

SOUTH DAKOTA BLACK HILLS COLD STREAM SURVEY
Battle Creek (Trib of Cheyenne River), Pennington County
21-0023-00
2016

Table 1. Population and Biomass Estimates for Battle Creek (Trib of Cheyenne River)

Site Number: 208 **Date Sampled:** 05/17/2016 **Conductivity (umhos/cm):**
Site Midpoint (Latitude, Longitude): 43.89679666, -103.36819041 **Site Length (m):** 100 **pH:**
Survey Completed by: South Dakota Game, Fish and Parks **Mean Width (m):** 8.7 **Water Temperature (C):**
Stream Classification: BK2, BR3 **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 | 5 | 5 | 7 | 5 | 58 | 3 | 50 | 23 | 2.81 | 80 | 165.8 | 54.6 |
| Brook Trout | >=200mm | 7 | 7 | 9 | 7 | 81 | 10 | 70 | 33 | 9.17 | 113 | 229.9 | 127.4 |
| Brook Trout | All | 12 | 14 | 21 | 12 | 161 | 16 | 140 | 65 | 13.98 | 225 | 203.2 | 97.1 |
| Brown Trout | <200mm | 2 | 2 | 4 | 2 | 23 | 1 | 20 | 9 | 1.03 | 32 | 174.5 | 50.0 |
| Brown Trout | >=200mm | 3 | 3 | 4 | 3 | 35 | 6 | 30 | 14 | 5.39 | 48 | 254.3 | 174.7 |
| Brown Trout | All | 5 | 5 | 7 | 5 | 58 | 7 | 50 | 23 | 6.42 | 80 | 222.4 | 124.8 |
| Creek Chub | All | 193 | 222 | 245 | 199 | 2557 | 77 | 2220 | 1036 | 68.97 | 3572 | 124.1 | 30.2 |
| Longnose Dace | All | 14 | 20 | 40 | 14 | 230 | 4 | 200 | 93 | 3.50 | 322 | 83.5 | 17.0 |
| Rock Bass | All | 10 | 14 | 30 | 10 | 161 | 8 | 140 | 65 | 7.26 | 225 | 113.4 | 50.4 |
| White Sucker | All | 41 | 56 | 83 | 41 | 645 | 64 | 560 | 261 | 57.00 | 901 | 192.0 | 99.0 |

Site Number: 222 **Date Sampled:** 05/17/2016 **Conductivity (umhos/cm):**
Site Midpoint (Latitude, Longitude): 43.88862350, -103.35988972 **Site Length (m):** 100 **pH:**
Survey Completed by: South Dakota Game, Fish and Parks **Mean Width (m):** 7.7 **Water Temperature (C):**
Stream Classification: BK2, BR3 **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 | 19 | 19 | 20 | 19 | 246 | 11 | 190 | 100 | 9.50 | 306 | 153.6 | 43.2 |
| Brook Trout | >=200mm | 7 | 7 | 7 | 7 | 91 | 13 | 70 | 37 | 11.36 | 113 | 232.9 | 140.1 |
| Brook Trout | All | 26 | 26 | 27 | 26 | 337 | 23 | 260 | 137 | 20.86 | 418 | 174.9 | 69.3 |
| Brown Trout | <200mm | 7 | 7 | 7 | 7 | 91 | 6 | 70 | 37 | 5.28 | 113 | 183.0 | 65.1 |
| Brown Trout | >=200mm | 3 | 3 | 4 | 3 | 39 | 6 | 30 | 16 | 5.12 | 48 | 230.3 | 147.3 |
| Brown Trout | All | 11 | 11 | 11 | 11 | 143 | 13 | 110 | 58 | 11.44 | 177 | 197.2 | 89.8 |
| Creek Chub | All | 335 | 383 | 412 | 354 | 4968 | 71 | 3830 | 2012 | 63.69 | 6162 | 78.5 | 14.4 |
| Longnose Dace | All | 116 | 244 | 430 | 116 | 3165 | 45 | 2440 | 1282 | 40.62 | 3926 | 68.3 | 14.4 |
| White Sucker | All | 46 | 70 | 113 | 46 | 908 | 44 | 700 | 368 | 39.13 | 1126 | 125.3 | 48.3 |

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 Battle Creek (Trib of Cheyenne River), 2006-2016

Site 208

| Species/Size | Date | Pop Est. | (95% C.I.) | Stream Classification |
|---------------------|--------------|----------|------------|-----------------------|
| Brook Trout <200mm | Aug 11, 2015 | 10 | 10-10 | |
| | May 17, 2016 | 5 | 5-7 | |
| Brook Trout >=200mm | Aug 11, 2015 | 5 | 5-6 | BK2 |
| | May 17, 2016 | 7 | 7-9 | BK2 |
| Brown Trout <200mm | May 17, 2016 | 2 | 2-4 | |
| Brown Trout >=200mm | Aug 11, 2015 | 1 | 1-1 | BR3 |
| | May 17, 2016 | 3 | 3-4 | BR3 |

| | | | |
|---------------|--------------|-----|---------|
| Creek Chub | Aug 11, 2015 | 174 | 166-183 |
| | May 17, 2016 | 222 | 199-245 |
| Longnose Dace | Aug 11, 2015 | 69 | 69-70 |
| | May 17, 2016 | 20 | 14-40 |
| Rock Bass | May 17, 2016 | 14 | 10-30 |
| White Sucker | Aug 11, 2015 | 85 | 81-91 |
| | May 17, 2016 | 56 | 41-83 |

Site 222

| Species/Size | Date | Pop Est. | (95% C.I.) | Stream Classification |
|---------------------|--------------|-----------------|-------------------|------------------------------|
| Brook Trout <200mm | Aug 11, 2015 | 1 | 1-1 | |
| | May 17, 2016 | 19 | 19-20 | |
| Brook Trout >=200mm | Aug 11, 2015 | 4 | 4-4 | BK3 |
| | May 17, 2016 | 7 | 7-7 | BK2 |
| Brown Trout <200mm | May 17, 2016 | 7 | 7-7 | |
| Brown Trout >=200mm | Aug 11, 2015 | 4 | 4-4 | BR3 |
| | May 17, 2016 | 3 | 3-4 | BR3 |

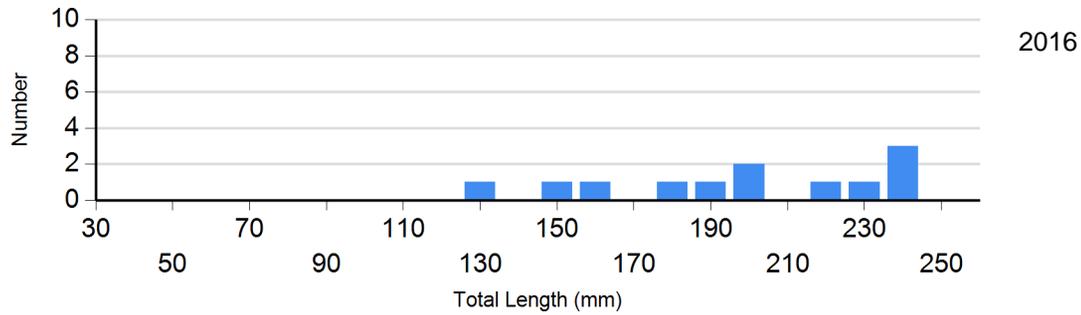
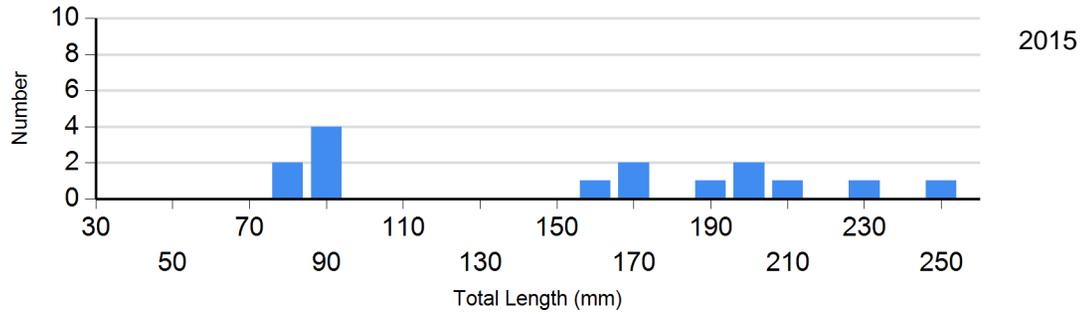
| | | | |
|---------------|--------------|-----|---------|
| Creek Chub | Aug 11, 2015 | 53 | 53-54 |
| | May 17, 2016 | 383 | 354-412 |
| Longnose Dace | Aug 11, 2015 | 5 | 5-6 |
| | May 17, 2016 | 244 | 116-430 |
| Rock Bass | Aug 11, 2015 | 10 | 10-12 |
| White Sucker | Aug 11, 2015 | 21 | 21-21 |
| | May 17, 2016 | 70 | 46-113 |

Length Frequency Distribution

Length frequency histogram of species sampled by year.

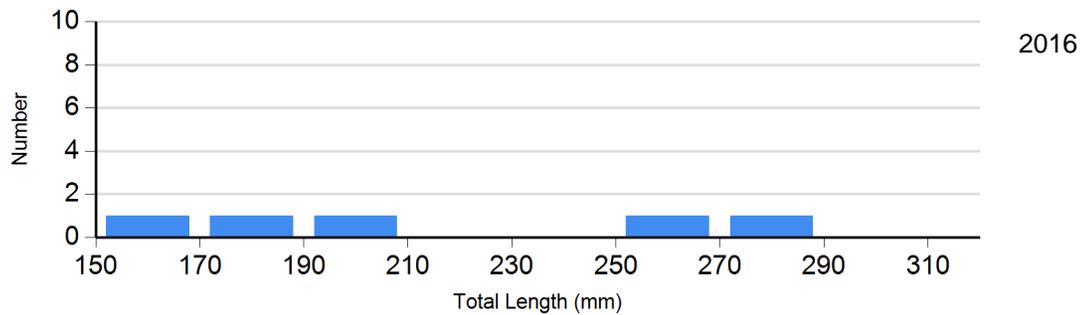
Site: 208

Species: Brook Trout

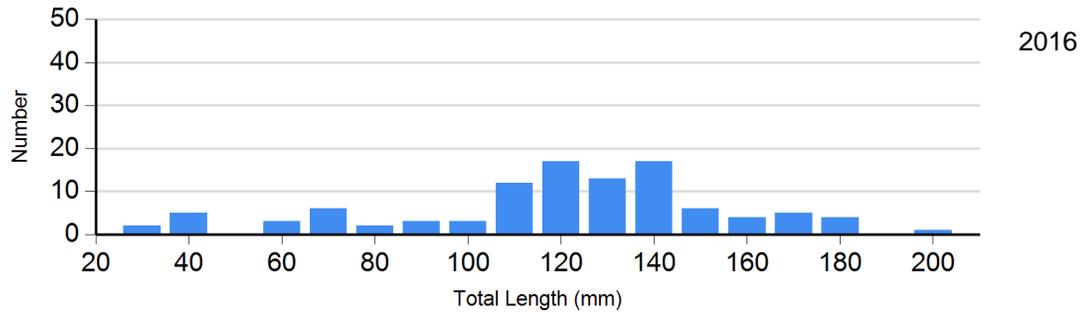
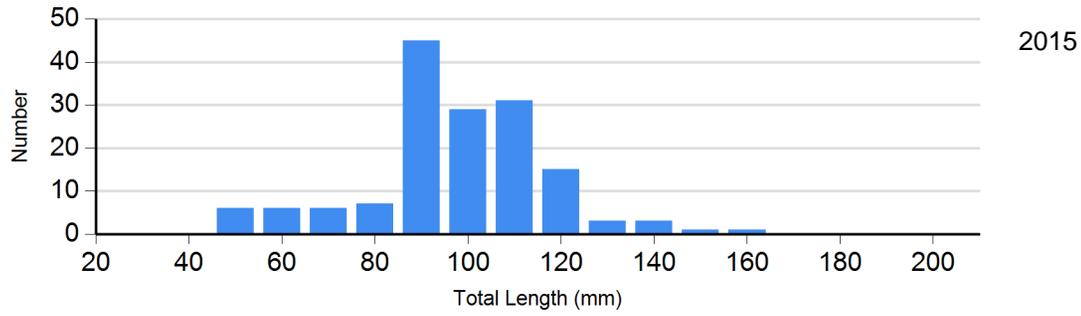


Site: 208

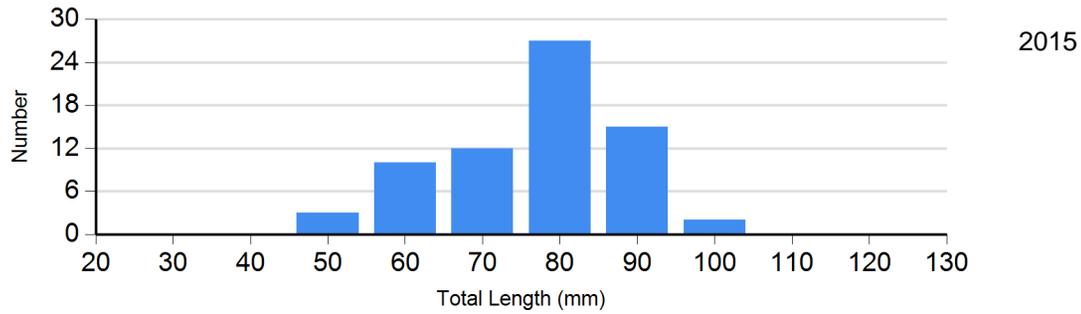
Species: Brown Trout

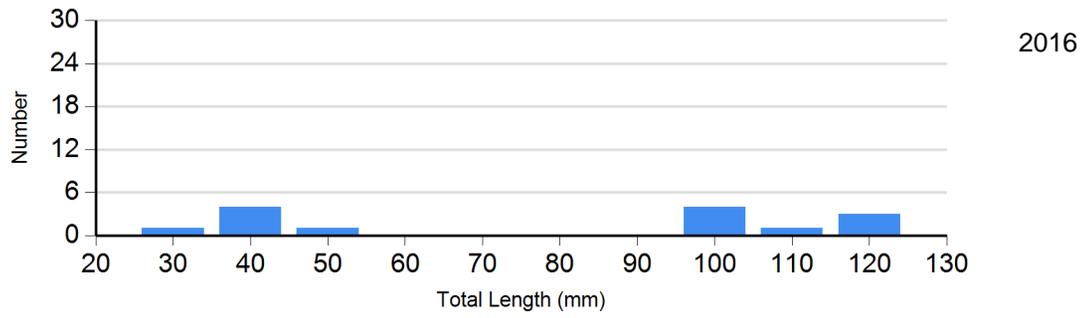


Site: 208
Species: Creek Chub

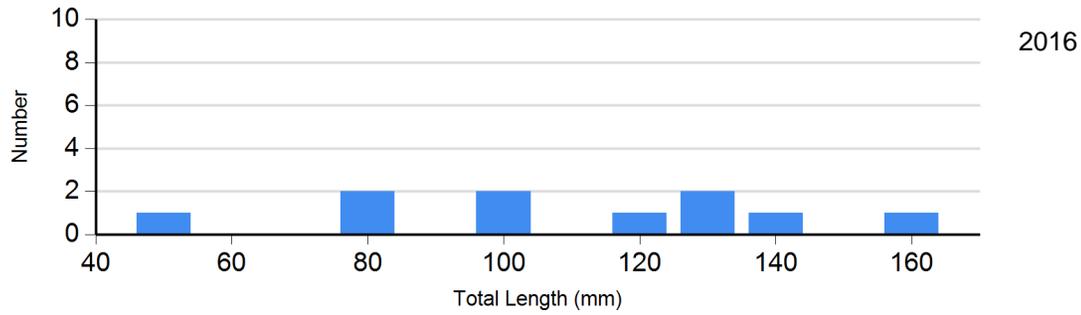


Site: 208
Species: Longnose Dace

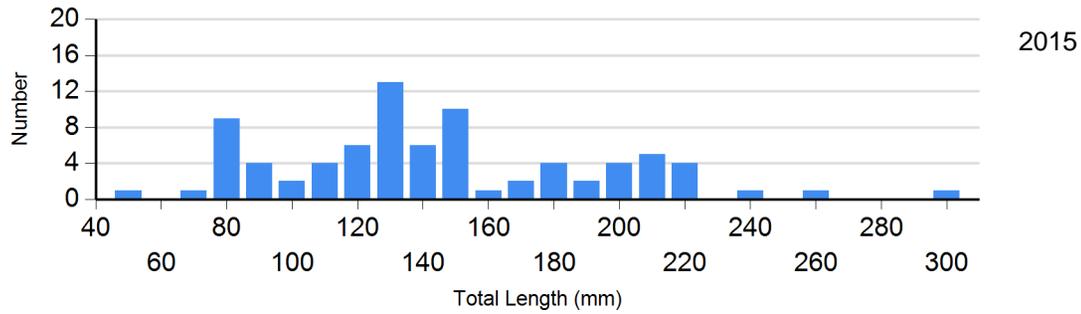


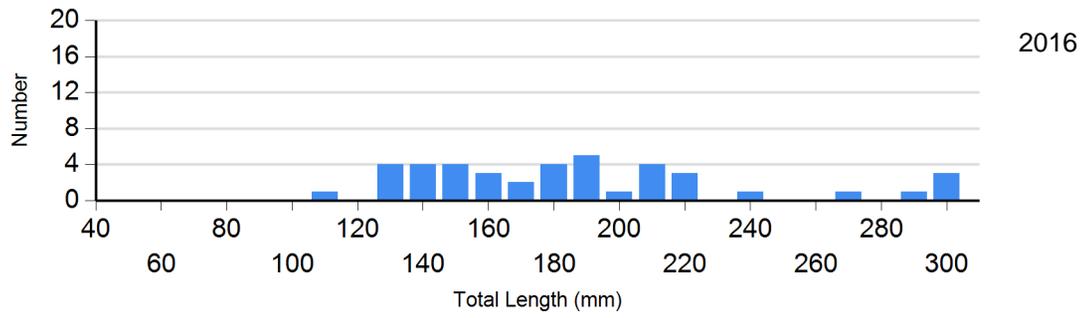


Site: 208
Species: Rock Bass

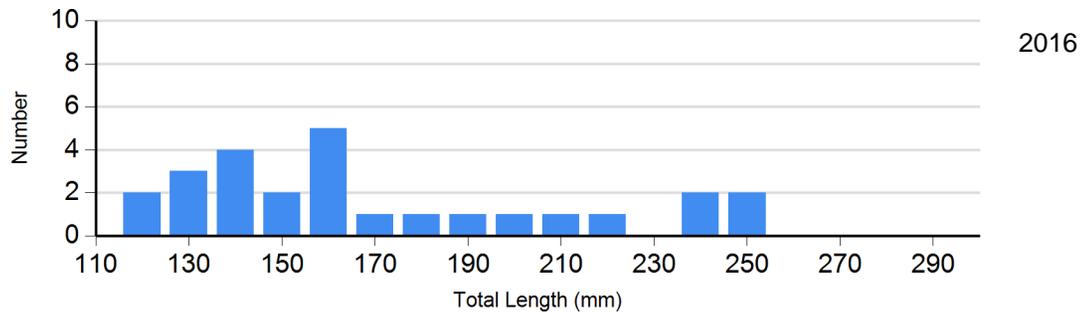
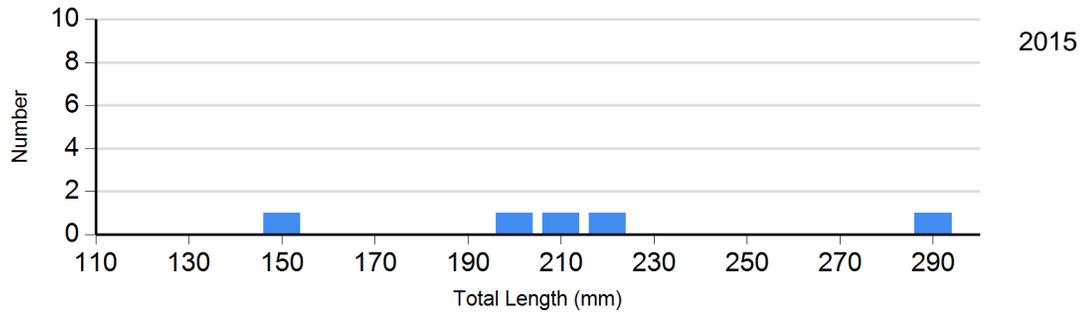


Site: 208
Species: White Sucker

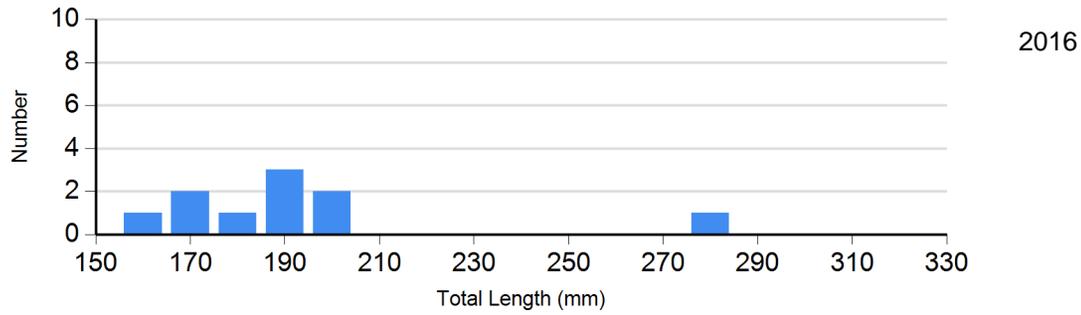
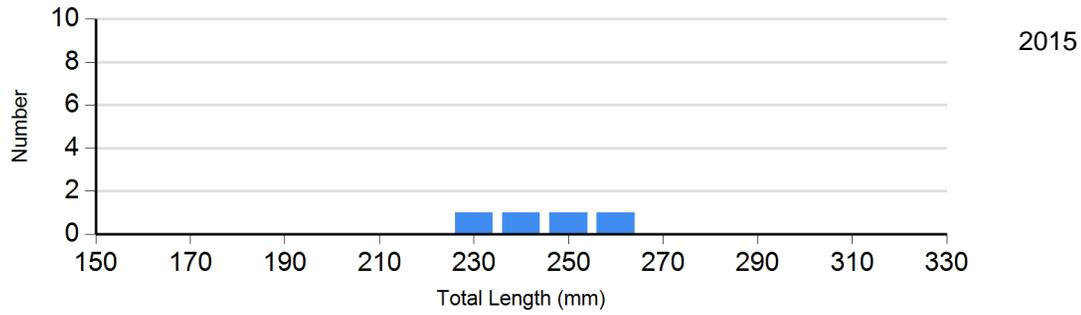




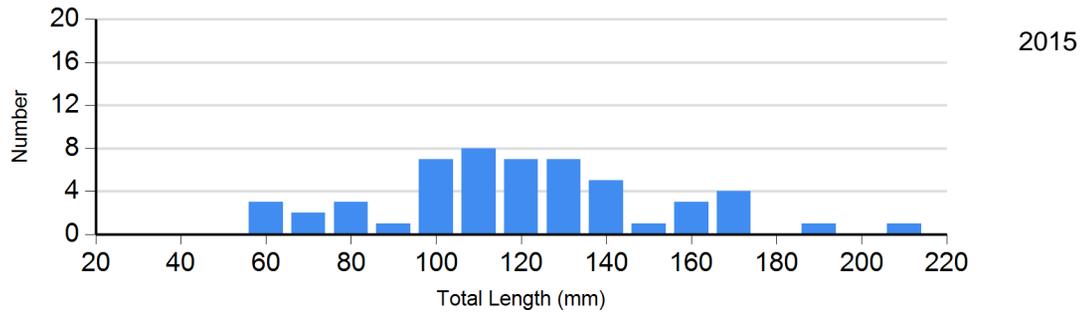
Site: 222
Species: Brook Trout

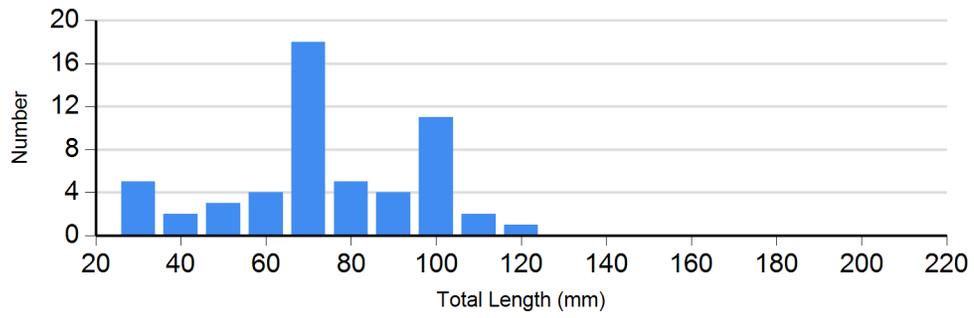


Site: 222
Species: Brown Trout

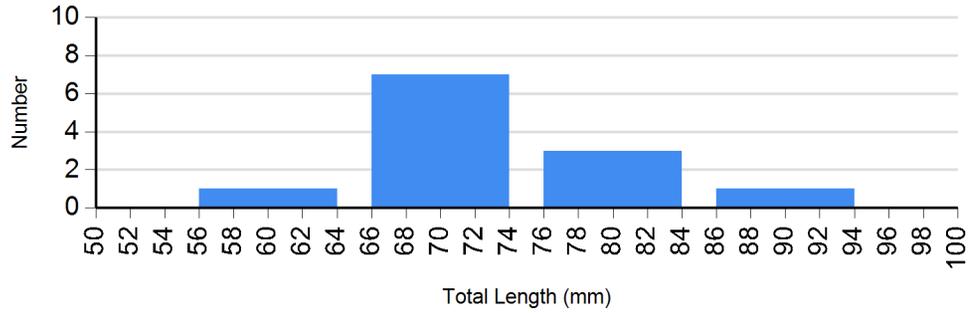


Site: 222
Species: Creek Chub

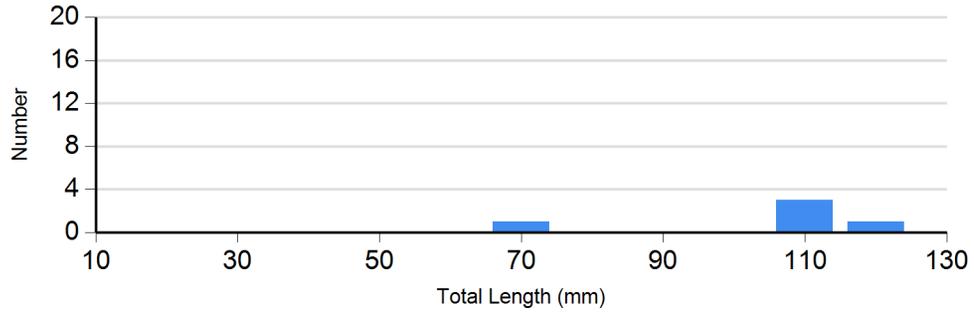


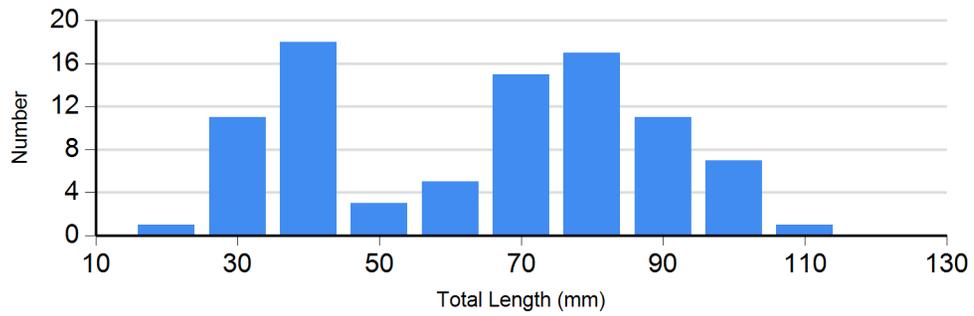


Site: 222
Species: Fathead Minnow

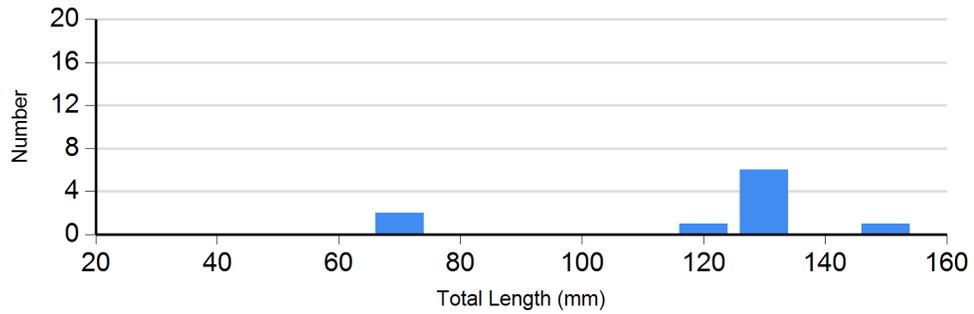


Site: 222
Species: Longnose Dace

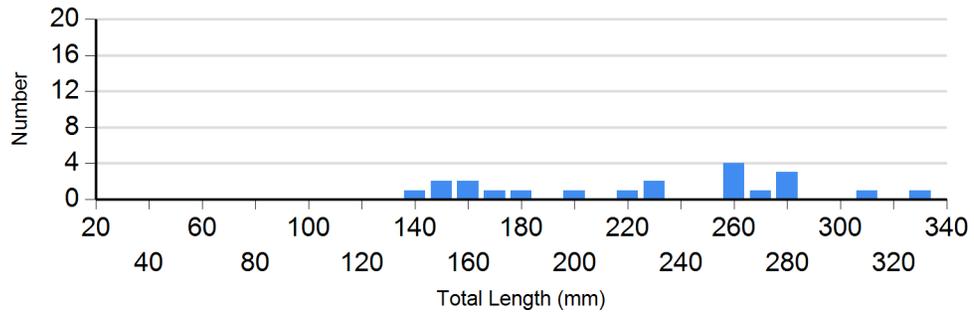


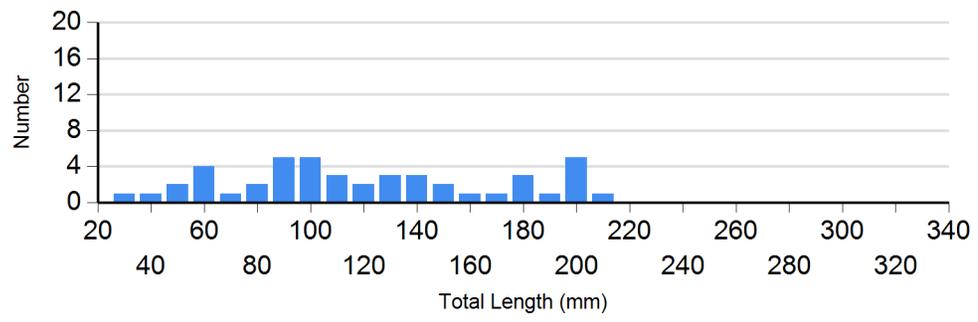


Site: 222
Species: Rock Bass



Site: 222
Species: White Sucker





2016