

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Castle Creek, Pennington County
02-0071-00
2012

Table 1. Population and Biomass Estimates for Castle Creek

Site Number: 239	Date Sampled: 06/25/2012	Conductivity (umhos/cm): 428
Site Midpoint (Latitude, Longitude): 44.07777124, -103.73016114	Site Length (m): 100	pH:
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 5.0	Water Temperature (C): 20.1
Stream Classification: BR2, RB2	Number of Pass: 3	Voltage: 325

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	36	44	59	36	886	34	440	359	30.38	708	149.3	38.4
Brown Trout	>=200mm	4	4	5	4	81	7	40	33	6.08	64	213.0	84.5
Brown Trout	All	41	49	63	41	987	42	490	400	37.90	788	155.7	43.0
Rainbow Trout	>=200mm	2	2	3	2	40	6	20	16	5.02	32	266.5	139.5
Rainbow Trout	All	2	2	3	2	40	6	20	16	5.02	32	266.5	139.5

Site Number: 361	Date Sampled: 06/12/2012	Conductivity (umhos/cm): 397
Site Midpoint (Latitude, Longitude): 44.05523022, -103.76363258	Site Length (m): 100	pH: 8.6
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 4.8	Water Temperature (C): 13.0
Stream Classification: BK2, 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)
Brook Trout	<200mm	41	62	102	41	1280	46	620	518	40.77	998	146.2	35.7
Brook Trout	>=200mm	3	3	5	3	62	6	30	25	5.66	48	211.7	102.3
Brook Trout	All	44	70	119	44	1445	58	700	585	51.89	1126	150.7	40.2
Brown Trout	<200mm	31	43	68	31	887	28	430	359	25.17	692	121.6	31.8

Brown Trout	>=200mm	21	21	23	21	433	65	210	176	57.66	338	241.0	149.0
Brown Trout	All	52	60	72	52	1238	106	600	502	94.29	965	169.8	85.3

Site Number: 373
Site Midpoint (Latitude, Longitude): 44.05014956, -103.77144194
Survey Completed by:
Stream Classification: BK1, BR1

Date Sampled: 08/15/2012 **Conductivity (umhos/cm):** 399
Site Length (m): 100
Mean Width (m): 5.7 **pH:** 8.5
Number of Pass: 3 **Water Temperature (C):**
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	79	79	80	79	1384	62	790	560	55.42	1271	161.1	44.9
Brook Trout	>=200mm	24	24	25	24	420	41	240	170	36.31	386	213.6	96.8
Brook Trout	All	608	631	645	617	11051	629	6310	4476	561.94	10153	173.3	57.0
Brown Trout	<200mm	27	27	28	27	473	23	270	192	20.33	434	158.9	48.2
Brown Trout	>=200mm	23	23	24	23	403	77	230	163	68.99	370	260.2	191.8
Brown Trout	All	129	160	189	131	2802	328	1600	1135	292.72	2574	205.5	117.0

Site Number: 417
Site Midpoint (Latitude, Longitude): 44.03016917, -103.78286708
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BK1, BR1

Date Sampled: 06/08/2012 **Conductivity (umhos/cm):** 413
Site Length (m): 100
Mean Width (m): 6.6 **pH:** 8.4
Number of Pass: 3 **Water Temperature (C):** 9.4
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	117	381	960	117	5741	261	3810	2325	233.21	6130	156.7	45.5
Brook Trout	>=200mm	218	236	251	221	3556	476	2360	1440	424.57	3797	232.6	133.7
Brook Trout	All	336	412	456	368	6208	640	4120	2514	571.30	6629	206.1	103.1
Brown Trout	<200mm	6	6	7	6	90	5	60	37	4.23	97	155.2	52.4

Brown Trout	>=200mm	29	30	33	29	452	115	300	183	102.99	483	278.7	255.2
Brown Trout	All	35	36	39	35	542	122	360	220	109.15	579	257.5	225.4
White Sucker	All	6	6	9	6	90	8	60	37	6.73	97	189.7	83.3

Site Number: 483

Site Midpoint (Latitude, Longitude): 44.02086149, -103.83725124

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK2, RB1

Date Sampled: 07/09/2012

Site Length (m): 100

Mean Width (m): 2.9

Number of Pass: 3

Conductivity (umhos/cm): 462

pH:

Water Temperature (C): 17.6

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	150	158	167	150	5414	113	1580	2193	100.88	2542	120.8	20.9
Brook Trout	>=200mm	6	6	6	6	206	22	60	83	19.46	97	220.5	106.0
Brook Trout	All	156	164	173	156	5620	136	1640	2276	121.14	2639	124.6	24.1
Rainbow Trout	<200mm	6	6	6	6	206	9	60	83	7.65	97	149.5	41.7
Rainbow Trout	>=200mm	4	4	4	4	137	33	40	56	29.19	64	307.5	238.5
Rainbow Trout	All	10	10	10	10	343	41	100	139	36.84	161	212.7	120.4
Rock Bass	All	12	12	13	12	411	13	120	167	11.75	193	117.5	32.0

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, 2002-2012

Site 239

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Jul 10, 2009	33	33-35	
	Jun 25, 2012	44	36-59	
Brown Trout >=200mm	Jul 10, 2009	1	1-1	BR3
	Jun 25, 2012	4	4-5	BR2
Rainbow Trout >=200mm	Jun 25, 2012	2	2-3	RB2

Site 361

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Jun 30, 2009	50	39-70	

Brook Trout <200mm	Jun 12, 2012	62	41-102	
Brook Trout >=200mm	Jun 30, 2009	5	5-6	BK2
	Jun 12, 2012	3	3-5	BK2
Brown Trout <200mm	Jun 30, 2009	21	20-25	
	Jun 12, 2012	43	31-68	
Brown Trout >=200mm	Jun 30, 2009	12	12-12	BR2
	Jun 12, 2012	21	21-23	BR1

Site 373

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 23, 2002	93	91-97	
	Sep 24, 2003	32	31-35	
	Sep 29, 2004	44	44-44	
	Sep 17, 2007	57	50-68	
	Sep 23, 2008	41	41-42	
	Aug 15, 2012	79	79-80	
Brook Trout >=200mm	Sep 23, 2002	3	3-5	BK3

Brook Trout >=200mm	Sep 24, 2003	4	4-7	BK2
	Sep 29, 2004	7	7-7	BK2
	Sep 17, 2007	2	2-3	BK3
	Sep 23, 2008	7	7-8	BK2
	Aug 15, 2012	24	24-25	BK1
Brown Trout <200mm	Sep 23, 2002	69	66-74	
	Sep 24, 2003	54	48-64	
	Sep 29, 2004	138	137-141	
	Sep 17, 2007	31	26-42	
	Sep 23, 2008	30	27-37	
	Aug 15, 2012	27	27-28	
Brown Trout >=200mm	Sep 23, 2002	29	29-31	BR1
	Sep 24, 2003	32	32-32	BR1
	Sep 29, 2004	28	28-28	BR1
	Sep 17, 2007	15	15-16	BR2
	Sep 23, 2008	13	13-14	BR2

Brown Trout >=200mm

Aug 15, 2012

23

23-24

BR1

Site 417

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 17, 2002	114	105-125	
	Sep 30, 2004	98	95-103	
	Sep 20, 2006	73	72-76	
	Jun 18, 2009	32	30-38	
	Jun 08, 2012	381	117-960	
Brook Trout >=200mm	Sep 17, 2002	155	155-156	BK1
	Sep 30, 2004	122	122-123	BK1
	Sep 20, 2006	93	92-96	BK1
	Jun 18, 2009	12	12-12	BK2
	Jun 08, 2012	236	221-251	BK1
Brown Trout <200mm	Sep 17, 2002	18	18-19	
	Sep 30, 2004	11	11-11	
	Sep 20, 2006	50	50-52	

Brown Trout <200mm	Jun 18, 2009	35	26-55	
	Jun 08, 2012	6	6-7	
Brown Trout >=200mm	Sep 17, 2002	16	16-17	BR2
	Sep 30, 2004	18	18-19	BR2
	Sep 20, 2006	39	39-40	BR1
	Jun 18, 2009	16	16-17	BR2
	Jun 08, 2012	30	29-33	BR1
White Sucker	Jun 08, 2012	6	6-9	

Site 483

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Aug 21, 2009	98	98-99	
	Jul 09, 2012	158	150-167	
Brook Trout >=200mm	Aug 21, 2009	5	5-5	BK2
	Jul 09, 2012	6	6-6	BK2
Rainbow Trout <200mm	Aug 21, 2009	10	10-10	
	Jul 09, 2012	6	6-6	

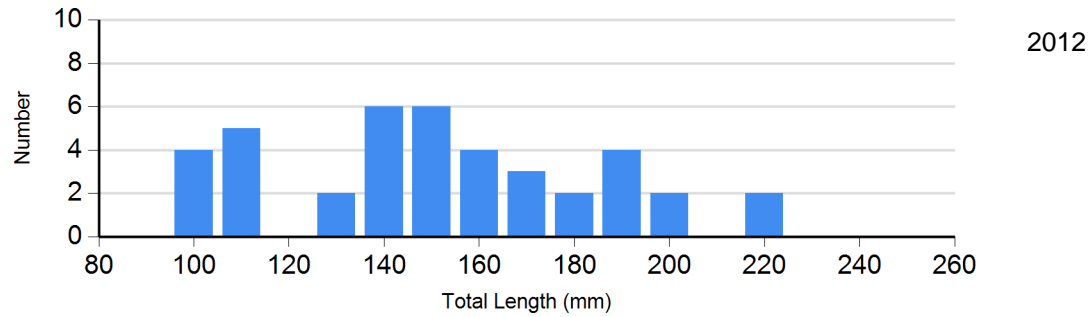
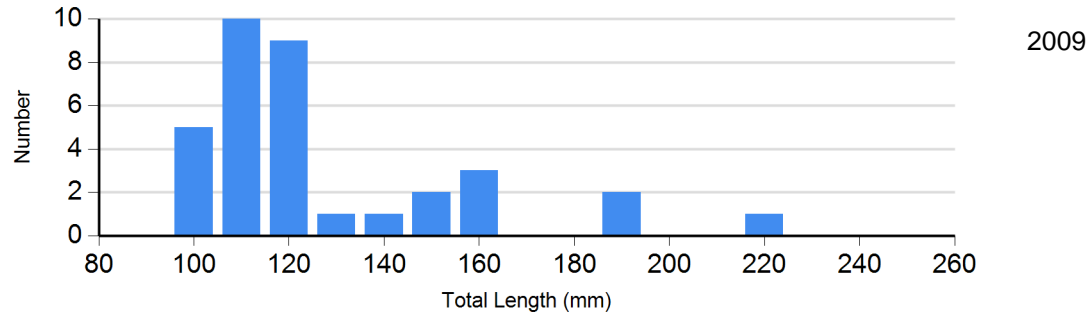
Rainbow Trout >=200mm	Aug 21, 2009	1	1-1	RB2
	Jul 09, 2012	4	4-4	RB1
Rock Bass	Jul 09, 2012	12	12-13	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

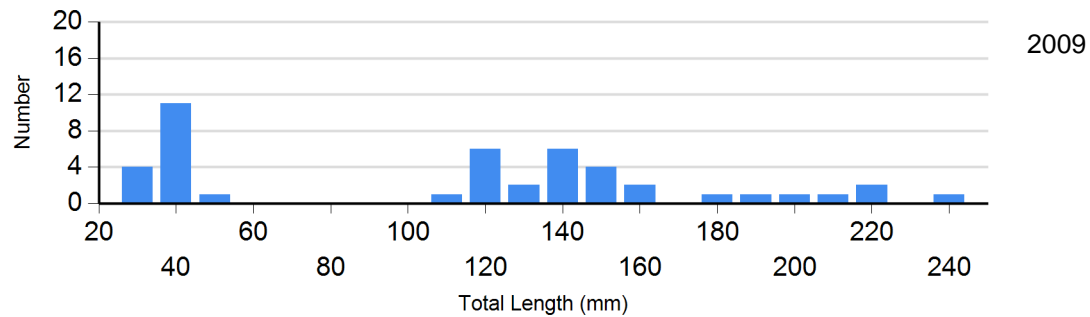
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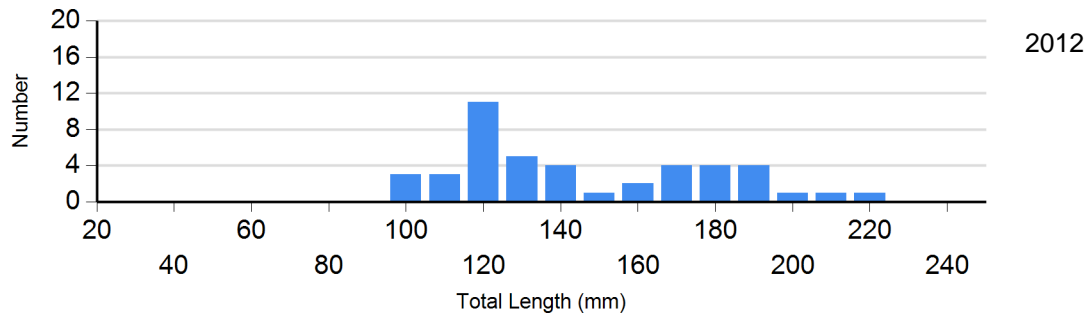
Species: Brown Trout



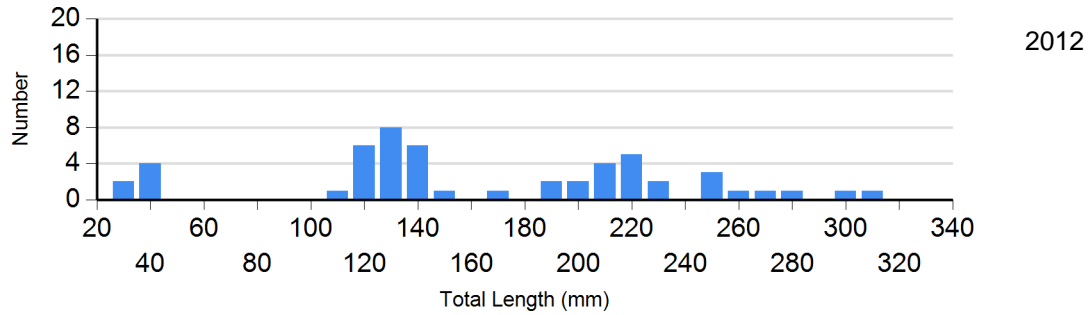
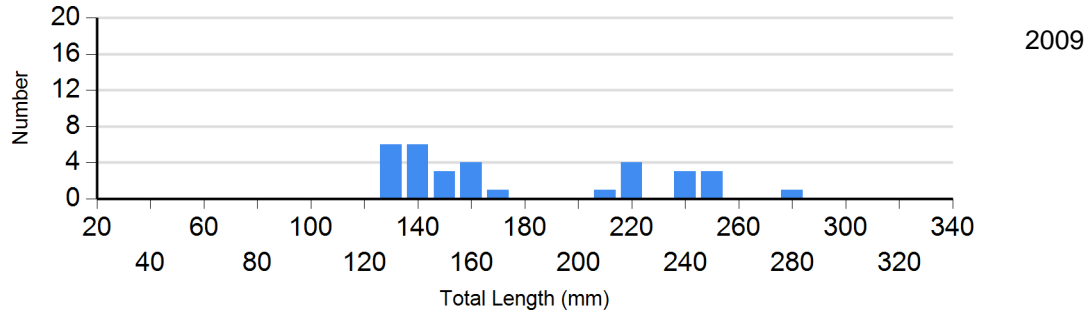
Site: 361

Species: Brook Trout

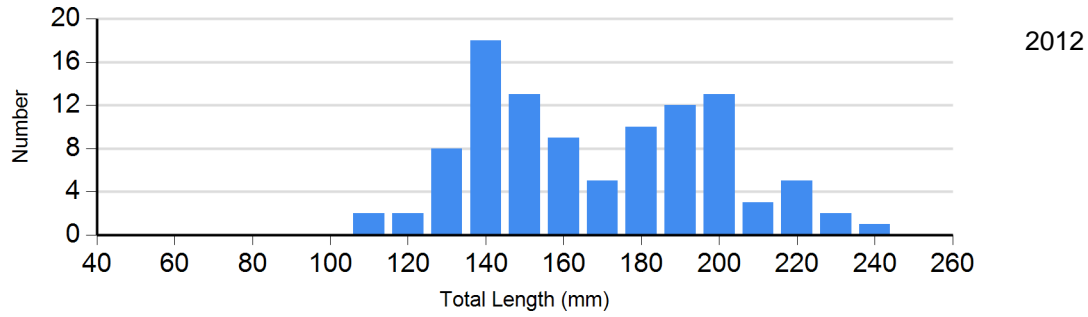
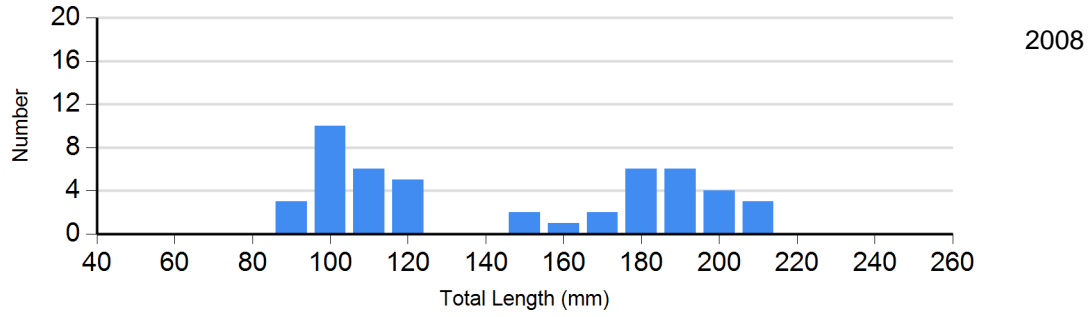
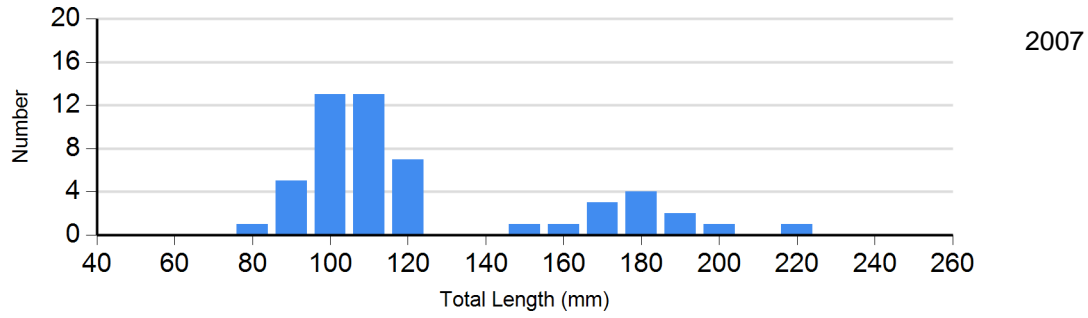




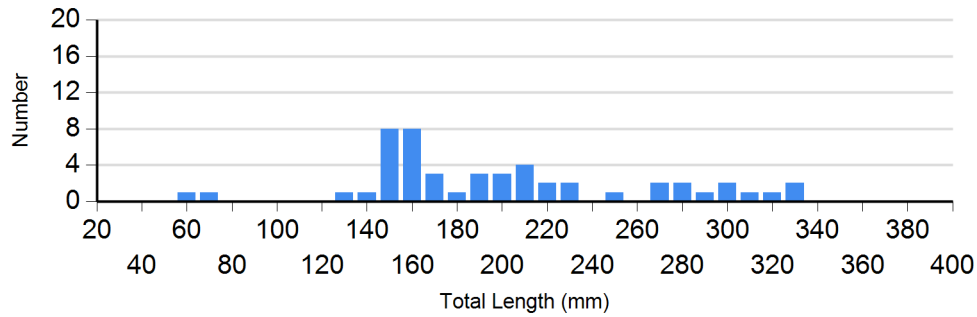
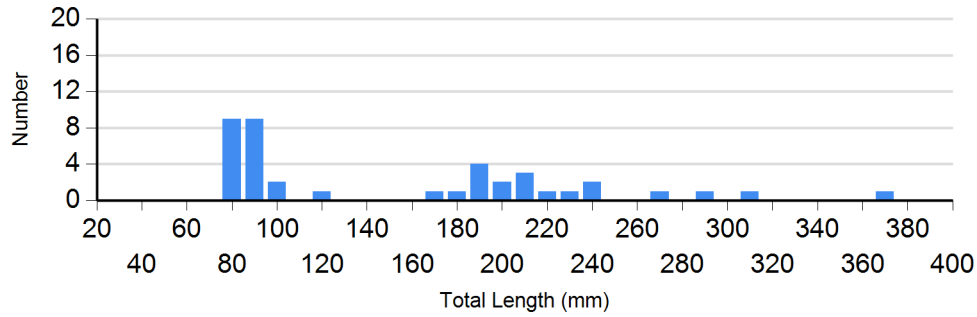
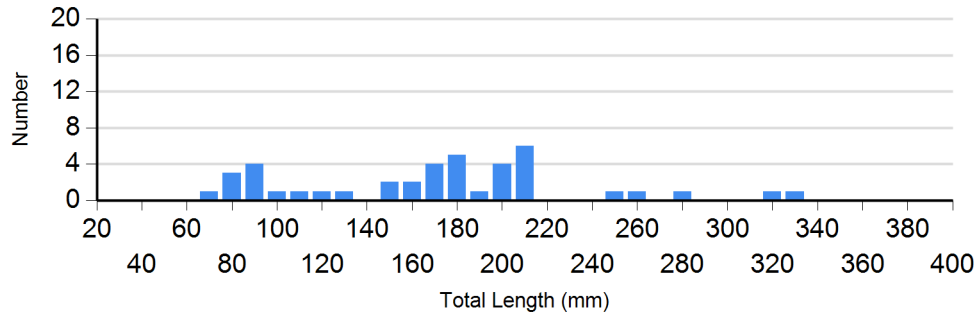
Site: 361
Species: Brown Trout



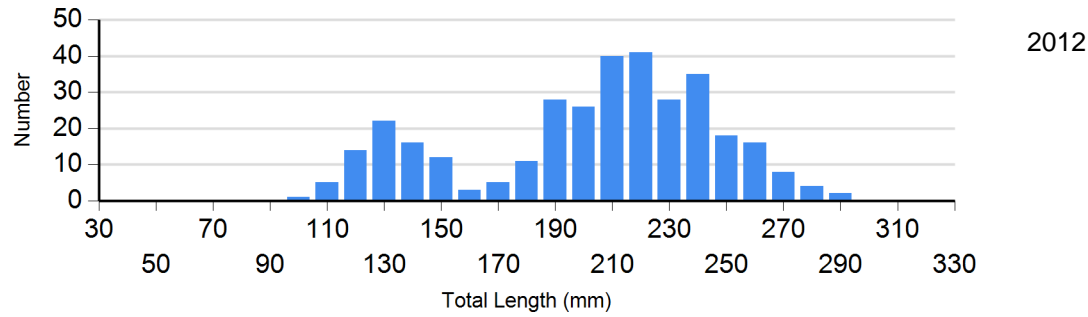
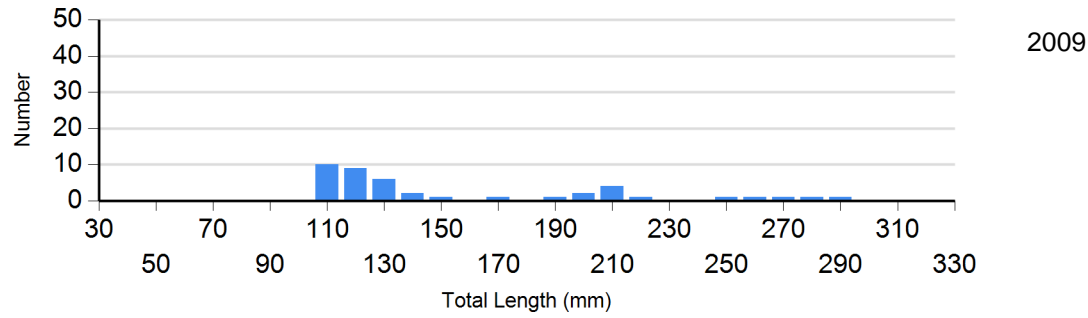
Site: 373
Species: Brook Trout



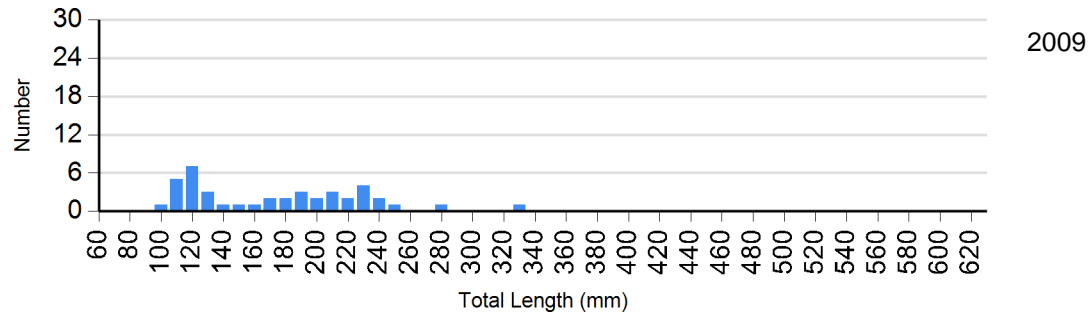
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Species: Brown Trout

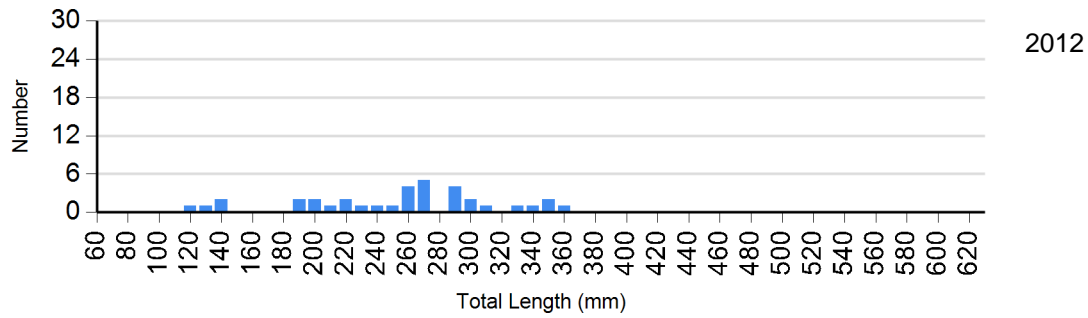


Site: 417
Species: Brook Trout

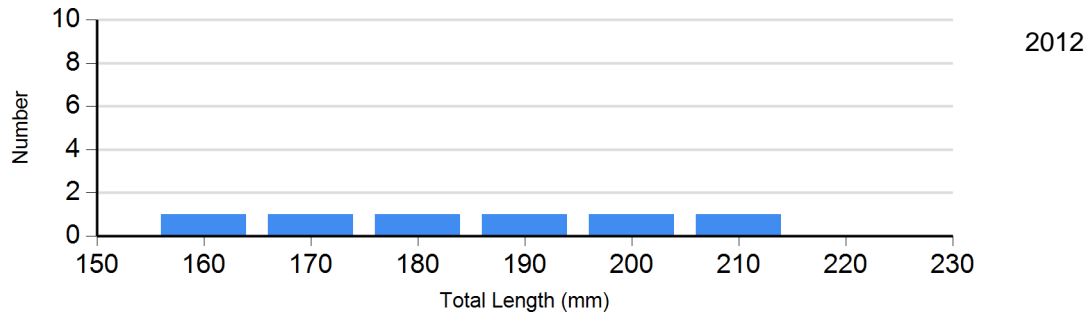


Site: 417
Species: Brown Trout

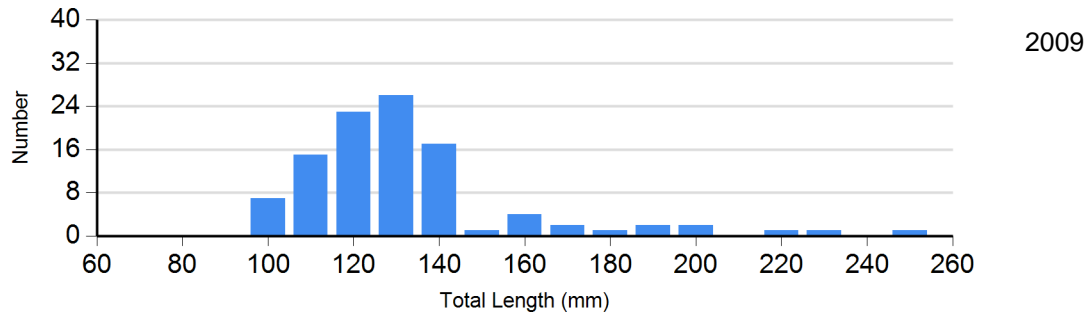


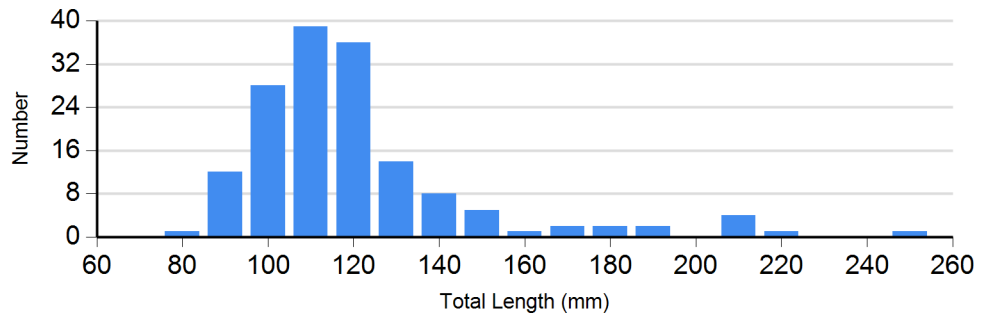


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Species: White Sucker

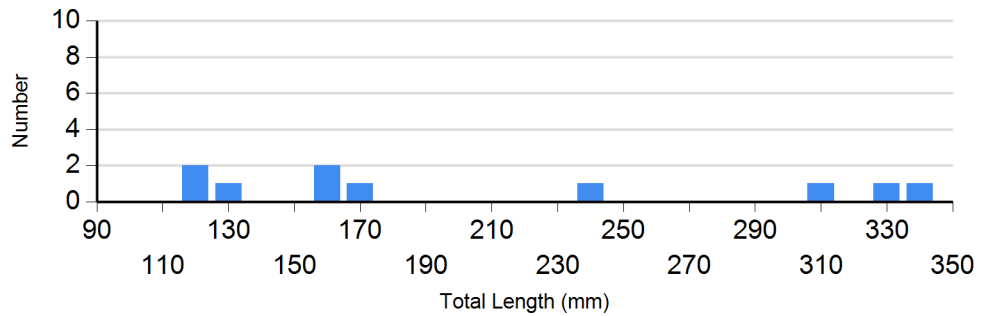
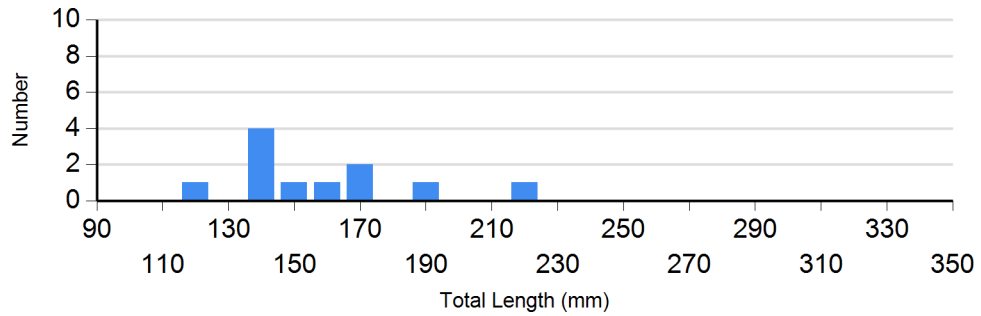


Site: 483
Species: Brook Trout

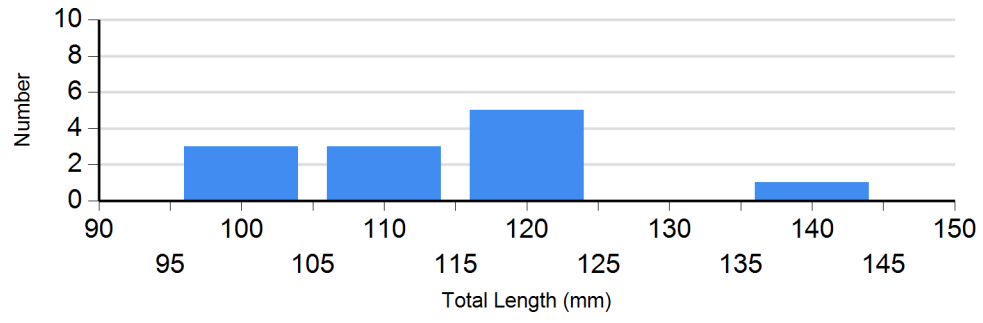




Site: 483
Species: Rainbow Trout



Site: 483
Species: Rock Bass



2012