

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Castle Creek - South Fork, Pennington County
02-0073-00
2019

Table 1. Population and Biomass Estimates for Castle Creek - South Fork

| | | | |
|--|---------------------------------|---------------------------------|------|
| Site Number: 3 | Date Sampled: 07/31/2019 | Conductivity (umhos/cm): | 493 |
| Site Midpoint (Latitude, Longitude): 44.01097852, -103.83139349 | Site Length (m): 100 | pH: | 8.8 |
| Survey Completed by: South Dakota Game, Fish and Parks | Mean Width (m): 3.8 | Water Temperature (C): | 12.8 |
| Stream Classification: BK2, RB2 | Number of Pass: 3 | Voltage: | 0 |

| 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 | 102 | 104 | 108 | 102 | 2711 | 89 | 1040 | 1098 | 79.16 | 1673 | 142.0 | 32.7 |
| Brook Trout | >=200mm | 12 | 12 | 13 | 12 | 313 | 35 | 120 | 127 | 31.42 | 193 | 224.3 | 112.5 |
| Brook Trout | All | 114 | 116 | 120 | 114 | 3024 | 124 | 1160 | 1225 | 110.98 | 1866 | 150.7 | 41.1 |
| Rainbow Trout | <200mm | 30 | 30 | 31 | 30 | 782 | 17 | 300 | 317 | 15.48 | 483 | 122.4 | 22.2 |
| Rainbow Trout | >=200mm | 1 | 1 | 1 | 1 | 26 | 18 | 10 | 11 | 15.90 | 16 | 394.0 | 683.0 |
| Rainbow Trout | All | 31 | 31 | 32 | 31 | 808 | 35 | 310 | 327 | 31.37 | 499 | 131.2 | 43.5 |

| | | | |
|--|---------------------------------|---------------------------------|------|
| Site Number: 7 | Date Sampled: 07/31/2019 | Conductivity (umhos/cm): | 474 |
| Site Midpoint (Latitude, Longitude): 44.00759115, -103.83206939 | Site Length (m): 100 | pH: | 8.8 |
| Survey Completed by: South Dakota Game, Fish and Parks | Mean Width (m): 4.2 | Water Temperature (C): | 14.2 |
| Stream Classification: BK2, RB2 | Number of Pass: 3 | Voltage: | 50 |

| 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 | 52 | 55 | 61 | 52 | 1318 | 39 | 550 | 534 | 35.26 | 885 | 138.1 | 30.0 |
| Brook Trout | >=200mm | 4 | 4 | 4 | 4 | 96 | 12 | 40 | 39 | 10.44 | 64 | 230.8 | 122.0 |
| Brook Trout | All | 56 | 59 | 65 | 56 | 1414 | 52 | 590 | 573 | 46.13 | 949 | 144.7 | 36.5 |

| | | | | | | | | | | | | | |
|---------------|---------|----|----|----|----|-----|----|-----|-----|-------|-----|-------|-------|
| Rainbow Trout | <200mm | 22 | 22 | 24 | 22 | 527 | 12 | 220 | 214 | 10.46 | 354 | 124.8 | 22.2 |
| Rainbow Trout | >=200mm | 1 | 1 | 5 | 1 | 24 | 13 | 10 | 10 | 11.83 | 16 | 419.0 | 553.0 |
| Rainbow Trout | All | 23 | 24 | 28 | 23 | 575 | 26 | 240 | 233 | 23.27 | 386 | 137.6 | 45.3 |

Site Number: 9

Site Midpoint (Latitude, Longitude): 44.00590467, -103.83159943

Survey Completed by: South Dakota Game, Fish and Parks

Stream Classification: BK2, RB0

Date Sampled: 07/31/2019

Site Length (m): 100

Mean Width (m): 3.5

Number of Pass: 3

Conductivity (umhos/cm): 467

pH: 8.8

Water Temperature (C): 15.1

Voltage: 50

| 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 | 54 | 60 | 70 | 54 | 1737 | 60 | 600 | 703 | 53.33 | 965 | 143.6 | 34.4 |
| Brook Trout | >=200mm | 9 | 9 | 10 | 9 | 261 | 29 | 90 | 106 | 26.13 | 145 | 221.9 | 112.3 |
| Brook Trout | All | 63 | 69 | 78 | 63 | 1997 | 91 | 690 | 809 | 81.19 | 1110 | 154.8 | 45.5 |
| Rainbow Trout | <200mm | 8 | 13 | 38 | 8 | 376 | 16 | 130 | 152 | 14.07 | 209 | 152.0 | 41.9 |
| Rainbow Trout | All | 8 | 13 | 38 | 8 | 376 | 16 | 130 | 152 | 14.07 | 209 | 152.0 | 41.9 |

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 - South Fork, 2009-2019

Site 3

| Species/Size | Date | Pop Est. | (95% C.I.) | Stream Classification |
|-----------------------|--------------|----------|------------|-----------------------|
| Brook Trout <200mm | Jul 31, 2019 | 104 | 102-108 | |
| Brook Trout >=200mm | Jul 31, 2019 | 12 | 12-13 | BK2 |
| Rainbow Trout <200mm | Jul 31, 2019 | 30 | 30-31 | |
| Rainbow Trout >=200mm | Jul 31, 2019 | 1 | 1-1 | RB2 |

Site 7

| Species/Size | Date | Pop Est. | (95% C.I.) | Stream Classification |
|---------------------|--------------|----------|------------|-----------------------|
| Brook Trout <200mm | Jul 31, 2019 | 55 | 52-61 | |
| Brook Trout >=200mm | Jul 31, 2019 | 4 | 4-4 | BK2 |

| | | | | |
|-----------------------|--------------|----|-------|-----|
| Rainbow Trout <200mm | Jul 31, 2019 | 22 | 22-24 | |
| Rainbow Trout >=200mm | Jul 31, 2019 | 1 | 1-5 | RB2 |

Site 9

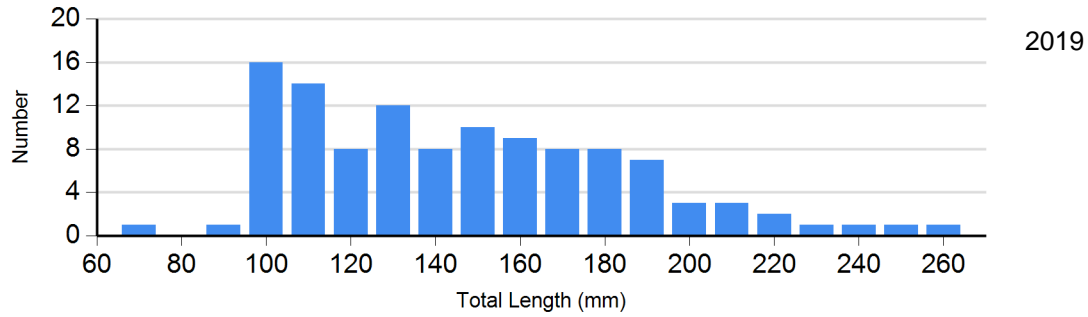
| Species/Size | Date | Pop Est. | (95% C.I.) | Stream Classification |
|----------------------|--------------|-----------------|-------------------|------------------------------|
| Brook Trout <200mm | Jul 31, 2019 | 60 | 54-70 | |
| Brook Trout >=200mm | Jul 31, 2019 | 9 | 9-10 | BK2 |
| Rainbow Trout <200mm | Jul 31, 2019 | 13 | 8-38 | |

Length Frequency Distribution

Length frequency histogram of species sampled by year.

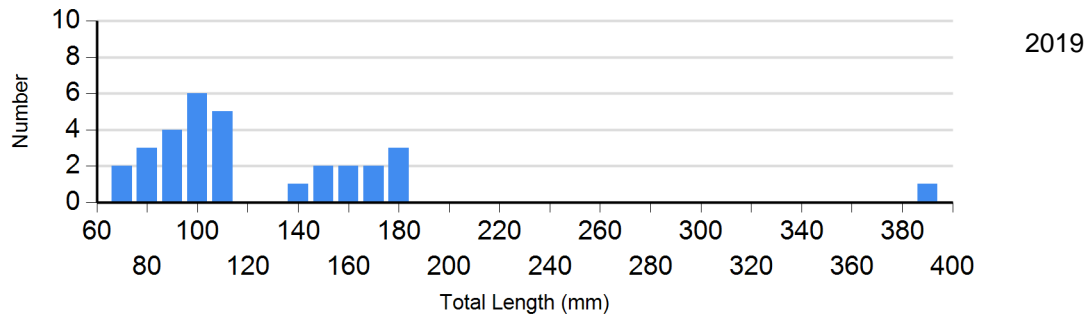
Site: 3

Species: Brook Trout



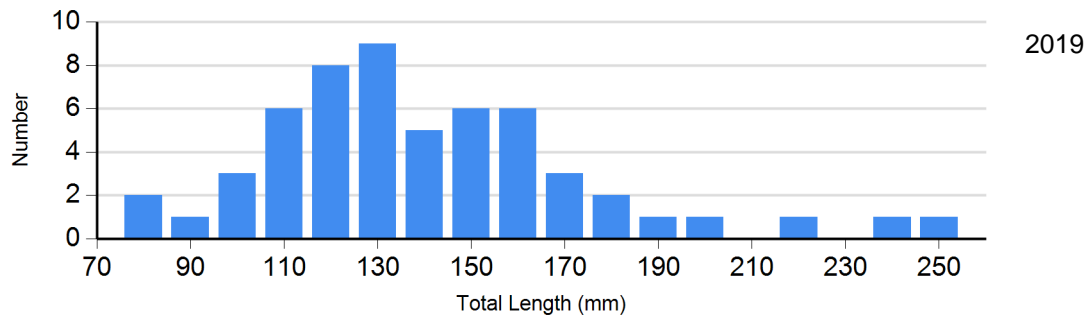
Site: 3

Species: Rainbow Trout

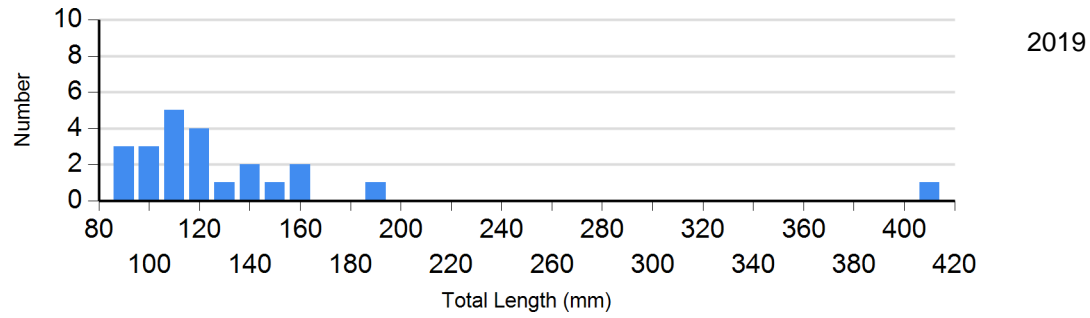


Site: 7

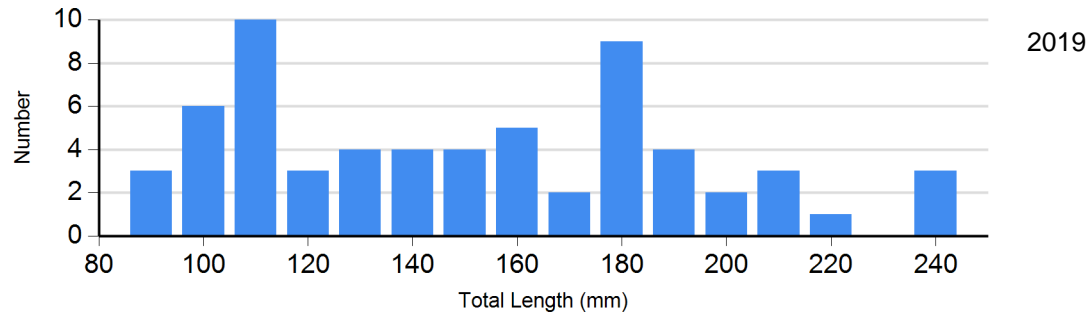
Species: Brook Trout



Site: 7
Species: Rainbow Trout



Site: 9
Species: Brook Trout



Site: 9
Species: Rainbow Trout

