

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Castle Creek, Pennington County
02-0071-00
1994

Table 1. Population and Biomass Estimates for Castle Creek

Site Number: 249	Date Sampled: 06/21/1994	Conductivity (umhos/cm): 277
Site Midpoint (Latitude, Longitude): 44.08152213, -103.72974261	Site Length (m): 100	pH: 8.6
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 5.6	Water Temperature (C): 10.0
Stream Classification: BK3, BR2	Number of Pass: 5	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	6	6	7	6	108	4	60	44	3.73	97	159.8	38.8
Brook Trout	>=200mm	1	1	1	1	18	1	10	7	1.22	16	210.0	76.0
Brook Trout	All	7	7	8	7	125	6	70	51	4.94	113	167.0	44.1
Brown Trout	<200mm	43	46	52	43	824	23	460	334	20.10	740	132.5	27.3
Brown Trout	>=200mm	13	13	14	13	233	26	130	94	23.09	209	226.8	111.0
Brown Trout	All	56	58	63	56	1039	49	580	421	43.37	933	154.4	46.7
Hatchery Brown Trout	>=200mm	9	9	10	9	161	19	90	65	16.71	145	230.9	116.0
Hatchery Brown Trout	All	9	9	10	9	161	19	90	65	16.71	145	230.9	116.0
Longnose Dace	All	1	1	5	1	18	0	10	7	0.03	16	70.0	2.0

Site Number: 296	Date Sampled: 06/20/1994	Conductivity (umhos/cm): 282
Site Midpoint (Latitude, Longitude): 44.07393507, -103.74845067	Site Length (m): 100	pH: 8.4
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 4.3	Water Temperature (C): 11.0
Stream Classification: BK0, BR2	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	5	5	6	5	115	4	50	47	3.46	80	127.8	33.6
Brook Trout	All	5	5	6	5	115	4	50	47	3.46	80	127.8	33.6
Brown Trout	<200mm	45	51	61	45	1175	26	510	476	22.80	821	119.6	21.7
Brown Trout	>=200mm	6	6	8	6	138	23	60	56	20.41	97	248.7	165.3
Brown Trout	All	51	58	69	51	1336	54	580	541	47.81	933	134.8	40.1
Longnose Dace	All	3	3	3	3	69	1	30	28	1.23	48	121.3	20.0
Mountain Sucker	All	7	7	9	7	161	13	70	65	11.52	113	192.6	80.0
White Sucker	All	1	1	1	1	23	7	10	9	6.01	16	293.0	292.0

Site Number: 296

Site Midpoint (Latitude, Longitude): 44.07393507, -103.74845067

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK3, BR1

Date Sampled: 06/20/1994

Site Length (m): 100

Mean Width (m): 4.7

Number of Pass: 3

Conductivity (umhos/cm): 258

pH: 8.4

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)
Brook Trout	<200mm	36	39	46	36	837	24	390	339	21.21	628	140.8	28.4
Brook Trout	>=200mm	2	2	2	2	43	4	20	17	3.24	32	211.5	84.5
Brook Trout	All	38	41	47	38	880	28	410	356	24.62	660	144.6	31.3
Brown Trout	<200mm	80	85	93	80	1824	62	850	739	55.13	1368	137.8	33.9
Brown Trout	>=200mm	26	27	30	26	579	79	270	235	70.20	434	240.5	135.7
Brown Trout	All	106	113	122	106	2425	143	1130	982	127.37	1818	163.0	58.8

Site Number: 356

Site Midpoint (Latitude, Longitude): 44.05717425, -103.76307493

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK2, BR1

Date Sampled: 11/08/1994

Site Length (m): 104

Mean Width (m): 2.9

Number of Pass: 3

Conductivity (umhos/cm): 203

pH: 8.4

Water Temperature (C): 1.0

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	165	167	171	165	5680	85	1606	2301	75.71	2584	111.4	14.9
Brook Trout	>=200mm	7	7	7	7	238	21	67	96	18.56	108	216.4	87.3
Brook Trout	All	172	174	178	172	5918	106	1673	2397	94.53	2692	115.7	17.9
Brown Trout	<200mm	59	59	61	59	2007	45	567	813	39.75	913	116.1	22.2
Brown Trout	>=200mm	24	24	24	24	816	95	231	331	85.07	371	230.2	116.7
Brown Trout	All	83	83	85	83	2823	140	798	1143	124.82	1284	149.1	49.5

Site Number: 384

Site Midpoint (Latitude, Longitude): 44.04396904, -103.77363060

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK2, BR1

Date Sampled: 11/07/1994

Site Length (m): 111

Mean Width (m): 4.0

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)
Brook Trout	<200mm	81	81	83	81	2015	47	730	816	41.58	1174	125.6	23.1
Brook Trout	>=200mm	12	12	13	12	299	40	108	121	36.07	174	236.9	135.3
Brook Trout	All	93	93	95	93	2313	87	838	937	77.65	1348	140.0	37.6
Brown Trout	<200mm	10	10	10	10	249	13	90	101	11.22	145	159.2	50.5
Brown Trout	>=200mm	43	47	55	43	1169	237	423	474	211.50	681	263.0	202.6
Brown Trout	All	53	56	62	53	1393	242	505	564	216.30	812	243.5	173.9
White Sucker	All	1	1	2	1	25	0	9	10	0.20	14	105.0	9.0

Site Number: 388

Site Midpoint (Latitude, Longitude): 44.04338453, -103.77130517

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK1, BR1

Date Sampled: 11/07/1994

Site Length (m): 97

Mean Width (m): 4.0

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)
Brook Trout	<200mm	67	67	68	67	1675	69	691	678	61.97	1111	156.3	41.4
Brook Trout	>=200mm	34	34	35	34	850	109	351	344	97.10	564	232.2	127.9
Brook Trout	All	101	101	102	101	2525	178	1041	1023	159.07	1675	181.9	70.6
Brown Trout	<200mm	10	10	10	10	250	11	103	101	9.80	166	154.6	43.9
Brown Trout	>=200mm	31	31	32	31	775	175	320	314	156.30	514	274.7	225.9
Brown Trout	All	41	41	42	41	1025	186	423	415	166.10	680	245.4	181.5
White Sucker	All	1	1	1	1	25	0	10	10	0.18	17	96.0	8.0

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 Castle Creek, 1984-1994

Site 249

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Jun 21, 1994	6	6-7	
Brook Trout >=200mm	Jun 21, 1994	1	1-1	BK3
Brown Trout <200mm	Jun 21, 1994	46	43-52	
Brown Trout >=200mm	Jun 21, 1994	13	13-14	BR2
Hatchery Brown Trout >=200mm	Jun 21, 1994	9	9-10	
Longnose Dace	Jun 21, 1994	1	1-5	

Site 296

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 19, 1993	20	14-40	
	Jun 20, 1994	5	5-6	
	Jun 20, 1994	39	36-46	
Brook Trout >=200mm	Jun 20, 1994	2	2-2	BK3
Brown Trout <200mm	Oct 19, 1993	117	112-124	
	Jun 20, 1994	51	45-61	
	Jun 20, 1994	85	80-93	
Brown Trout >=200mm	Oct 19, 1993	11	11-11	BR2
	Jun 20, 1994	27	26-30	BR1
	Jun 20, 1994	6	6-8	BR2
Longnose Dace	Oct 19, 1993	8	8-10	
	Jun 20, 1994	3	3-3	
Mountain Sucker	Jun 20, 1994	7	7-9	
White Sucker	Oct 19, 1993	1	1-1	
	Jun 20, 1994	1	1-1	

Site 356

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 16, 1992	71	71-72	
	Oct 13, 1993	80	71-92	
	Nov 08, 1994	167	165-171	
Brook Trout >=200mm	Oct 16, 1992	3	3-3	BK2
	Oct 13, 1993	5	5-5	BK2
	Nov 08, 1994	7	7-7	BK2
Brown Trout <200mm	Oct 16, 1992	86	84-90	
	Oct 13, 1993	58	57-61	
	Nov 08, 1994	59	59-61	
Brown Trout >=200mm	Oct 16, 1992	23	23-24	BR1
	Oct 13, 1993	25	25-25	BR1
	Nov 08, 1994	24	24-24	BR1
Hatchery Brown Trout >=200mm	Oct 13, 1993	1	1-2	

Site 384

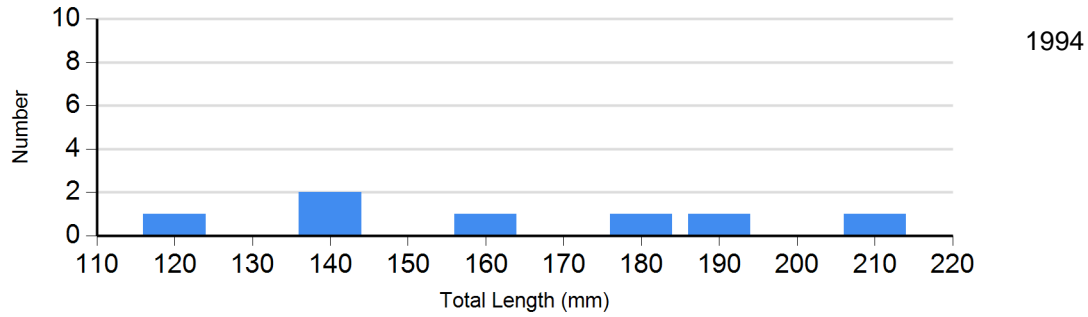
Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 14, 1992	127	109-146	
	Oct 12, 1993	87	84-92	
	Nov 07, 1994	81	81-83	
Brook Trout >=200mm	Oct 14, 1992	11	11-12	BK2
	Oct 12, 1993	21	21-21	BK1
	Nov 07, 1994	12	12-13	BK2
Brown Trout <200mm	Oct 14, 1992	13	13-14	
	Oct 12, 1993	38	37-41	
	Nov 07, 1994	10	10-10	
Brown Trout >=200mm	Oct 14, 1992	34	32-39	BR1
	Oct 12, 1993	29	29-30	BR1
	Nov 07, 1994	47	43-55	BR1
White Sucker	Oct 14, 1992	7	7-9	
	Nov 07, 1994	1	1-2	

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 14, 1992	26	26-27	
	Oct 12, 1993	58	53-66	
	Nov 07, 1994	67	67-68	
Brook Trout >=200mm	Oct 14, 1992	16	12-30	BK2
	Oct 12, 1993	14	14-15	BK2
	Nov 07, 1994	34	34-35	BK1
Brown Trout <200mm	Oct 14, 1992	10	10-10	
	Oct 12, 1993	17	17-19	
	Nov 07, 1994	10	10-10	
Brown Trout >=200mm	Oct 14, 1992	27	27-28	BR1
	Oct 12, 1993	33	33-35	BR1
	Nov 07, 1994	31	31-32	BR1
White Sucker	Nov 07, 1994	1	1-1	

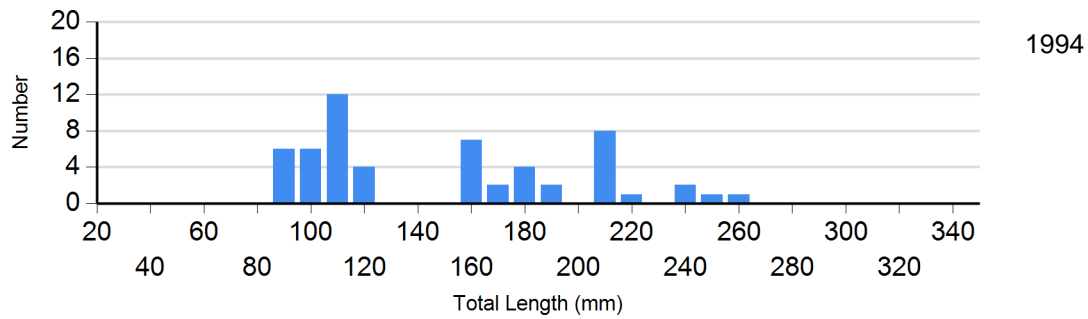
Length Frequency Distribution

Length frequency histogram of species sampled by year.

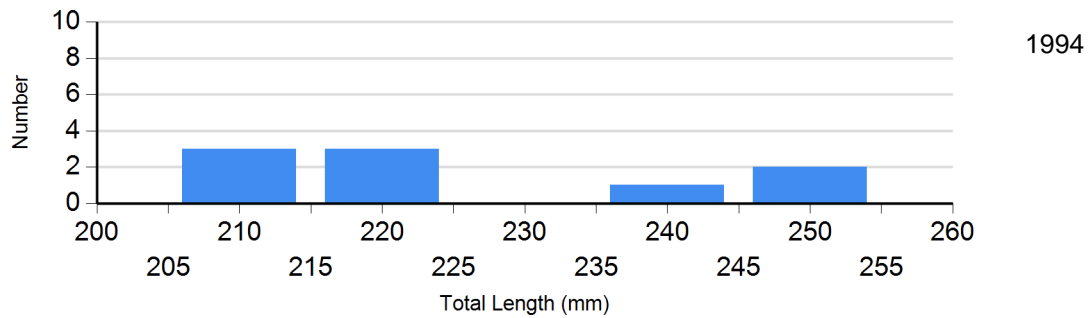
Site: 249
Species: Brook Trout



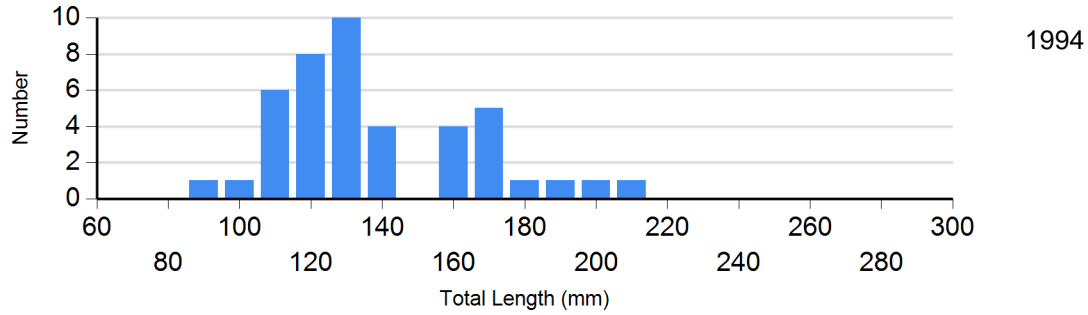
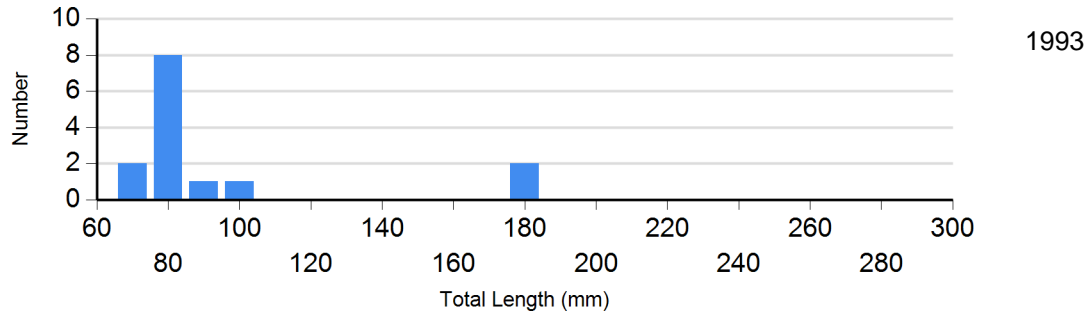
Site: 249
Species: Brown Trout



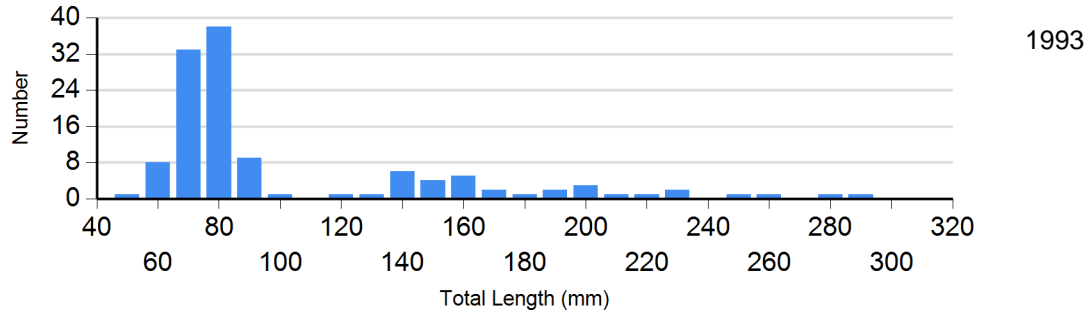
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Species: Hatchery Brown Trout

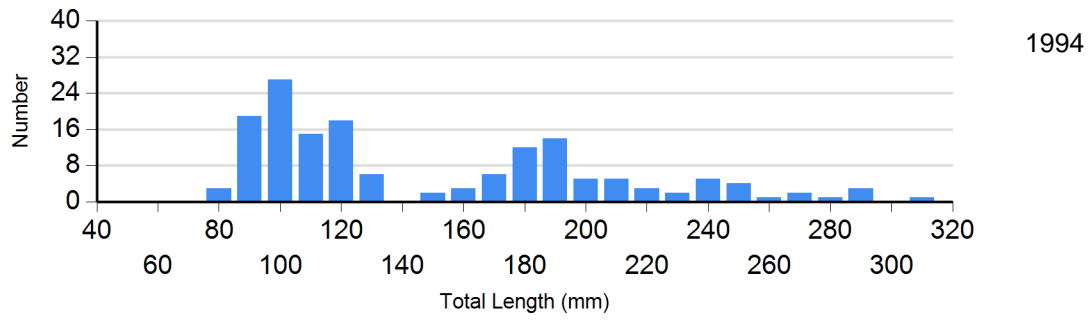


Site: 296
Species: Brook Trout

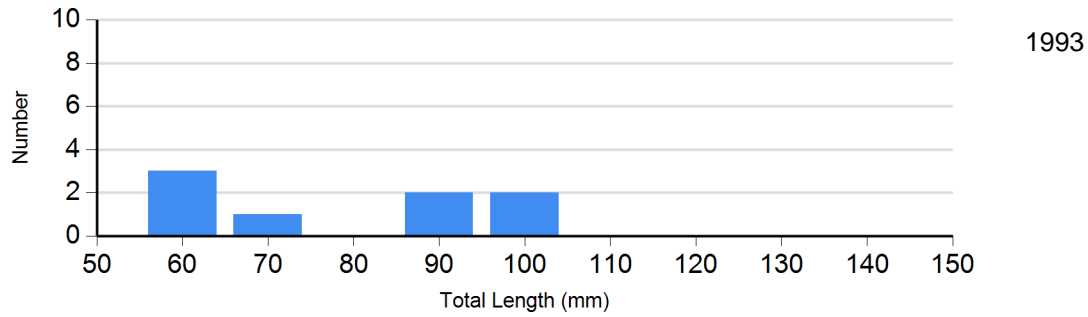


Site: 296
Species: Brown Trout

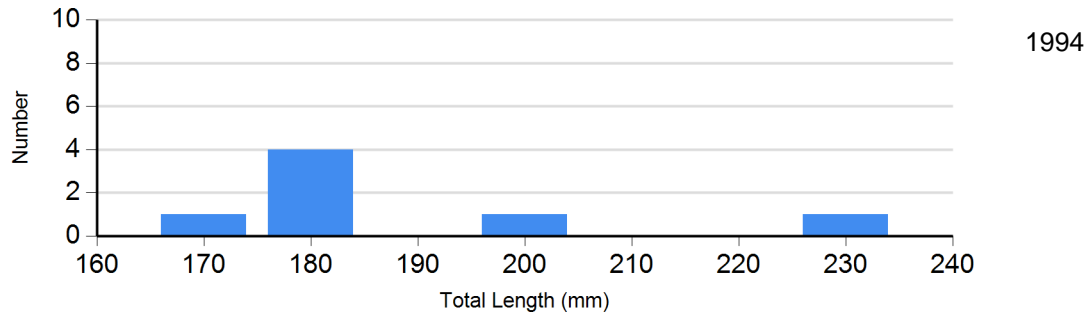




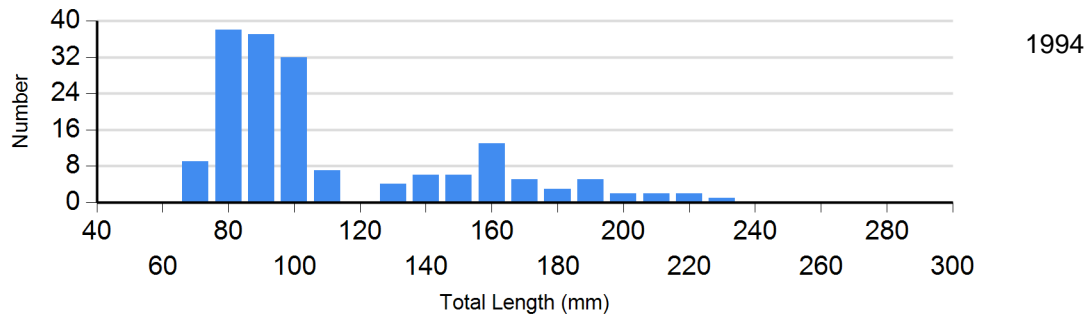
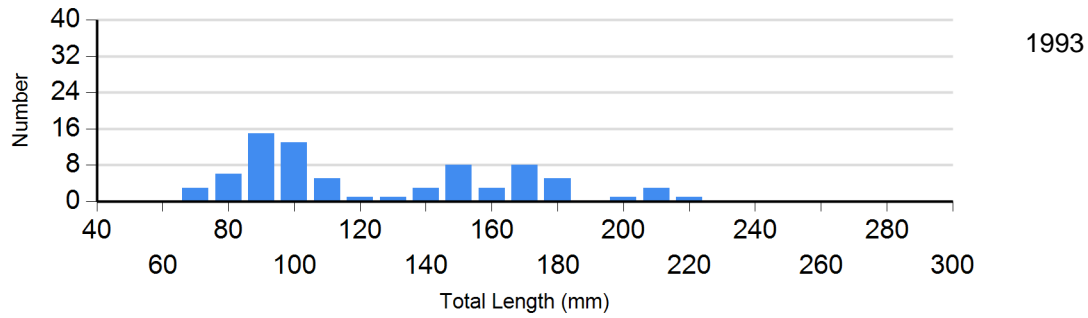
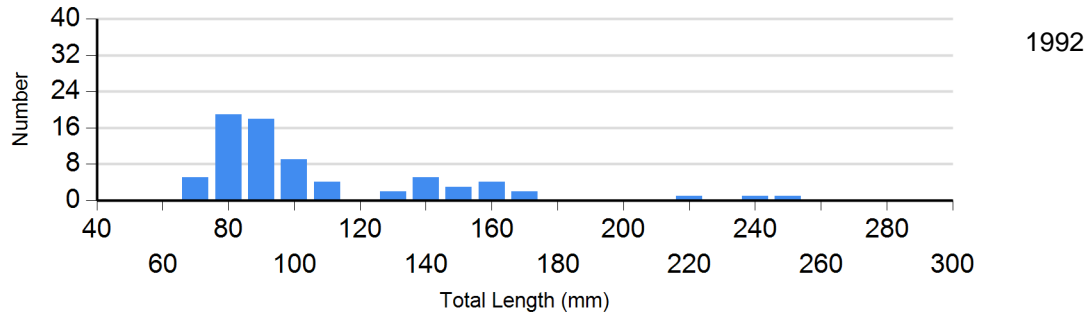
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Species: Longnose Dace



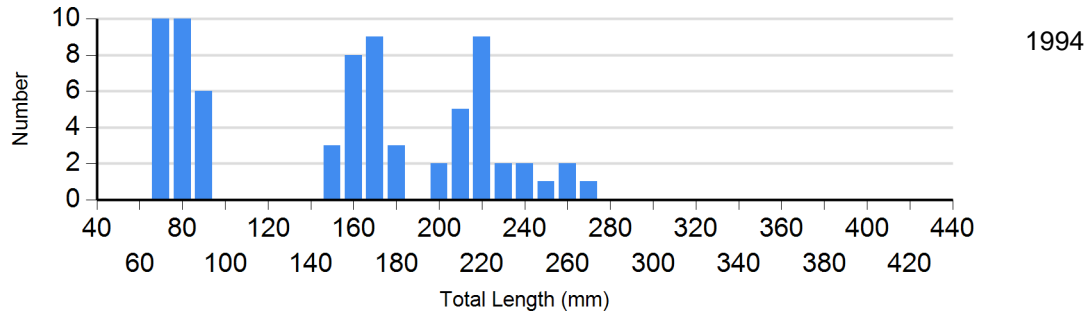
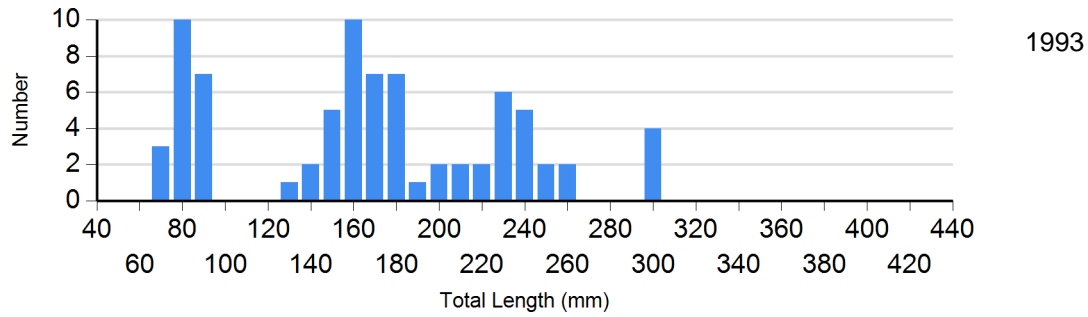
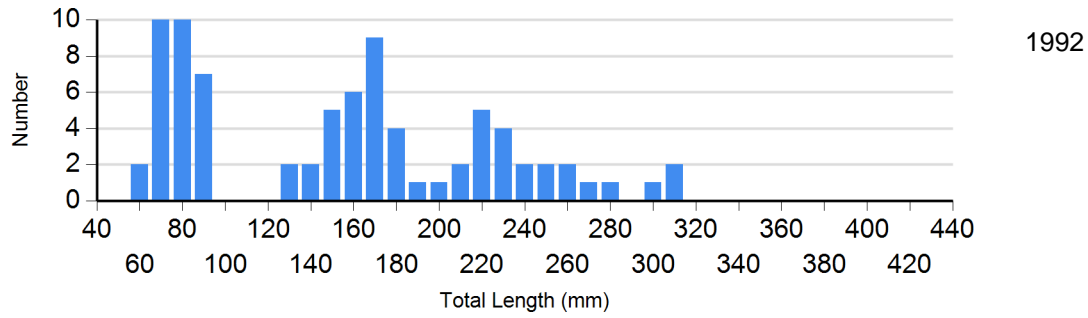
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Species: Mountain Sucker



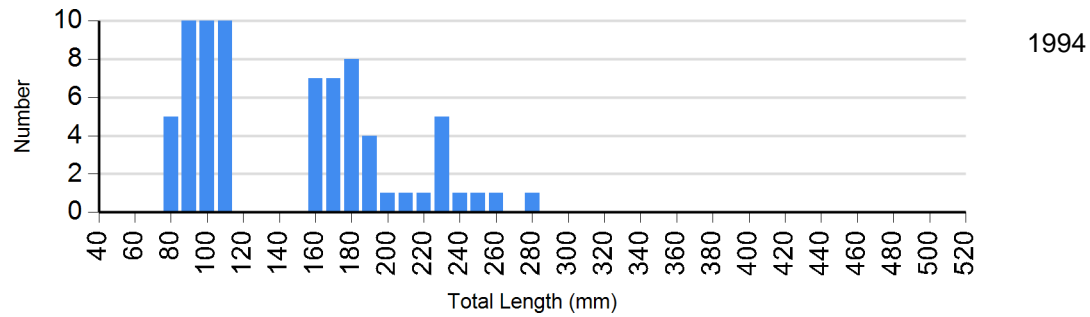
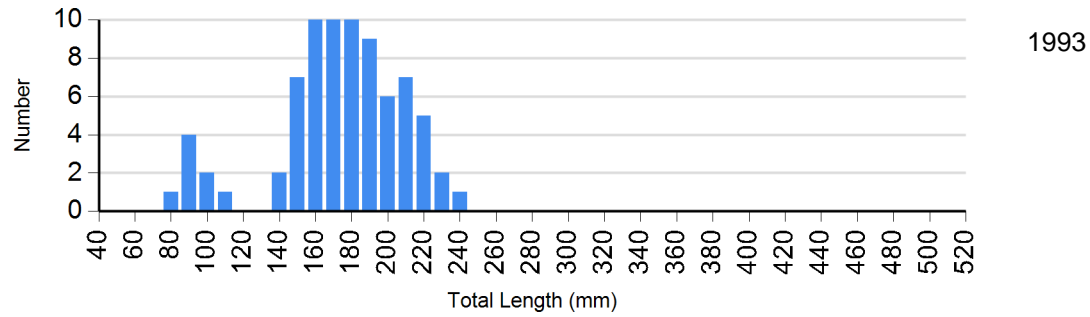
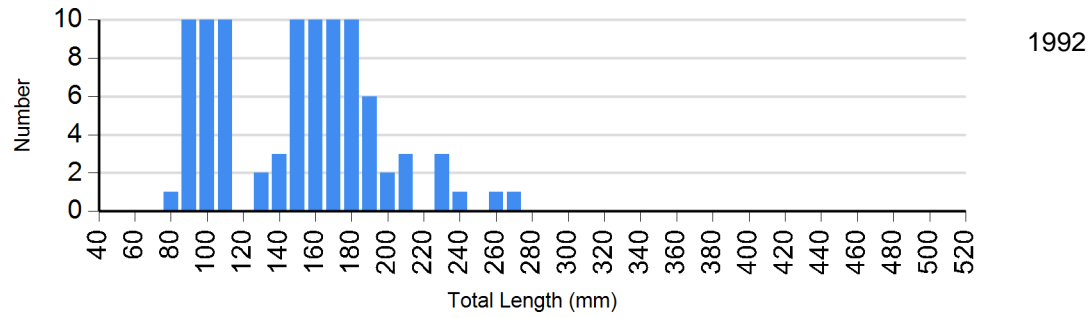
Site: 356
Species: Brook Trout



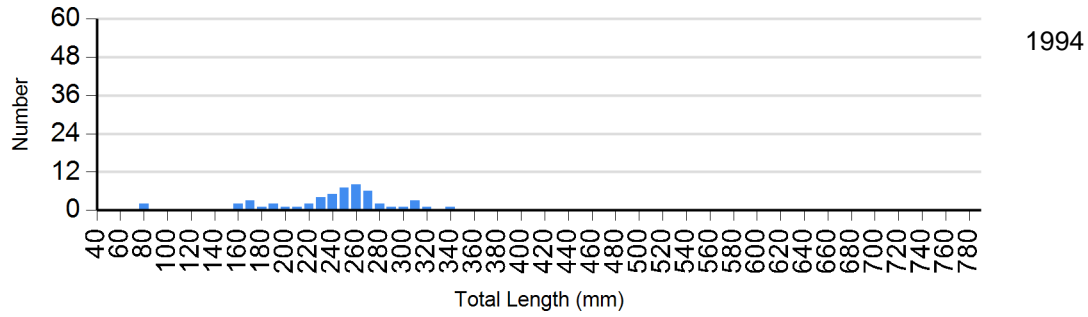
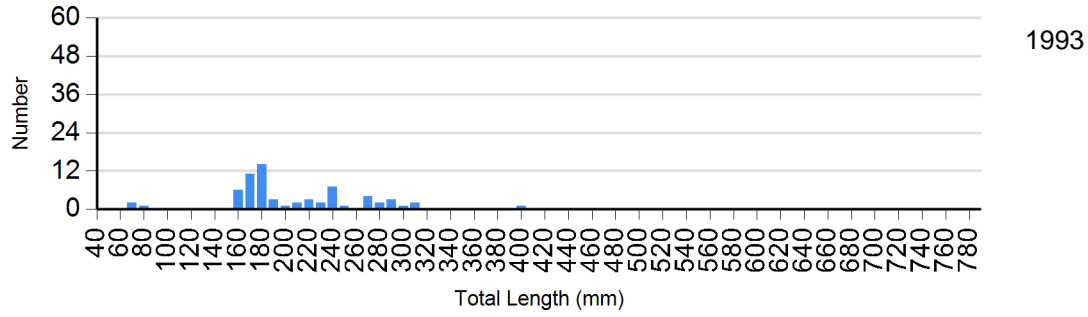
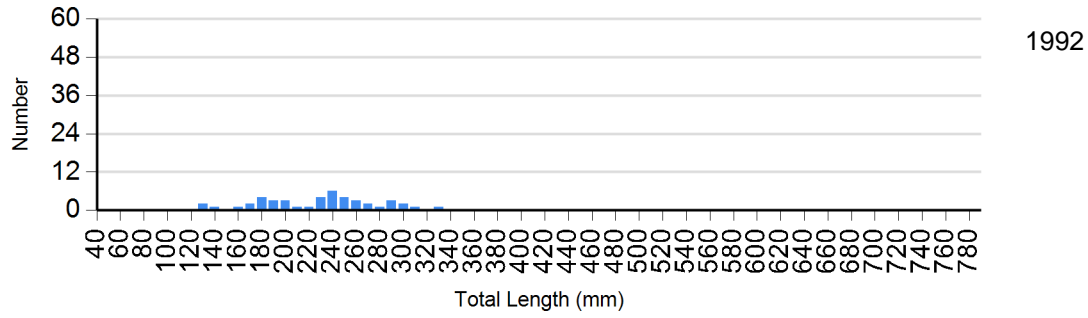
Site: 356
Species: Brown Trout



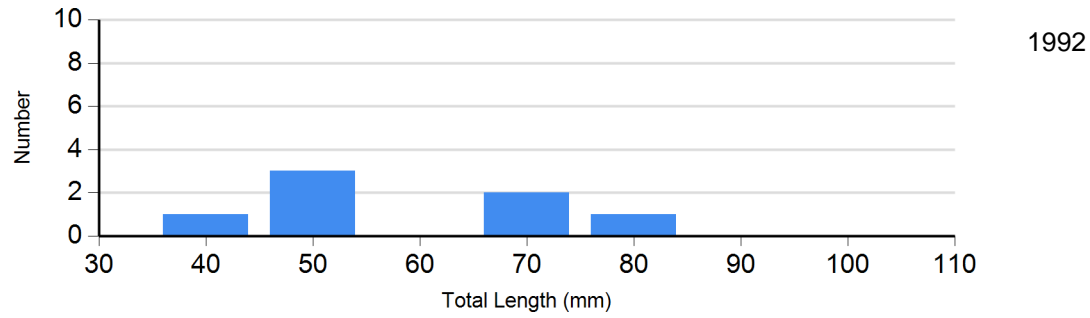
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Species: Brook Trout



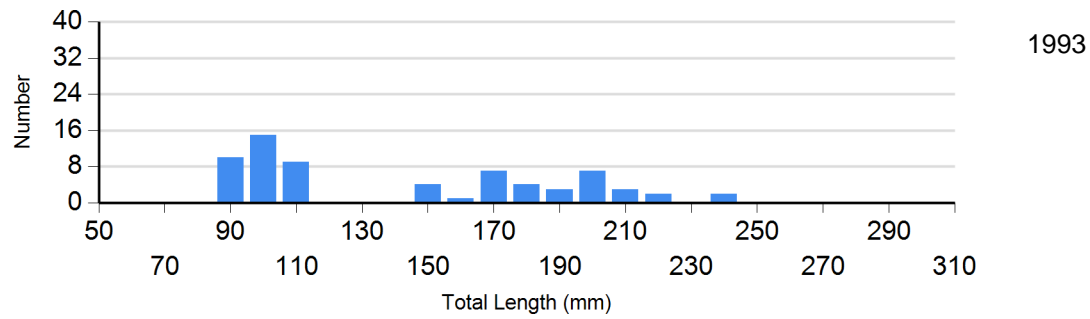
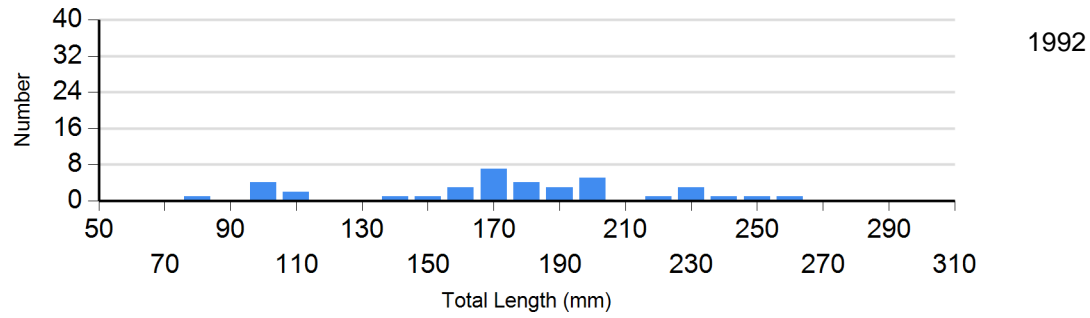
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Species: Brown Trout

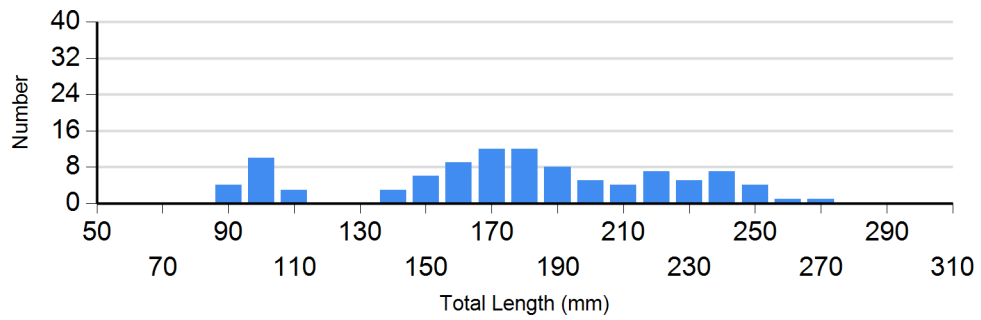


Site: 384
Species: White Sucker



Site: 388
Species: Brook Trout





Site: 388
Species: Brown Trout

