

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Rapid Creek, Pennington County
02-0062-00
2018

Table 1. Population and Biomass Estimates for Rapid Creek

Site Number: 1487
Site Midpoint (Latitude, Longitude): 44.04905234, -103.31193431
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR2, RB1

Date Sampled: 10/01/2018
Site Length (m): 100
Mean Width (m): 10.3
Number of Pass: 3
Conductivity (umhos/cm):
pH:
Water Temperature (C):
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	85	86	89	85	833	32	860	337	28.68	1384	102.4	38.6
Brown Trout	>=200mm	15	15	16	15	145	35	150	59	31.60	241	282.2	243.7
Brown Trout	All	100	101	104	100	978	105	1010	396	93.38	1625	129.4	106.9
Rainbow Trout	>=200mm	13	13	14	13	126	44	130	51	39.65	209	328.2	352.8
Rainbow Trout	All	13	13	14	13	126	44	130	51	39.65	209	328.2	352.8

Site Number: 1930
Site Midpoint (Latitude, Longitude): 44.08581700, -103.55549131
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BK0, BR2, RB1

Date Sampled: 10/12/2018
Site Length (m): 100
Mean Width (m): 8.8
Number of Pass: 3
Conductivity (umhos/cm):
pH:
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	1	1	2	1	11	0	10	5	0.36	16	153.0	35.0
Brook Trout	All	1	1	2	1	11	0	10	5	0.36	16	153.0	35.0
Brown Trout	<200mm	24	31	47	24	354	16	310	143	14.23	499	150.9	45.1
Brown Trout	>=200mm	7	7	9	7	80	11	70	32	10.10	113	243.0	141.6

Brown Trout	All	31	40	58	31	456	32	400	185	28.95	644	171.7	71.0
Rainbow Trout	<200mm	3	3	5	3	34	2	30	14	2.02	48	125.0	66.0
Rainbow Trout	>=200mm	23	27	37	23	308	230	270	125	205.41	434	409.8	746.7
Rainbow Trout	All	26	33	49	26	377	270	330	153	241.52	531	376.9	718.3

Site Number: 1936
Site Midpoint (Latitude, Longitude): 44.08412803, -103.56026979
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR3, RB1

Date Sampled: 10/12/2018
Site Length (m): 100
Mean Width (m): 9.9
Number of Pass: 3
Conductivity (umhos/cm):
pH:
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)
Brown Trout	<200mm	36	39	46	36	395	15	390	160	13.49	628	126.1	38.3
Brown Trout	>=200mm	1	1	1	1	10	1	10	4	0.74	16	202.0	82.0
Brown Trout	All	37	40	46	37	405	16	400	164	14.52	644	128.1	40.2
Rainbow Trout	<200mm	4	4	5	4	40	2	40	16	2.13	64	107.3	59.0
Rainbow Trout	>=200mm	8	8	8	8	81	56	80	33	50.29	129	398.5	695.8
Rainbow Trout	All	12	12	12	12	121	76	120	49	67.77	193	301.4	625.0

Site Number: 1952
Site Midpoint (Latitude, Longitude): 44.08822830, -103.57398811
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR2, RB2

Date Sampled: 08/23/2018
Site Length (m): 100
Mean Width (m): 8.3
Number of Pass: 3
Conductivity (umhos/cm):
pH:
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)
Brown Trout	<200mm	118	130	143	118	1575	72	1300	638	63.98	2092	109.2	45.5
Brown Trout	>=200mm	13	13	15	13	157	20	130	64	18.23	209	234.8	129.6

Brown Trout	All	131	143	155	131	1732	110	1430	702	98.11	2301	121.6	63.4
Rainbow Trout	>=200mm	2	2	3	2	24	9	20	10	8.36	32	340.5	386.5
Rainbow Trout	All	2	2	3	2	24	9	20	10	8.36	32	340.5	386.5
Rock Bass	All	2	2	2	2	24	1	20	10	0.91	32	130.0	42.0
White Sucker	All	2	2	2	2	24	1	20	10	1.30	32	157.5	60.0

Site Number: 1952
Site Midpoint (Latitude, Longitude): 44.08822830, -103.57398811
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR2, RB2

Date Sampled: 10/16/2018
Site Length (m): 100
Mean Width (m): 9.9
Number of Pass: 3
Conductivity (umhos/cm):
pH:
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)
Brown Trout	<200mm	101	111	123	101	1120	40	1110	454	35.38	1786	123.6	35.4
Brown Trout	>=200mm	20	20	21	20	202	24	200	82	21.84	322	231.2	121.2
Brown Trout	All	121	131	142	121	1322	75	1310	535	67.40	2108	141.4	57.1
Rainbow Trout	<200mm	5	5	6	5	50	3	50	20	2.80	80	161.0	62.3
Rainbow Trout	>=200mm	1	1	1	1	10	1	10	4	0.77	16	210.0	85.0
Rainbow Trout	All	6	6	7	6	61	4	60	25	3.61	97	169.2	66.8

Site Number: 1952
Site Midpoint (Latitude, Longitude): 44.08822830, -103.57398811
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR1, RB2

Date Sampled: 10/16/2018
Site Length (m): 100
Mean Width (m): 8.3
Number of Pass: 3
Conductivity (umhos/cm):
pH:
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)
Brown Trout	<200mm	115	157	201	115	1883	68	1570	763	60.96	2526	128.9	36.3

Brown Trout	>=200mm	32	33	37	32	396	51	330	160	45.69	531	237.4	129.3
Brown Trout	All	147	184	217	151	2207	141	1840	894	126.28	2961	152.5	64.1
Rainbow Trout	<200mm	3	3	4	3	36	1	30	15	1.09	48	146.3	34.0
Rainbow Trout	>=200mm	3	3	4	3	36	21	30	15	19.11	48	384.7	594.7
Rainbow Trout	All	6	6	7	6	72	23	60	29	20.20	97	265.5	314.3

Site Number: 1965
Site Midpoint (Latitude, Longitude): 44.08228452, -103.58120757
Survey Completed by: South Dakota Game, Fish and Parks
Stream Classification: BR2, RB2

Date Sampled: 08/23/2018
Site Length (m): 100
Mean Width (m): 10.0
Number of Pass: 3
Conductivity (umhos/cm):
pH:
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)
Brown Trout	<200mm	63	62	73	63	620	27	620	251	23.67	998	120.9	42.8
Brown Trout	>=200mm	19	22	30	19	220	25	220	89	22.29	354	228.3	113.5
Brown Trout	All	82	272	779	82	2720	185	2720	1102	165.42	4376	145.8	68.1
Mountain Sucker	All	1	1	2	1	10	0	10	4	0.18	16	116.0	20.0
Rainbow Trout	<200mm	2	2	2	2	20	1	20	8	1.01	32	166.0	56.5
Rainbow Trout	>=200mm	2	2	3	2	20	9	20	8	7.75	32	330.0	434.0
Rainbow Trout	All	4	4	4	4	40	10	40	16	8.76	64	248.0	245.3

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 Rapid Creek, 2008-2018

Site 1487

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brown Trout <200mm	May 18, 2017	67	46-103	
	Jun 14, 2017	34	32-39	
	Jul 18, 2017	72	66-81	
	Aug 15, 2017	198	132-266	
	Sep 18, 2017	177	158-196	
	Oct 01, 2018	86	85-89	
Brown Trout >=200mm	May 18, 2017	41	41-42	BR1

Brown Trout >=200mm	Jun 14, 2017	24	24-25	BR2
	Jul 18, 2017	32	31-35	BR2
	Aug 15, 2017	28	28-29	BR2
	Sep 18, 2017	15	15-16	BR2
	Oct 01, 2018	15	15-16	BR2
Rainbow Trout >=200mm	May 18, 2017	2	2-3	RB2
	Jun 14, 2017	1	1-1	RB2
	Jul 18, 2017	4	4-5	RB2
	Aug 15, 2017	2	2-3	RB2
	Oct 01, 2018	13	13-14	RB1
White Sucker	Aug 15, 2017	7	7-8	
	Sep 18, 2017	3	4-5	

Site 1930

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Oct 12, 2018	1	1-2	
Brown Trout <200mm	Jul 20, 2016	14	14-16	

Brown Trout <200mm	Oct 05, 2016	17	16-21	
	Jul 26, 2017	20	21-27	
	Oct 10, 2017	34	34-36	
	Oct 12, 2018	31	24-47	
Brown Trout >=200mm	Jul 20, 2016	2	2-3	BR3
	Oct 05, 2016	11	11-12	BR2
	Jul 26, 2017	7	7-9	BR2
	Oct 10, 2017	22	22-22	BR2
	Oct 12, 2018	7	7-9	BR2
Rainbow Trout <200mm	Jul 20, 2016	1	1-2	
	Oct 05, 2016	4	4-6	
	Oct 10, 2017	33	25-51	
	Oct 12, 2018	3	3-5	
Rainbow Trout >=200mm	Jul 20, 2016	3	3-3	RB2
	Oct 05, 2016	12	12-13	RB1
	Oct 10, 2017	7	7-7	RB1

Rainbow Trout >=200mm

Oct 12, 2018

27

23-37

RB1

Site 1936

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout >=200mm	Oct 05, 2016	1	1-2	BK3
Brown Trout <200mm	Jun 27, 2012	29	29-31	
	Jul 20, 2016	39	38-42	
	Oct 05, 2016	16	16-17	
	Jul 26, 2017	58	34-112	
	Oct 10, 2017	46	46-47	
	Oct 12, 2018	39	36-46	
Brown Trout >=200mm	Jun 27, 2012	10	10-10	BR2
	Jul 20, 2016	20	20-22	BR2
	Oct 05, 2016	6	6-7	BR3
	Jul 26, 2017	8	8-10	BR2
	Oct 10, 2017	29	29-29	BR2
	Oct 12, 2018	1	1-1	BR3

Rainbow Trout <200mm	Oct 10, 2017	49	42-61	
	Oct 12, 2018	4	4-5	
Rainbow Trout >=200mm	Jun 27, 2012	4	4-7	RB2
	Oct 05, 2016	7	7-8	RB1
	Oct 10, 2017	6	6-6	RB2
	Oct 12, 2018	8	8-8	RB1
Rock Bass	Jun 27, 2012	7	7-9	
	Jul 20, 2016	3	3-4	
	Jul 26, 2017	3	3-5	
White Sucker	Jun 27, 2012	3	3-3	
	Jul 20, 2016	1	1-2	
	Jul 26, 2017	5	6-8	
	Oct 10, 2017	3	3-5	

Site 1952

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Aug 05, 2013	1	1-1	

Brown Trout <200mm	Jun 27, 2012	42	40-47	
	Aug 05, 2013	52	52-54	
	Jul 20, 2016	43	43-44	
	Oct 05, 2016	104	101-109	
	Jul 26, 2017	37	35-42	
	Oct 16, 2017	68	66-73	
	Aug 23, 2018	130	118-143	
	Oct 16, 2018	157	115-201	
	Oct 16, 2018	111	101-123	
Brown Trout >=200mm	Jun 27, 2012	18	18-20	BR2
	Aug 05, 2013	16	16-17	BR2
	Jul 20, 2016	31	29-36	BR1
	Oct 05, 2016	42	42-44	BR1
	Jul 26, 2017	20	20-21	BR2
	Oct 16, 2017	32	32-33	BR1
	Aug 23, 2018	13	13-15	BR2

Brown Trout >=200mm	Oct 16, 2018	33	32-37	BR1
	Oct 16, 2018	20	20-21	BR2
Rainbow Trout <200mm	Jun 27, 2012	4	4-7	
	Aug 05, 2013	1	1-5	
	Jul 20, 2016	2	2-4	
	Oct 05, 2016	2	2-2	
	Jul 26, 2017	10	8-19	
	Oct 16, 2018	3	3-4	
	Oct 16, 2018	5	5-6	
Rainbow Trout >=200mm	Jun 27, 2012	6	6-6	RB1
	Aug 05, 2013	14	14-14	RB1
	Jul 20, 2016	1	1-1	RB2
	Oct 05, 2016	6	6-7	RB1
	Jul 26, 2017	49	10-493	RB1
	Oct 16, 2017	4	4-4	RB2
	Aug 23, 2018	2	2-3	RB2

Rainbow Trout >=200mm	Oct 16, 2018	1	1-1	RB2
	Oct 16, 2018	3	3-4	RB2
Rock Bass	Jun 27, 2012	1	1-1	
	Aug 05, 2013	9	9-9	
	Jul 20, 2016	5	5-6	
	Oct 05, 2016	2	2-6	
	Jul 26, 2017	5	5-5	
	Aug 23, 2018	2	2-2	
White Sucker	Jul 26, 2017	4	4-4	
	Oct 16, 2017	4	4-7	
	Aug 23, 2018	2	2-2	

Site 1965

Species/Size	Date	Pop Est.	(95% C.I.)	Stream Classification
Brook Trout <200mm	Jun 28, 2012	2	2-3	
	Jul 21, 2016	1	2-2	
Brown Trout <200mm	Jun 28, 2012	35	31-44	

Brown Trout <200mm	Aug 06, 2013	57	52-66	
	Jul 21, 2016	64	59-72	
	Oct 06, 2016	89	71-112	
	Jul 26, 2017	103	91-117	
	Oct 16, 2017	120	113-129	
	Aug 23, 2018	62	63-73	
Brown Trout >=200mm	Jun 28, 2012	37	35-42	BR1
	Aug 06, 2013	14	14-16	BR2
	Jul 21, 2016	29	28-32	BR2
	Oct 06, 2016	31	31-31	BR2
	Jul 26, 2017	20	20-20	BR2
	Oct 16, 2017	22	22-22	BR2
	Aug 23, 2018	22	19-30	BR2
Mountain Sucker	Jul 21, 2016	2	2-6	
	Aug 23, 2018	1	1-2	
Rainbow Trout <200mm	Jun 28, 2012	1	1-1	

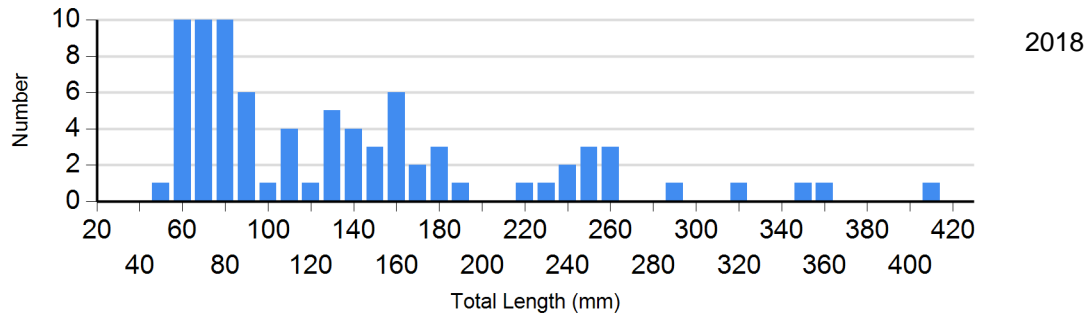
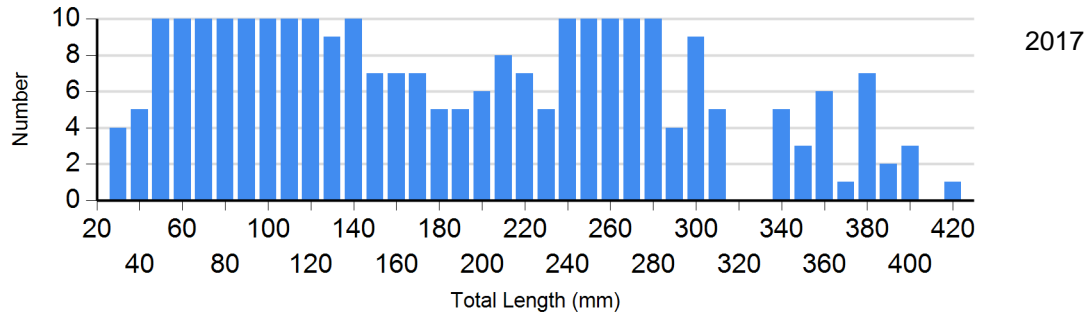
Rainbow Trout <200mm	Oct 16, 2017	38	36-43	
	Aug 23, 2018	2	2-2	
Rainbow Trout >=200mm	Jun 28, 2012	11	10-16	RB1
	Aug 06, 2013	41	37-49	RB1
	Oct 06, 2016	2	2-2	RB2
	Jul 26, 2017	1	1-1	RB2
	Aug 23, 2018	2	2-3	RB2
Rock Bass	Aug 06, 2013	5	5-7	
	Jul 21, 2016	2	2-2	
White Sucker	Jun 28, 2012	2	2-6	
	Aug 06, 2013	2	2-4	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

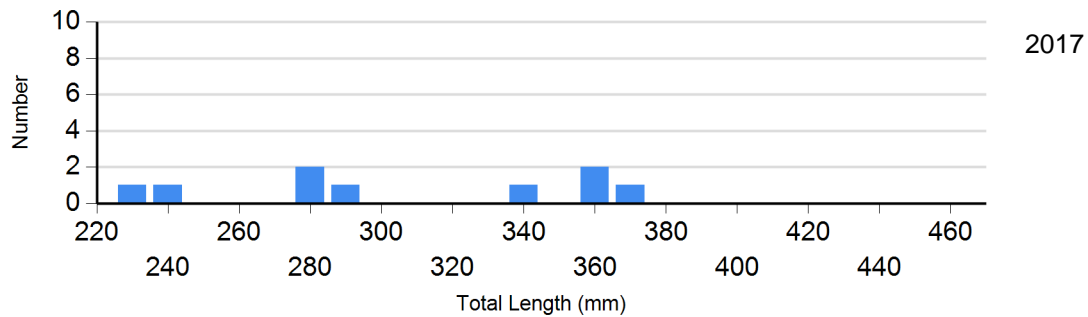
Site: 1487

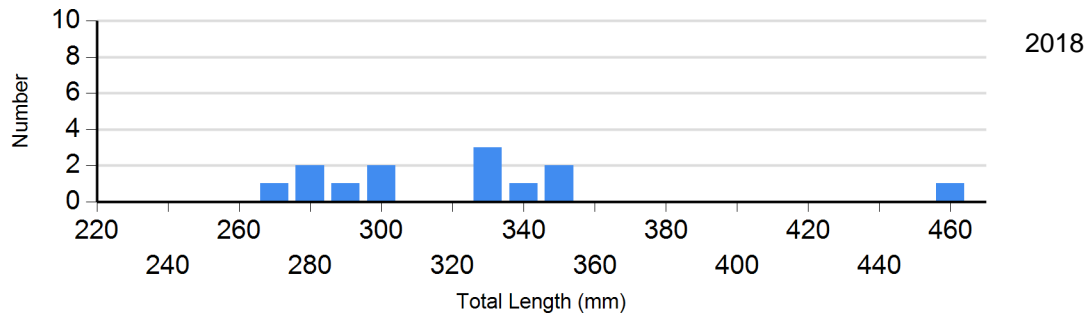
Species: Brown Trout



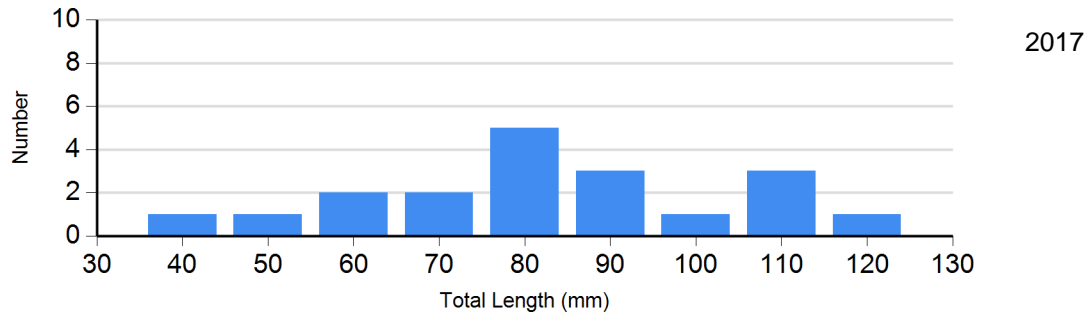
Site: 1487

Species: Rainbow Trout

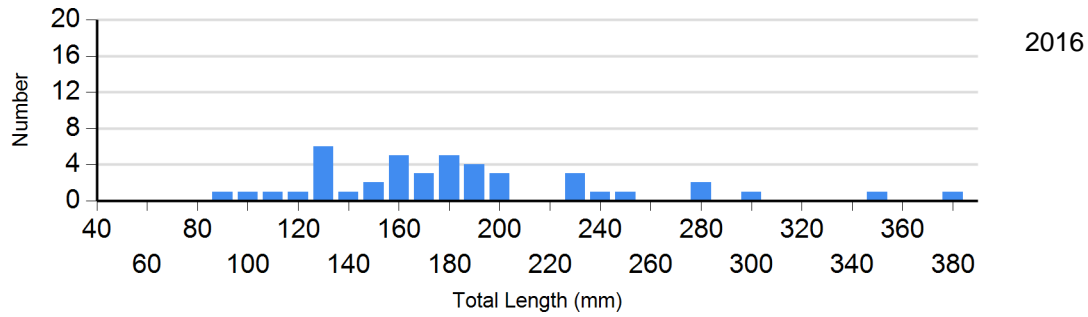


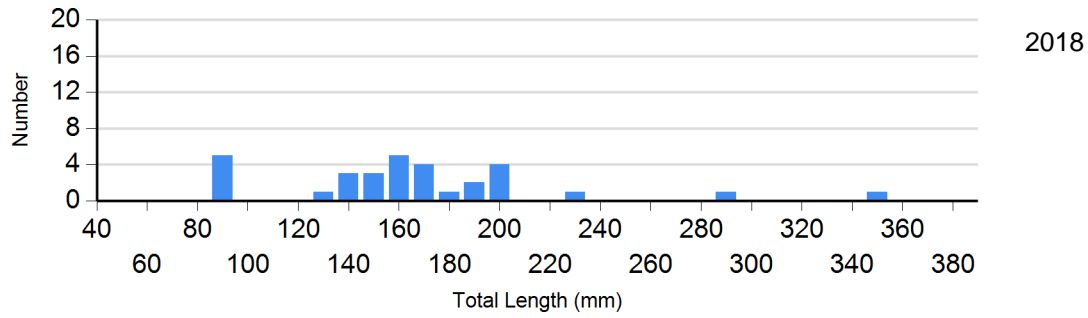
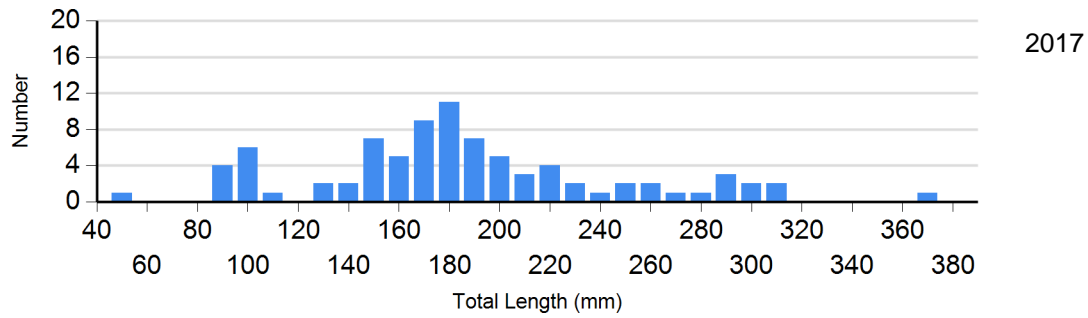


Site: 1487
Species: White Sucker

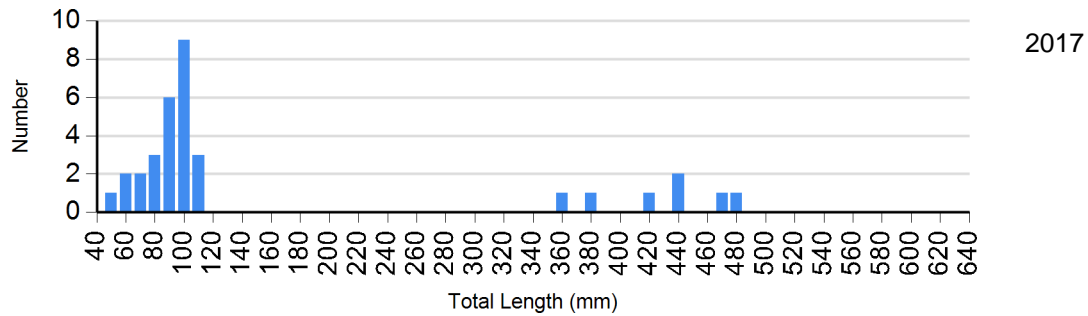
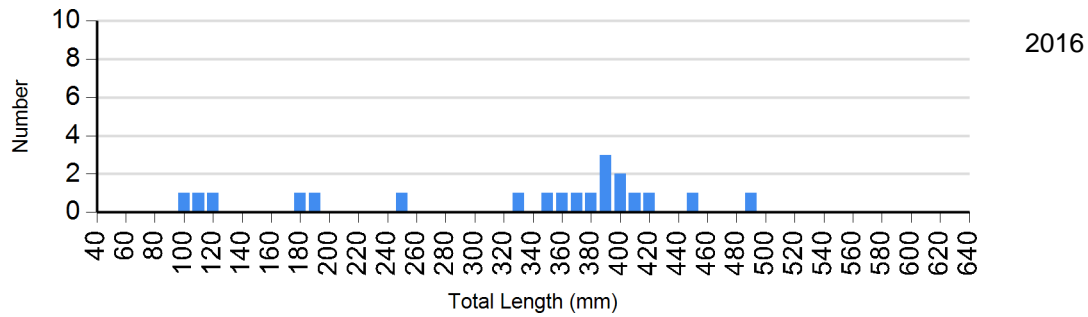


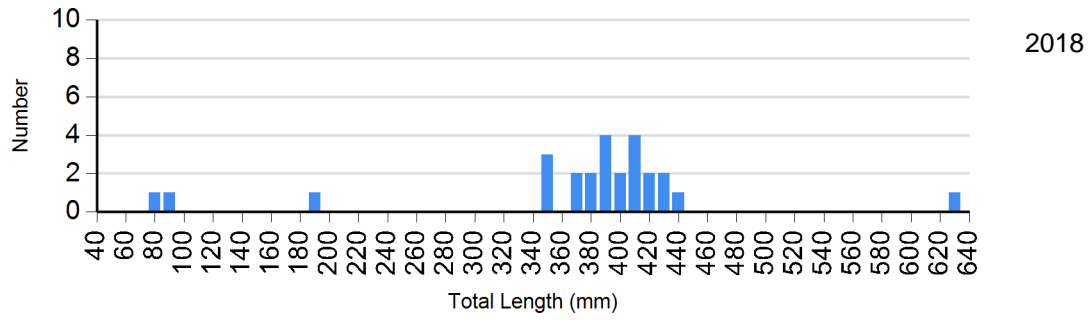
Site: 1930
Species: Brown Trout



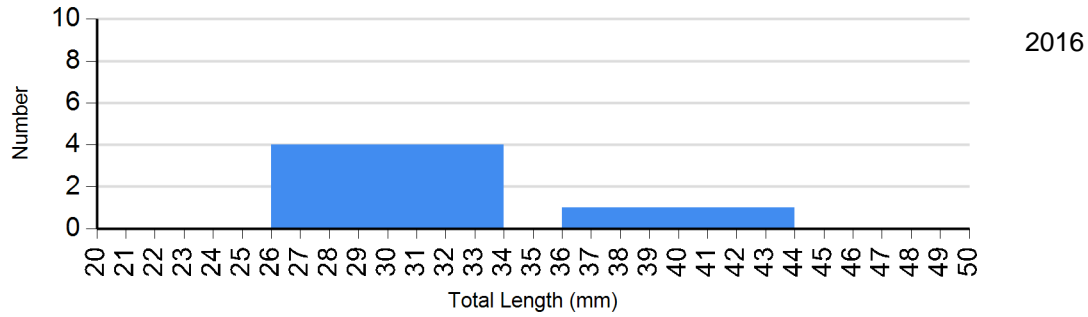


Site: 1930
Species: Rainbow Trout

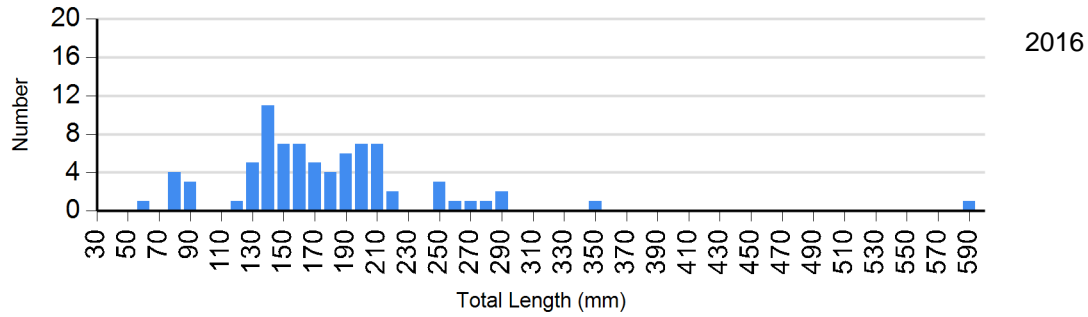


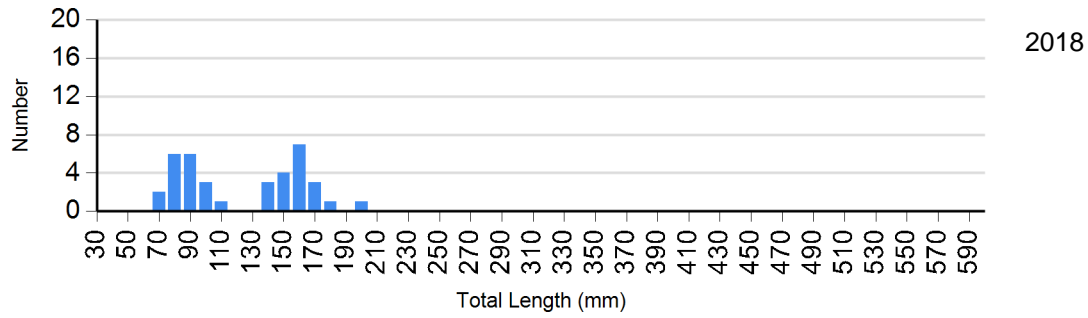
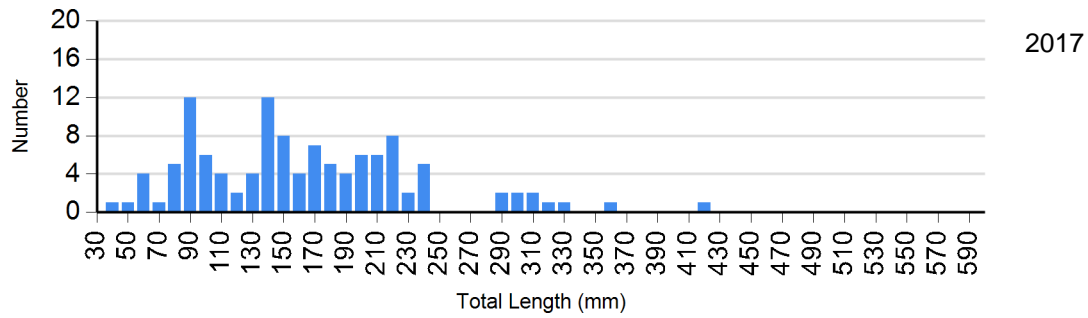


Site: 1930
Species: White Sucker

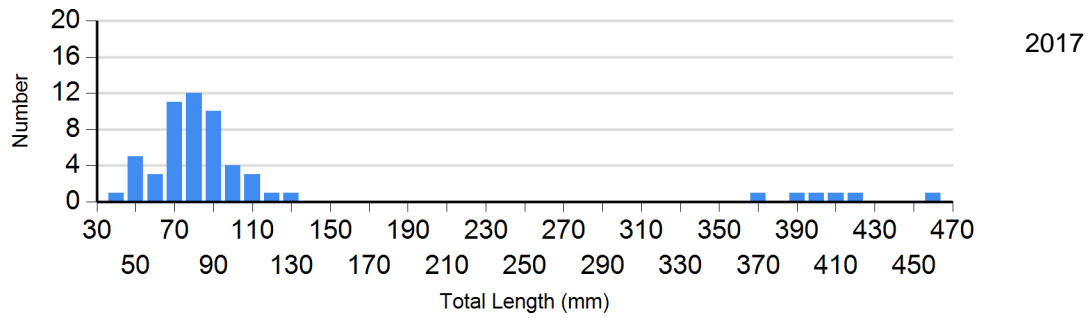
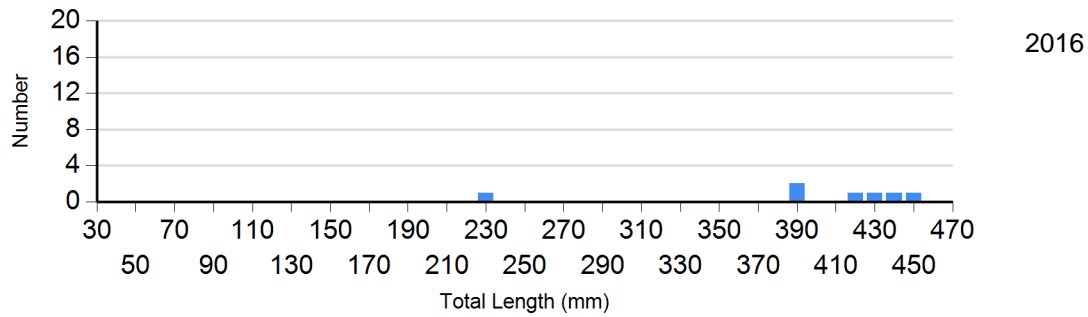


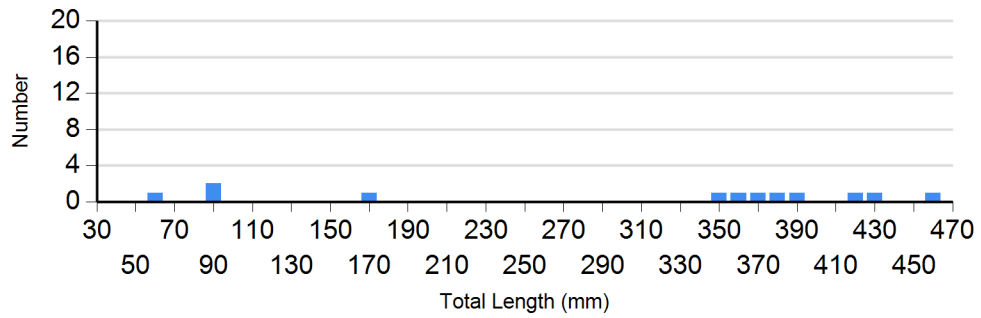
Site: 1936
Species: Brown Trout



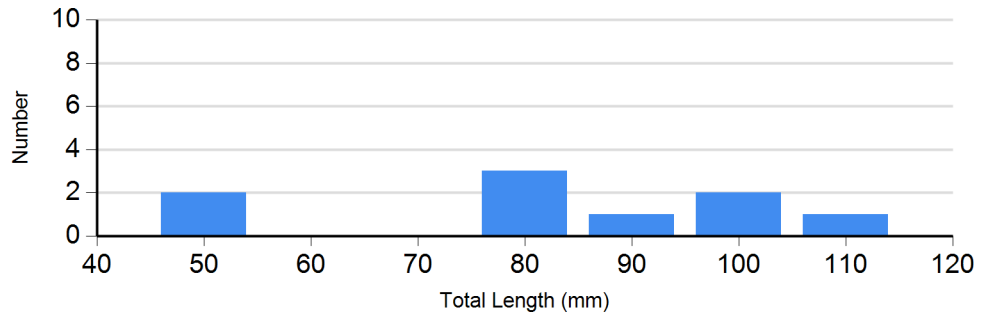


Site: 1936
Species: Rainbow Trout

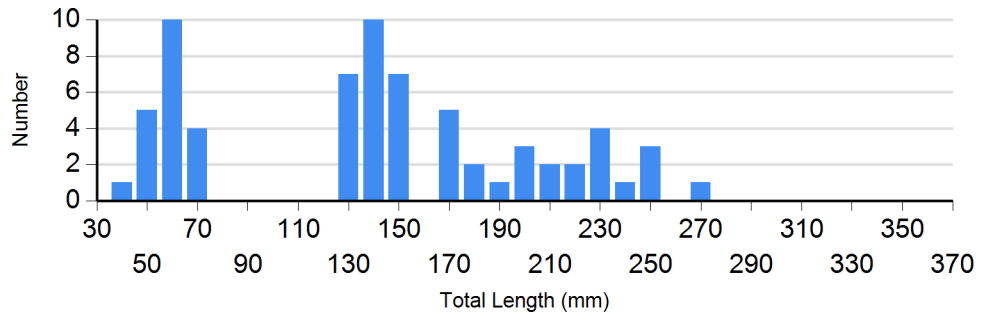


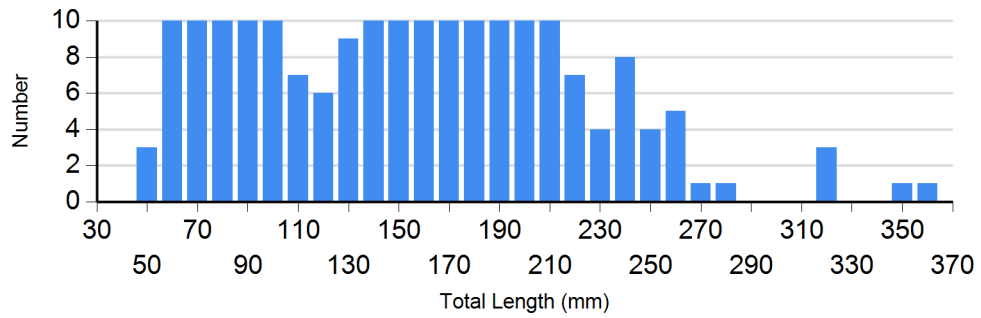
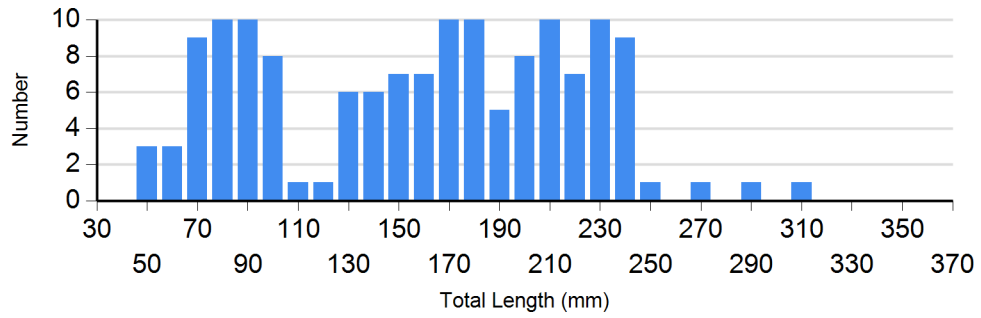
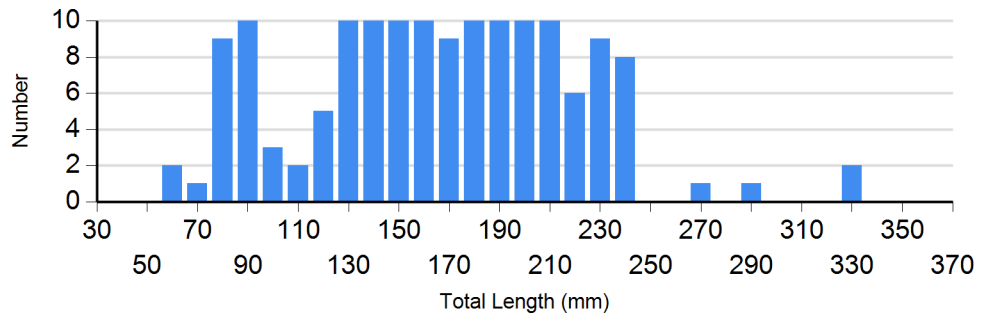


Site: 1936
Species: White Sucker

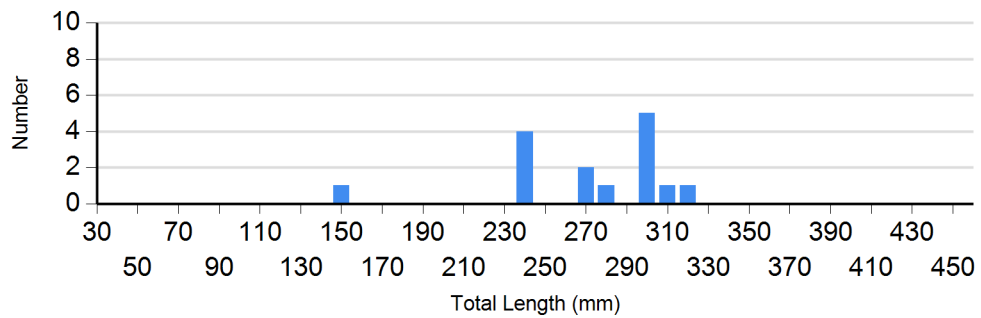


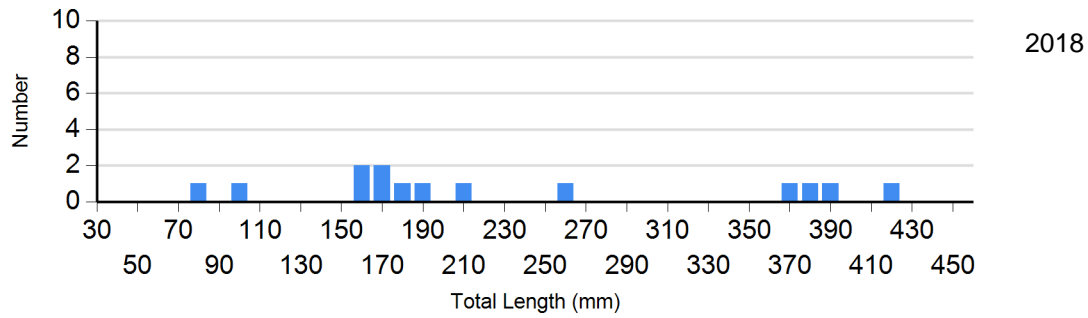
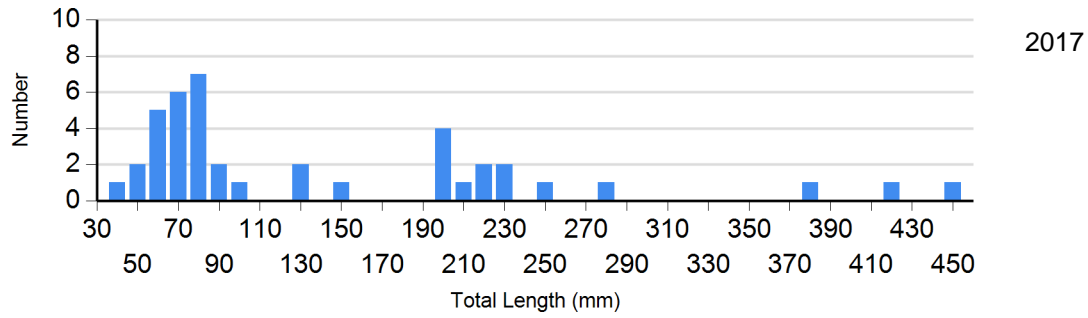
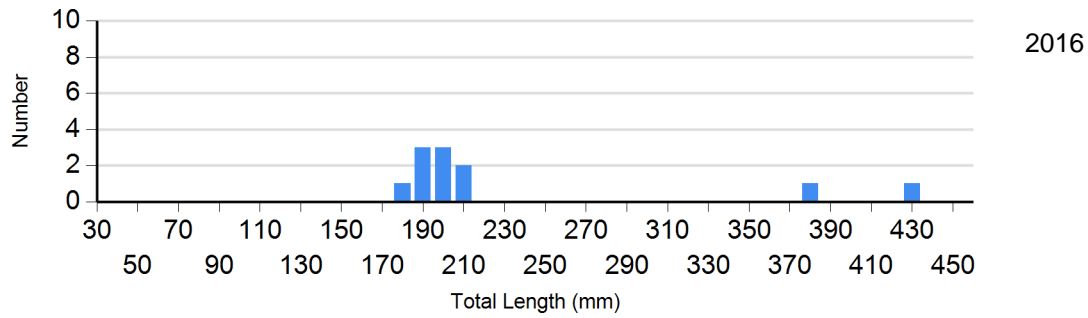
Site: 1952
Species: Brown Trout



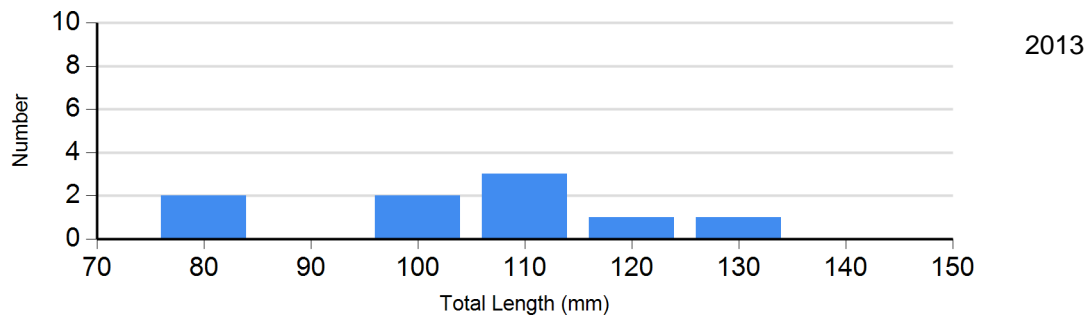


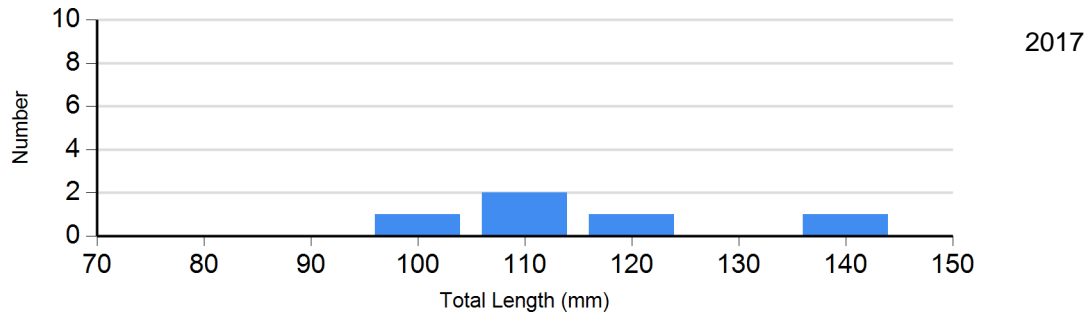
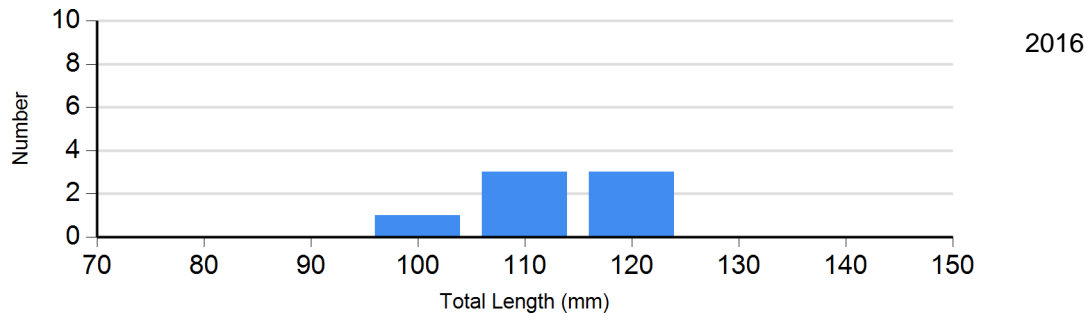
Site: 1952
Species: Rainbow Trout



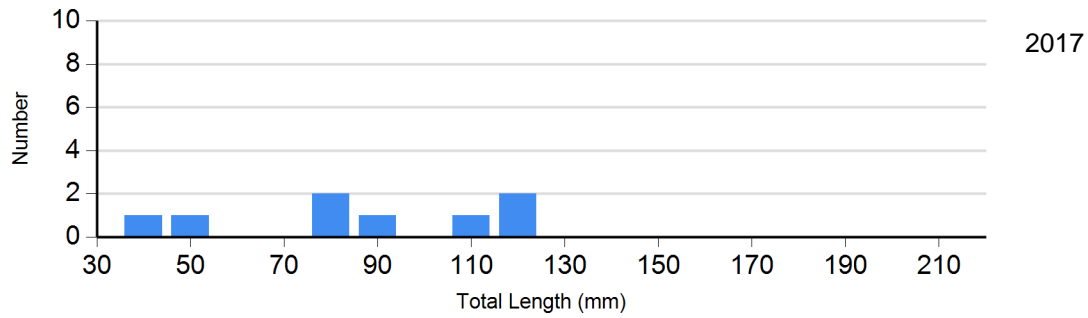
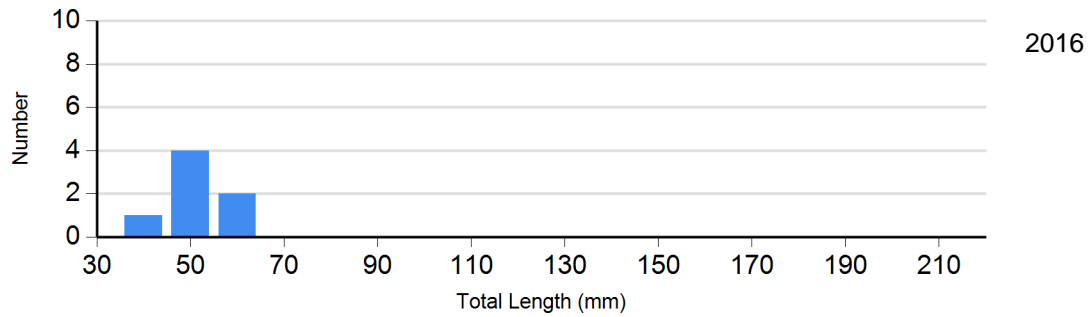


Site: 1952
Species: Rock Bass

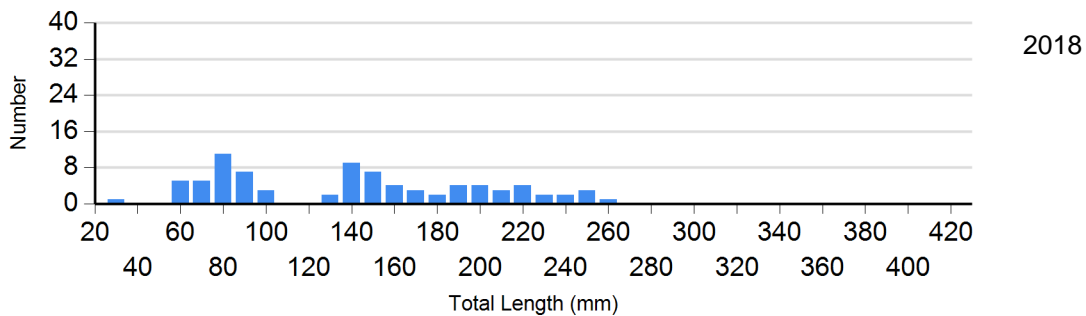
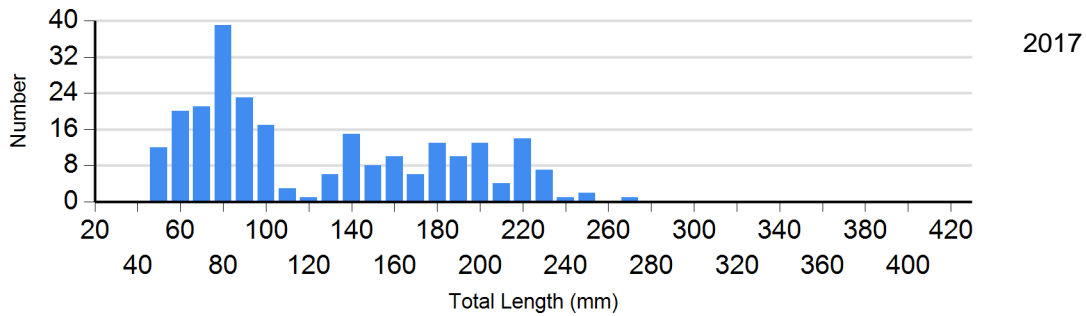
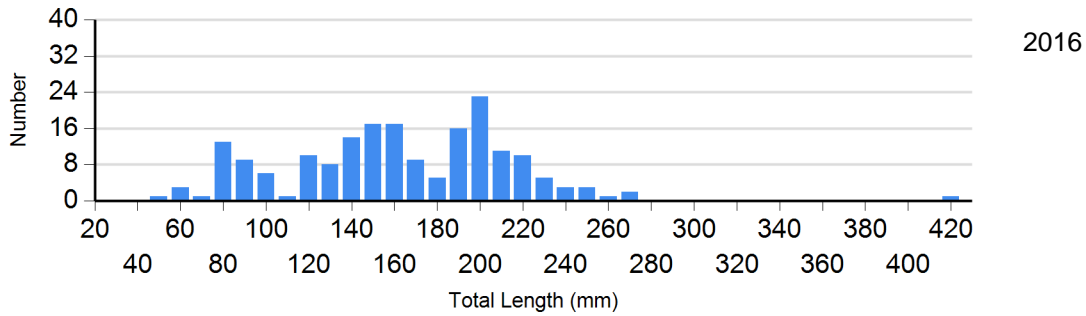
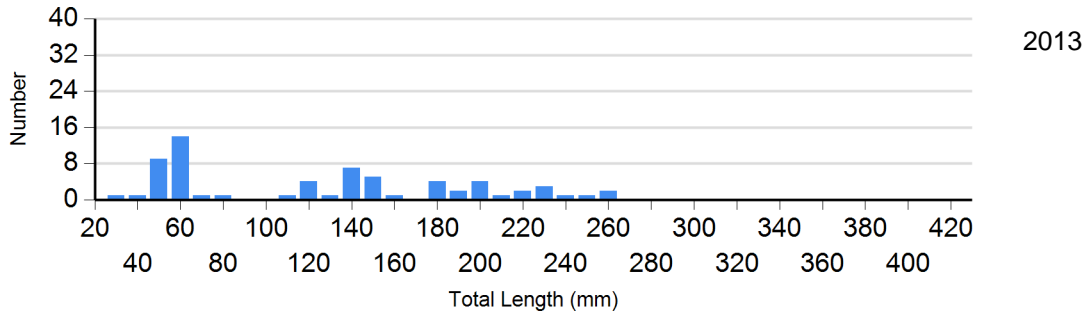




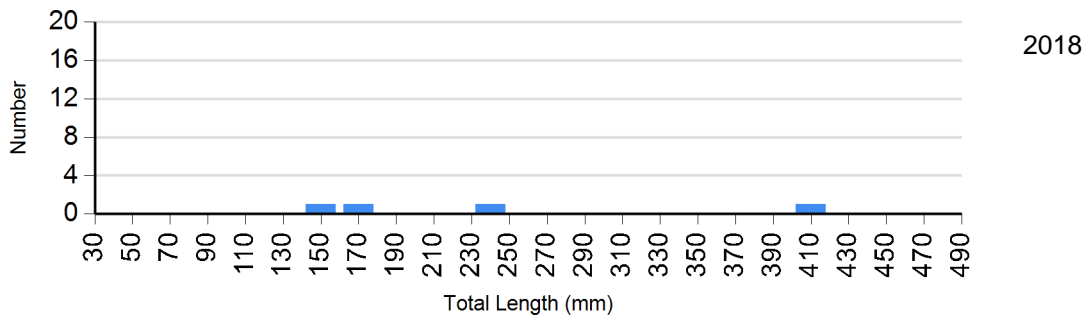
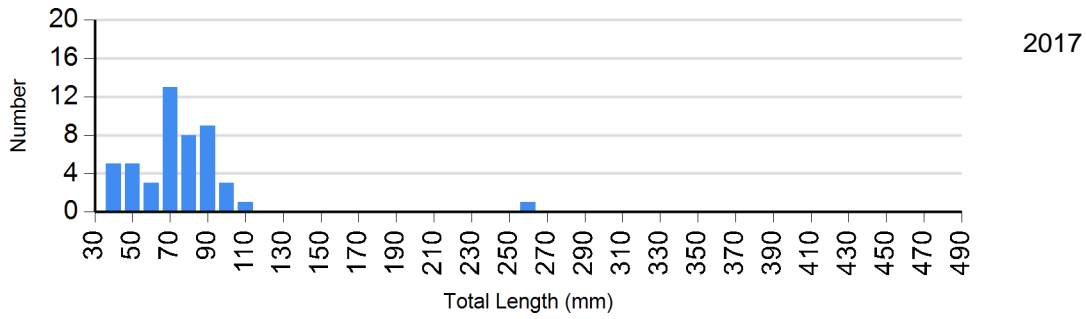
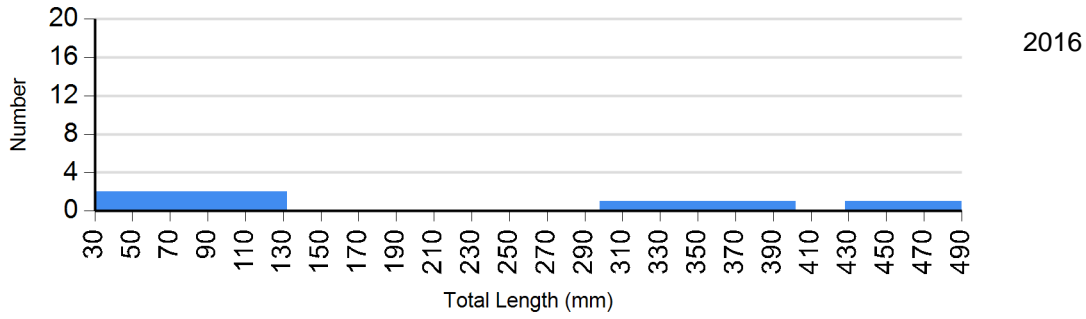
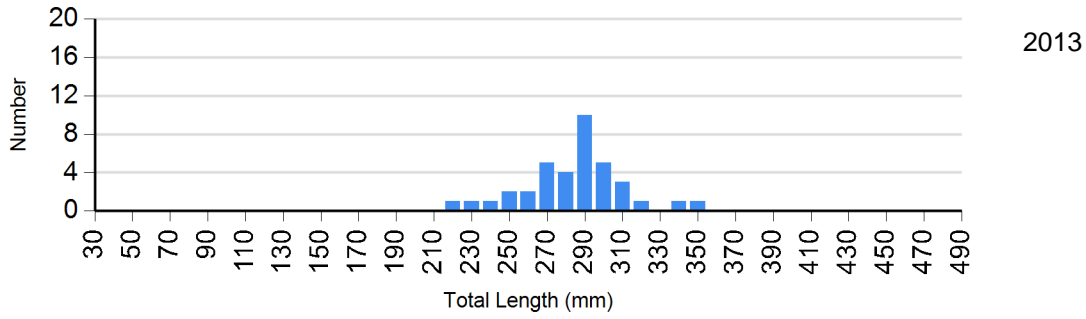
Site: 1952
Species: White Sucker



Site: 1965
Species: Brown Trout



Site: 1965
Species: Rainbow Trout



Site: 1965
Species: Rock Bass

