

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Spearfish Creek, Lawrence County
09-0021-00
2013

Table 1. Population and Biomass Estimates for Spearfish Creek

Site Number: 174	Date Sampled: 07/22/2013	Conductivity (umhos/cm): 466
Site Midpoint (Latitude, Longitude): 44.50196266, -103.86743501	Site Length (m): 100	pH:
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 7.0	Water Temperature (C): 12.7
Stream Classification: BR1	Number of Pass: 3	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)
Brown Trout	<200mm	19	22	30	19	316	15	220	128	13.12	354	102.9	46.5
Brown Trout	>=200mm	60	62	66	60	890	202	620	361	180.35	998	282.4	226.9
Brown Trout	All	79	83	90	79	1192	245	830	483	218.85	1335	239.3	205.6
Creek Chub	All	1	1	2	1	14	0	10	6	0.19	16	116.0	15.0

Site Number: 205	Date Sampled: 07/22/2013	Conductivity (umhos/cm): 430
Site Midpoint (Latitude, Longitude): 44.47880965, -103.85669154	Site Length (m): 100	pH:
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 7.1	Water Temperature (C): 12.8
Stream Classification: BR1, RB2	Number of Pass: 3	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)
Brown Trout	<200mm	114	117	122	114	1656	69	1170	671	61.64	1883	83.6	41.7
Brown Trout	>=200mm	38	38	40	38	538	107	380	218	95.33	611	269.1	198.5
Brown Trout	All	152	155	160	152	2194	299	1550	889	266.96	2494	130.0	136.3
Rainbow Trout	>=200mm	1	1	2	1	14	3	10	6	2.78	16	275.0	220.0
Rainbow Trout	All	1	1	2	1	14	3	10	6	2.78	16	275.0	220.0

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: 07/24/2013 **Conductivity (umhos/cm):** 387
Site Length (m): 100
Mean Width (m): 9.5 **pH:**
Number of Pass: 3 **Water Temperature (C):** 15.7
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)
Brown Trout	<200mm	34	39	49	34	410	14	390	166	12.22	628	131.0	33.4
Brown Trout	>=200mm	42	44	49	42	463	68	440	187	61.00	708	241.7	147.6
Brown Trout	All	76	84	95	76	883	88	840	358	78.90	1352	192.2	100.0
Rainbow Trout	<200mm	41	44	50	41	463	11	440	187	10.23	708	117.9	24.8
Rainbow Trout	>=200mm	14	14	16	14	147	24	140	60	21.68	225	247.2	164.9
Rainbow Trout	All	55	59	66	55	620	40	590	251	35.91	949	150.8	64.8

Site Number: 392
Site Midpoint (Latitude, Longitude): 44.37690503, -103.91378843
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR1

Date Sampled: 07/25/2013 **Conductivity (umhos/cm):** 419
Site Length (m): 100
Mean Width (m): 9.1 **pH:** 8.3
Number of Pass: 3 **Water Temperature (C):** 12.9
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)
Brown Trout	<200mm	105	146	191	105	1603	53	1460	649	47.16	2349	128.0	33.0
Brown Trout	>=200mm	50	54	61	50	593	84	540	240	75.03	869	238.3	141.8
Brown Trout	All	155	196	231	161	2152	157	1960	871	140.16	3154	163.6	73.0

Site Number: 477
Site Midpoint (Latitude, Longitude): 44.33239689, -103.90206721
Survey Completed by: South Dakota Game, Fish and Parks

Date Sampled: 07/25/2013 **Conductivity (umhos/cm):** 404
Site Length (m): 100
Mean Width (m): 6.9 **pH:**

Stream Classification: BR1

Number of Pass: 3

Water Temperature (C): 14.3

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)
Brown Trout	<200mm	139	148	158	139	2134	69	1480	864	62.03	2381	112.3	32.6
Brown Trout	>=200mm	53	54	57	53	779	108	540	315	96.62	869	238.5	139.0
Brown Trout	All	192	202	212	192	2912	225	2020	1179	201.20	3250	147.1	77.4

Site Number: 509

Date Sampled: 07/24/2013

Conductivity (umhos/cm):

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

Site Length (m): 100

pH:

Survey Completed by: South Dakota Game, Fish and Parks

Mean Width (m): 6.4

Water Temperature (C):

Stream Classification: BR1

Number of Pass: 3

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)
Brown Trout	<200mm	237	262	280	244	4111	137	2620	1665	122.49	4216	116.7	33.4
Brown Trout	>=200mm	116	122	130	116	1914	268	1220	775	238.94	1963	233.9	139.8
Brown Trout	All	353	385	405	365	6041	503	3850	2447	448.84	6195	155.2	83.2

Site Number: 570

Date Sampled: 07/23/2013

Conductivity (umhos/cm): 475

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

Site Length (m): 100

pH:

Survey Completed by: South Dakota Game, Fish and Parks

Mean Width (m): 5.4

Water Temperature (C): 9.2

Stream Classification: BK0, BR1

Number of Pass: 3

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	2	2	2	2	37	0	20	15	0.43	32	107.0	13.0
Brook Trout	All	2	2	2	2	37	0	20	15	0.43	32	107.0	13.0

Brown Trout	<200mm	238	244	251	238	4557	185	2440	1846	165.03	3926	138.9	40.6
Brown Trout	>=200mm	35	35	37	35	654	70	350	265	62.47	563	216.4	107.0
Brown Trout	All	273	280	287	273	5229	272	2800	2118	242.67	4505	148.8	52.0

Site Number: 621

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

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK2, BR1

Date Sampled: 07/23/2013

Site Length (m): 100

Mean Width (m): 3.3

Number of Pass: 3

Conductivity (umhos/cm): 443

pH: 8.0

Water Temperature (C): 11.2

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	72	114	175	72	3436	126	1140	1391	112.94	1834	142.0	36.8
Brook Trout	>=200mm	12	12	14	12	362	38	120	146	34.23	193	216.2	106.0
Brook Trout	All	84	121	167	84	3647	171	1210	1477	152.44	1947	152.6	46.8
Brown Trout	<200mm	85	400	1566	85	12055	442	4000	4882	394.23	6436	140.2	36.6
Brown Trout	>=200mm	31	38	52	31	1145	211	380	464	188.28	611	253.5	184.1
Brown Trout	All	116	283	561	116	8529	654	2830	3454	584.36	4553	170.4	76.7

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, 2003-2013

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	
	Jul 22, 2013	22	19-30	
Brown Trout >=200mm	Oct 03, 2005	96	96-98	BR1
	Aug 26, 2008	71	71-73	BR1

Brown Trout >=200mm	Aug 08, 2011	77	74-82	BR1
	Jul 31, 2012	101	101-103	BR1
	Jul 22, 2013	62	60-66	BR1
Creek Chub	Jul 22, 2013	1	1-2	
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	
	Jul 22, 2013	117	114-122	
Brown Trout >=200mm	Oct 03, 2005	37	37-38	BR2
	Aug 25, 2008	35	35-36	BR2
	Sep 12, 2011	73	72-76	BR1

Brown Trout >=200mm	Jul 31, 2012	47	47-48	BR1
	Jul 22, 2013	38	38-40	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
	Jul 22, 2013	1	1-2	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	Sep 22, 2003	57	50-68	

Brown Trout <200mm	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	
	Jul 24, 2013	39	34-49	
Brown Trout >=200mm	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
	Jul 24, 2013	44	42-49	BR1
Rainbow Trout <200mm	Sep 22, 2003	220	215-226	

Rainbow Trout <200mm	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	
	Jul 24, 2013	44	41-50	
Rainbow Trout >=200mm	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
	Jul 24, 2013	14	14-16	RB1

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	
	Jul 25, 2013	146	105-191	
Brown Trout >=200mm	Jul 27, 2011	60	58-64	BR1
	Jul 30, 2012	85	78-95	BR1
	Jul 25, 2013	54	50-61	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	
	Jul 25, 2013	148	139-158	
Brown Trout >=200mm	Sep 03, 2008	49	49-50	BR1

Brown Trout >=200mm	Aug 04, 2011	23	23-24	BR2
	Aug 01, 2012	57	57-59	BR1
	Jul 25, 2013	54	53-57	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	
	Jul 24, 2013	262	244-280	
Brown Trout >=200mm	Aug 02, 2011	74	67-84	BR1
	Aug 01, 2012	93	92-96	BR1
	Jul 24, 2013	122	116-130	BR1

Site 570

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Aug 09, 2011	3	3-4	
	Aug 02, 2012	3	3-3	
	Jul 23, 2013	2	2-2	
Brown Trout <200mm	Aug 09, 2011	230	208-252	

Brown Trout <200mm	Aug 02, 2012	294	284-304	
	Jul 23, 2013	244	238-251	
Brown Trout >=200mm	Aug 09, 2011	35	35-36	BR1
	Aug 02, 2012	21	21-23	BR1
	Jul 23, 2013	35	35-37	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	
	Jul 23, 2013	114	72-175	
Brook Trout >=200mm	Aug 21, 2008	1	1-5	BK3
	Aug 11, 2011	7	7-7	BK2
	Aug 02, 2012	16	16-18	BK1
	Jul 23, 2013	12	12-14	BK2
Brown Trout <200mm	Aug 21, 2008	28	28-30	

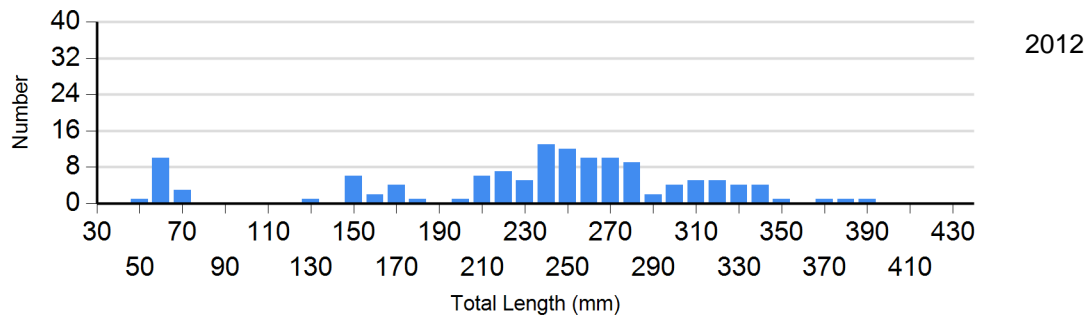
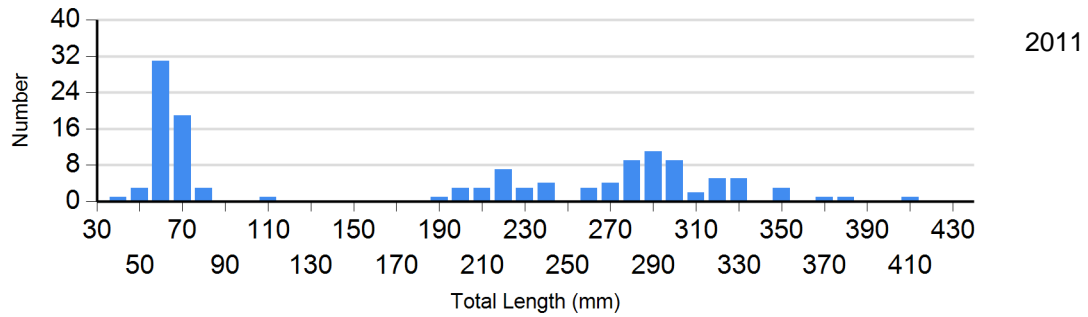
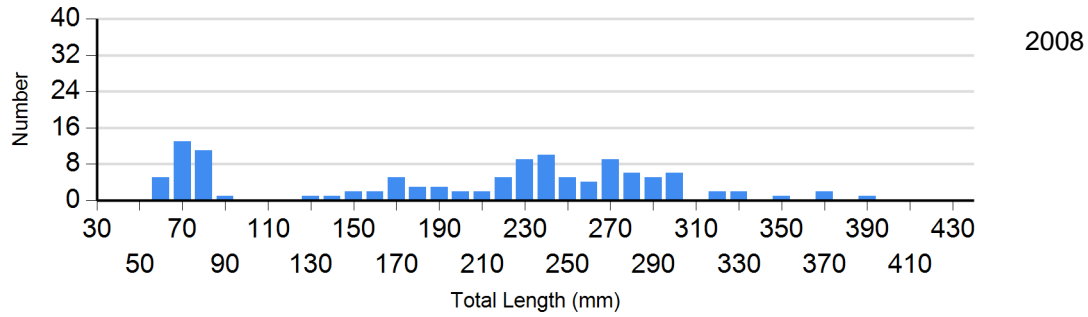
Brown Trout <200mm	Aug 11, 2011	19	16-28	
	Aug 02, 2012	66	55-82	
	Jul 23, 2013	400	85-1566	
Brown Trout >=200mm	Aug 21, 2008	6	6-9	BR2
	Aug 11, 2011	14	14-16	BR1
	Aug 02, 2012	28	28-30	BR1
	Jul 23, 2013	38	31-52	BR1

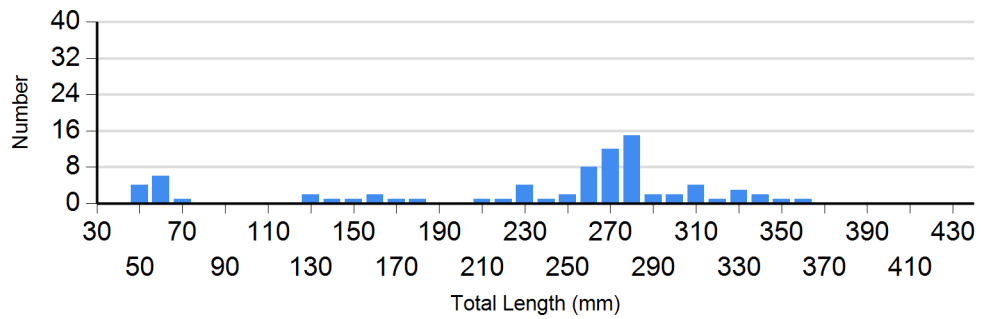
Length Frequency Distribution

Length frequency histogram of species sampled by year.

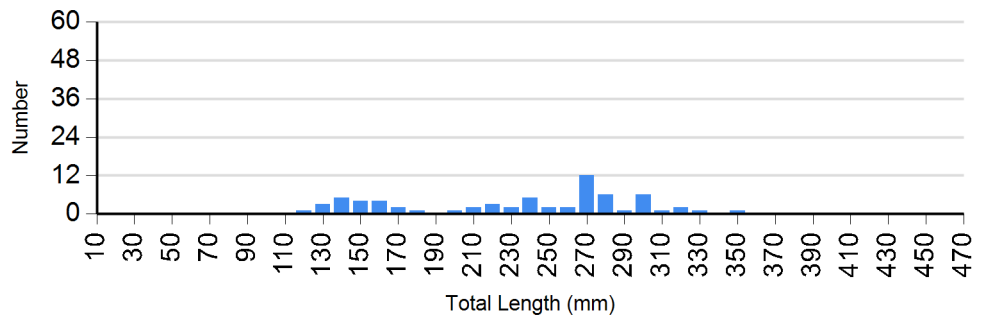
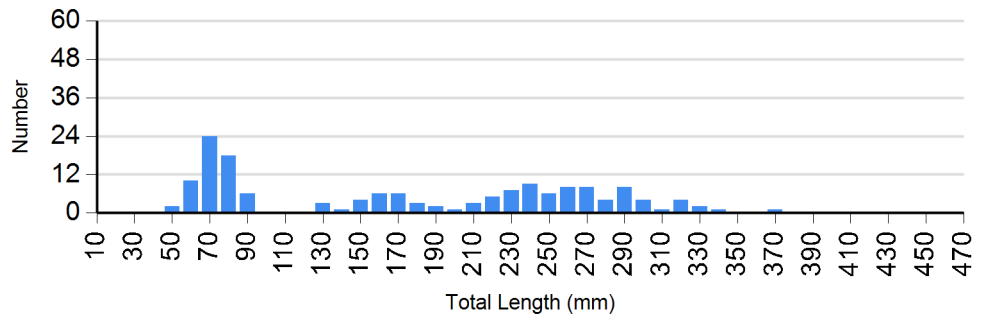
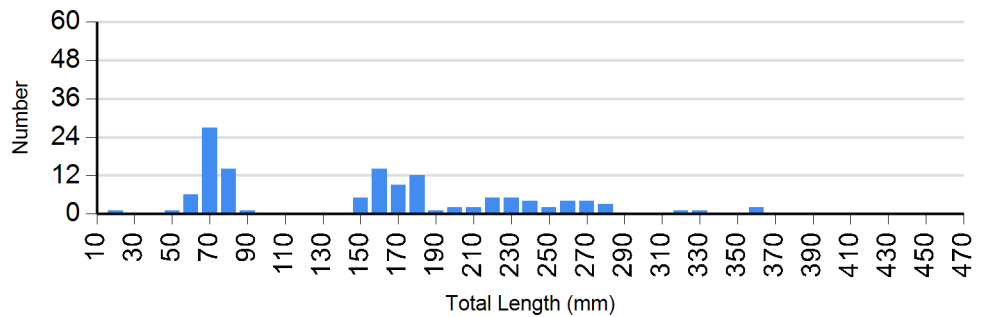
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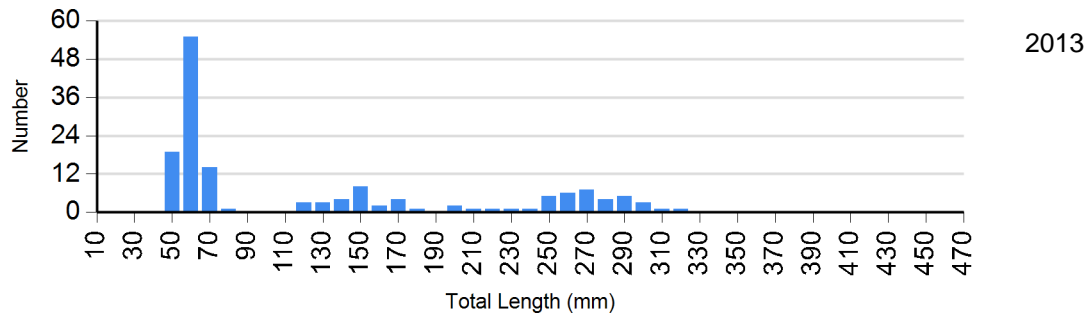
Species: Brown Trout



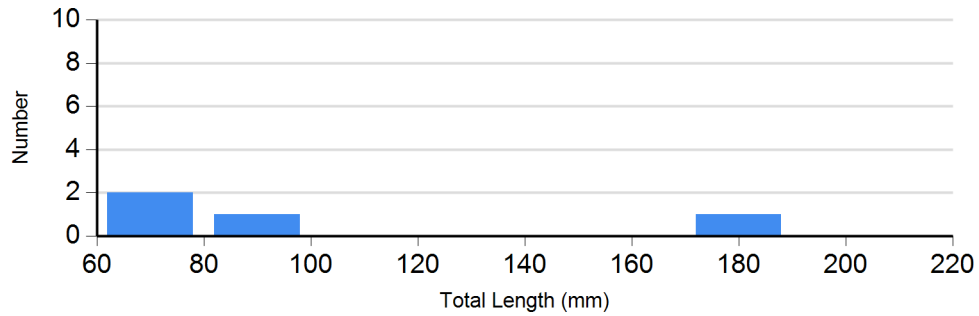


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Species: Brown Trout

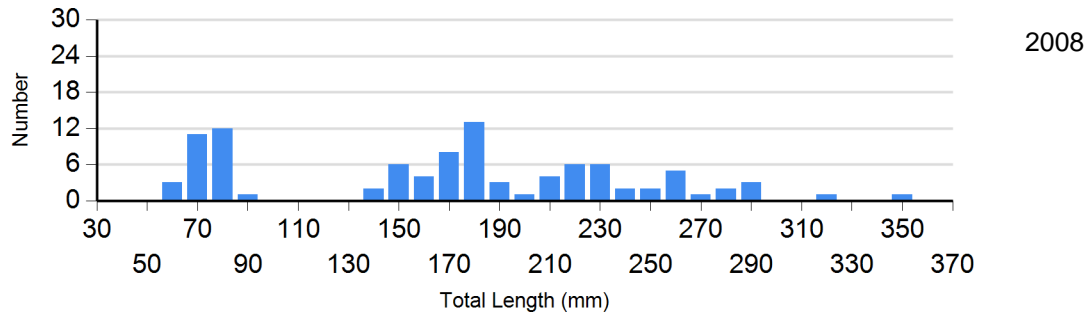


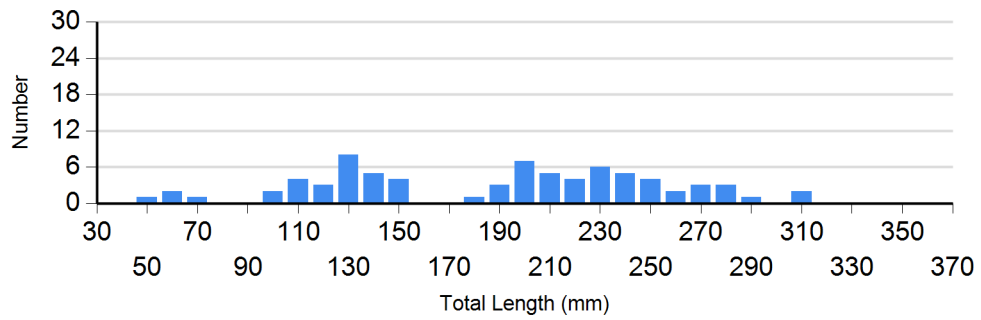
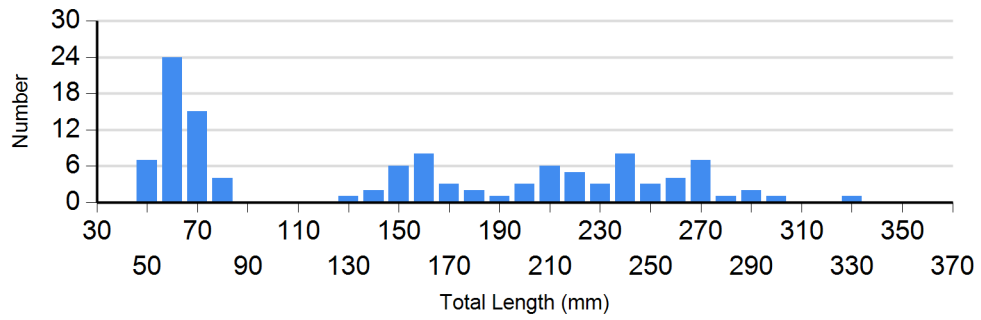
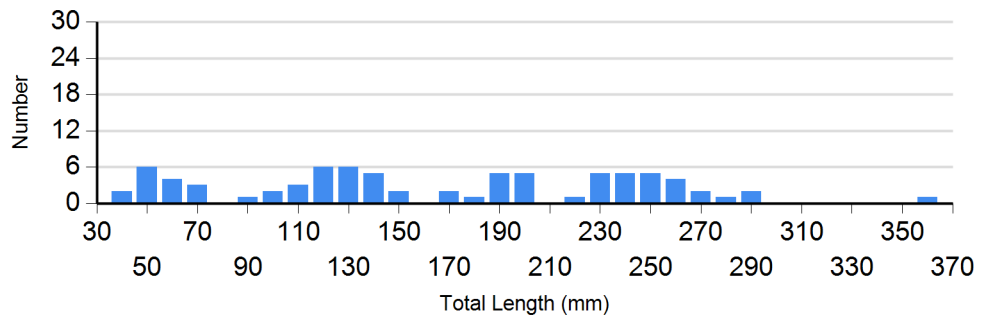


Site: 340
Species: Brook Trout

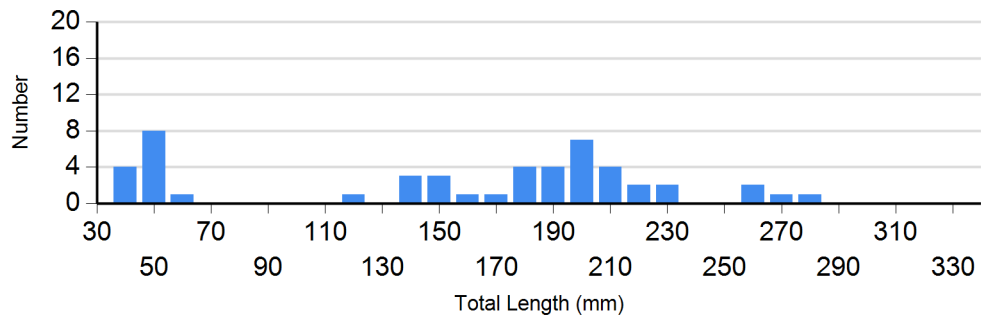


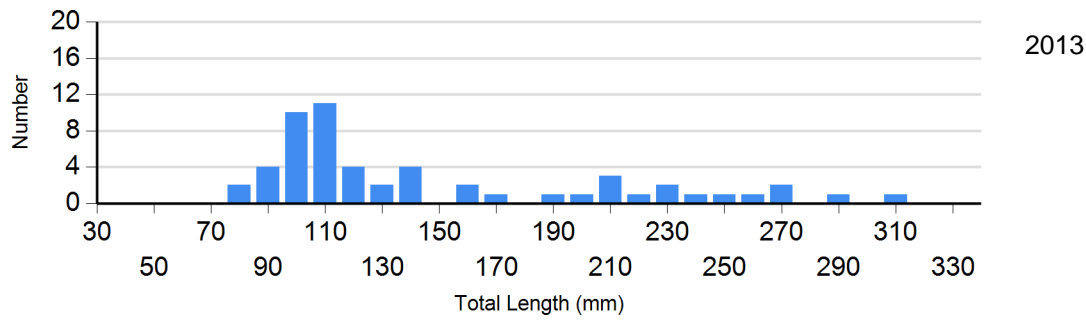
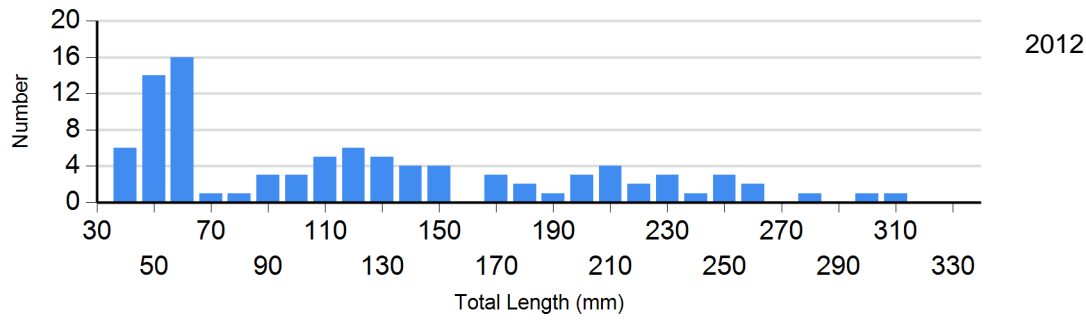
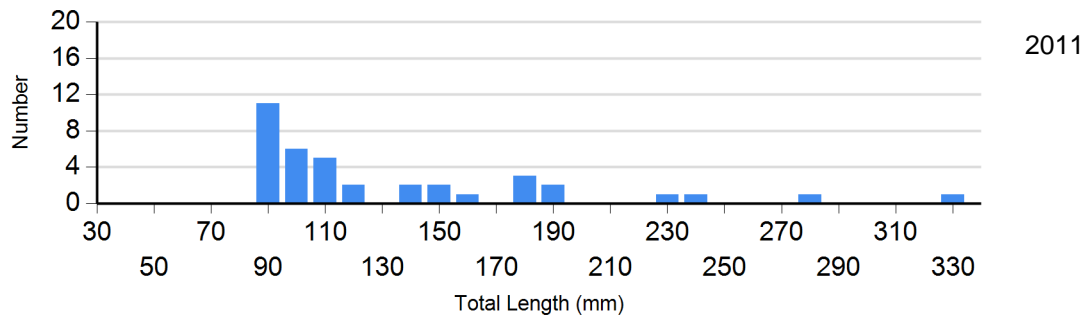
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Species: Brown Trout



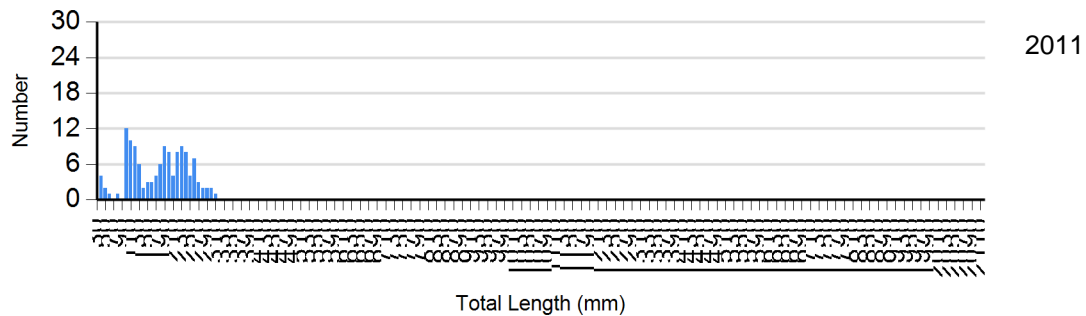


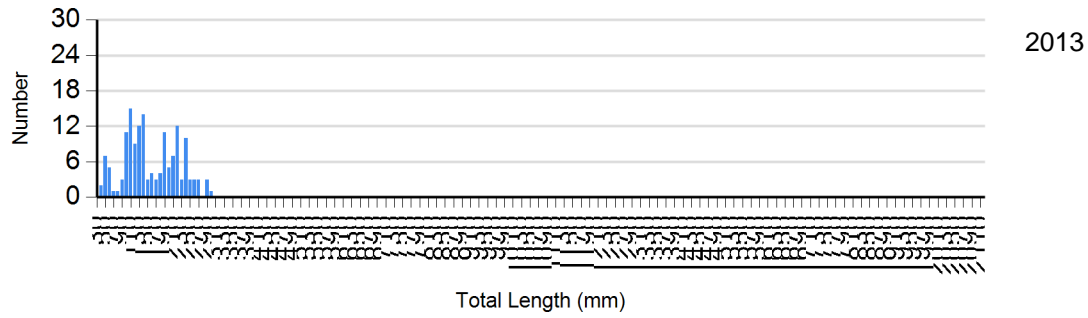
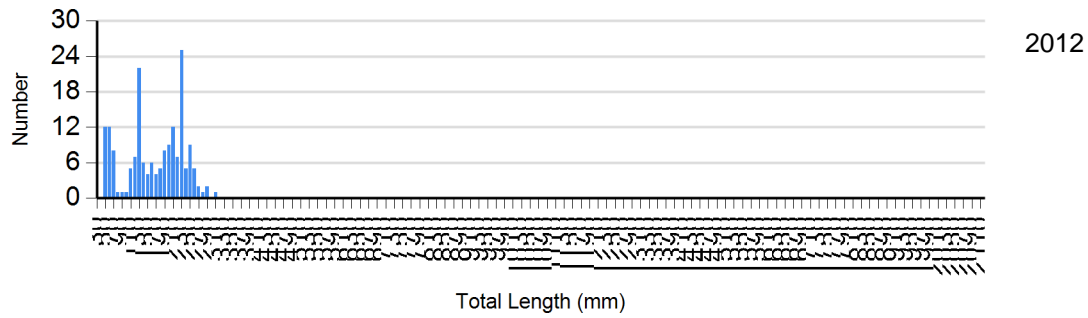
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Species: Rainbow Trout



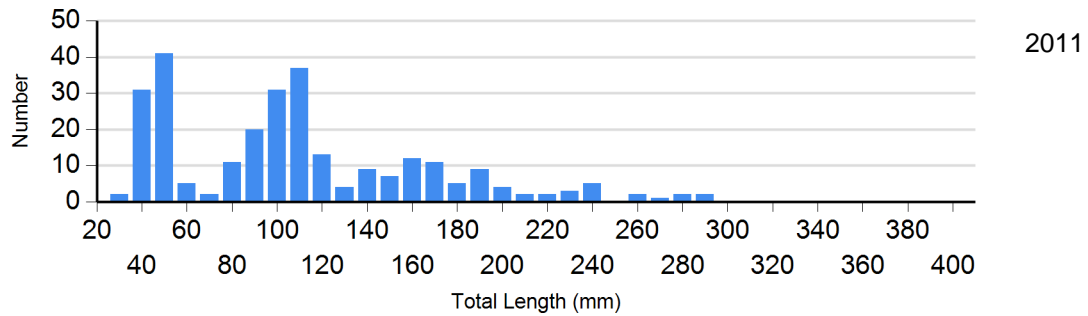
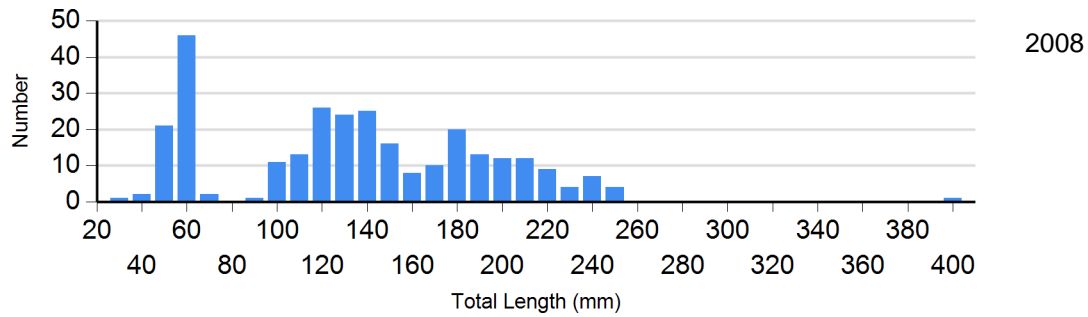


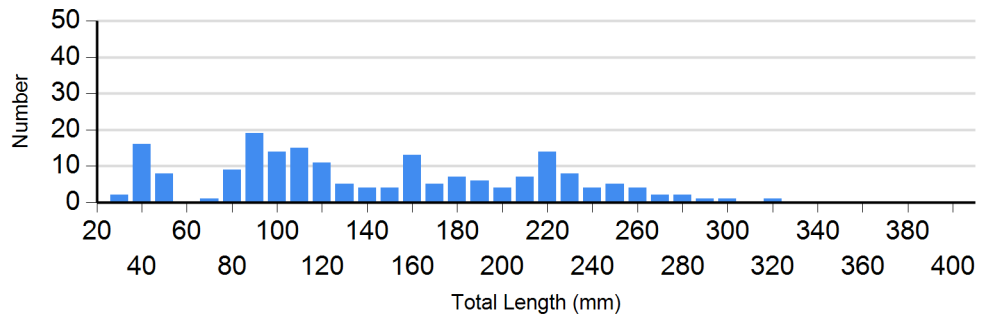
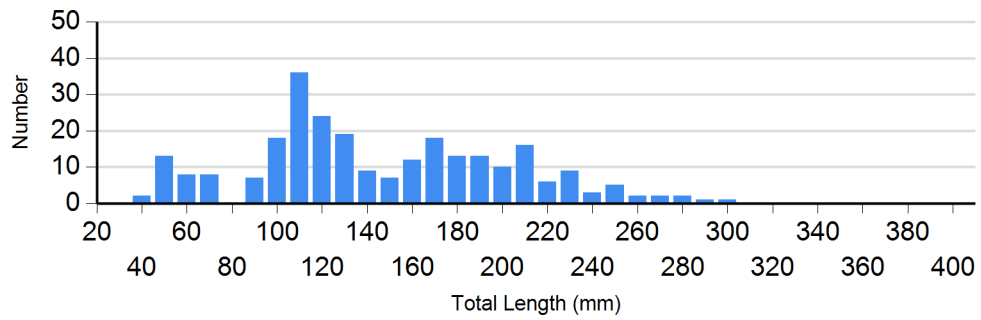
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Species: Brown Trout



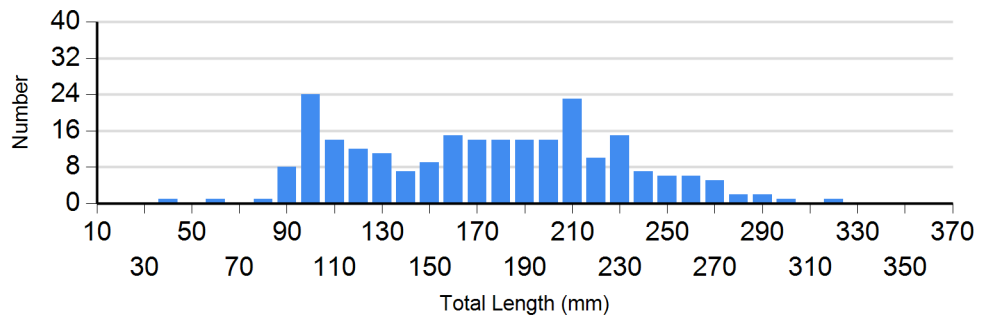
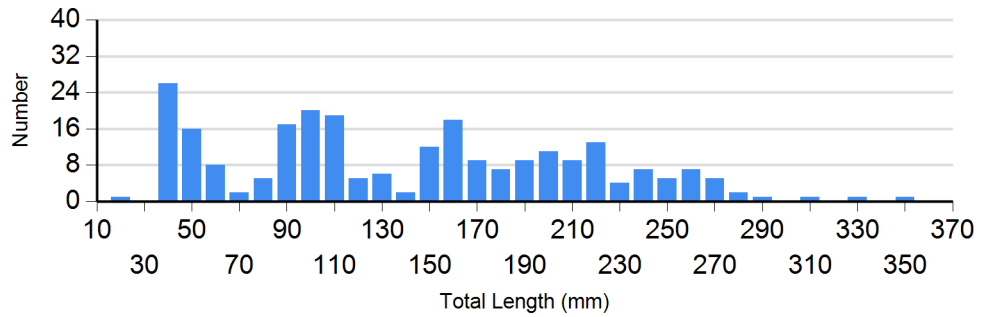


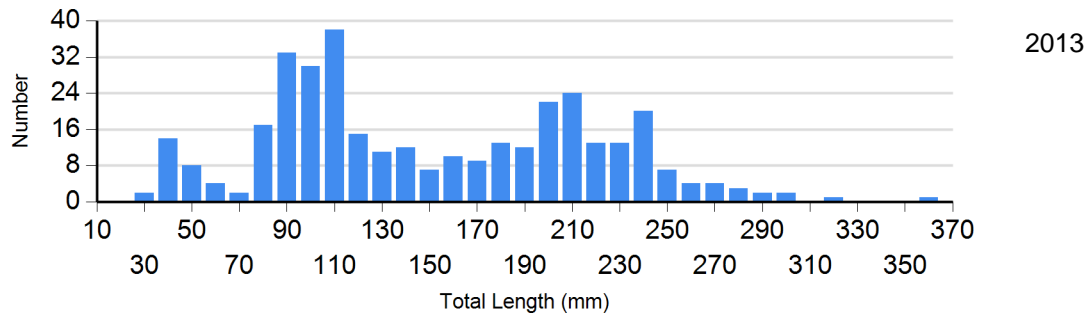
Site: 477
Species: Brown Trout



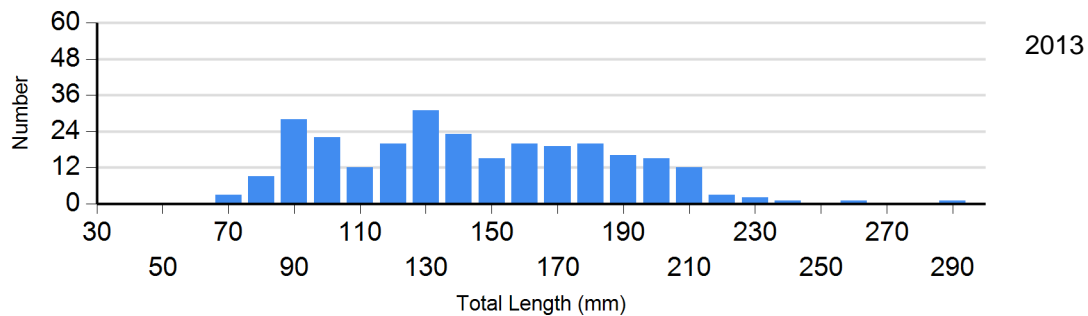
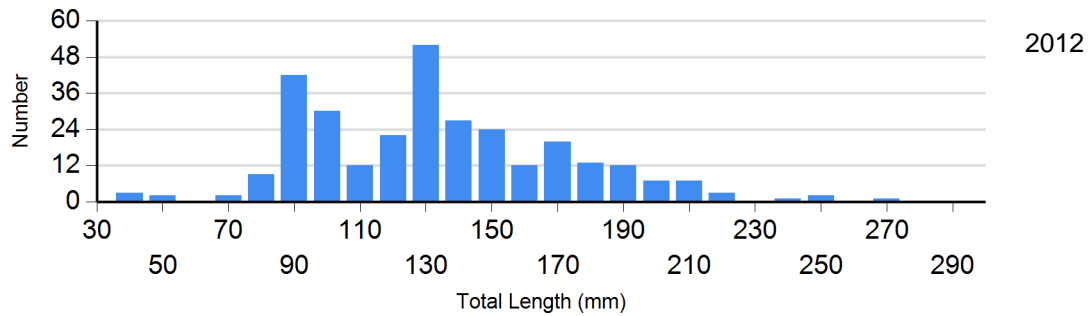
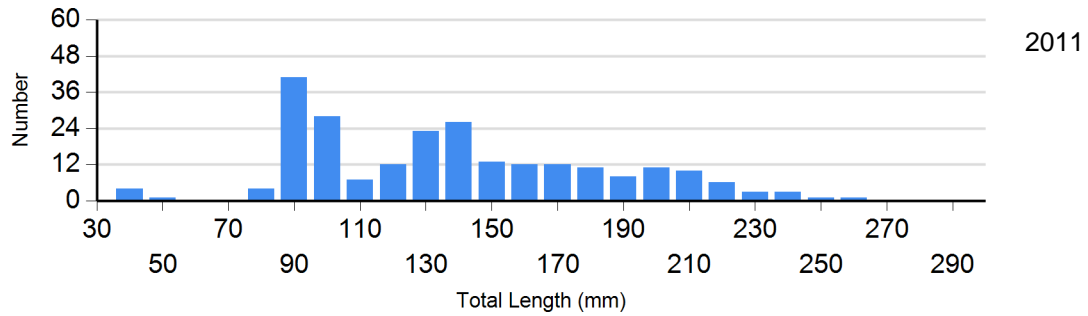


Site: 509
Species: Brown Trout

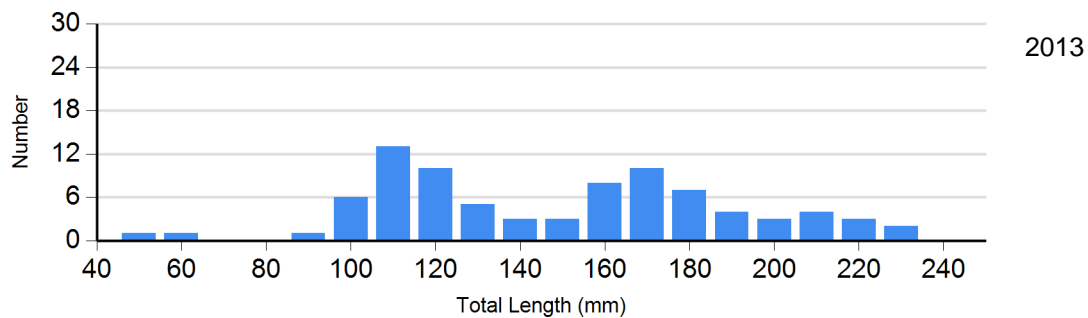
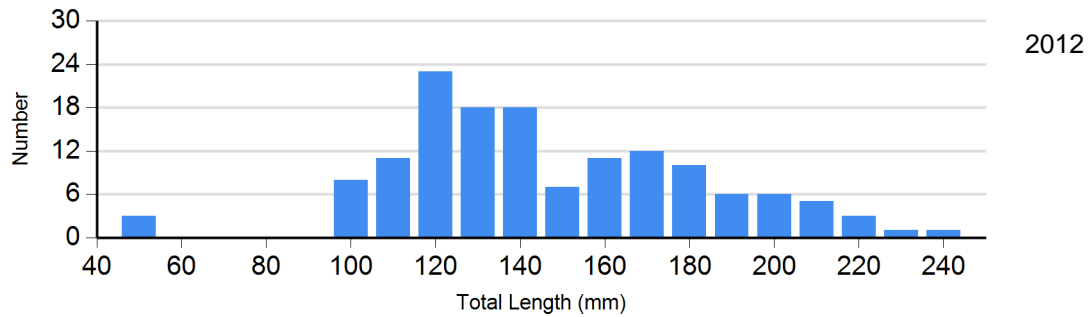
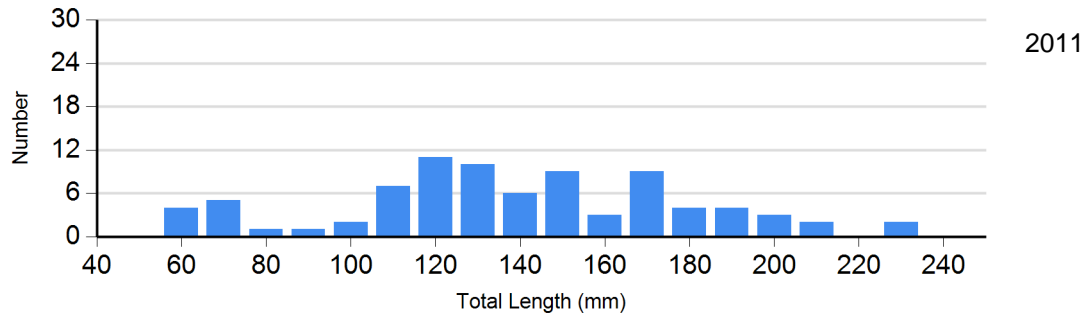
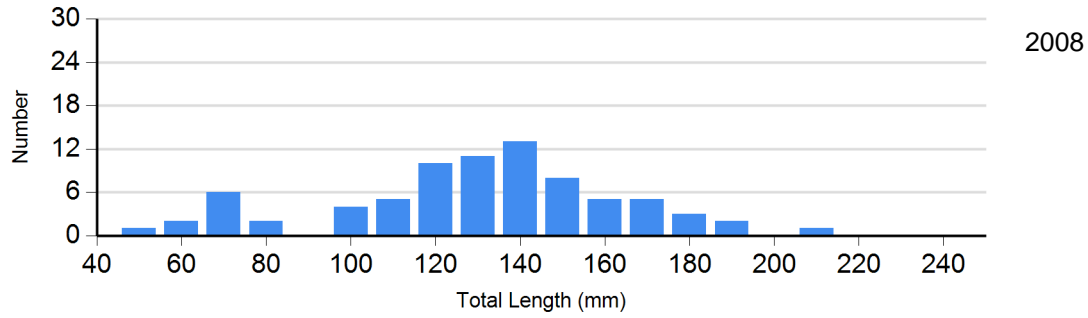




Site: 570
Species: Brown Trout



Site: 621
Species: Brook Trout



Site: 621
Species: Brown Trout

