

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Spearfish Creek, Lawrence County
09-0021-00
2006

Table 1. Population and Biomass Estimates for Spearfish Creek

Site Number: 190	Date Sampled: 09/11/2006	Conductivity (umhos/cm): 410
Site Midpoint (Latitude, Longitude): 44.48929462, -103.86435821	Site Length (m): 100	pH: 8.3
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 6.5	Water Temperature (C): 11.4
Stream Classification: BR1	Number of Pass: 3	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)
Brown Trout	<200mm	53	53	55	53	814	23	530	330	20.10	853	125.4	27.6
Brown Trout	>=200mm	47	47	48	47	722	185	470	292	165.46	756	286.3	256.6
Brown Trout	All	148	169	188	150	2596	351	1690	1052	313.59	2719	201.0	135.3

Site Number: 340	Date Sampled: 09/11/2006	Conductivity (umhos/cm): 391
Site Midpoint (Latitude, Longitude): 44.40182261, -103.89476328	Site Length (m): 100	pH: 7.0
Survey Completed by: South Dakota Game, Fish and Parks	Mean Width (m): 8.3	Water Temperature (C): 11.2
Stream Classification: BK3, BR1, RB1	Number of Pass: 3	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	3	3	4	3	36	1	30	15	0.85	48	121.3	26.3
Brook Trout	>=200mm	1	1	5	1	12	1	10	5	1.14	16	212.0	106.0
Brook Trout	All	4	4	7	4	48	2	40	20	2.00	64	144.0	46.3
Brown Trout	<200mm	54	54	56	54	653	19	540	264	16.68	869	123.8	28.6
Brown Trout	>=200mm	34	34	35	34	411	74	340	166	66.09	547	251.9	180.1
Brown Trout	All	88	88	90	88	1064	93	880	431	82.76	1416	173.3	87.1

Rainbow Trout	<200mm	113	114	117	113	1378	24	1140	558	21.63	1834	88.4	17.6
Rainbow Trout	>=200mm	8	8	10	8	97	17	80	39	15.08	129	253.9	174.6
Rainbow Trout	All	306	318	328	308	3844	109	3180	1557	97.19	5117	99.4	28.3

Site Number: 344
Site Midpoint (Latitude, Longitude): 44.39843255, -103.89618603
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BK0, BR2, RB2

Date Sampled: 09/13/2006 **Conductivity (umhos/cm):** 430
Site Length (m): 100
Mean Width (m): 10.2 **pH:** 7.0
Number of Pass: 3 **Water Temperature (C):** 9.2
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	2	2	2	2	20	1	20	8	0.58	32	145.0	33.0
Brook Trout	All	2	2	2	2	20	1	20	8	0.58	32	145.0	33.0
Brown Trout	<200mm	123	134	146	123	1316	24	1340	533	21.50	2156	109.7	18.3
Brown Trout	>=200mm	11	11	11	11	108	17	110	44	14.93	177	243.2	154.7
Brown Trout	All	134	144	155	134	1414	42	1440	573	37.24	2317	120.6	29.5
Rainbow Trout	<200mm	22	22	24	22	216	8	220	88	6.81	354	129.6	35.3
Rainbow Trout	>=200mm	3	3	4	3	29	5	30	12	4.57	48	249.3	173.7
Rainbow Trout	All	25	25	27	25	246	13	250	99	11.70	402	144.0	53.3

Site Number: 418
Site Midpoint (Latitude, Longitude): 44.36357703, -103.92915307
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BK0, BR1, RB0

Date Sampled: 09/13/2006 **Conductivity (umhos/cm):** 41
Site Length (m): 100
Mean Width (m): 7.3 **pH:** 7.1
Number of Pass: 3 **Water Temperature (C):** 13.0
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	1	1	1	1	14	0	10	6	0.39	16	153.0	32.0

Brook Trout	All	1	1	1	1	14	0	10	6	0.39	16	153.0	32.0
Brown Trout	<200mm	216	265	301	229	3653	75	2650	1479	66.92	4264	113.6	20.5
Brown Trout	>=200mm	36	42	53	36	579	66	420	234	59.36	676	224.5	114.8
Brown Trout	All	252	309	347	271	4259	145	3090	1725	129.28	4972	129.4	34.0
Rainbow Trout	<200mm	2	2	4	2	28	0	20	11	0.07	32	54.0	3.0
Rainbow Trout	All	2	2	4	2	28	0	20	11	0.07	32	54.0	3.0

Site Number: 508
Site Midpoint (Latitude, Longitude): 44.31483138, -103.88577053
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR1

Date Sampled: 09/12/2006
Site Length (m): 100
Mean Width (m): 6.8
Number of Pass: 3
Conductivity (umhos/cm): 410
pH: 7.0
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)
Brown Trout	<200mm	93	92	125	93	1346	30	920	545	26.62	1480	107.4	22.2
Brown Trout	>=200mm	113	118	125	113	1726	329	1180	699	293.46	1899	249.4	190.4
Brown Trout	All	979	1122	1171	1073	16412	1886	11220	6647	1683.78	18053	185.3	114.9

Site Number: 604
Site Midpoint (Latitude, Longitude): 44.26490664, -103.91607855
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BK0, BR2

Date Sampled: 08/09/2006
Site Length (m): 100
Mean Width (m): 4.7
Number of Pass: 3
Conductivity (umhos/cm): 345
pH:
Water Temperature (C): 14.0
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	8	9	14	8	191	4	90	77	3.33	145	120.9	19.5
Brook Trout	All	8	9	14	8	191	4	90	77	3.33	145	120.9	19.5
Brown Trout	<200mm	137	145	154	137	3079	87	1450	1247	77.75	2333	131.7	28.3

Brown Trout	>=200mm	11	11	12	11	234	28	110	95	25.02	177	223.1	120.0
Brown Trout	All	194	198	204	194	4204	148	1980	1703	131.93	3186	138.5	35.1

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, 1996-2006

Site 190

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Oct 09, 1996	190	176-204	
	Oct 14, 1998	92	83-103	
	Oct 26, 1999	31	30-34	
	Oct 07, 2004	15	15-16	
	Sep 11, 2006	53	53-55	
Brown Trout >=200mm	Oct 09, 1996	58	53-66	BR1
	Oct 14, 1998	219	207-231	BR1

Brown Trout >=200mm	Oct 26, 1999	144	129-159	BR1
	Oct 07, 2004	130	129-133	BR1
	Sep 11, 2006	47	47-48	BR1

Site 340

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 08, 1996	5	5-7	
	Oct 22, 2001	2	2-4	
	Sep 11, 2006	3	3-4	
Brook Trout >=200mm	Oct 08, 1996	2	2-3	BK3
	Sep 11, 2006	1	1-5	BK3
Brown Trout <200mm	Oct 08, 1996	165	130-200	
	Oct 25, 1999	116	76-171	
	Oct 23, 2000	162	140-184	
	Oct 22, 2001	78	72-87	
	Oct 31, 2002	142	90-209	
	Sep 22, 2003	57	50-68	

Brown Trout <200mm	Oct 05, 2004	102	67-153	
	Sep 11, 2006	54	54-56	
Brown Trout >=200mm	Oct 08, 1996	48	48-49	BR1
	Oct 25, 1999	98	85-113	BR1
	Oct 23, 2000	114	105-125	BR1
	Oct 22, 2001	127	126-130	BR1
	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
Rainbow Trout <200mm	Oct 08, 1996	27	25-33	
	Oct 25, 1999	22	15-44	
	Oct 23, 2000	37	35-42	
	Oct 22, 2001	43	41-48	
	Oct 31, 2002	18	13-35	
	Sep 22, 2003	220	215-226	

Rainbow Trout <200mm	Oct 05, 2004	265	237-293	
	Sep 11, 2006	114	113-117	
Rainbow Trout >=200mm	Oct 08, 1996	34	31-41	RB1
	Oct 25, 1999	39	37-44	RB1
	Oct 23, 2000	46	40-57	RB1
	Oct 22, 2001	53	46-65	RB1
	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

Site 344

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 13, 2006	2	2-2	
Brook Trout >=200mm	Oct 25, 1999	1	1-2	BK3
Brown Trout <200mm	Oct 25, 1999	267	197-337	
	Sep 13, 2006	134	123-146	

Brown Trout >=200mm	Oct 25, 1999	139	123-155	BR1
	Sep 13, 2006	11	11-11	BR2
Rainbow Trout <200mm	Oct 25, 1999	3	3-4	
	Sep 13, 2006	22	22-24	
Rainbow Trout >=200mm	Oct 25, 1999	31	27-40	RB1
	Sep 13, 2006	3	3-4	RB2

Site 418

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Sep 13, 2006	1	1-1	
Brook Trout >=200mm	Jun 17, 1998	1	1-1	BK3
Brown Trout <200mm	Jun 17, 1998	137	111-164	
	Oct 06, 2004	73	64-86	
	Sep 28, 2005	190	165-215	
	Sep 13, 2006	265	229-301	
Brown Trout >=200mm	Jun 17, 1998	70	60-84	BR1
	Oct 06, 2004	117	114-122	BR1

Brown Trout >=200mm	Sep 28, 2005	39	38-42	BR1
	Sep 13, 2006	42	36-53	BR1
Rainbow Trout <200mm	Sep 13, 2006	2	2-4	

Site 508

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	Jun 15, 1998	198	163-233	
	Sep 12, 2006	92	93-125	
Brown Trout >=200mm	Jun 15, 1998	145	119-171	BR1
	Sep 12, 2006	118	113-125	BR1

Site 604

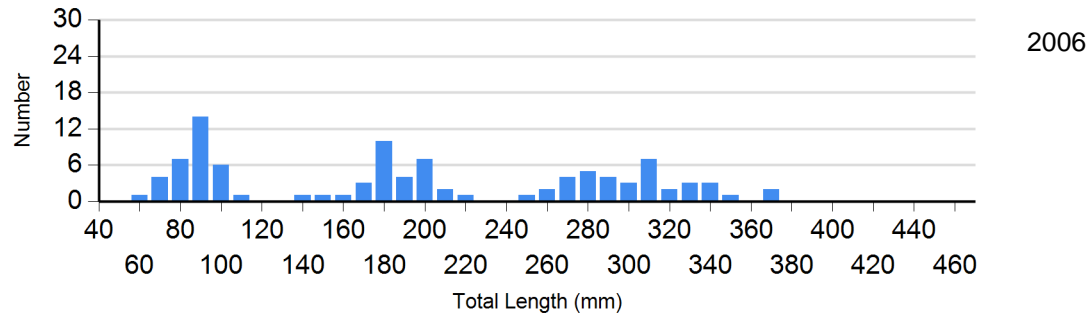
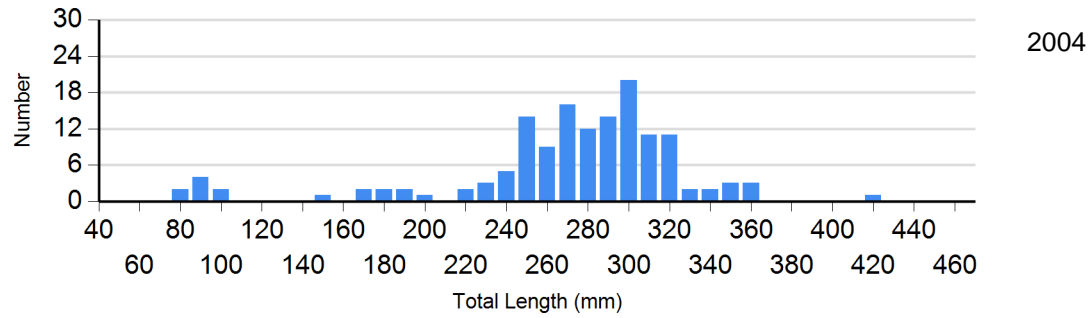
Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Aug 09, 2006	9	8-14	
Brown Trout <200mm	Aug 09, 2006	145	137-154	
Brown Trout >=200mm	Aug 09, 2006	11	11-12	BR2

Length Frequency Distribution

Length frequency histogram of species sampled by year.

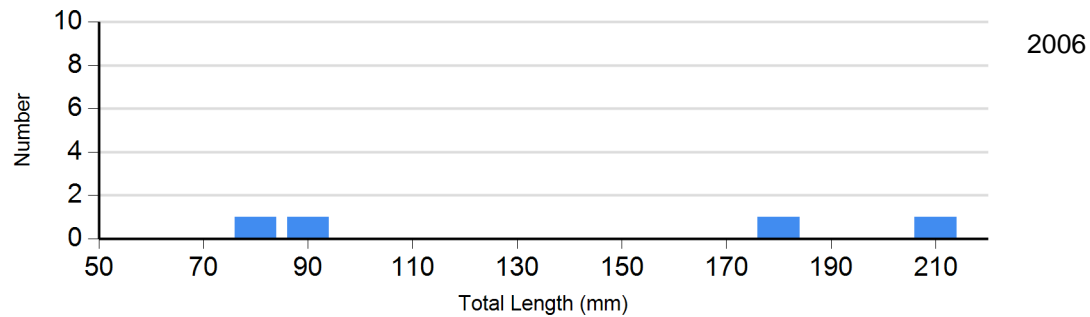
Site: 190

Species: Brown Trout

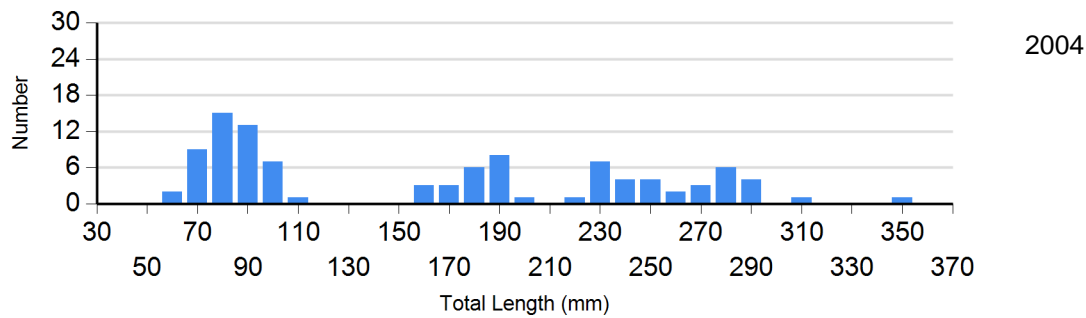
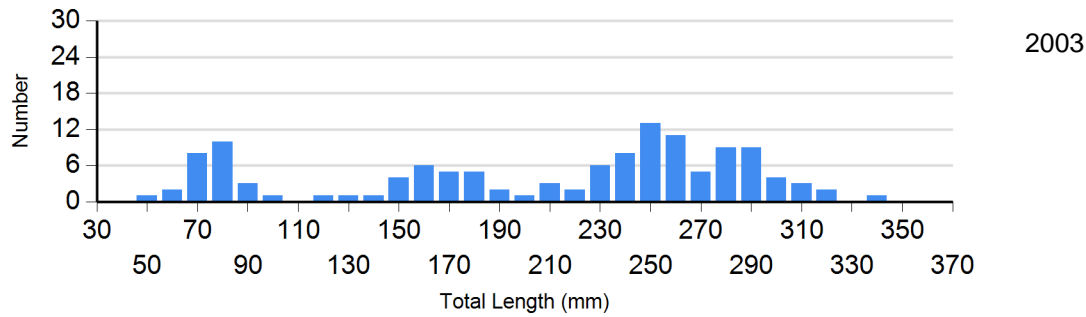
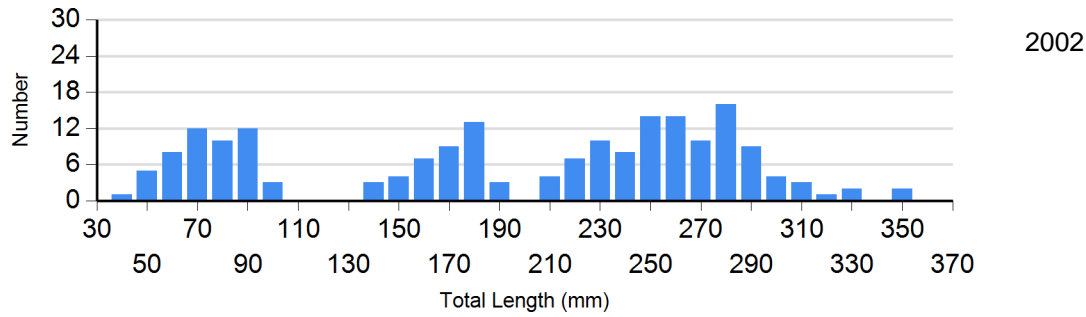
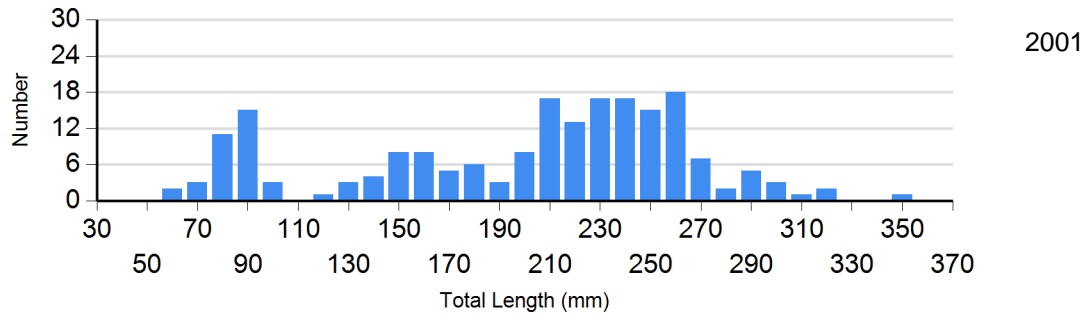


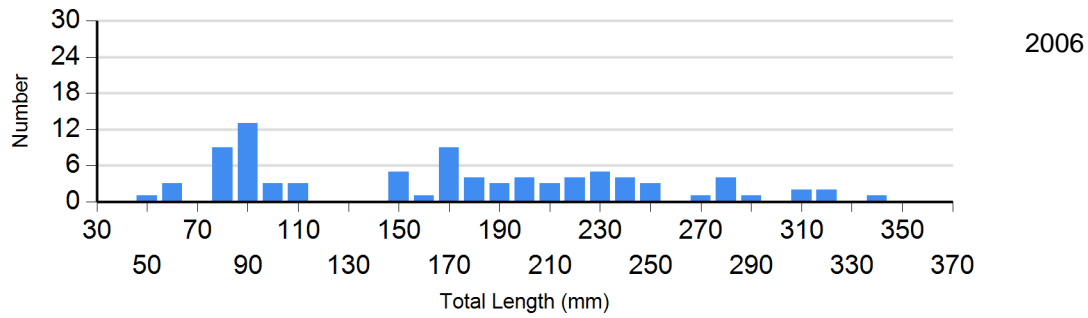
Site: 340

Species: Brook Trout

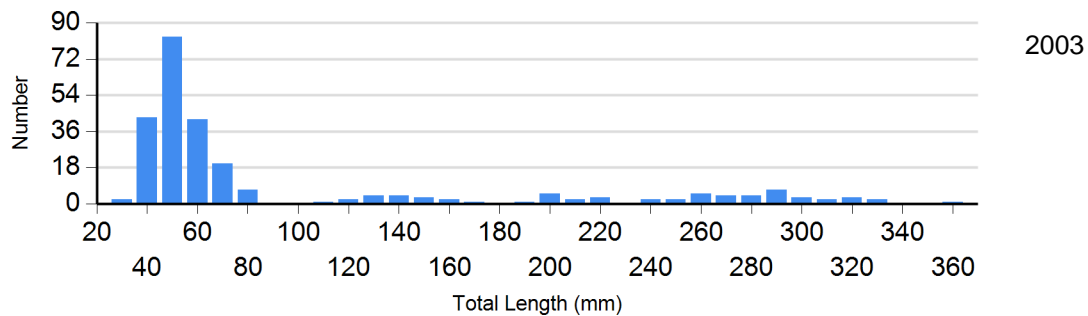
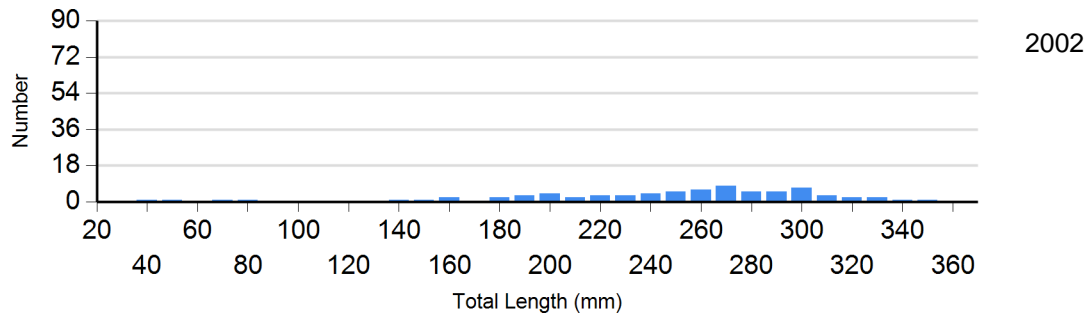
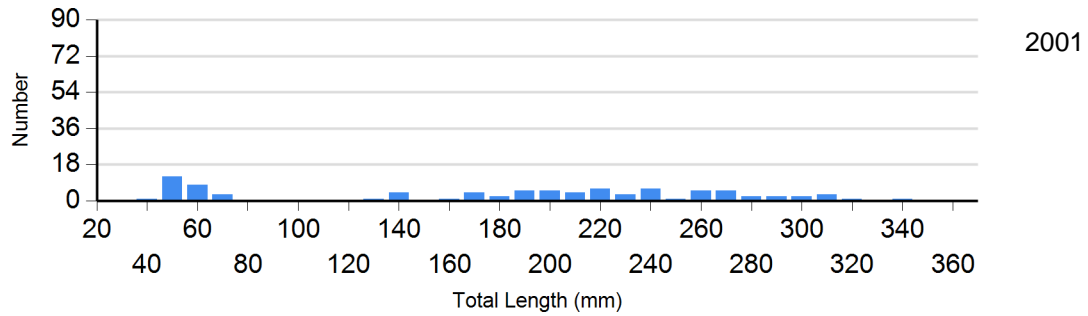


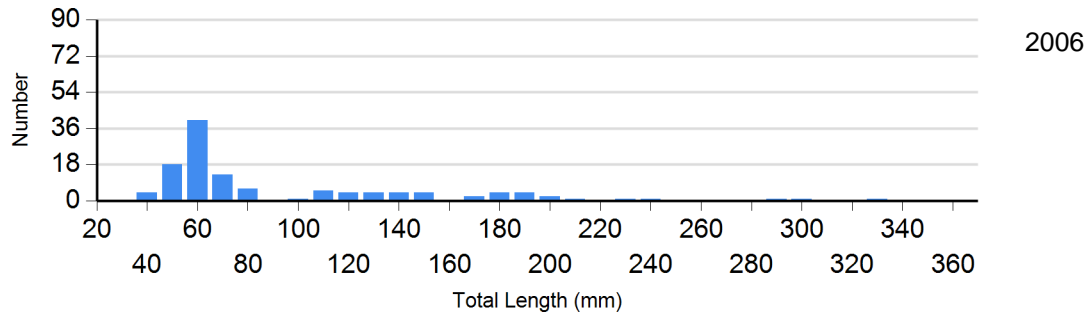
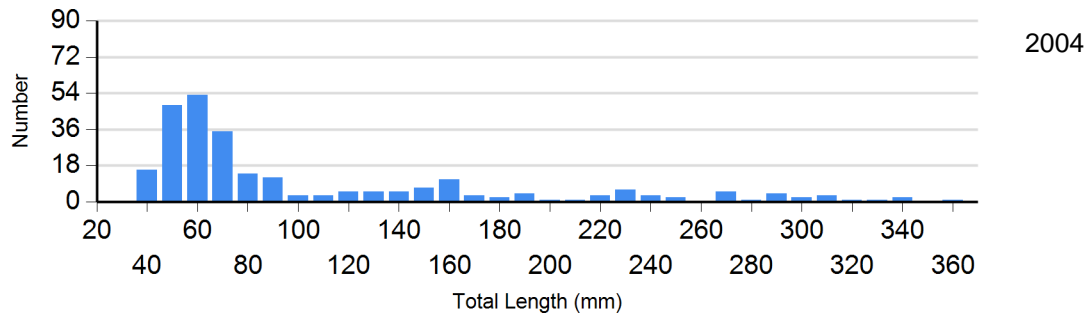
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Species: Brown Trout



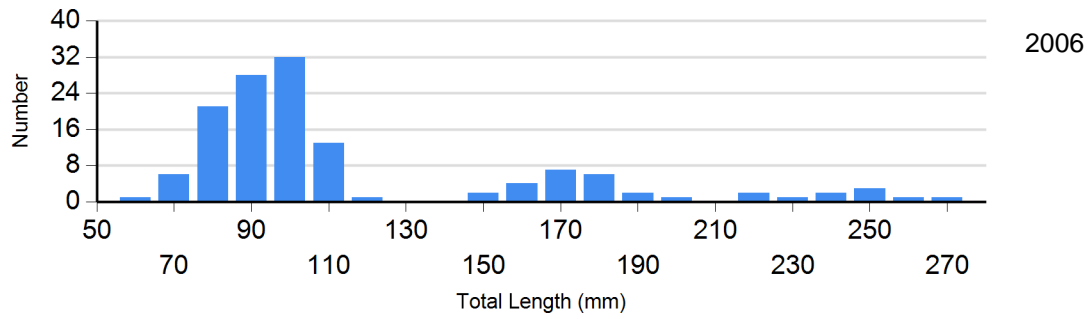


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Species: Rainbow Trout

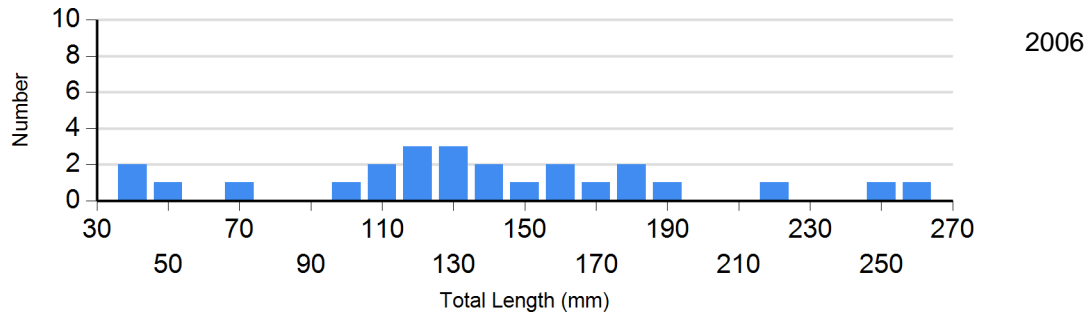




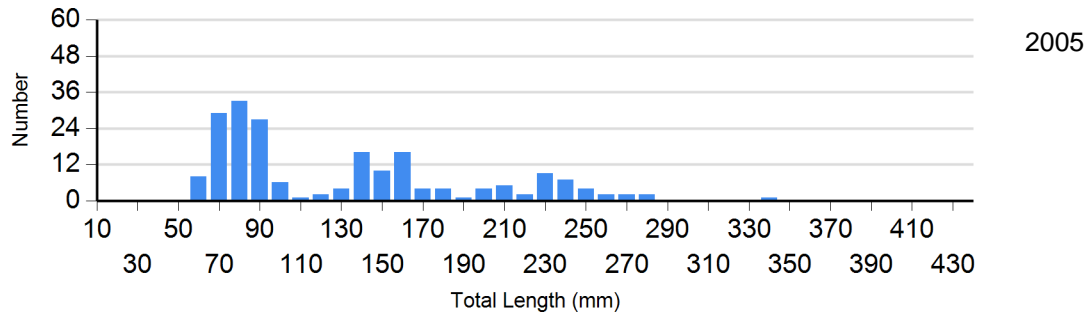
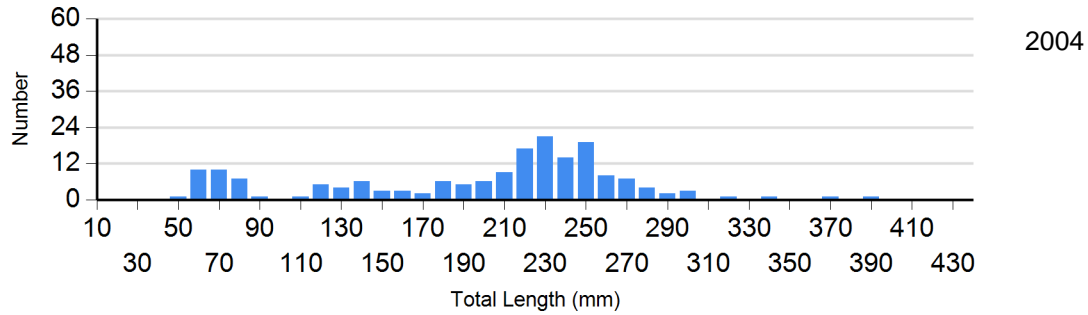
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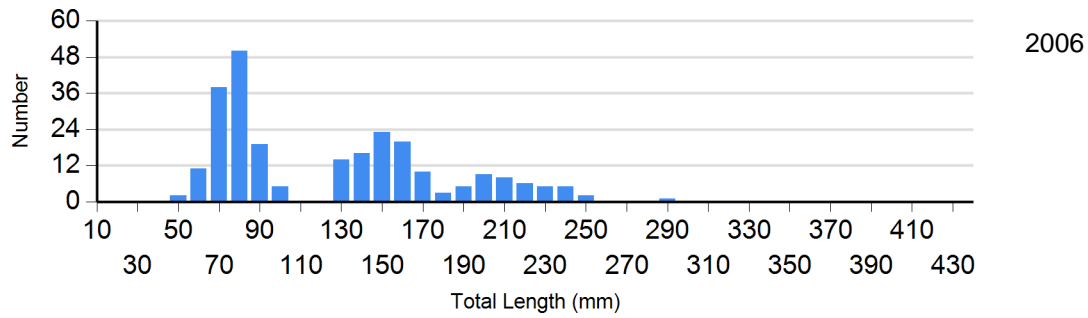


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Species: Rainbow Trout

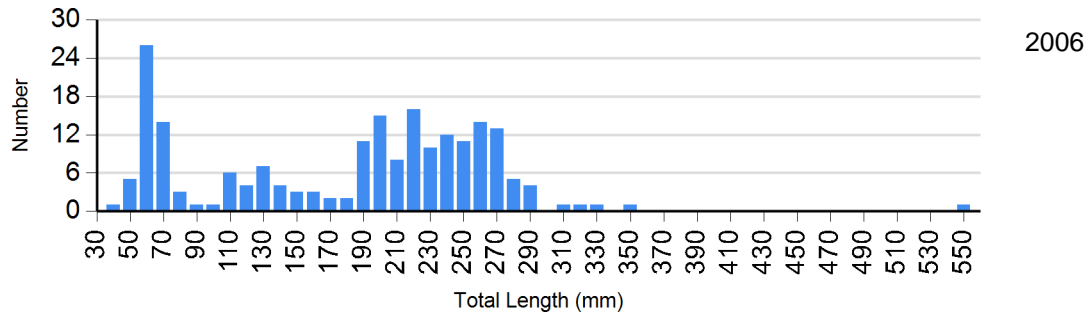


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Species: Brown Trout

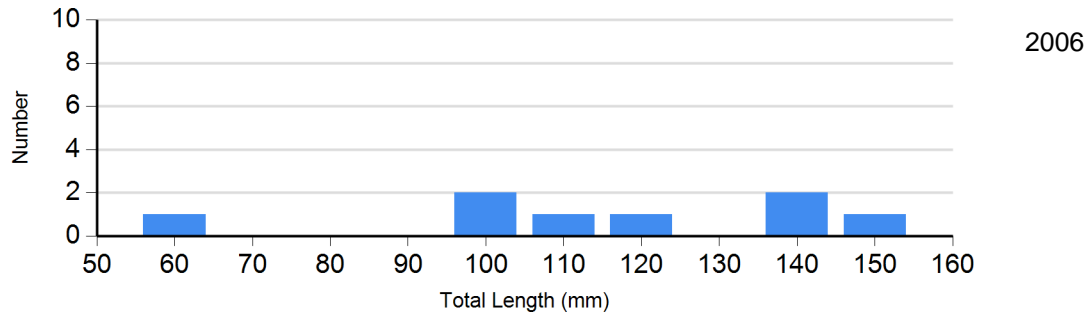




Site: 508
Species: Brown Trout



Site: 604
Species: Brook Trout



Site: 604
Species: Brown Trout

