

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Cleopatra Creek, Lawrence County
09-0055-00
1997

Table 1. Population and Biomass Estimates for Cleopatra Creek

Site Number: 2	Date Sampled: 09/10/1997	Conductivity (umhos/cm): 350
Site Midpoint (Latitude, Longitude): 44.40059662, -103.89317768	Site Length (m): 100	pH: 7.6
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 3.2	Water Temperature (C): 10.0
Stream Classification: BK1, BR0, RB2	Number of Pass: 3	Voltage: 200

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	305	341	364	318	10723	94	3410	4343	84.05	5487	89.5	8.8
Brook Trout	>=200mm	16	16	16	16	503	53	160	204	47.34	257	216.5	105.4
Brook Trout	All	321	352	372	332	11069	156	3520	4483	139.25	5664	95.9	14.1
Brown Trout	<200mm	19	19	21	19	597	19	190	242	16.59	306	149.1	31.1
Brown Trout	All	19	19	21	19	597	19	190	242	16.59	306	149.1	31.1
Rainbow Trout	<200mm	408	457	484	430	14371	129	4570	5820	115.29	7353	76.4	9.0
Rainbow Trout	>=200mm	1	1	1	1	31	3	10	13	2.64	16	203.0	94.0
Rainbow Trout	All	409	457	483	431	14371	134	4570	5820	119.30	7353	76.7	9.3
Tiger Trout	<200mm	2	2	4	2	63	1	20	25	1.29	32	126.5	23.0
Tiger Trout	All	2	2	4	2	63	1	20	25	1.29	32	126.5	23.0

Site Number: 4	Date Sampled: 09/04/1997	Conductivity (umhos/cm):
Site Midpoint (Latitude, Longitude): 44.39921369, -103.89223587	Site Length (m): 100	pH:
Survey Completed by: OEA Research Inc.	Mean Width (m): 3.9	Water Temperature (C): 16.0
Stream Classification: BK2	Number of Pass: 4	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	565	592	607	577	15025	202	5920	6085	180.34	9525	98.9	13.4
Brook Trout	>=200mm	13	14	18	13	355	41	140	144	36.29	225	211.8	114.4
Brook Trout	All	578	606	621	591	15381	242	6060	6229	215.78	9751	101.5	15.7

Site Number: 6

Site Midpoint (Latitude, Longitude): 44.39833343, -103.89181119

Survey Completed by: OEA Research Inc.

Stream Classification: BK2

Date Sampled: 09/05/1997

Site Length (m): 100

Mean Width (m): 2.9

Number of Pass: 3

Conductivity (umhos/cm):

pH:

Water Temperature (C): 15.0

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	569	629	657	601	21993	198	6290	8907	176.70	10121	90.9	9.0
Brook Trout	>=200mm	9	9	9	9	315	45	90	127	40.55	145	227.9	144.3
Brook Trout	All	578	636	663	609	22238	247	6360	9006	220.51	10233	93.0	11.1

Site Number: 9

Site Midpoint (Latitude, Longitude): 44.39653612, -103.88925370

Survey Completed by: OEA Research Inc.

Stream Classification: BK2

Date Sampled: 09/05/1997

Site Length (m): 100

Mean Width (m): 3.2

Number of Pass: 3

Conductivity (umhos/cm):

pH:

Water Temperature (C): 15.0

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	436	449	459	439	14119	180	4490	5718	161.03	7224	100.3	12.8
Brook Trout	>=200mm	5	5	5	5	157	28	50	64	25.24	80	242.6	179.8
Brook Trout	All	441	454	464	444	14277	209	4540	5782	186.96	7305	101.9	14.7

Site Number: 45
Site Midpoint (Latitude, Longitude): 44.37686389, -103.86595601
Survey Completed by: OEA Research Inc.
Stream Classification: BK2

Date Sampled: 09/06/1997
Site Length (m): 100
Mean Width (m): 2.6
Number of Pass: 3
Conductivity (umhos/cm):
pH:
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	196	200	205	196	7752	132	2000	3140	117.45	3218	99.6	17.0
Brook Trout	>=200mm	4	4	4	4	155	20	40	63	18.24	64	218.0	131.8
Brook Trout	All	200	204	209	200	7907	152	2040	3202	136.01	3282	102.0	19.3

Site Number: 53
Site Midpoint (Latitude, Longitude): 44.37406394, -103.85831780
Survey Completed by: OEA Research Inc.
Stream Classification: BK2

Date Sampled: 09/09/1997
Site Length (m): 100
Mean Width (m): 2.2
Number of Pass: 3
Conductivity (umhos/cm):
pH:
Water Temperature (C): 12.0
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	342	355	365	345	15848	106	3550	6419	94.79	5712	79.0	6.7
Brook Trout	>=200mm	2	2	2	2	89	15	20	36	13.07	32	239.5	164.0
Brook Trout	All	344	356	366	346	15893	121	3560	6437	108.04	5728	79.9	7.6

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 Cleopatra Creek, 1987-1997

Site 2

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 10, 1997	341	318-364	
Brook Trout >=200mm	Sep 10, 1997	16	16-16	BK1
Brown Trout <200mm	Sep 10, 1997	19	19-21	
Rainbow Trout <200mm	Sep 10, 1997	457	430-484	
Rainbow Trout >=200mm	Sep 10, 1997	1	1-1	RB2
Tiger Trout <200mm	Sep 10, 1997	2	2-4	

Site 4

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 11, 1993	440	278-602	
	Sep 13, 1993	121	100-144	
	Sep 17, 1994	361	347-375	
	Sep 19, 1994	140	140-140	
	Oct 11, 1994	136	136-136	
	Sep 18, 1996	249	236-262	
	Sep 04, 1997	592	577-607	
Brook Trout >=200mm	Sep 11, 1993	2	2-3	BK3
	Sep 13, 1993	3	3-3	BK3
	Sep 17, 1994	1	1-1	BK3
	Sep 19, 1994	3	3-3	BK3
	Oct 11, 1994	1	1-1	BK3
	Sep 18, 1996	21	21-23	BK3
	Sep 04, 1997	14	13-18	BK2
Brown Trout <200mm	Sep 13, 1993	102	74-139	

Rainbow Trout <200mm	Sep 13, 1993	230	175-285
	Sep 19, 1994	248	248-248

Site 6

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 11, 1993	130	124-138	
	Sep 18, 1994	417	393-441	
	Oct 11, 1994	32	32-32	
	Sep 18, 1996	244	234-254	
	Sep 05, 1997	629	601-657	
Brook Trout >=200mm	Sep 11, 1993	14	14-16	BK3
	Sep 18, 1994	24	7-190	BK3
	Sep 18, 1996	21	21-22	BK3
	Sep 05, 1997	9	9-9	BK2

Site 9

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 12, 1993	20	20-21	
	Sep 19, 1994	201	188-214	

Brook Trout <200mm	Sep 19, 1996	172	164-181	
	Sep 05, 1997	449	439-459	
Brook Trout >=200mm	Sep 12, 1993	1	1-1	BK3
	Sep 19, 1994	2	2-2	BK3
	Sep 19, 1996	10	10-12	BK3
	Sep 05, 1997	5	5-5	BK2

Site 45

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 12, 1993	2	2-4	
	Sep 16, 1994	20	20-22	
	Sep 19, 1996	35	32-42	
	Sep 06, 1997	200	196-205	
Brook Trout >=200mm	Sep 16, 1994	5	5-6	BK3
	Sep 19, 1996	2	2-3	BK3
	Sep 06, 1997	4	4-4	BK2

Site 53

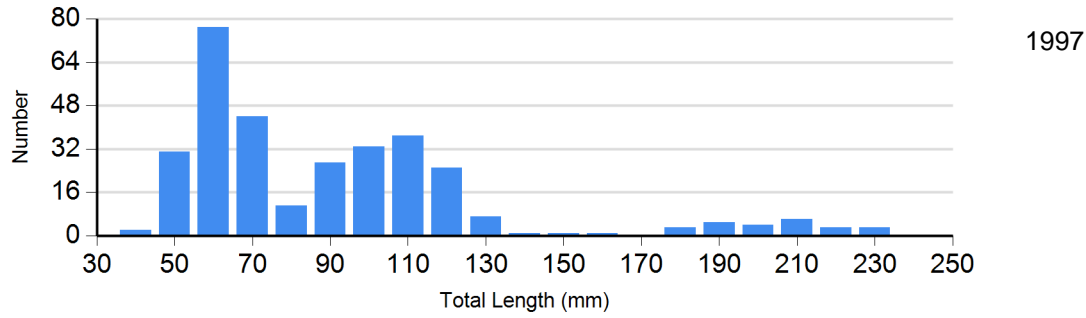
Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 13, 1993	8	7-14	
	Sep 15, 1994	158	131-185	
	Sep 20, 1996	93	91-97	
	Sep 09, 1997	355	345-365	
Brook Trout >=200mm	Oct 11, 1994	1	1-1	BK3
	Sep 09, 1997	2	2-2	BK2

Length Frequency Distribution

Length frequency histogram of species sampled by year.

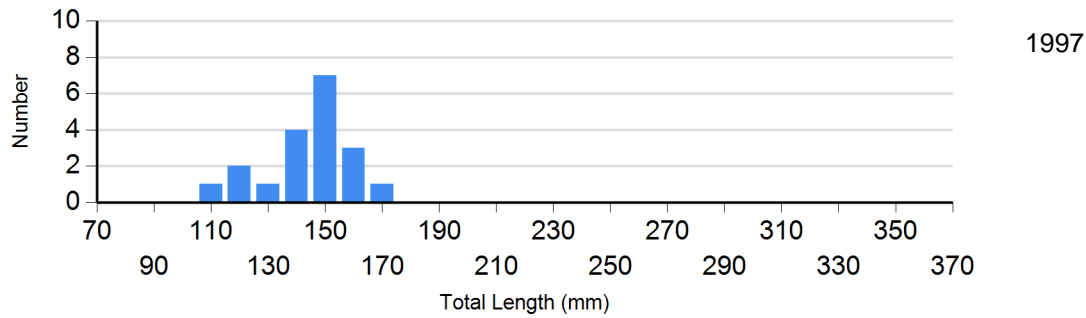
Site: 2

Species: Brook Trout



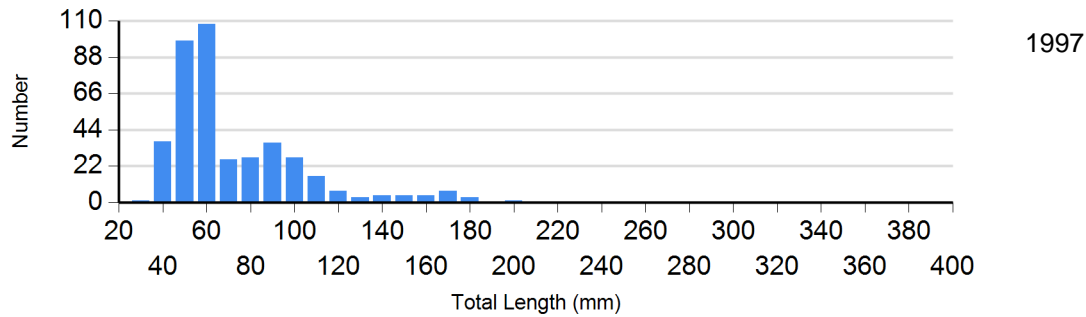
Site: 2

Species: Brown Trout

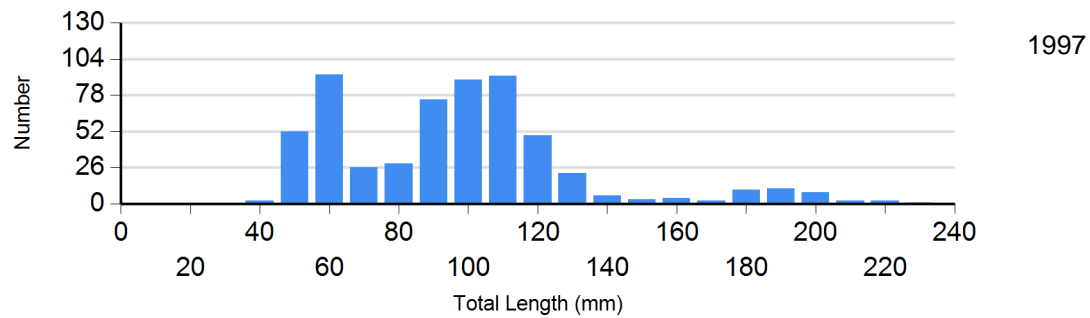
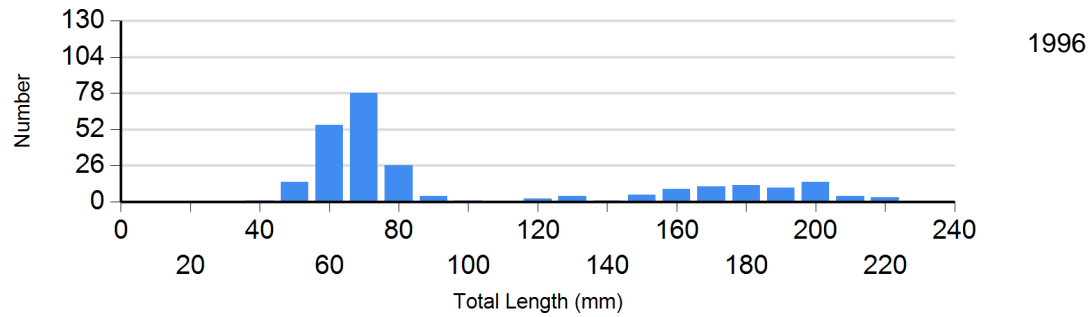
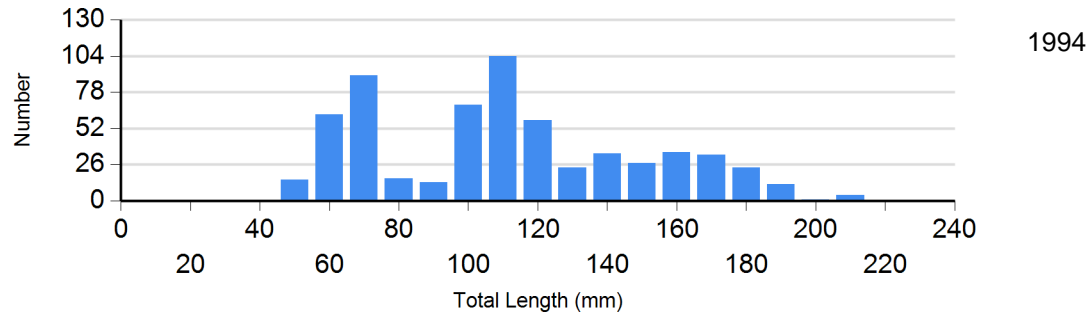
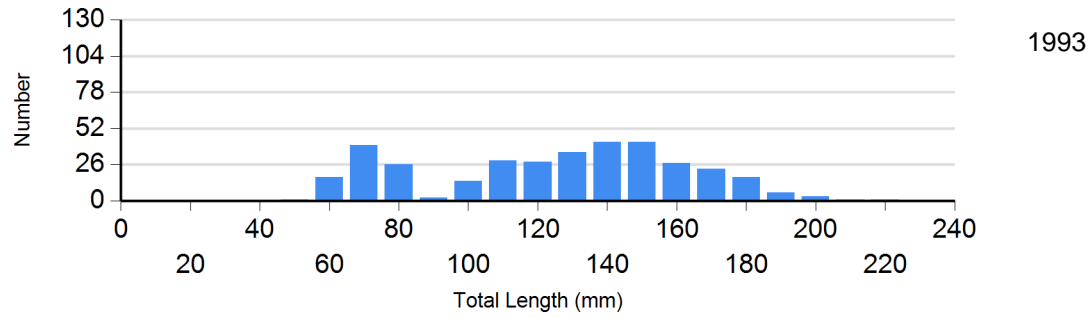


Site: 2

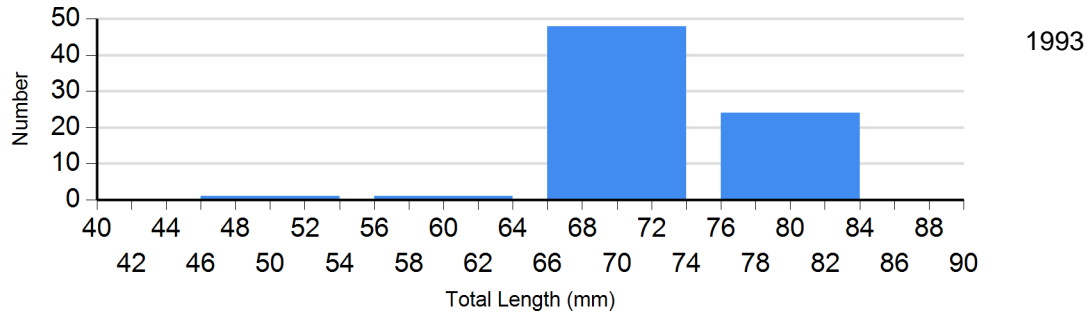
Species: Rainbow Trout



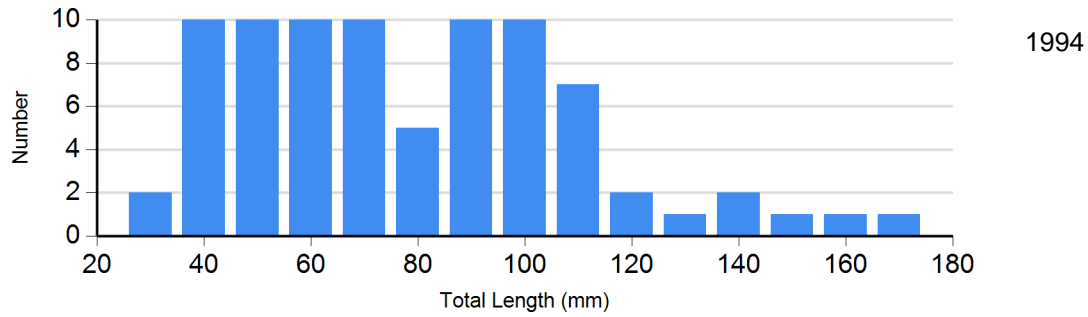
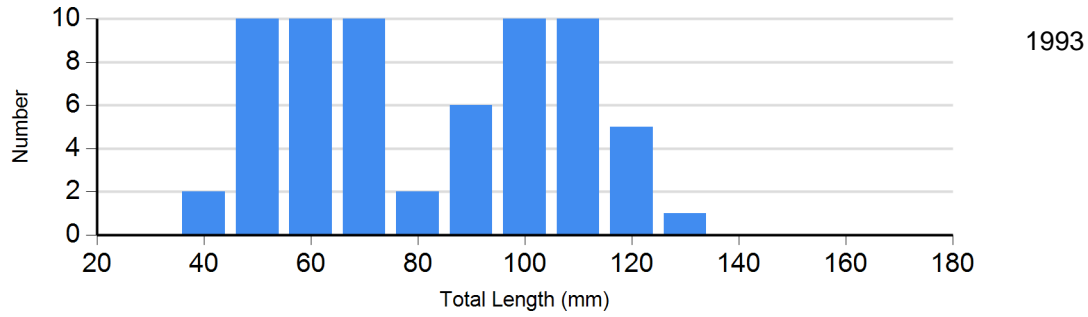
Site: 4
Species: Brook Trout



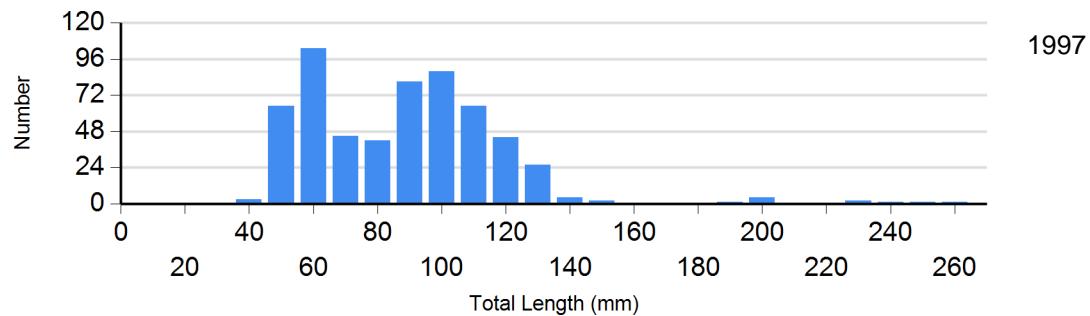
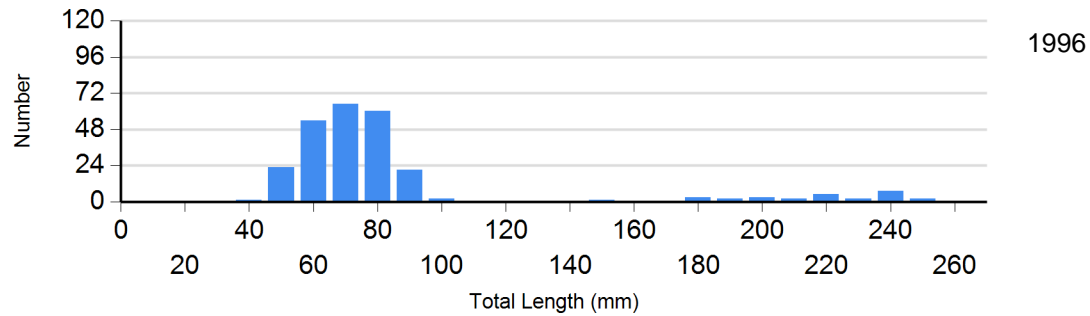
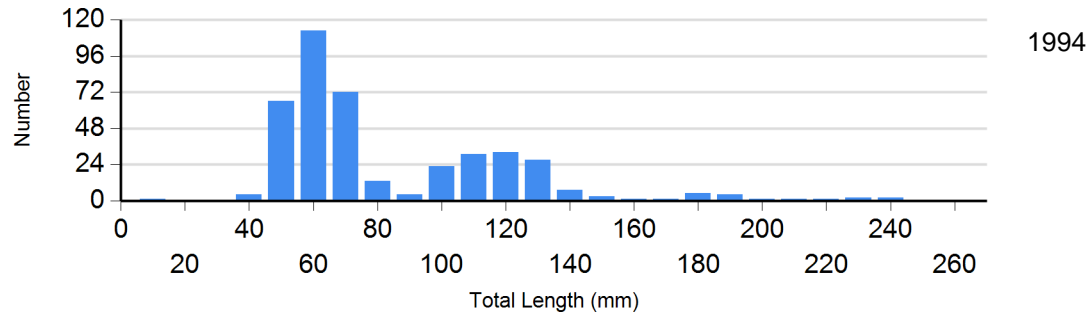
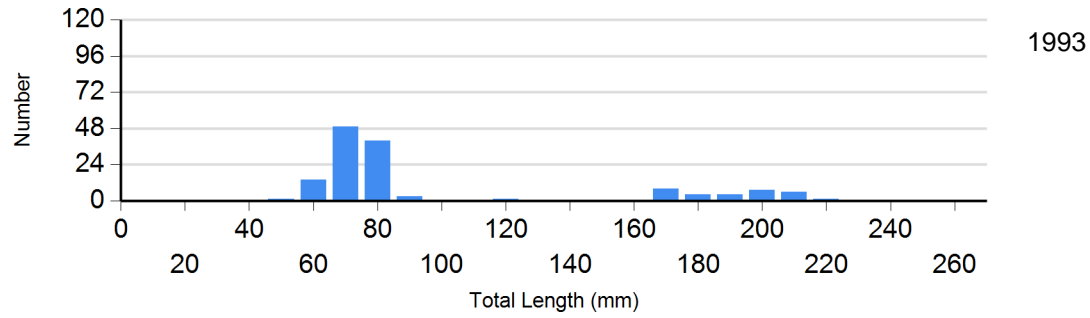
Site: 4
Species: Brown Trout



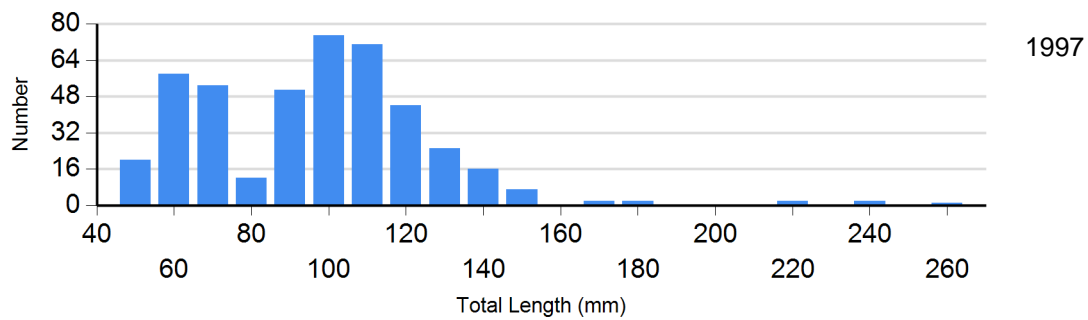
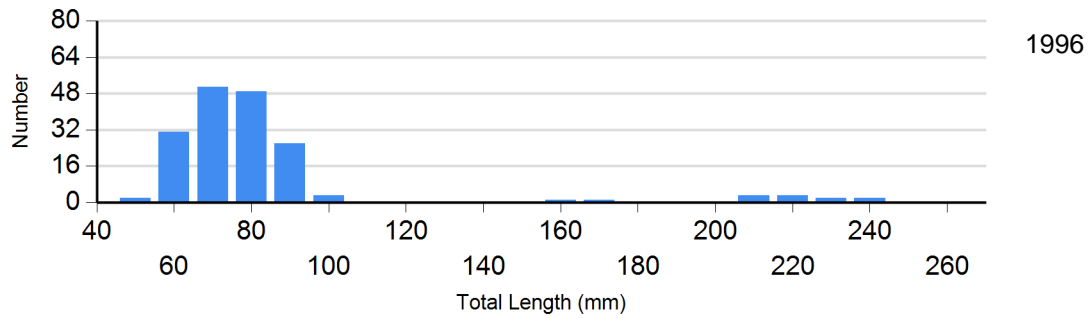
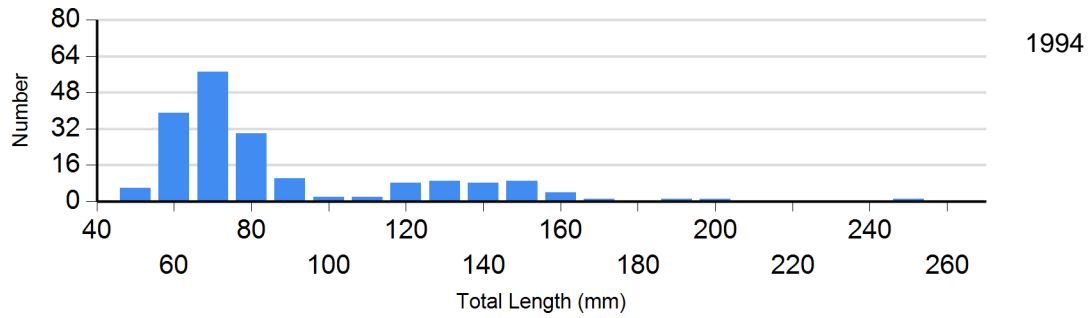
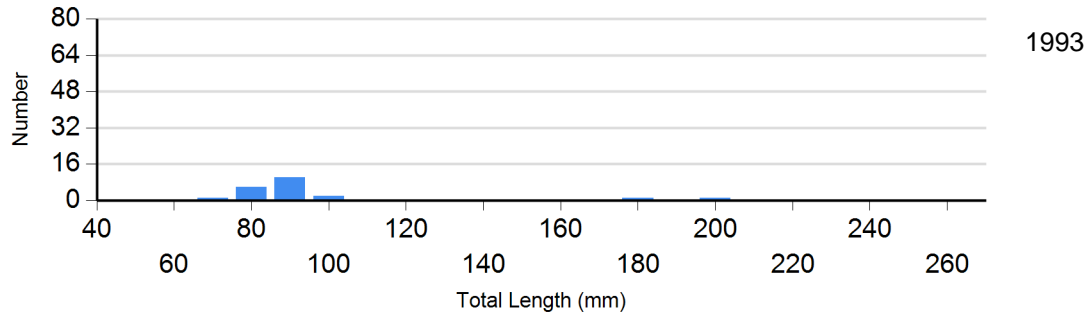
Site: 4
Species: Rainbow Trout



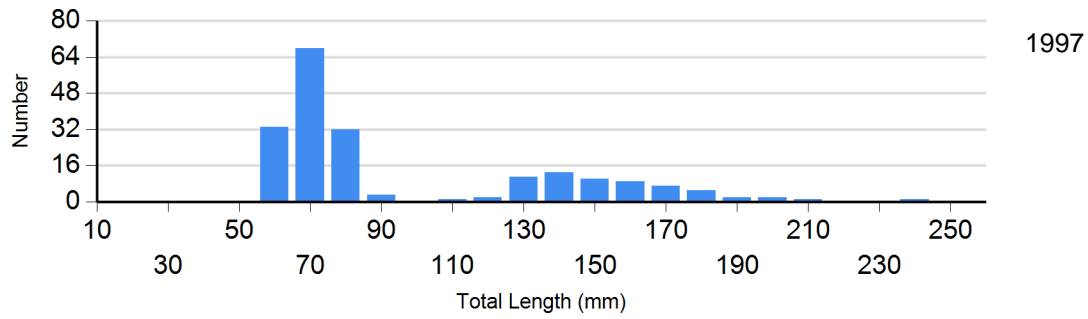
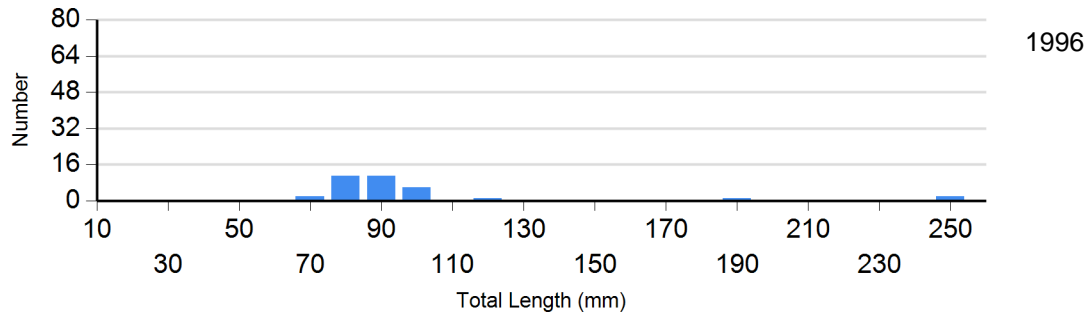
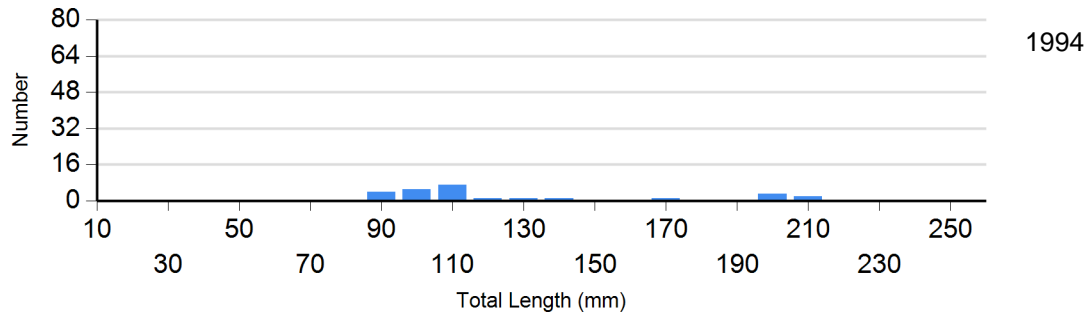
Site: 6
Species: Brook Trout



Site: 9
Species: Brook Trout



Site: 45
Species: Brook Trout



Site: 53
Species: Brook Trout

