

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Spearfish Creek, Lawrence County
09-0021-00
2012

Table 1. Population and Biomass Estimates for Spearfish Creek

Site Number: 174	Date Sampled: 07/31/2012	Conductivity (umhos/cm): 425
Site Midpoint (Latitude, Longitude): 44.50196266, -103.86743501	Site Length (m): 100	pH:
Survey Completed by:	Mean Width (m): 6.5	Water Temperature (C): 14.2
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	28	28	30	28	430	20	280	174	18.05	451	113.6	47.0
Brown Trout	>=200mm	101	101	103	101	1552	349	1010	628	311.25	1625	273.4	224.7
Brown Trout	All	129	130	133	129	1997	405	1300	809	362.05	2092	238.7	203.0

Site Number: 205	Date Sampled: 07/31/2012	Conductivity (umhos/cm): 415
Site Midpoint (Latitude, Longitude): 44.47880965, -103.85669154	Site Length (m): 100	pH: 8.7
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 11.4	Water Temperature (C): 14.2
Stream Classification: BR1, RB2	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	20	20	22	20	175	7	200	71	5.84	322	152.5	37.5
Brown Trout	>=200mm	47	47	48	47	411	85	470	166	75.45	756	271.6	205.8
Brown Trout	All	346	377	396	358	3294	512	3770	1334	457.44	6066	236.0	155.5
Rainbow Trout	>=200mm	1	1	1	1	9	1	10	4	0.74	16	212.0	95.0
Rainbow Trout	All	1	1	1	1	9	1	10	4	0.74	16	212.0	95.0

Site Number: 340
Site Midpoint (Latitude, Longitude): 44.40182261, -103.89476328
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BK3, BR1, RB1

Date Sampled: 07/30/2012 **Conductivity (umhos/cm):** 420
Site Length (m): 100 **pH:** 8.6
Mean Width (m): 10.1 **Water Temperature (C):** 12.2
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)
Brook Trout	>=200mm	1	1	5	1	10	1	10	4	0.90	16	213.0	101.0
Brook Trout	All	1	1	5	1	10	1	10	4	0.90	16	213.0	101.0
Brown Trout	<200mm	73	85	100	73	845	37	850	342	33.02	1368	98.3	43.8
Brown Trout	>=200mm	44	45	48	44	447	73	450	181	65.52	724	248.0	164.1
Brown Trout	All	176	252	317	187	2504	308	2520	1014	274.57	4055	154.6	122.8
Rainbow Trout	<200mm	74	75	78	74	745	23	750	302	20.56	1207	95.7	30.9
Rainbow Trout	>=200mm	21	22	26	21	219	43	220	89	38.06	354	240.4	195.0
Rainbow Trout	All	336	474	559	389	4710	425	4740	1908	379.80	7627	127.7	90.3

Site Number: 392
Site Midpoint (Latitude, Longitude): 44.37690503, -103.91378843
Survey Completed by:
Stream Classification: BR1

Date Sampled: 07/30/2012 **Conductivity (umhos/cm):** 416
Site Length (m): 100 **pH:** 8.6
Mean Width (m): 9.3 **Water Temperature (C):** 14.1
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	102	135	171	102	1447	54	1350	586	48.28	2172	121.3	37.4
Brown Trout	>=200mm	78	85	95	78	911	120	850	369	106.98	1368	235.9	131.5
Brown Trout	All	180	216	245	187	2316	201	2160	938	179.81	3475	171.0	87.0

Site Number: 477

Site Midpoint (Latitude, Longitude): 44.33239689, -103.90206721

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK3, BR1

Date Sampled: 08/01/2012

Site Length (m): 100

Mean Width (m): 6.6

Number of Pass: 3

Conductivity (umhos/cm): 444

pH: 8.9

Water Temperature (C): 10.4

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	1	1	15	4	10	6	3.73	16	292.0	275.0
Brook Trout	All	1	1	1	1	15	4	10	6	3.73	16	292.0	275.0
Brown Trout	<200mm	207	214	222	207	3251	109	2140	1317	97.53	3443	127.8	33.6
Brown Trout	>=200mm	57	57	59	57	866	116	570	351	103.43	917	230.1	133.8
Brown Trout	All	364	389	405	373	5910	343	3890	2394	306.59	6259	149.9	58.1

Site Number: 509

Site Midpoint (Latitude, Longitude): 44.31511348, -103.88464425

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BR1

Date Sampled: 08/01/2012

Site Length (m): 100

Mean Width (m): 7.2

Number of Pass: 3

Conductivity (umhos/cm): 447

pH: 8.9

Water Temperature (C): 11.4

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	145	178	207	149	2475	93	1780	1003	83.40	2864	142.6	37.7
Brown Trout	>=200mm	92	93	96	92	1293	175	930	524	156.64	1496	234.3	135.7
Brown Trout	All	315	357	383	331	4965	378	3570	2011	337.19	5744	178.2	76.1

Site Number: 570

Site Midpoint (Latitude, Longitude): 44.28744929, -103.89652776

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK0, BR1

Date Sampled: 08/02/2012

Site Length (m): 100

Mean Width (m): 5.0

Number of Pass: 3

Conductivity (umhos/cm): 463

pH: 8.7

Water Temperature (C): 9.2

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	3	3	3	3	60	1	30	24	0.54	48	103.7	10.0
Brook Trout	All	3	3	3	3	60	1	30	24	0.54	48	103.7	10.0
Brown Trout	<200mm	282	294	304	284	5912	167	2940	2394	148.77	4730	130.9	28.2
Brown Trout	>=200mm	21	21	23	21	422	44	210	171	39.56	338	220.0	104.9
Brown Trout	All	303	316	327	305	6355	215	3160	2574	191.98	5084	137.1	33.8

Site Number: 621

Site Midpoint (Latitude, Longitude): 44.25495945, -103.92257741

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK1, BR1

Date Sampled: 08/02/2012

Site Length (m): 100

Mean Width (m): 3.8

Number of Pass: 3

Conductivity (umhos/cm): 405

pH: 8.3

Water Temperature (C): 10.7

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	127	132	139	127	3465	119	1320	1403	105.93	2124	142.5	34.2
Brook Trout	>=200mm	16	16	18	16	420	42	160	170	37.46	257	216.4	99.9
Brook Trout	All	148	154	161	148	4043	169	1540	1637	150.86	2478	150.7	41.8
Brown Trout	<200mm	55	66	82	55	1733	51	660	702	45.84	1062	121.8	29.6
Brown Trout	>=200mm	28	28	30	28	735	140	280	298	125.08	451	256.6	190.6
Brown Trout	All	89	98	109	89	2573	233	980	1042	207.96	1577	167.2	90.5

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, 2002-2012

Site 174

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Oct 03, 2005	54	51-60	
	Aug 26, 2008	61	47-84	
	Aug 08, 2011	95	59-154	
	Jul 31, 2012	28	28-30	
Brown Trout >=200mm	Oct 03, 2005	96	96-98	BR1
	Aug 26, 2008	71	71-73	BR1
	Aug 08, 2011	77	74-82	BR1

Brown Trout >=200mm	Jul 31, 2012	101	101-103	BR1
Rainbow Trout <200mm	Aug 08, 2011	1	1-5	
Rainbow Trout >=200mm	Aug 26, 2008	2	2-2	RB2

Site 205

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Oct 03, 2005	165	159-172	
	Aug 25, 2008	92	91-95	
	Sep 12, 2011	84	85-104	
	Jul 31, 2012	20	20-22	
Brown Trout >=200mm	Oct 03, 2005	37	37-38	BR2
	Aug 25, 2008	35	35-36	BR2
	Sep 12, 2011	73	72-76	BR1
	Jul 31, 2012	47	47-48	BR1
Rainbow Trout <200mm	Sep 12, 2011	1	1-1	
Rainbow Trout >=200mm	Oct 03, 2005	1	1-2	RB2
	Jul 31, 2012	1	1-1	RB2

Site 340

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 11, 2006	3	3-4	
	Sep 18, 2007	4	4-5	
	Sep 11, 2008	4	4-7	
	Jul 27, 2011	1	1-1	
Brook Trout >=200mm	Sep 11, 2006	1	1-5	BK3
	Jul 27, 2011	1	1-5	BK3
	Jul 30, 2012	1	1-5	BK3
Brown Trout <200mm	Oct 31, 2002	142	90-209	
	Sep 22, 2003	57	50-68	
	Oct 05, 2004	102	67-153	
	Sep 11, 2006	54	54-56	
	Sep 18, 2007	78	69-90	
	Sep 11, 2008	64	63-67	
	Jul 27, 2011	52	48-59	
	Jul 30, 2012	85	73-100	

Brown Trout >=200mm	Oct 31, 2002	107	104-112	BR1
	Sep 22, 2003	77	77-79	BR1
	Oct 05, 2004	34	34-35	BR2
	Sep 11, 2006	34	34-35	BR1
	Sep 18, 2007	35	35-36	BR1
	Sep 11, 2008	34	34-36	BR2
	Jul 27, 2011	33	31-38	BR2
	Jul 30, 2012	45	44-48	BR1
Rainbow Trout <200mm	Oct 31, 2002	18	13-35	
	Sep 22, 2003	220	215-226	
	Oct 05, 2004	265	237-293	
	Sep 11, 2006	114	113-117	
	Sep 18, 2007	89	86-94	
	Sep 11, 2008	38	30-55	
	Jul 27, 2011	49	34-79	
	Jul 30, 2012	75	74-78	

Rainbow Trout >=200mm	Oct 31, 2002	63	61-67	RB1
	Sep 22, 2003	45	45-46	RB1
	Oct 05, 2004	36	36-37	RB1
	Sep 11, 2006	8	8-10	RB1
	Sep 18, 2007	20	20-20	RB1
	Sep 11, 2008	63	19-310	RB1
	Jul 27, 2011	4	4-4	RB2
	Jul 30, 2012	22	21-26	RB1

Site 392

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Jul 27, 2011	71	72-82	
	Jul 30, 2012	135	102-171	
Brown Trout >=200mm	Jul 27, 2011	60	58-64	BR1
	Jul 30, 2012	85	78-95	BR1
Rainbow Trout <200mm	Jul 27, 2011	2	2-2	

Site 477

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout >=200mm	Aug 01, 2012	1	1-1	BK3
Brown Trout <200mm	Sep 03, 2008	249	240-258	
	Aug 04, 2011	319	272-366	
	Aug 01, 2012	214	207-222	
Brown Trout >=200mm	Sep 03, 2008	49	49-50	BR1
	Aug 04, 2011	23	23-24	BR2
	Aug 01, 2012	57	57-59	BR1

Site 509

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Aug 02, 2011	233	192-274	
	Aug 01, 2012	178	149-207	
Brown Trout >=200mm	Aug 02, 2011	74	67-84	BR1
	Aug 01, 2012	93	92-96	BR1

Site 570

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Aug 09, 2011	3	3-4	

Brook Trout <200mm	Aug 02, 2012	3	3-3	
Brown Trout <200mm	Aug 09, 2011	230	208-252	
	Aug 02, 2012	294	284-304	
Brown Trout >=200mm	Aug 09, 2011	35	35-36	BR1
	Aug 02, 2012	21	21-23	BR1

Site 621

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Aug 21, 2008	88	77-102	
	Aug 11, 2011	76	76-78	
	Aug 02, 2012	132	127-139	
Brook Trout >=200mm	Aug 21, 2008	1	1-5	BK3
	Aug 11, 2011	7	7-7	BK2
	Aug 02, 2012	16	16-18	BK1
Brown Trout <200mm	Aug 21, 2008	28	28-30	
	Aug 11, 2011	19	16-28	
	Aug 02, 2012	66	55-82	

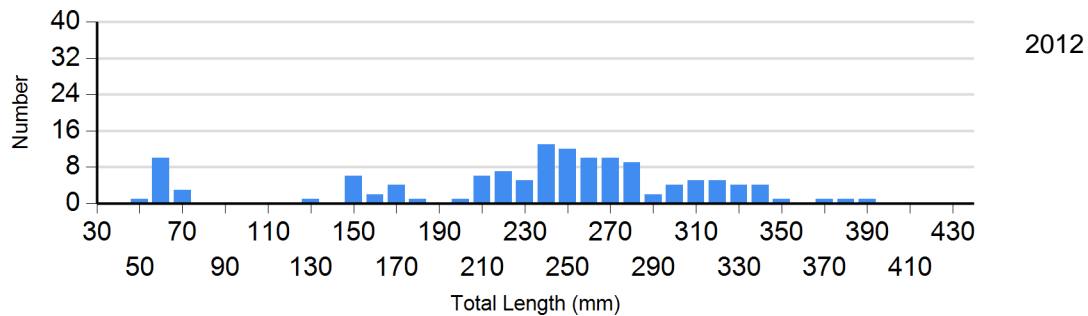
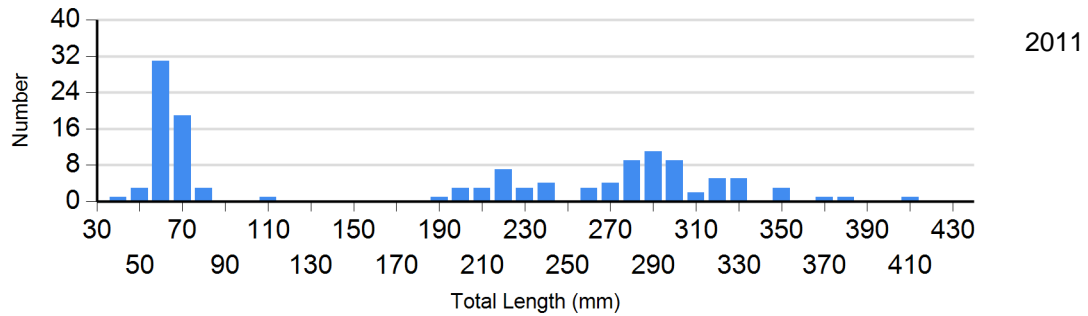
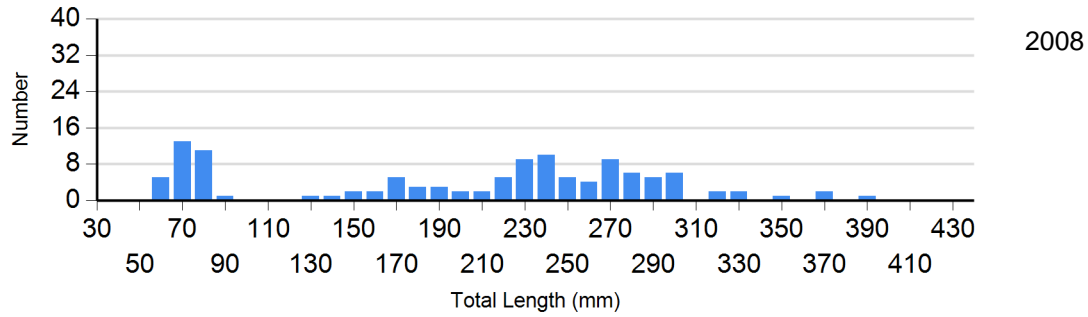
Brown Trout >=200mm	Aug 21, 2008	6	6-9	BR2
	Aug 11, 2011	14	14-16	BR1
	Aug 02, 2012	28	28-30	BR1

Length Frequency Distribution

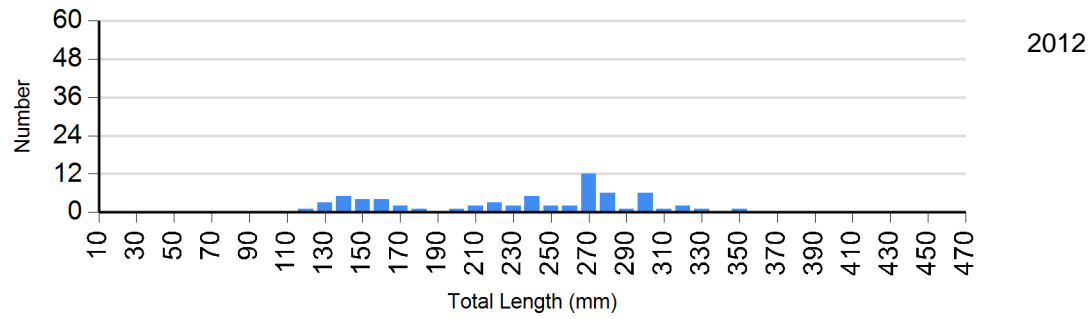
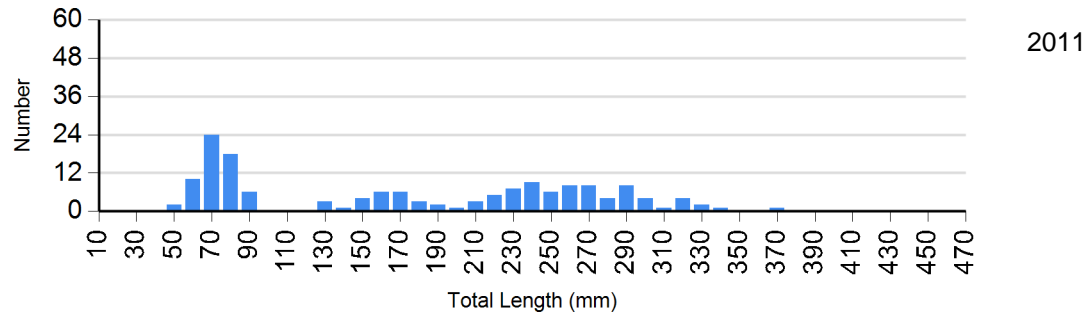
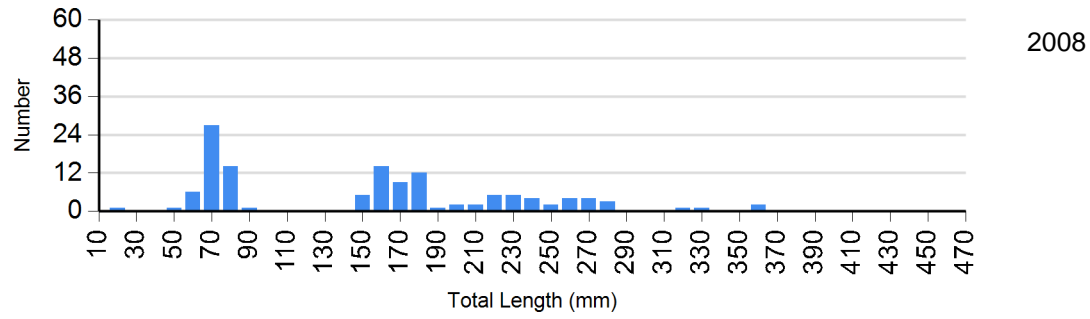
Length frequency histogram of species sampled by year.

Site: 174

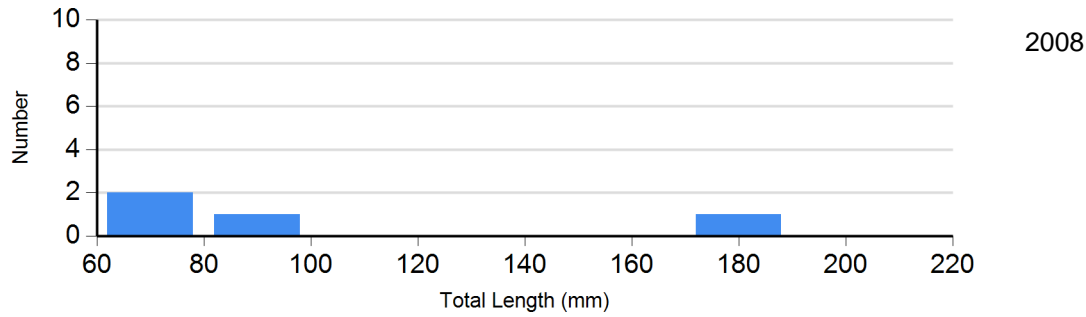
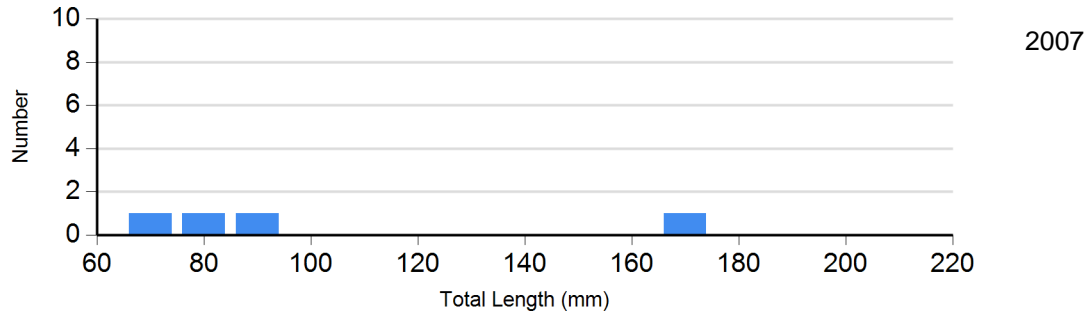
Species: Brown Trout



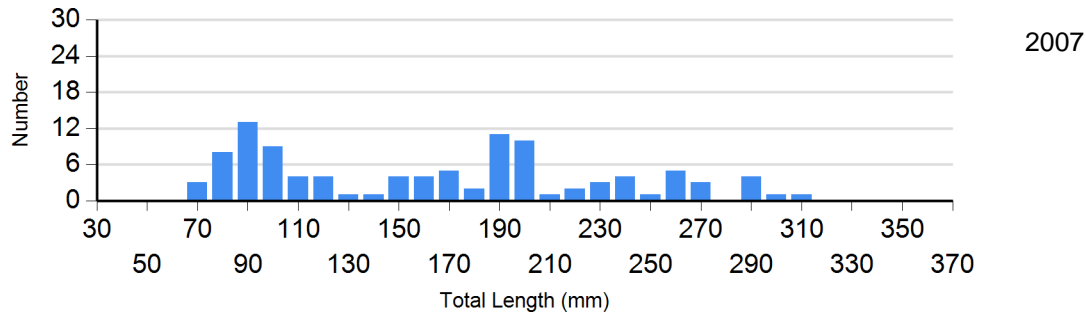
Site: 205
Species: Brown Trout

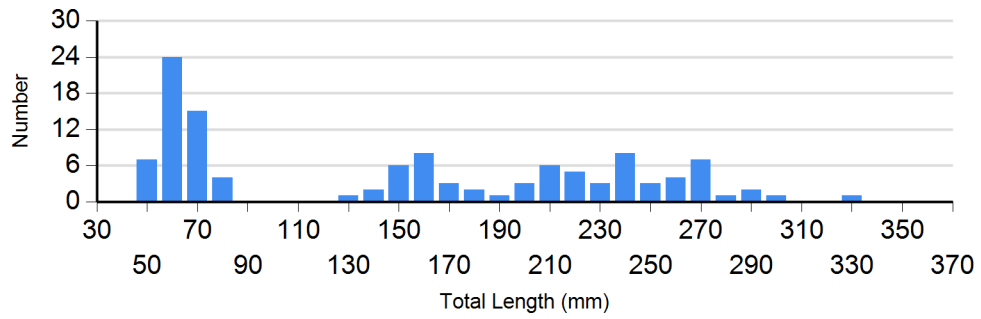
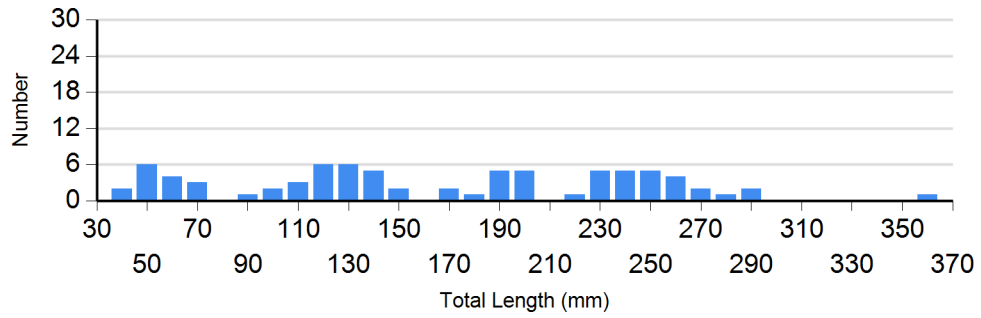
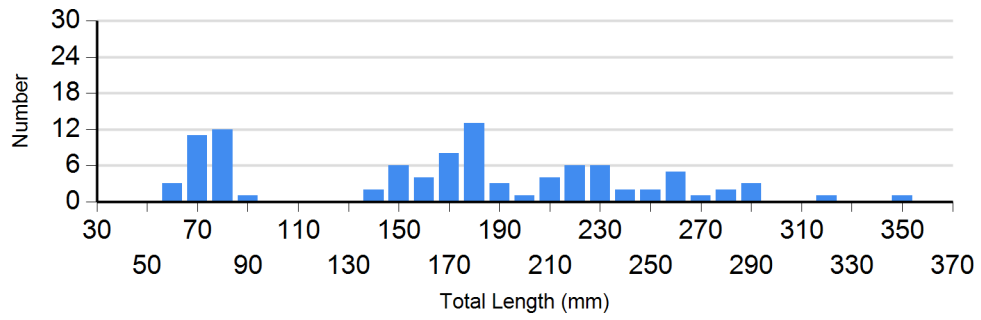


Site: 340
Species: Brook Trout

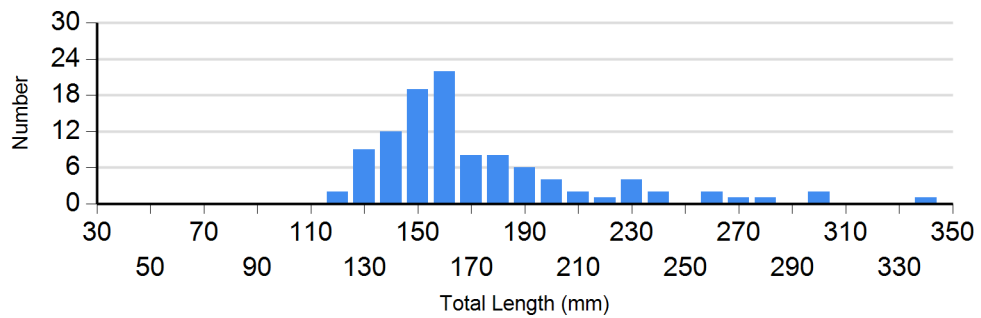


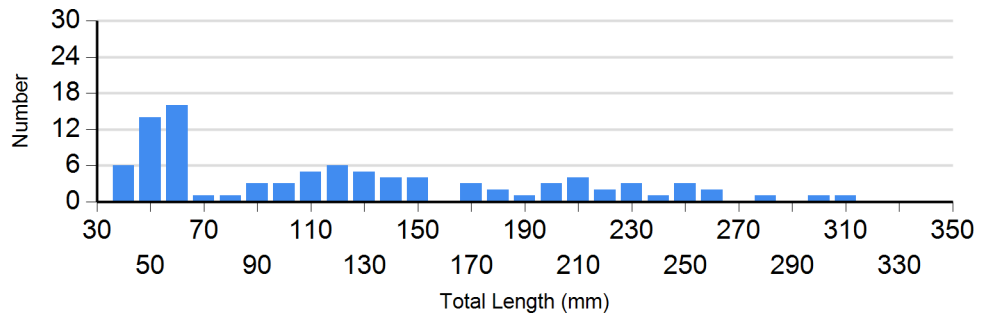
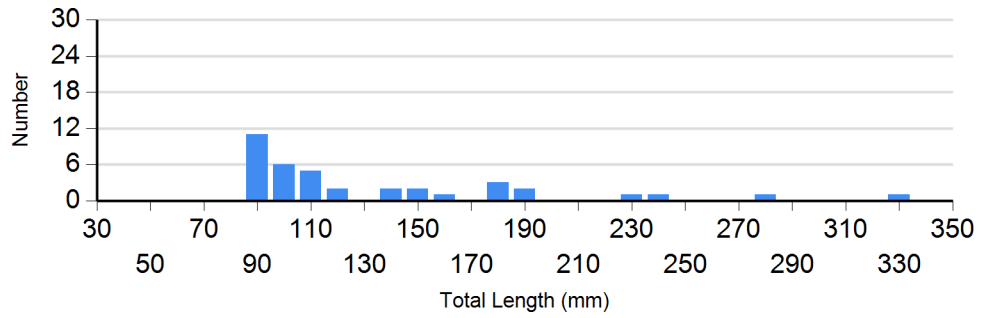
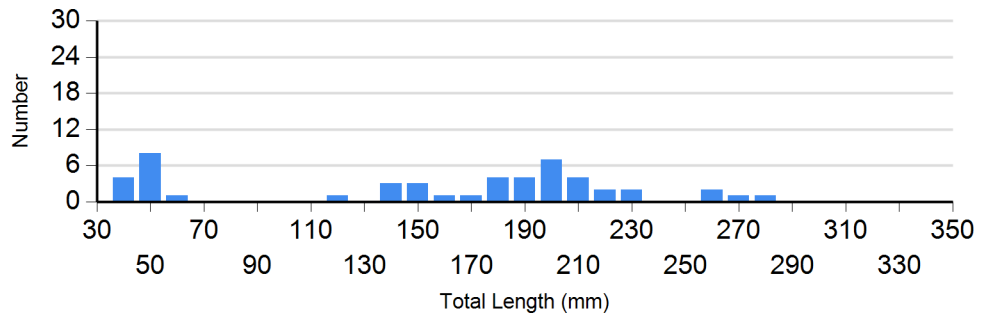
Site: 340
Species: Brown Trout



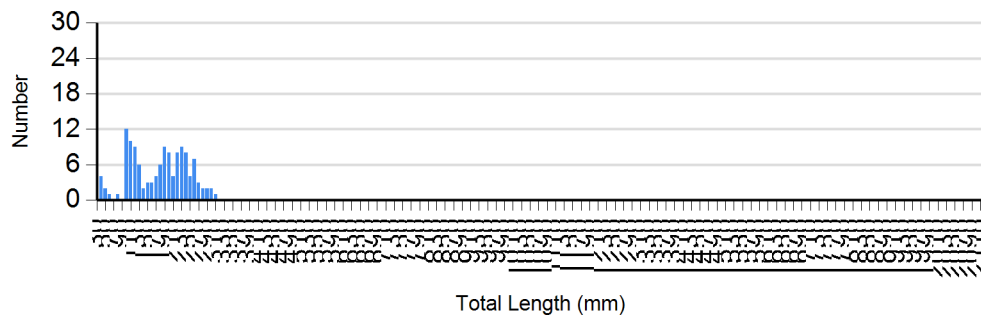


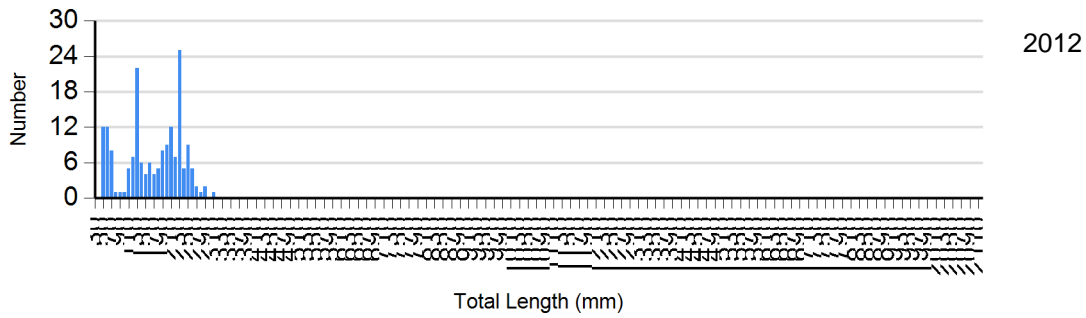
Site: 340
Species: Rainbow Trout



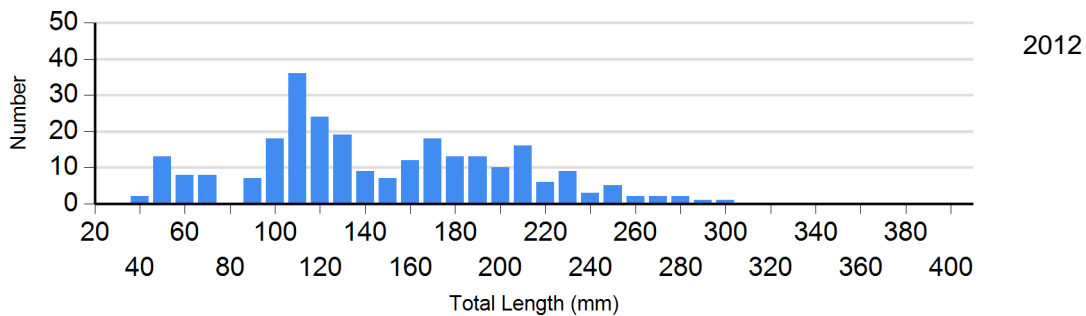
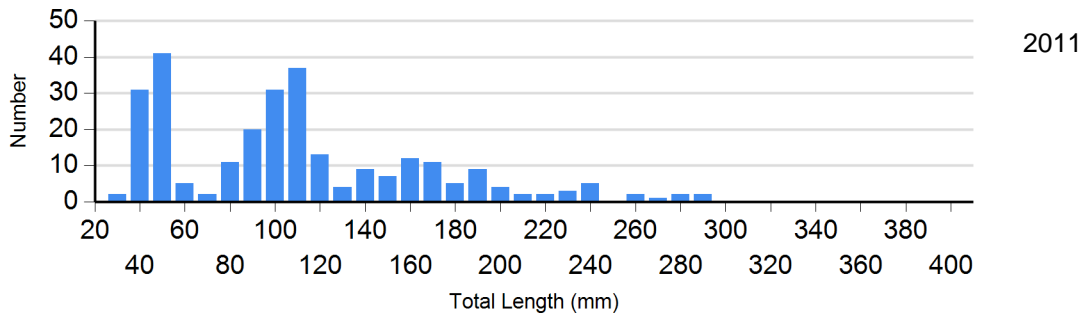
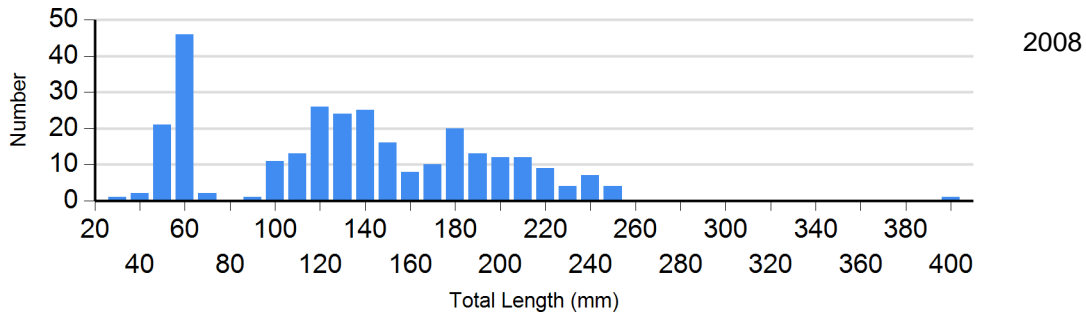


Site: 392
Species: Brown Trout

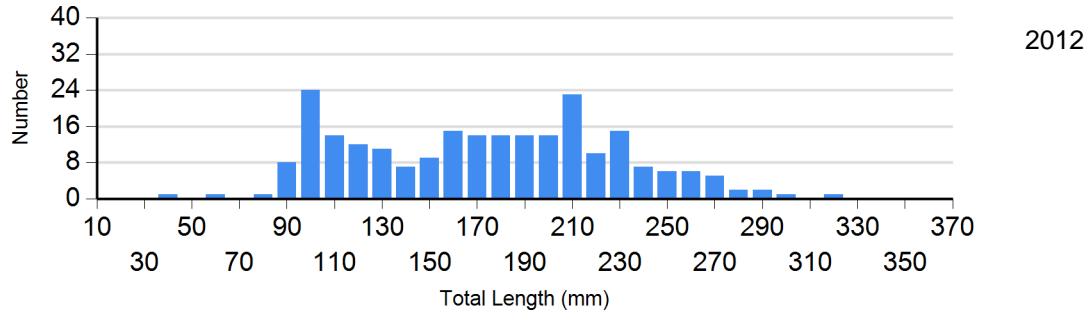
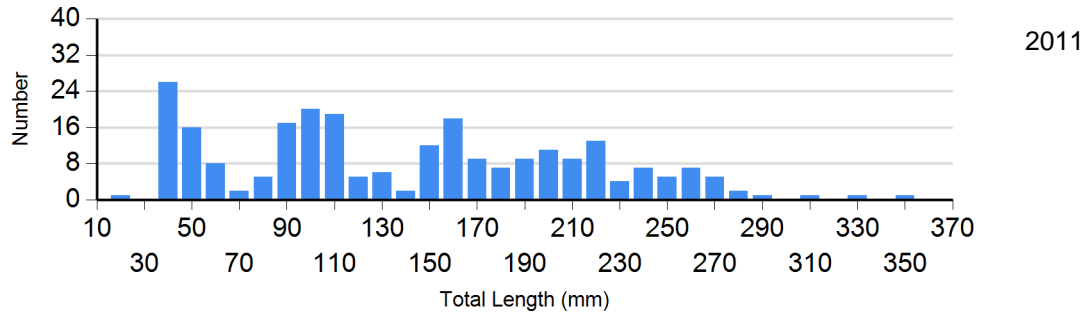




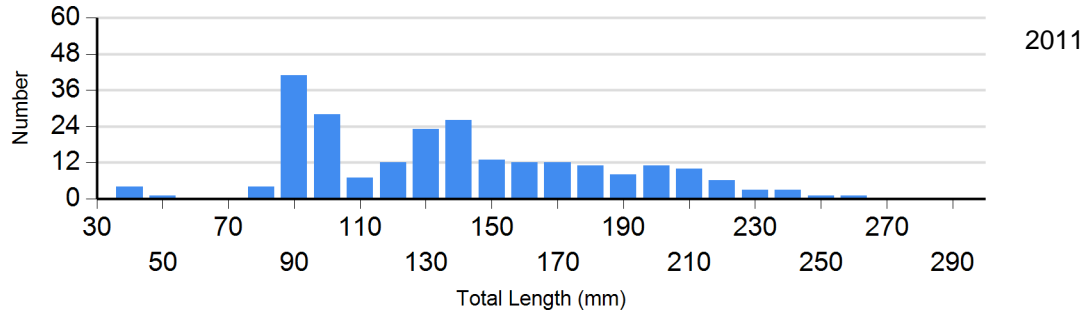
Site: 477
Species: Brown Trout

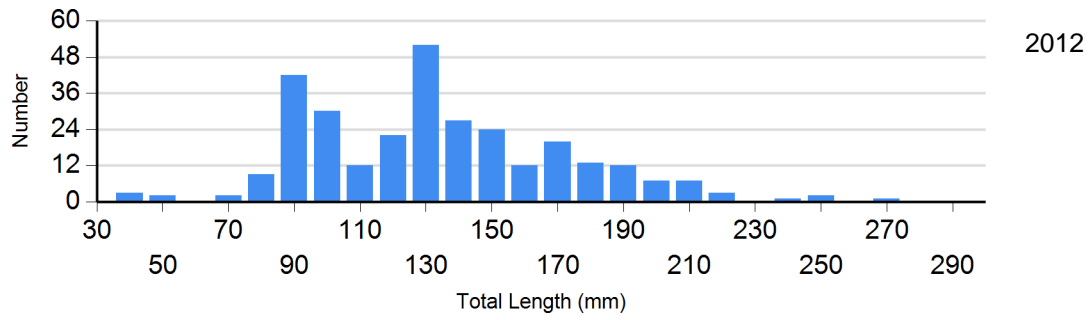


Site: 509
Species: Brown Trout

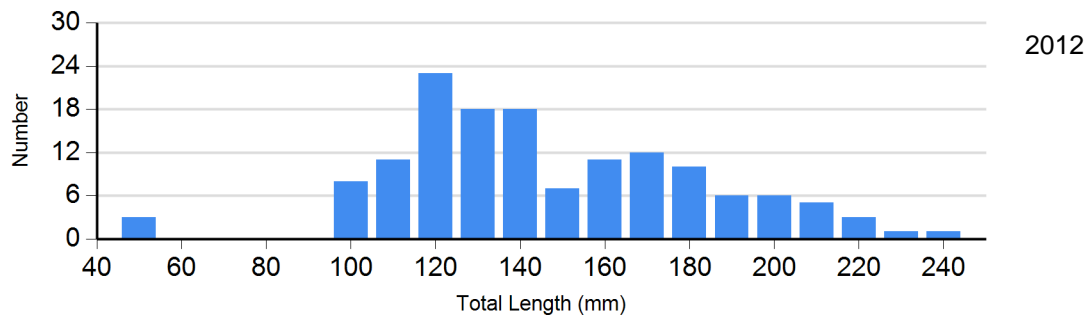
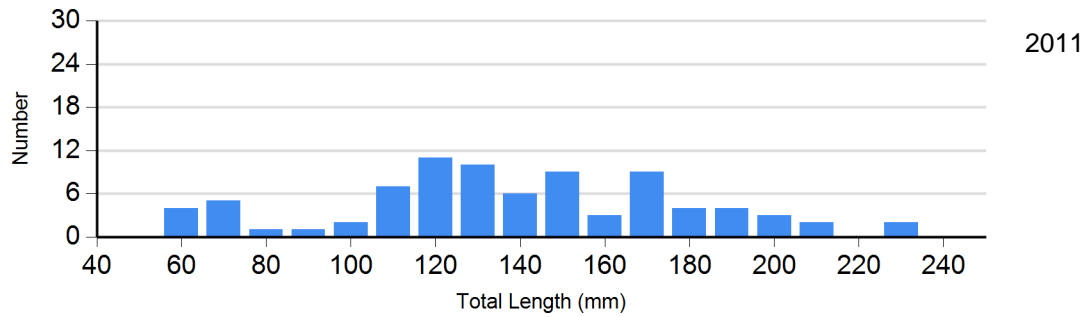
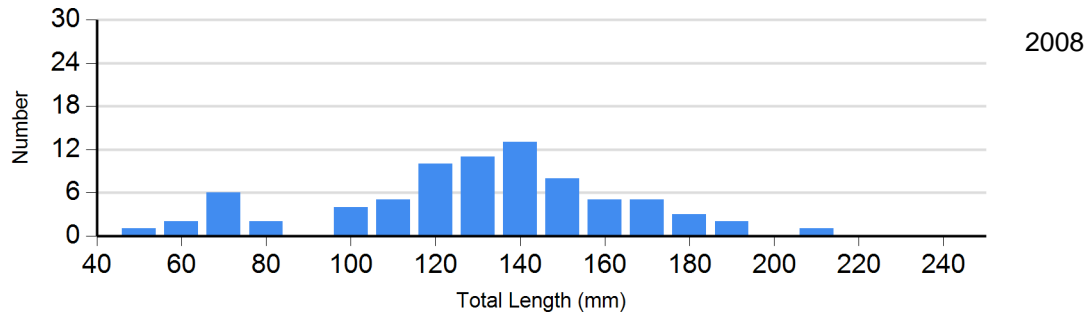


Site: 570
Species: Brown Trout





Site: 621
Species: Brook Trout



Site: 621
Species: Brown Trout

