# Amsden Dam

## Site Description

***Location***

| | |
|---|---|
| Water designation number (WDN) | 22-0001-00 |
| Legal description | T122N-R59W-Sec.19-20, 29-30 |
| County (ies) | Day |
| Location from nearest town | three and one-half miles south and three miles west of Andover, SD |

***Survey Dates and Netting Information***

| | |
|---|---|
| Dates of current survey | June 15 – 17, 2004<br>August 26,2005<br>September 12-19, 2006 |
| Dates of last survey | May 20-23, 1999 |
| Gill net sets (n) | 3 (2004,2006) |
| Frame net sets (n) | 19 (2004) 18 (2006) |
| Fall electrofishing (min) | 59 (2005) 63 (2006) |

***Morphometry (Figure 1)***

| | |
|---|---|
| Watershed area (acres) | 31,961 |
| Surface area (acres) | 235 |
| Maximum depth (ft) | 27 |
| Mean depth (ft) | 9 |

***Ownership and Public Access***

Amsden Dam is a small impoundment managed by the SDGFP. A state park (including camp sites and boat ramp) is located centrally on the southern shoreline of Amsden Dam (Figure 1). Lands adjacent to the lake are generally under state and private ownership.

***Watershed and Land Use***

Amsden Dam watershed is comprised of a mix of pasture or grassland and cropland.

***Water Level and Water Quality***

Visual observation indicated Amsden Dam at or near full at the time of this survey. The trophic state of Amsden Dam varies from eutrophic to hypreutrophic.

***Aquatic Vegetation and Exotics***

Cattails and bulrushes cover <5% of the shoreline of Amsden Lake, submergent vegetation in the form of *Potamogeton richardsonii, P. pectinatus*, and *Ceratophyllum demersum* are found throughout the lake (E. Stueven and W. Stewart 1996). No exotic vegetation or wildlife was reported during this survey.

***Fish Management Information***

| | |
|---|---|
| Primary species | black crappie, bluegill, muskellunge, smallmouth bass, walleye |
| Other species | black bullhead, common carp, fathead minnow, johnny darter, northern pike, smallmouth bass, white sucker, yellow perch |
| Management classification | warm-water permanent impoundment |
| Fish Consumption Advisories | None |

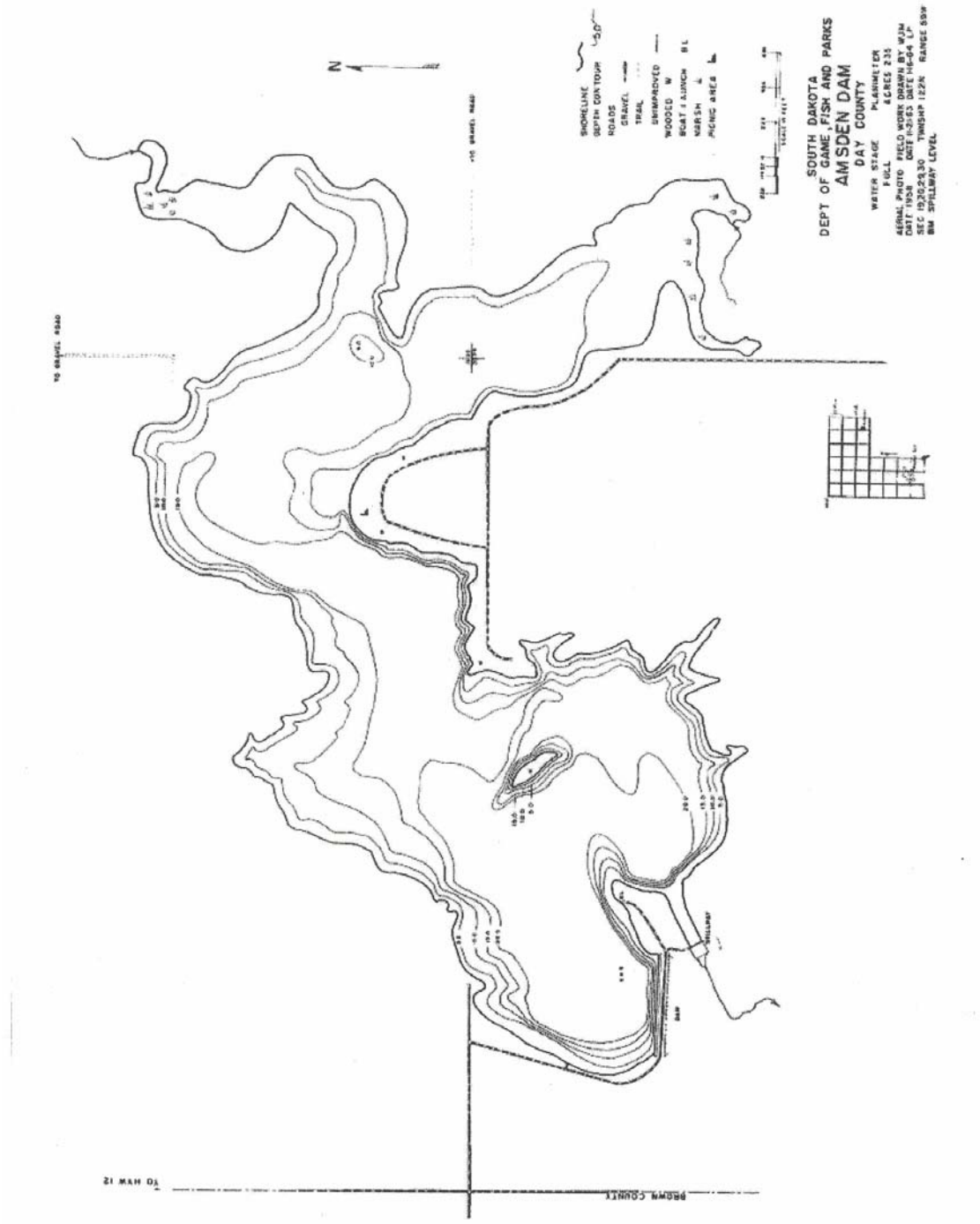


Figure 1. Amsden Dam contour map.

## Management Objectives

1) Maintain a mean frame net CPUE of stock-length black crappie ≥ 15, a PSD of 30 – 60, an RSD-P of 5 – 10.

2) Maintain a mean frame net CPUE of stock-length bluegill ≥ 25, a PSD of 30 – 60, an RSD-P of 5 – 10.

3) Maintain a low density muskellunge population that provides a unique angling opportunity in northeastern South Dakota.

4) Maintain a mean fall night electrofishing CPUE of stock-length smallmouth bass ≥ 30, a PSD of 30-60, and an RSD-P of 5-10.

5) Maintain a mean gill net CPUE of stock-length walleye ≥ 10, a PSD of 30 – 60, and an RSD-P of 5 – 10.

## Results and Discussion

Amsden Dam is an artificial impoundment created on Mud Creek in 1936, by the Work Progress Administration. There are two main water sources for Amsden Dam, Peckerel Creek in the northeast corner and Mud Creek in the southeast corner (Figure 1). The Mud Creek outlet is located on the western edge of the Amsden Dam, and is the only outlet that exists (Figure 1).

Prior to 2004, fisheries survey activities were designed around the existing muskellunge population. Survey gears were limited to spring and fall night electrofishing, and frame netting during cool water periods, in an effort to minimize the risk of lethally sampling muskellunge (Ermer et al. 2005). This approach limited the ability to monitor the status of certain species commonly assessed utilizing gill nets (i.e., northern pike, walleye, and yellow perch). In the fall 2004, biennial standard fish population assessments began utilizing gill nets, frame nets, and fall night electrofishing.

*Primary Species*

Black crappie: The mean frame net CPUE of stock-length black crappie was 10.3 in 2006, an increase from the 0.3 observed in 2004 (Tables 1-3). Length-frequency analysis of frame net captured black crappies indicates the presence of at least three year-classes, indicating relatively consistent recruitment in recent years, resulting in increased abundance (Figure 2). Based on the mean frame net CPUE observed in 2006 black crappie abundance appears to be low to moderate.

Black crappie captured in frame nets during 2006 ranged in total length from 80 to 250 mm (Figure 2). The PSD and RSD-P of black crappie captured in frame nets during 2006 was 28 and 1, respectively, and well below PSD and RSD-P values of 100

observed in 2004 (Table 1; Table 3; Figure 2). High PSD and RSD-P values observed in 2004 were likely a result of sporadic recruitment, resulting in the adult population being skewed toward larger individuals. However, PSD and RSD-P values declined during the 2006 survey, the result of recently produced black crappies recruiting to the population

No black crappie growth information was collected in 2004 nor 2006. The condition of black crappie captured in Amsden Dam was good in 2006 with mean relative weight (Wr) values exceeding 115 for all length groups sampled. No length related trends in Wr were apparent during the 2006 survey.

Bluegill: The mean frame net CPUE of stock-length bluegill during 2006 was 16.2 (Tables 1-3). A substantial increase from the 0.7 observed during the 2004 survey (Tables 2-3). Bluegill abundance, as indexed by mean frame net CPUE is considered low to moderate.

The total length of bluegill captured in frame nets during 2006 ranged from 70 to 190 mm (Figure 3). PSD and RSD-P values were 82 and 0, respectively for frame net captured bluegills. The high PSD value is the result of a large bluegill cohort ranging in length from 150-190 mm dominating the population (Figure 3). As these fish grow and reach preferred length (> 200 mm), RSD-P values should increase.

No growth information was available for bluegill in Amsden Dam; however, the condition of bluegill in Amsden Dam during 2006 was excellent with mean relative weight (Wr) values exceeding 100 for all length categories sampled. No length related trends in Wr were apparent for frame net captured bluegills in 2006.

Muskellunge: Muskellunge were introduced into Amsden Dam in 1975 creating South Dakota's only muskellunge fishery (Hubers and Pyle 1998). Hubers and Pyle (1998) reported that from 1975-1996 muskellunge fingerling stockings of various sizes and densities were made, resulting in a somewhat successful fishery. However concerns over declining muskellunge numbers from anglers prompted a change in management. In 1996, 500 fingerling muskellunge were stocked into Amsden and 500 were held and over-wintered at Blue Dog State Fish Hatchery to be stocked in the spring, in an attempt to increase survival of newly stocked muskellunge (Hubers and Pyle 1998). Hubers and Pyle (1998) reported that fall electrofishing and frame netting in 1997 resulted in a 10 muskellunge sample, nine of these were freeze branded age-1 fish over-winter at Blue Dog State Fish Hatchery and one adult. None of the fall stocked muskellunge were sampled indicating apparent high mortality.

Ermer et al. (2005) reported that fall electrofishing in 1998-2002 resulted in eight muskellunge being sampled, and twenty three frame net nights of effort in 1999 resulted in a ten muskellunge sample, with eight of the ten believed to be from a fingerling stocking made in April 1999.

Fall electrofishing and netting surveys conducted in 2004-2006 resulted in two adult muskellunge being sampled, both in gill nets during 2004. The success of stockings made in 2004-2006 is unknown as muskellunge in Amsden Dam have proven difficult to sample.

Smallmouth bass: Smallmouth bass were introduced into Amsden in 1984, and have become a well-established self-supporting population that should prove attractive to anglers (Ermer et al. 2005). The mean fall electrofishing CPUE of stock-length smallmouth bass was 22.3 and 13.4 in 2005 and 2006, respectively (Tables 1-3). Fall electrofishing CPUE values observed in 2005 and 2006 were below the minimum objective (≥ 30 stock-length fish/hour), and indicative of a moderate density population. Examination of the frame net length frequency suggests consistent recruitment in recent years with good natural reproduction in 2006 (Table 8; Figure 5).

Smallmouth bass captured during fall night electrofishing ranged in total length from 210 to 450 mm (Figure 4). Frame net captured smallmouth bass ranged in total length from 110 to 500 mm (Figure 5). PSD and RSD-P values during 2006 were 64 and 36, respectively for smallmouth bass caught during fall electrofishing, and 17 and 9, respectively for smallmouth captured using frame nets (Table 1; Table 3; Figures 4-5).

Growth of smallmouth bass during 2006 was slightly faster than the region IV and statewide means reported for smallmouth bass by Willis et al. (2001), with mean back-calculated lengths for age-3 of 285 mm for smallmouth sampled utilizing fall electrifishing in 2006 (Table 6; Table 8). Condition of smallmouth bass sampled by fall electrofishing and frame nets in 2006 was good with mean relative weights (Wr) exceeding 100 for all length groups sampled. No length-related trends in Wr were apparent for smallmouth bass in Amsden Dam.

Walleye: The mean gill net CPUE of stock-length walleye during 2006 was 8.7, a slight increase from the 6.0 observed during 2004 (Table1). The mean gill net CPUE observed during 2006 was slightly below the minimum objective (≥ 10 stock-length fish/net night), and indicative of a low to moderate density population (Tables 1-3).

Ermer et al. (2005) and Hubers and Blackwell (1999) reported that natural recruitment can at times significantly contribute to the walleye population. However from the 1999-2002 highest fall electrofishing CPUE of age-0 walleye coincided with small fingerling stocks made in 1999 and 2001 (Table 2; Table 3; Table 9; Table 10). Fall electrofishing conducted in 2005 indicated poor natural reproduction with a mean CPUE of age-0 walleye of 1.0 (Tables 1-3). In 2006, fall electrofishing indicated relatively successful natural reproduction with a mean electrofishing CPUE of age-0 walleyes of 34.8 (Tables 1-3). Although, the 2006 fall electrofishing CPUE of age-0 walleyes indicates a relatively small year-class produced, it is believed to be larger as conditions were less than ideal during sampling (i.e., murky water and high conductivity), which likely affected sampling efficiency. During the 2006 netting survey, six year-classes were represented in the gill net catch, with the 2003 and 2004 cohorts being the most represented and coinciding with fingerling stockings (Tables 9-10).

Walleye captured in gill nets during 2006 ranged in length from 160 to 530 mm (Figure 6). The PSD was 23 and the RSD-P was 8, indicating a nearly balanced population, as defined by PSD values ranging from 30-60 and RSD-P values from 5-10 (Table 1; Table 3; Figure 6). Approximately 69% of walleye sampled in 2006 were below the 356 mm (14-inch) minimum length restriction and unavailable for angler harvest. Few inferences can be made about the effectiveness of the 356 mm (14 inch) minimum length restriction as limited gill net data is available on the Amsden Dam walleye population.

Growth of gill net caught walleyes is good with weighted mean length at capture for age-3 walleyes of 343 and 345 mm during the 2004 and 2006 surveys, respectively (Table 4). Given current growth rates walleye in Amsden Dam likely begin to exceed the 356 mm (14 inch) minimum length limit and are available for angler harvest at age-3. Condition of stock-length walleye captured in gill nets in 2006 was good with a mean relative weight (Wr) of 89. No length-related trends in Wr were apparent for gill net captured walleyes in Amsden Dam in 2006.

*Other Species*

Northern Pike: Northern pike typically are not sampled consistently using standard lake survey methods; however, northern pike in Amsden Dam are considered to be present at low densities, as no northern pike were sampled in gill nets in 2004 or 2006 (Tables 1-2). Six northern pike were sampled in frame nets in 2004, and thirteen in 2006 for a mean frame net CPUE of stock-length northern pike of 0.2 and 0.9, respectively (Table 1-2).

No age or growth information was collected. Condition of northern pike in Amsden Dam was good with mean relative weight (Wr) values exceeding 95 for all length groups sampled. The good northern pike condition indicates sufficient prey availability.

Rock Bass: The 2006 mean frame net CPUE of stock-length fish was 17.1, an increase from the 2.9 observed in 2004, and indicative of a low to moderate density rock bass population (Tables 1-2). PSD and RSD-P values of 18 and 2, respectively, indicate a population dominated by smaller individuals (Table 1).

No age growth data was collected for rock bass in 2006. Condition of frame net captured rock bass was good with mean relative weight (Wr) values exceeding 100 for all length groups sampled. No length-related trends in Wr were apparent for frame net captured rock bass in 2006.

Yellow Perch: The mean gill net CPUE of stock-length (130 mm) yellow perch in 2006 was 5.7, a slight increase from the 3.3 observed in 2004, indicating a low density population (Tables 1-2). Few inferences can be made about the yellow perch population in Amsden Dam, as limited gill net data is available.

During 2006, yellow perch ranged in total length from 170 to 280 mm, had a PSD of 94, and an RSD-P of 12 (Tables 1-2; Figure 7). No growth information was available in 2006. The condition of yellow perch in Amsden Dam was good with mean relative weight (Wr) values ranging from mid 80's to the mid 100's for gill net captured yellow perch. A slight decreasing trend in Wr values was apparent as yellow perch total length increased, however sample sizes were small for stock to quality and preferred to memorable length categories.

Other: Black bullhead, white sucker and common carp were also sampled in 2006 (Table 1, Table 2). However densities are believed to be low and there impact on the Amsden Dam fishery is likely minimal.

## Management Recommendations

1) Conduct fish population assessment surveys on a biennial basis (next survey scheduled in summer 2008) to monitor fish abundance, fish population size structures, fish growth, and stocking success.

2) Stock walleye on a biennial basis (100 small fingerling/acre) to establish additional year classes.

3) Maintain the 356 mm (14-inch) minimum length restriction on walleye, to maintain predator densities, and provide larger walleyes to the angler.

4) Stock 500 (≈ 12-inch) muskellunge fingerlings on a biennial basis, in an effort to maintain a low density population which provides a unique angling opportunity in northeastern South Dakota.

5) Maintain the 1,016-mm (40-inch) minimum length restriction on muskellunge in an effort to develop a unique trophy fishery.

6) Collect otoliths (5 fish/cm group) from walleye, yellow perch, bluegill, and black crappie; collect scale samples (5 fish/cm group) from smallmouth bass to assess age and growth.

Table 1. Mean catch rate (frame/gill nets= catch/net night; electrofishing= catch/hour) of stock-length fish, mean relative weight (Wr) of stock-length fish, proportional stock density (PSD) and relative stock density of preferred-length fish (RSD-P) of various fish species captured in experimental gill nets, frame nets and fall night electrofishing in Amsden Dam, 2004-2006. Confidence intervals include 80 percent (± CI-80) or 90 percent (± CI-90). BLB = black bullhead; BLC= black crappie; BLG= bluegill; COC= common carp; MUS= muskellunge; NOP = northern pike; ROB= rock bass; SMB = smallmouth bass; WAE = walleye; WHS = white sucker; YEP = yellow perch

| **Survey Year** | Abundance | | Stock Density Indices | | | | Condition | |
|---|---|---|---|---|---|---|---|---|
| Species | CPUE | CI-80 | PSD | CI-90 | RSD-P | CI-90 | Wr | CI-90 |
| **2004** | | | | | | | | |
| *Frame nets* | | | | | | | | |
| BLB | 3.6 | 1.1 | 100 | 0 | 96 | 4 | 84 | 3 |
| BLC | 0.3 | 0.2 | 100 | 0 | 100 | 0 | | |
| BLG | 0.7 | 0.4 | 92 | 8 | 54 | 25 | 111 | 2 |
| COC | 0.1 | < 0.1 | 100 | --- | 100 | --- | --- | --- |
| NOP | 0.2 | 0.1 | 50 | 50 | 52 | 59 | 81 | < 1 |
| ROB | 2.9 | 1.4 | 55 | 11 | 2 | 3 | 110 | 1 |
| SMB | 1.9 | 0.8 | 78 | 12 | 31 | 13 | 104 | 1 |
| WAE | 1.5 | 0.8 | 55 | 16 | 34 | 16 | 87 | 2 |
| WHS | 0.6 | 0.3 | 100 | 0 | 100 | 0 | 92 | 4 |
| YEP | 1.1 | 0.6 | 90 | 10 | 65 | 19 | 89 | 2 |
| *Gill nets* | | | | | | | | |
| BLB | 0.3 | 0.7 | 100 | --- | 100 | --- | 83 | --- |
| BLC | 0.7 | 0.6 | 100 | 0 | 100 | 0 | 104 | 24 |
| MUS | 0.7 | 1.2 | 50 | 50 | --- | --- | 77 | --- |
| ROB | 1.7 | 1.6 | 40 | 52 | 20 | 43 | 108 | 1 |
| WAE | 6.0 | 2.9 | 17 | 15 | 6 | 9 | 84 | 2 |
| YEP | 3.3 | 1.7 | 30 | 28 | 10 | 18 | 98 | 4 |
| **2005** | | | | | | | | |
| *Fall electrofishing* | | | | | | | | |
| SMB | 22.3 | 7.0 | 77 | 16 | 73 | 16 | 99 | 2 |
| WAE (age-0) | 1.0 | --- | --- | --- | --- | --- | --- | --- |
| **2006**[1] | | | | | | | | |
| *Frame nets* | | | | | | | | |
| BLB | 0.1 | 0.1 | --- | --- | --- | --- | 86 | --- |
| BLC | 10.3 | 3.3 | 28 | 6 | 1 | 1 | 121 | 1 |
| BLG | 16.2 | 4.2 | 82 | 4 | --- | --- | 104 | 1 |
| COC | 0.2 | 0.2 | 67 | 33 | 33 | 67 | 102 | 36 |
| NOP | 0.9 | 0.2 | 62 | 25 | --- | --- | 96 | 2 |
| ROB | 17.1 | 5.5 | 18 | 4 | 2 | 2 | 107 | 1 |
| SMB | 4.4 | 1.7 | 17 | 7 | 9 | 6 | 110 | 1 |
| WAE | 0.5 | 0.4 | 63 | 34 | 13 | 23 | 86 | 4 |
| WHS | 0.3 | 0.2 | 100 | 0 | 75 | 25 | 102 | 12 |
| YEP | 11.7 | 4.4 | 99 | 1 | 18 | 4 | 91 | < 1 |
| *Gill nets* | | | | | | | | |
| BLC | 0.3 | 0.7 | --- | --- | --- | --- | 128 | --- |
| ROB | 4.0 | 5.8 | 17 | 20 | --- | --- | 115 | 1 |
| SMB | 0.3 | 0.7 | --- | --- | --- | --- | 117 | --- |
| WAE | 8.7 | 7.4 | 23 | 14 | 8 | 9 | 89 | 1 |
| WHS | 0.7 | 1.2 | 100 | 0 | 50 | 50 | 103 | 13 |
| YEP | 5.7 | 4.1 | 94 | 6 | 12 | 14 | 95 | 3 |
| *Fall electrofishing* | | | | | | | | |
| SMB | 13.4 | 6.5 | 64 | 24 | 36 | 23 | 108 | 3 |
| WAE (age-0) | 34.8 | --- | --- | --- | --- | --- | --- | --- |

[1] Monofilament gill net mesh size change (.75”, 1”, 1.25”, 1.5”, 2” and 2.5”), previous years (.5”, .75”, 1”, 1.25”, 1.5” and 2”).

Table 2. Historic mean catch rate (frame/gill nets= catch/net night; electrofishing= catch/hour) of stock-length fish for various fish species captured in experimental gill nets, frame nets and fall night electrofishing in Amsden Dam, 1999 - 2006. BLB =black bullhead; BLC= black crappie; BLG = bluegill; COC = common carp; MUS= muskellunge; NOP = northern pike; ROB= rock bass; SMB = smallmouth bass; WAE = walleye; WHS = white sucker; YEP = yellow perch

| | CPUE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006[1] | Mean |
| *Frame nets* | | | | | | | | | |
| BLB | --- | --- | --- | --- | --- | 3.6 | --- | 0.1 | 1.9 |
| BLC | --- | --- | --- | --- | --- | 0.3 | --- | 10.3 | 5.3 |
| BLG | --- | --- | --- | --- | --- | 0.7 | --- | 16.2 | 8.5 |
| COC | --- | --- | --- | --- | --- | 0.1 | --- | 0.2 | 0.2 |
| NOP | --- | --- | --- | --- | --- | 0.2 | --- | 0.9 | 0.6 |
| ROB | --- | --- | --- | --- | --- | 2.9 | --- | 17.1 | 10.0 |
| SMB | --- | --- | --- | --- | --- | 1.9 | --- | 4.4 | 3.2 |
| WAE | --- | --- | --- | --- | --- | 1.5 | --- | 0.5 | 1.0 |
| WHS | --- | --- | --- | --- | --- | 0.6 | --- | 0.3 | 0.5 |
| YEP | --- | --- | --- | --- | --- | 1.1 | --- | 11.7 | 6.4 |
| *Gill nets* | | | | | | | | | |
| BLB | --- | --- | --- | --- | --- | 0.3 | --- | 0.0 | 0.2 |
| BLC | --- | --- | --- | --- | --- | 0.7 | --- | 0.3 | 0.5 |
| MUS | --- | --- | --- | --- | --- | 0.7 | --- | 0.0 | 0.4 |
| ROB | --- | --- | --- | --- | --- | 1.7 | --- | 4.0 | 2.9 |
| SMB | --- | --- | --- | --- | --- | 0.0 | --- | 0.3 | 0.2 |
| WAE | --- | --- | --- | --- | --- | 6.0 | --- | 8.7 | 7.4 |
| WHS | --- | --- | --- | --- | --- | 0.0 | --- | 0.7 | 0.4 |
| YEP | --- | --- | --- | --- | --- | 3.3 | --- | 5.7 | 4.5 |
| *Fall electrofishing* | | | | | | | | | |
| SMB | --- | 8.0 | 11.8 | 36.3 | --- | --- | 22.3 | 13.4 | 18.4 |
| WAE (age-0) | 300.3 | 0.0 | 135.8 | 12.0 | --- | --- | 1.0 | 34.8 | 80.7 |

[1] Monofilament gill net mesh size change (.75", 1", 1.25", 1.5", 2" and 2.5"), previous years (.5", .75", 1", 1.25", 1.5" and 2").

Table 3. Mean catch rate (frame/gill nets= catch/net night; electrofishing= catch/hour) ) of stock-length fish, proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for selected species captured in experimental gill nets, frame nets, and fall night electrofishing in Amsden Dam, 1999 - 2006. BLC = black crappie; BLG = bluegill; SMB= smallmouth bass; WAE = walleye

| Species | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006[1] | Average | Objective |
|---|---|---|---|---|---|---|---|---|---|---|
| *Frame nets* | | | | | | | | | | |
| BLC | | | | | | | | | | |
| CPUE | --- | --- | --- | --- | --- | 0.3 | --- | 10.3 | 5 | ≥ 15 |
| PSD | --- | --- | --- | --- | --- | 100 | --- | 28 | 64 | 30-60 |
| RSD-P | --- | --- | --- | --- | --- | 100 | --- | 1 | 51 | 5-10 |
| Wr | --- | --- | --- | --- | --- | --- | --- | 121 | 121 | --- |
| BLG | | | | | | | | | | |
| CPUE | --- | --- | --- | --- | --- | 1 | --- | 16 | 9 | > 25 |
| PSD | --- | --- | --- | --- | --- | 92 | --- | 82 | 87 | 30-60 |
| RSD-P | --- | --- | --- | --- | --- | 54 | --- | 0 | 27 | 5-10 |
| Wr | --- | --- | --- | --- | --- | 111 | --- | 104 | 108 | --- |
| *Gill nets* | | | | | | | | | | |
| WAE | | | | | | | | | | |
| CPUE | --- | --- | --- | --- | --- | 6 | --- | 9 | 8 | ≥ 10 |
| PSD | --- | --- | --- | --- | --- | 17 | --- | 23 | 20 | 30-60 |
| RSD-P | --- | --- | --- | --- | --- | 6 | --- | 8 | 7 | 5-10 |
| Wr | --- | --- | --- | --- | --- | 84 | --- | 89 | 87 | --- |
| *Fall electrofishing* | | | | | | | | | | |
| SMB | | | | | | | | | | |
| CPUE | --- | --- | 12 | 36 | --- | --- | 22 | 13 | 21 | ≥ 30 |
| PSD | --- | --- | 46 | 45 | --- | --- | 77 | 64 | 58 | 30-60 |
| RSD-P | --- | --- | 31 | 21 | --- | --- | 73 | 36 | 40 | 5-10 |
| Wr | --- | --- | 107 | 105 | --- | --- | 99 | 108 | 105 | --- |
| WAE | | | | | | | | | | |
| CPUE (age-0) | 300 | 0 | 136 | 12 | --- | --- | 1 | 35 | 81 | --- |

[1] Monofilament gill net mesh size change (.75", 1", 1.25", 1.5", 2" and 2.5"), previous years (.5", .75", 1", 1.25", 1.5" and 2").

Table 4. Weighted mean length at capture (mm) for walleye captured in experimental gill nets in Amsden Dam, 2004-2006. Note: sampling was conducted at approximately three months later in 2006.

| | | Age | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | N | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 2006[1] | 31 | 187 | 166 | 296 | 345 | 400 | 493 | --- | --- | --- | --- |
| 2004 | 23 | 163 | 252 | 328 | 343 | --- | 508 | --- | 491 | --- | --- |

[1]Age and growth information obtained from otoliths; scales were utilized in previous years

Table 5. Mean back-calculated length (mm) at age and standard error (SE) for smallmouth bass captured during fall night electrofishing in Amsden Dam, 2005.

| | | | Age | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year Class | Age | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 2004 | 1 | 5 | 94 | | | | | | | |
| 2003 | 2 | --- | --- | --- | --- | | | | | |
| 2002 | 3 | 5 | 115 | 219 | 314 | | | | | |
| 2001 | 4 | 4 | 99 | 195 | 283 | 339 | | | | |
| 2000 | 5 | 3 | 102 | 220 | 297 | 342 | 376 | | | |
| 1999 | 6 | 2 | 87 | 192 | 279 | 354 | 401 | 429 | | |
| 1998 | 7 | 1 | 119 | 234 | 330 | 401 | 444 | 464 | 477 | |
| 1997 | 8 | 1 | 127 | 214 | 310 | 382 | 418 | 434 | 451 | 472 |
| Sample size (n) | | 21 | | | | | | | | |
| Mean | | | 106 | 212 | 302 | 363 | 410 | 442 | 464 | 472 |
| SE | | | 5 | 7 | 8 | 12 | 14 | 11 | 13 | 0 |
| *Mean Comparison* [1] | | | | | | | | | | |
| Small lakes/impoundments | | | 98 | 180 | 241 | 291 | | --- | --- | --- |
| Large lakes/impoundments | | | 92 | 169 | 237 | 304 | 335 | --- | --- | --- |
| Region IV | | | 96 | 179 | 249 | 316 | 339 | --- | --- | --- |
| Statewide | | | 91 | 171 | 242 | 300 | 333 | --- | --- | --- |

[1] Willis et al. 2001.

Table 6. Mean back-calculated length (mm) at age and standard error (SE) for smallmouth bass captured during fall night electrofishing in Amsden Dam, 2006.

| | | | Age | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year Class | Age | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2005 | 1 | 1 | 139 | | | | | | |
| 2004 | 2 | 4 | 87 | 185 | | | | | |
| 2003 | 3 | --- | --- | --- | --- | --- | | | |
| 2002 | 4 | 2 | 108 | 201 | 282 | 357 | | | |
| 2001 | 5 | 1 | 103 | 210 | 292 | 360 | 406 | | |
| 2000 | 6 | 1 | 106 | 200 | 281 | 346 | 393 | 432 | |
| 1999 | 7 | 1 | 130 | 203 | 283 | 308 | 334 | 396 | 413 |
| Sample size (n) | | 10 | | | | | | | |
| Mean | | | 112 | 200 | 285 | 343 | 378 | 414 | 413 |
| SE | | | 8 | 4 | 3 | 12 | 22 | 18 | 0 |
| *Mean Comparison* [1] | | | | | | | | | |
| Small lakes/impoundments | | | 98 | 180 | 241 | 291 | | --- | --- |
| Large lakes/impoundments | | | 92 | 169 | 237 | 304 | 335 | --- | --- |
| Region IV | | | 96 | 179 | 249 | 316 | 339 | --- | --- |
| Statewide | | | 91 | 171 | 242 | 300 | 333 | --- | --- |

[1] Willis et al. 2001.

Table 7. Mean back-calculated length (mm) at age and standard error (SE) for smallmouth bass captured in frame nets in Amsden Dam, 2004.

| | | | Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year Class | Age | N | 1 | 2 | 3 | 4 | 5 | 6 |
| 2004 | 0 | 1 | | | | | | |
| 2003 | 1 | 4 | 115 | | | | | |
| 2002 | 2 | 8 | 105 | 205 | | | | |
| 2001 | 3 | 17 | 113 | 204 | 285 | | | |
| 2000 | 4 | 4 | 103 | 214 | 298 | 346 | | |
| 1999 | 5 | 1 | 85 | 204 | 297 | 371 | 408 | |
| 1998 | 6 | 1 | 129 | 233 | 326 | 401 | 432 | 450 |
| Sample size (n) | | 36 | | | | | | |
| Mean | | | 108 | 212 | 301 | 372 | 420 | 450 |
| SE | | | 6 | 5 | 9 | 16 | 12 | 0 |
| *Mean Comparison* [1] | | | | | | | | |
| Small lakes/impoundments | | | 98 | 180 | 241 | 291 | | --- |
| Large lakes/impoundments | | | 92 | 169 | 237 | 304 | 335 | --- |
| Region IV | | | 96 | 179 | 249 | 316 | 339 | --- |
| Statewide | | | 91 | 171 | 242 | 300 | 333 | --- |

[1] Willis et al. 2001.

Table 8. Mean back-calculated length (mm) at age and standard error (SE) for smallmouth bass captured in frame nets in Amsden Dam, 2006.

| | | | Age | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year Class | Age | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 2006 | 0 | 226 | | | | | | | | |
| 2005 | 1 | 77 | 105 | | | | | | | |
| 2004 | 2 | 10 | 111 | 173 | | | | | | |
| 2003 | 3 | 2 | 95 | 194 | 245 | | | | | |
| 2002 | 4 | --- | | | | | | | | |
| 2001 | 5 | 1 | 109 | 193 | 269 | 360 | 394 | | | |
| 2000 | 6 | 1 | 94 | 149 | 220 | 302 | 350 | 361 | | |
| 1999 | 7 | 1 | 108 | 174 | 226 | 265 | 341 | 401 | 421 | |
| 1998 | 8 | 1 | 87 | 118 | 234 | 350 | 410 | 451 | 468 | 489 |
| Sample size (n) | | 319 | | | | | | | | |
| Mean | | | 101 | 167 | 239 | 319 | 374 | 404 | 444 | 489 |
| SE | | | 3 | 12 | 9 | 22 | 17 | 26 | 24 | 0 |
| *Mean Comparison* [1] | | | | | | | | | | |
| Small lakes/impoundments | | | 98 | 180 | 241 | 291 | | --- | --- | |
| Large lakes/impoundments | | | 92 | 169 | 237 | 304 | 335 | --- | --- | |
| Region IV | | | 96 | 179 | 249 | 316 | 339 | --- | --- | |
| Statewide | | | 91 | 171 | 242 | 300 | 333 | --- | --- | |

[1] Willis et al. 2001.

Table 9. Stocking history including size (Size) and number (Number) for fishes stocked into Amsden Dam, 1996 - 2006. MUS= muskellunge; WAE = walleye

| Year | Species | Size | Number |
|---|---|---|---|
| 1996 | MUS | fingerling | 500 |
| 1997 | MUS | juvenile | 500 |
| | WAE | small fingerling | 47,000 |
| 1999 | MUS | fingerling | 508 |
| | WAE | small fingerling | 28,600 |
| 2000 | MUS | juvenile | 8 |
| 2001 | MUS | fingerling | 250 |
| | WAE | small fingerling | 36,400 |
| 2003 | WAE | small fingerling | 26,000 |
| 2004 | MUS | fingerling | 470 |
| | WAE | large fingerling | 21,600 |
| 2005 | MUS | fingerling | 208 |
| 2006 | MUS | fingerling | 250 |

Table 10. Numbers of walleye sampled (n) by year class and associated stocking history (Number stocked x 1,000) for walleye captured in Amsden Dam, 2004 - 2006.

| | | | Year Class | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Survey Year | 2006 | 2005 | 2004 | 2003 | 2002 | 2001 | 2000 | 1999 | 1998 | 1997 | 1996 |
| 2006[1,2] | 5 | 1 | 11 | 8 | 3 | 3 | | | | | |
| 2004 | --- | --- | 3 | 4 | 6 | 7 | | 2 | | 1 | |
| Number stocked | | | | | | | | | | | |
| fry | | | | | | | | | | | |
| small fingerling | | | | 26 | | 36.4 | | 28.6 | | 47 | |
| large fingerling | | | 21.6 | | | | | | | | |

[1] Fish aged using otoliths; scales were utilized in previous years

[2] Monofilament gill net mesh size change (.75", 1", 1.25", 1.5", 2" and 2.5"), previous years (.5", .75", 1", 1.25", 1.5" and 2").

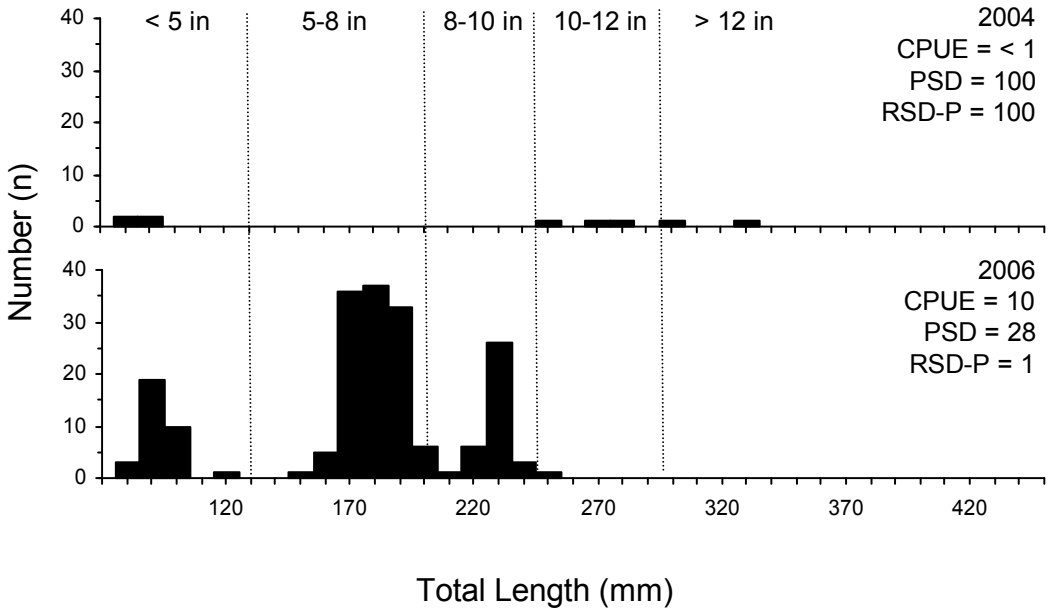


Figure 2. Length frequency, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for black crappie (BLC) captured using frame nets in Amsden Dam, 2004 and 2006.

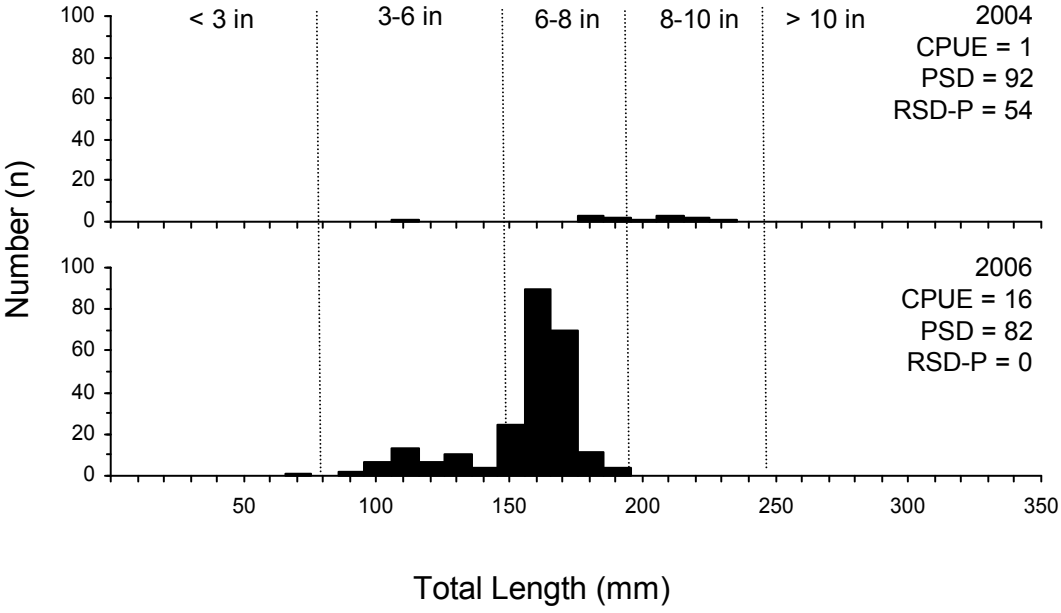


Figure 3. Length frequency, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for bluegill (BLG) captured using frame nets in Amsden Dam, 2004 and 2006.

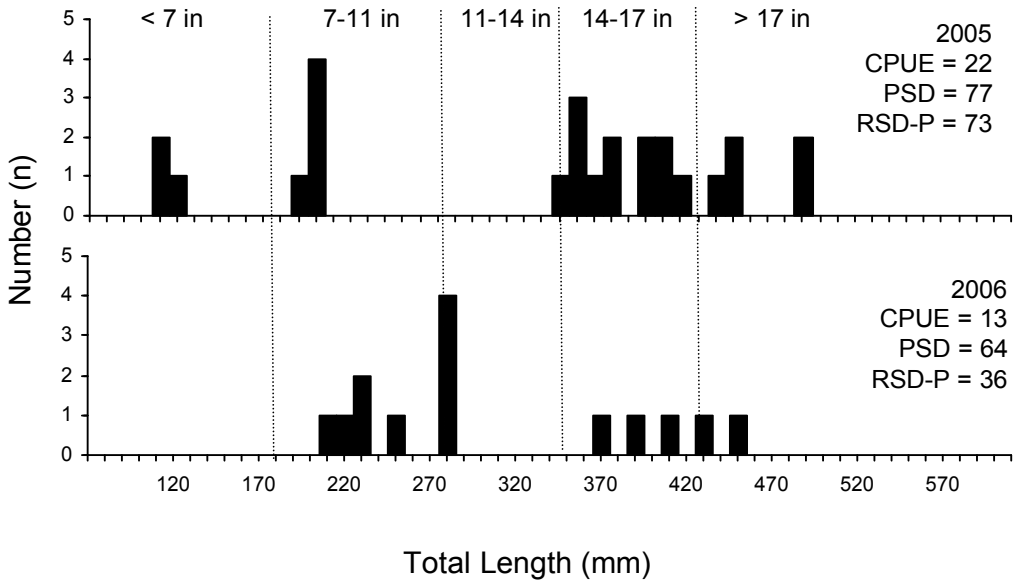


Figure 4. Length frequency, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for smallmouth bass captured during fall night electrofishing in Amsden Dam, 2005-2006.

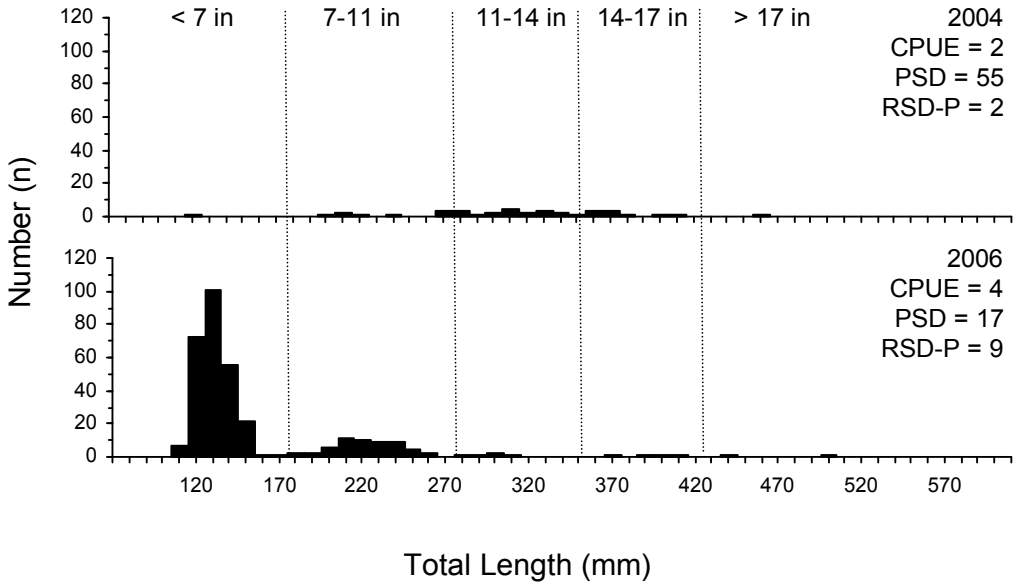


Figure 5. Length frequency, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for smallmouth bass captured in frame nets in Amsden Dam, 2004 and 2006.

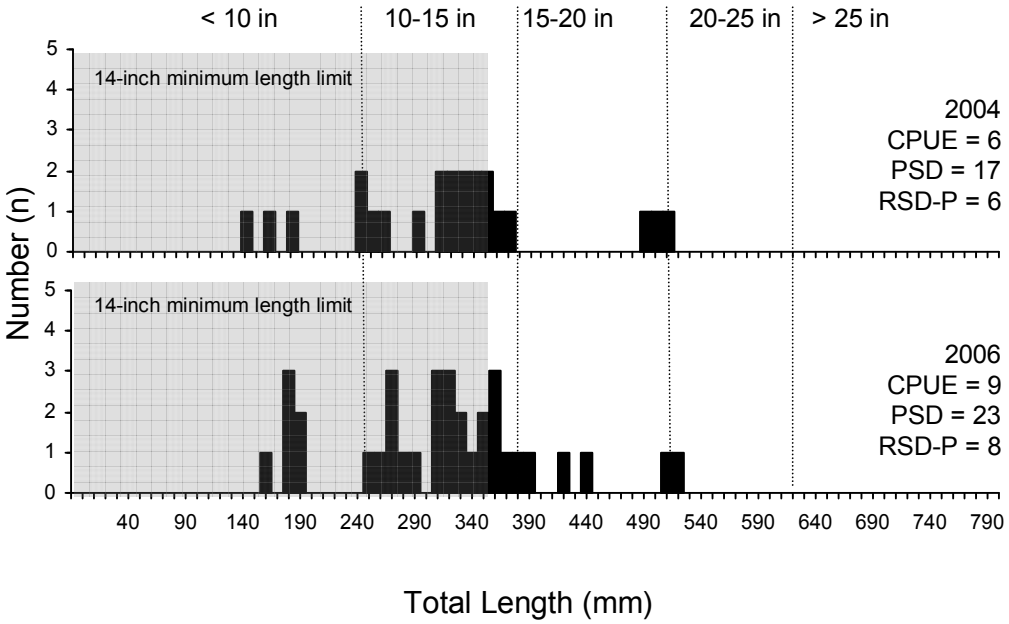


Figure 6. Length frequency, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for walleye captured in experimental gill nets in Amsden Dam, 2004 and 2006.

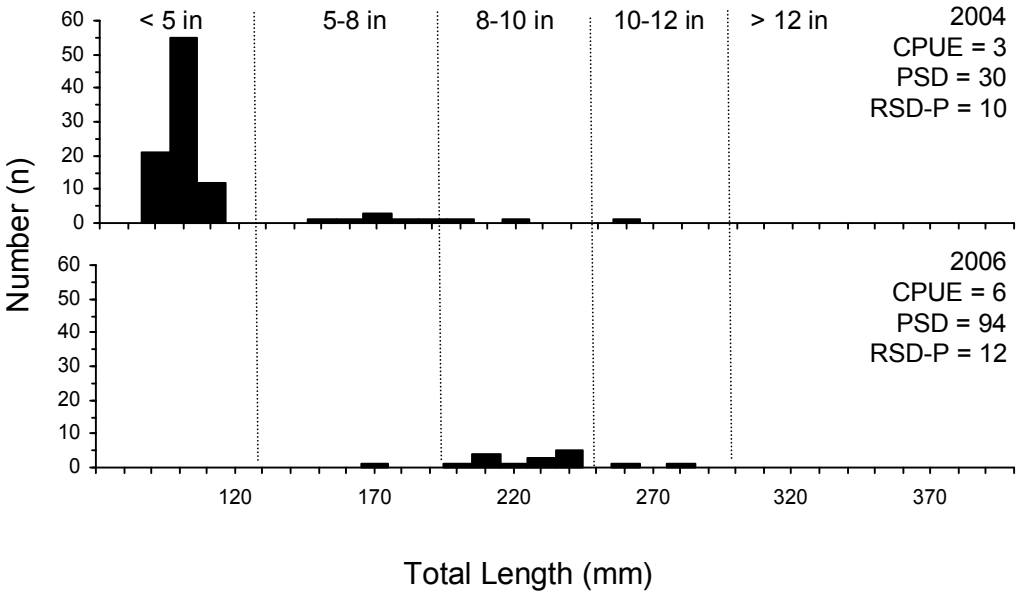


Figure 7. Length frequency, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for yellow perch captured in gill nets in Amsden Dam, 2004 and 2006.