.36	2249	99.4	21.9
Rainbow Trout	>=200mm	37	38	42	37	402	79	388	163	70.84	624	257.2	197.5
Rainbow Trout	All	125	161	196	126	1702	126	1643	689	112.30	2643	146.1	73.9

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, 1984-1994

Site 174

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Jul 30, 1987	15	15-15	
	Sep 13, 1990	77	75-81	
	Sep 24, 1991	78	65-97	
	Sep 28, 1992	67	65-71	
	Oct 06, 1993	41	34-54	
	Oct 11, 1994	54	48-64	
Brown Trout >=200mm	Jul 30, 1987	54	54-54	BR3

Brown Trout >=200mm	Sep 13, 1990	141	137-147	BR3
	Sep 24, 1991	84	60-122	BR3
	Sep 28, 1992	62	62-64	BR1
	Oct 06, 1993	49	48-52	BR1
	Oct 11, 1994	35	33-40	BR1

Site 205

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Nov 02, 1988	66	66-66	
	Jul 31, 1990	103	78-137	
	Sep 24, 1991	65	61-72	
	Sep 30, 1992	55	54-58	
	Oct 05, 1993	70	68-74	
	Oct 11, 1994	73	70-79	
Brown Trout >=200mm	Jul 30, 1987	3	3-3	BR3
	Nov 02, 1988	56	56-56	BR3
	Jul 31, 1990	108	102-116	BR3

Brown Trout >=200mm	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
Hatchery Rainbow Trout >=200mm	Oct 11, 1994	1	1-1	
Rainbow Trout <200mm	Nov 02, 1988	4	4-4	
	Oct 11, 1994	1	1-2	
Rainbow Trout >=200mm	Nov 02, 1988	3	3-3	RB2
	Jul 31, 1990	15	12-27	RB2
	Sep 24, 1991	11	11-12	RB2
	Sep 30, 1992	2	2-2	RB2

Site 334

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 30, 1992	1	1-1	
	Oct 06, 1993	1	1-1	
	Oct 12, 1994	6	6-9	

Brook Trout >=200mm	Oct 06, 1993	1	1-2	BK3
Brown Trout <200mm	Sep 25, 1991	135	79-224	
	Sep 30, 1992	74	60-94	
	Oct 06, 1993	64	61-69	
	Oct 12, 1994	96	89-105	
Brown Trout >=200mm	Sep 25, 1991	123	116-132	BR3
	Sep 30, 1992	111	104-120	BR1
	Oct 06, 1993	94	92-98	BR1
	Oct 12, 1994	85	81-91	BR1
Rainbow Trout <200mm	Sep 25, 1991	24	19-38	
	Sep 30, 1992	23	18-37	
	Oct 06, 1993	25	25-27	
	Oct 12, 1994	78	66-94	
Rainbow Trout >=200mm	Sep 25, 1991	60	47-83	RB2
	Sep 30, 1992	44	43-48	RB1
	Oct 06, 1993	55	54-59	RB1

Rainbow Trout >=200mm

Oct 12, 1994

56

56-58

RB1

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	
Brook Trout >=200mm	Oct 02, 1992	6	6-9	BK2
	Oct 07, 1993	3	3-4	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	
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

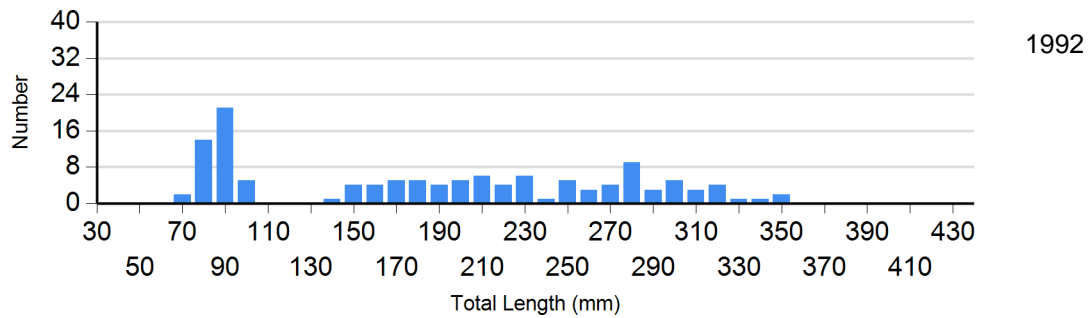
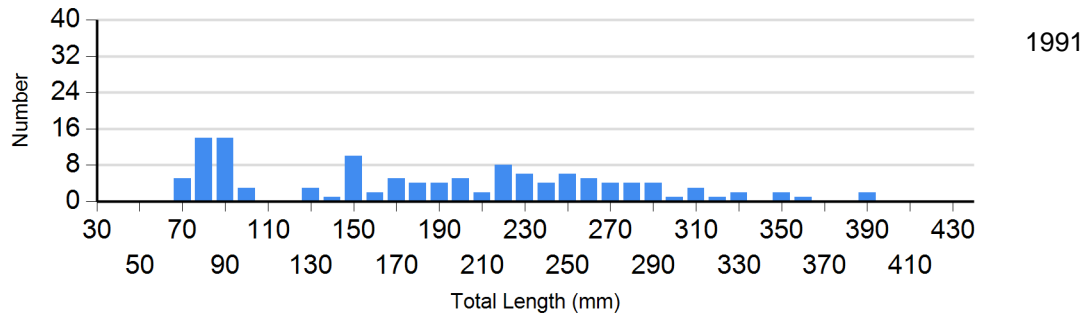
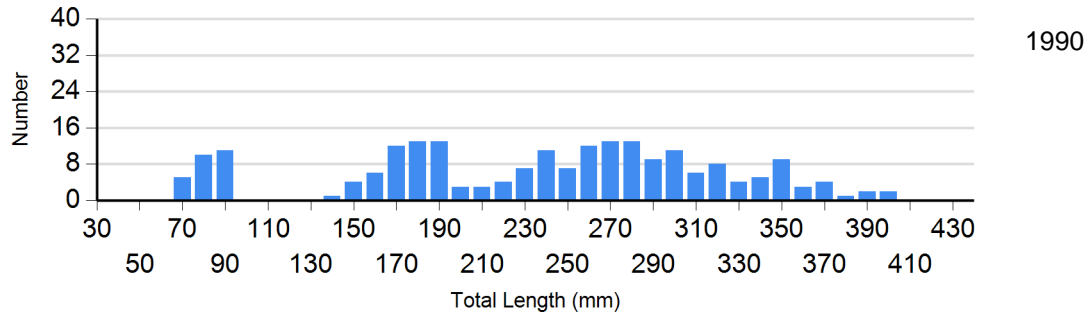
Rainbow Trout <200mm	Sep 26, 1991	75	39-166	
	Oct 02, 1992	135	104-168	
	Oct 07, 1993	52	50-56	
	Oct 12, 1994	137	88-200	
Rainbow Trout >=200mm	Sep 26, 1991	26	23-34	RB2
	Oct 02, 1992	43	41-48	RB1
	Oct 07, 1993	48	48-49	RB1
	Oct 12, 1994	38	37-42	RB1

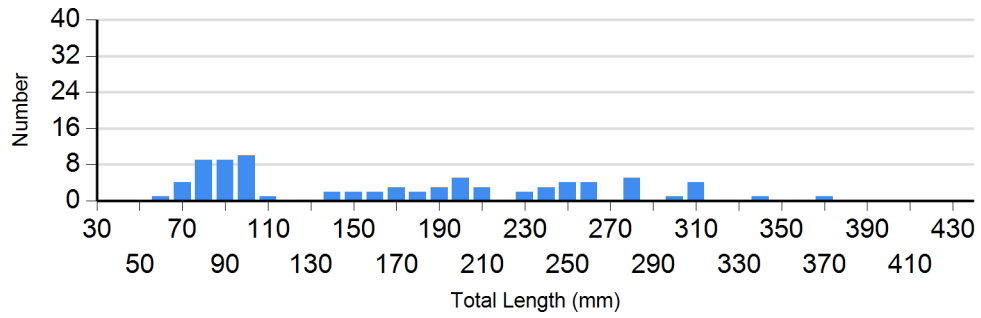
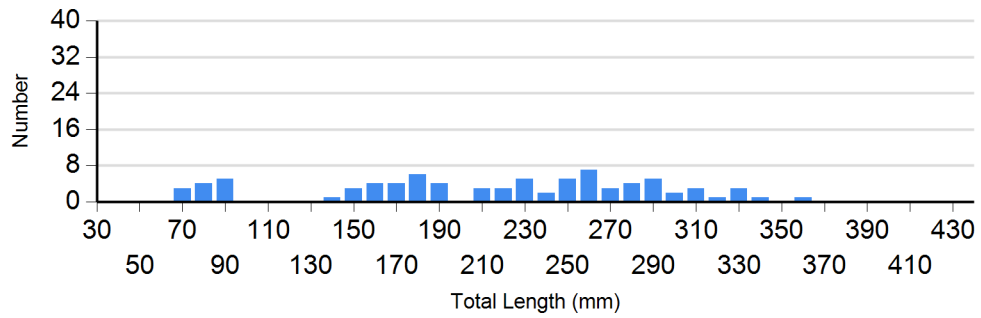
Length Frequency Distribution

Length frequency histogram of species sampled by year.

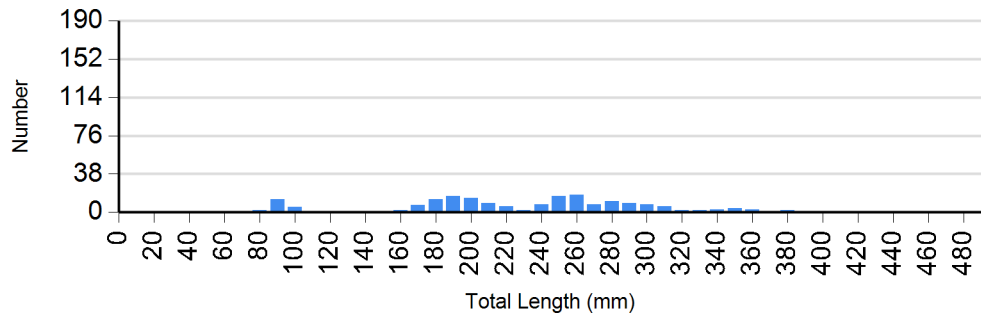
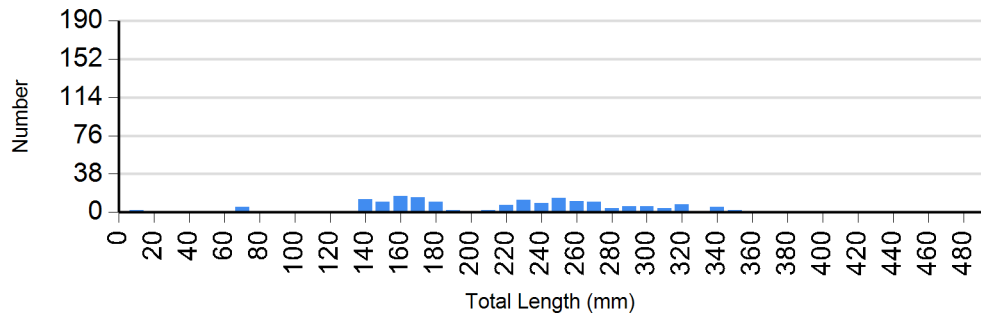
Site: 174

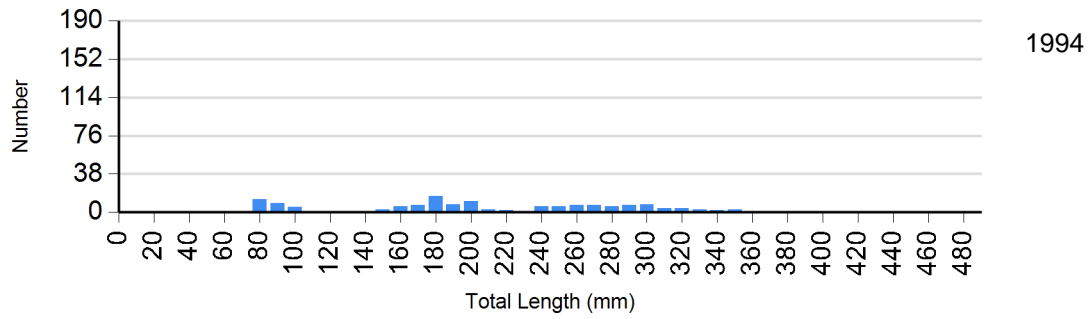
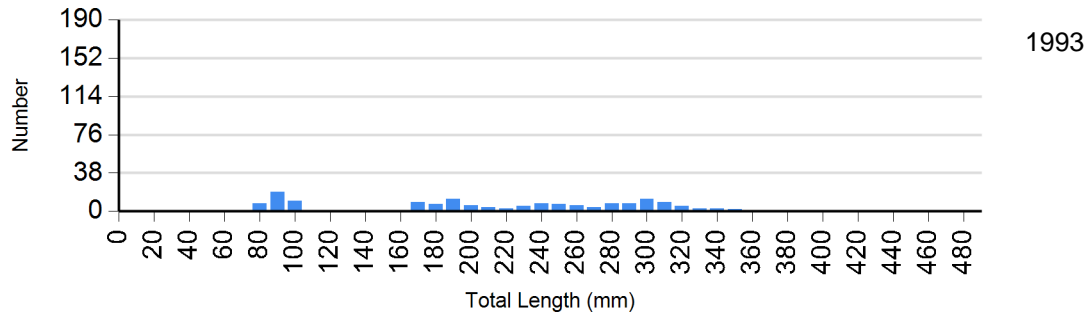
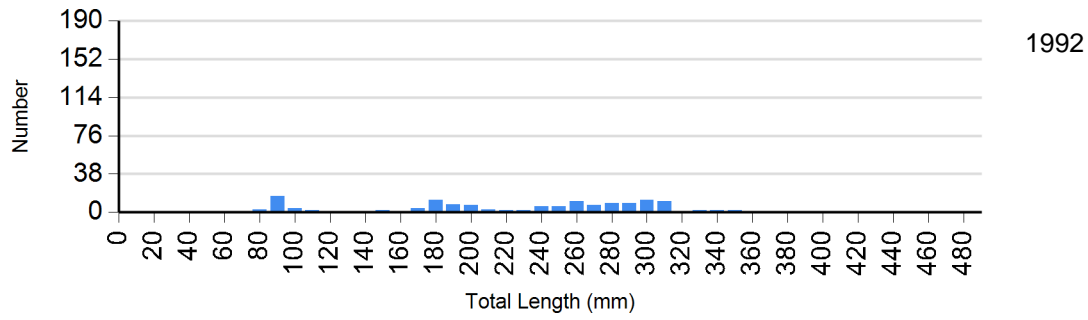
Species: Brown Trout



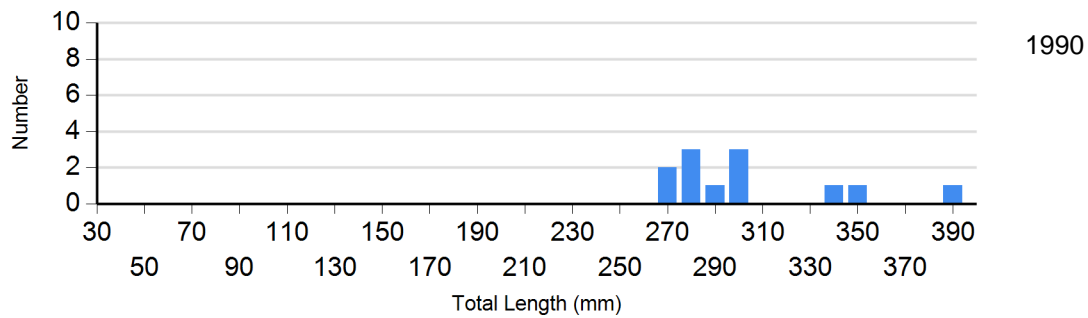


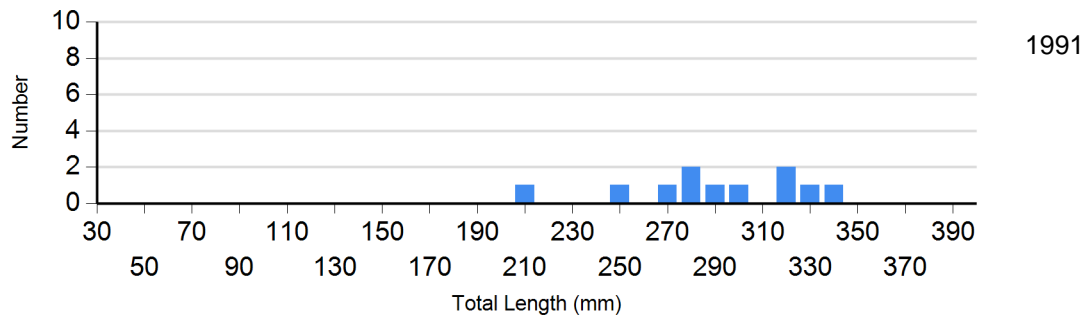
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Species: Brown Trout



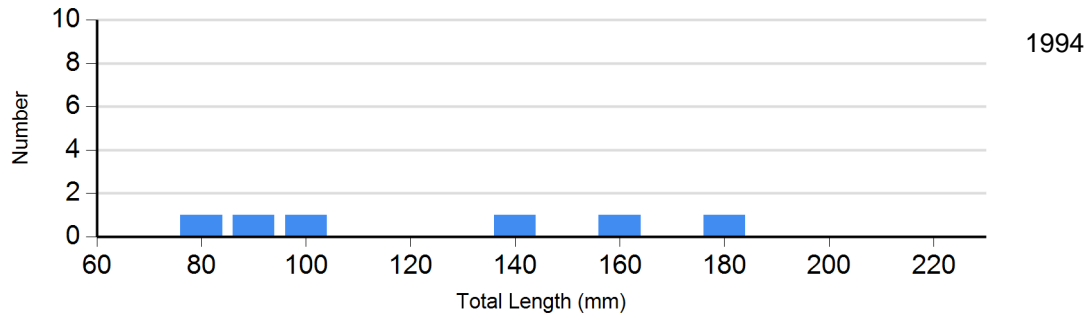


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Species: Rainbow Trout

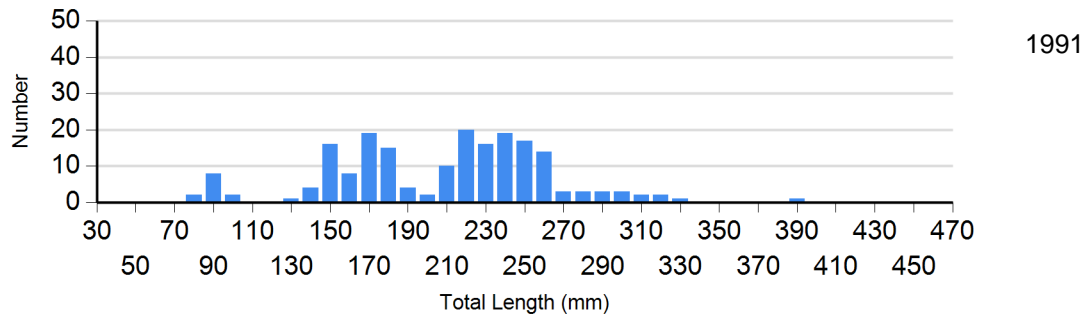


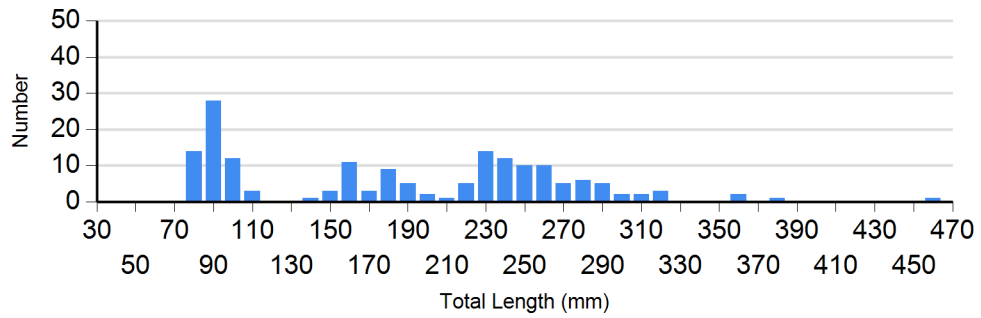
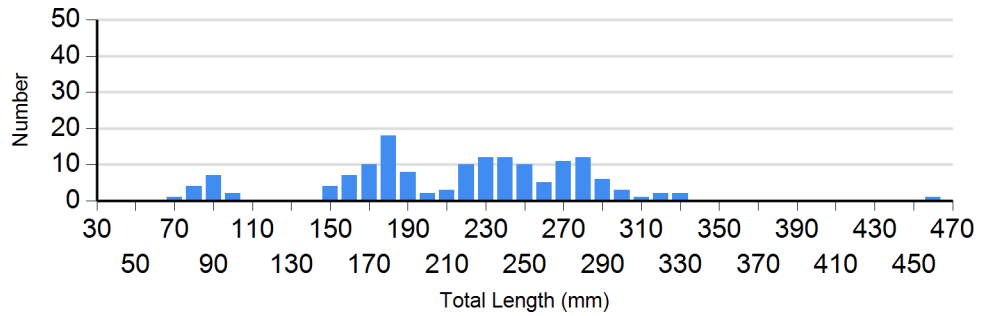
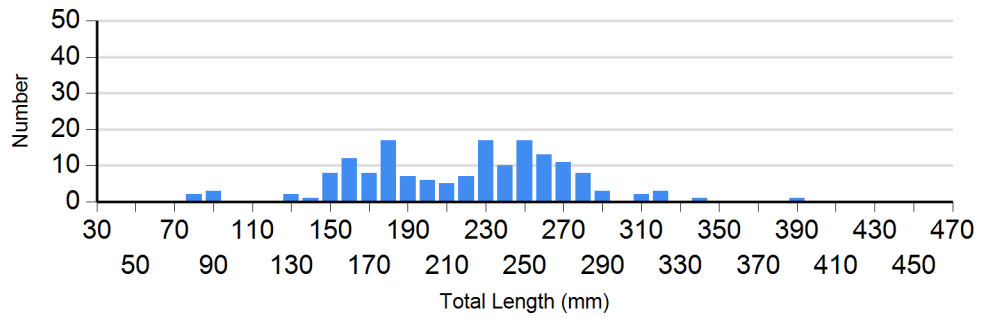


Site: 334
Species: Brook Trout

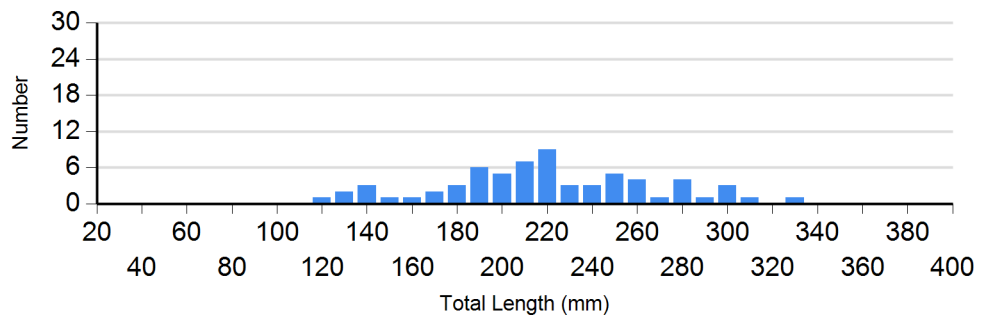


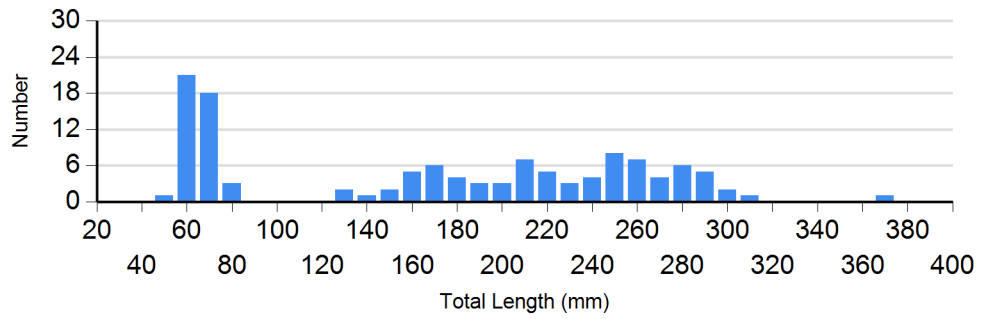
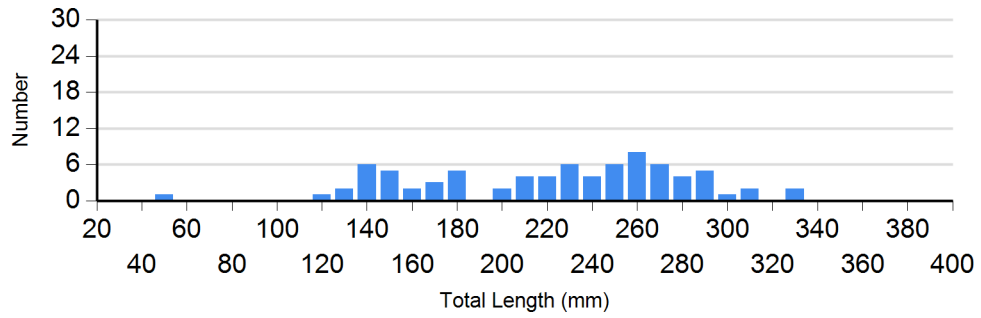
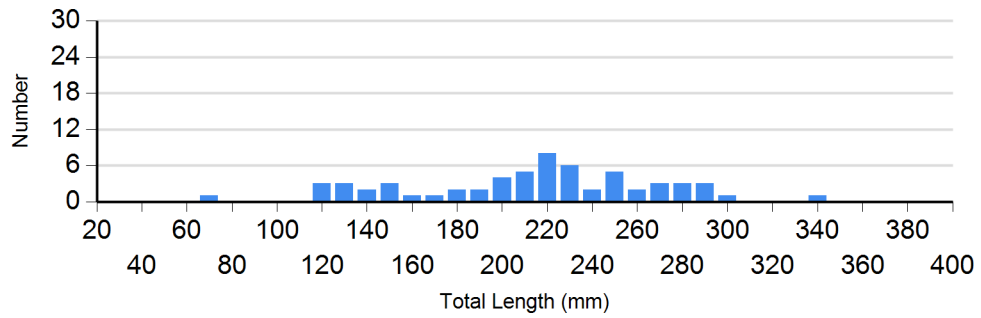
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Species: Brown Trout



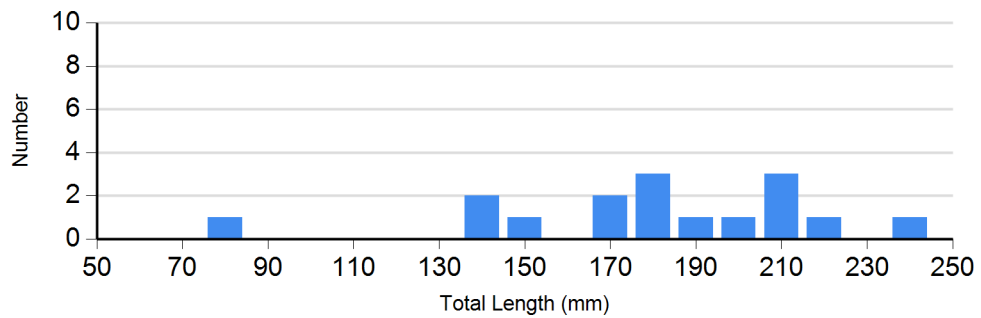


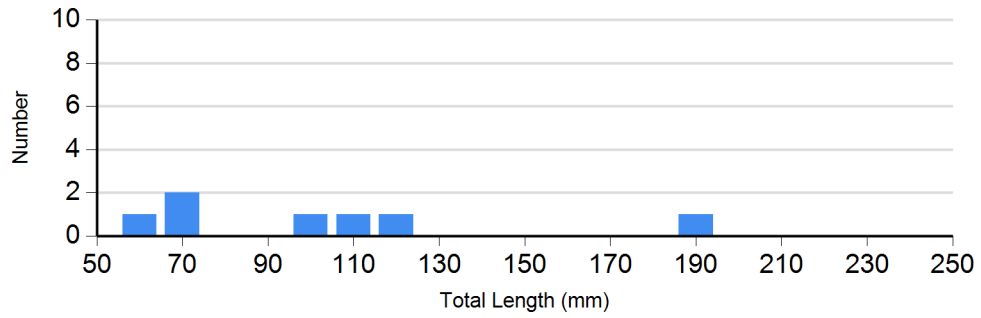
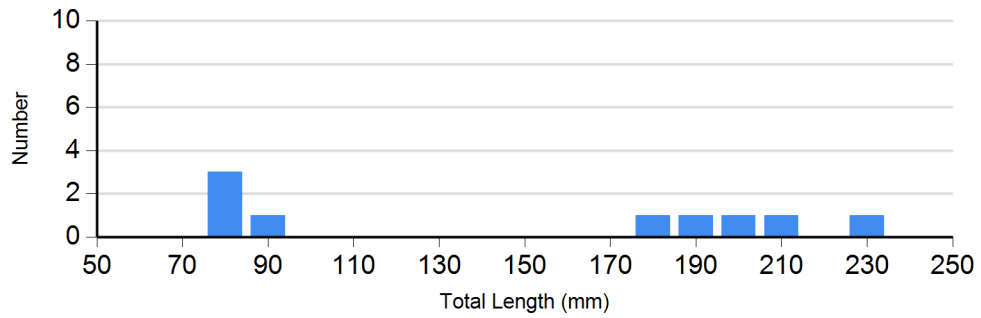
Site: 334
Species: Rainbow Trout



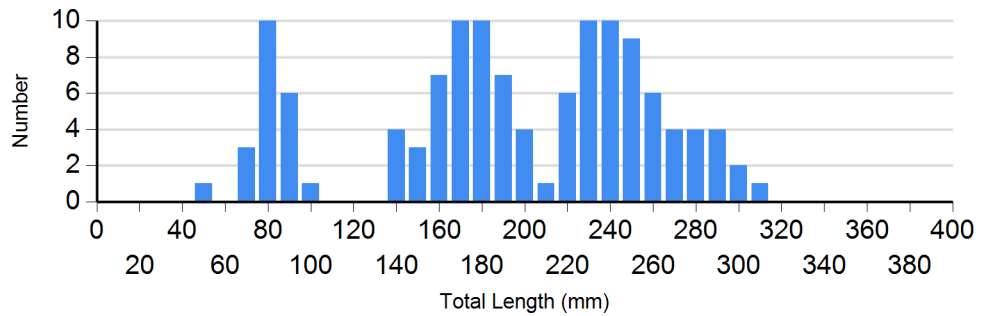
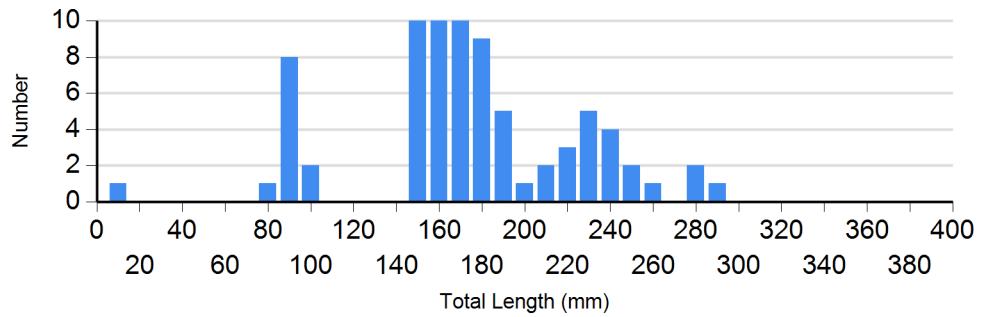


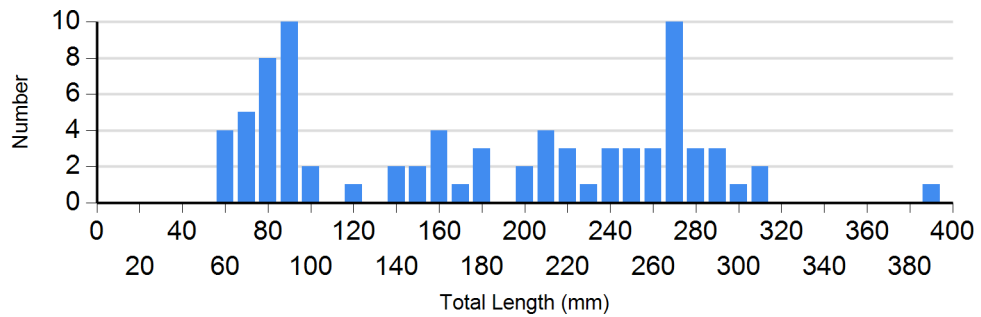
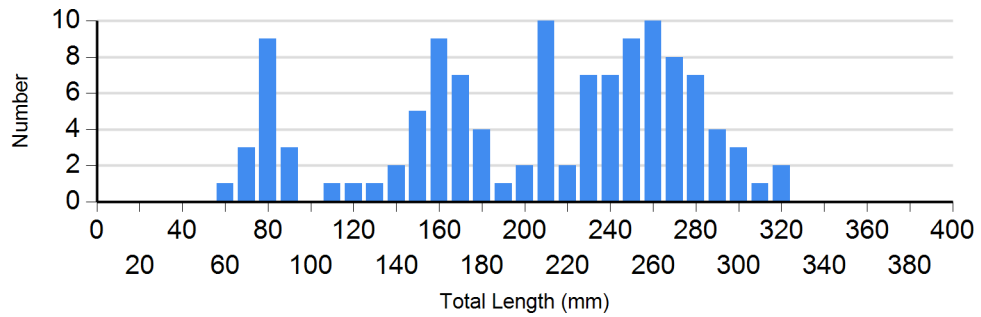
Site: 340
Species: Brook Trout





Site: 340
Species: Brown Trout





Site: 340
Species: Rainbow Trout

