

Pickerel Lake

Site Description

Location

| | |
|--------------------------------|-------------------------------------|
| Water designation number (WDN) | 22-0002-00 |
| Legal description | T124N-R53W-Sec.15,22,23,26,27,34,35 |
| County (ies) | Day |
| Location from nearest town | six miles northeast of Grenville |

Survey Dates and Netting Information

| | |
|----------------------------|--------------------------------|
| Dates of current survey | June 19-21, August 29, 2007 |
| Date of most recent survey | June 20-22, September 12, 2006 |
| Gill net sets (n) | 6 |
| Frame net sets (n) | 18 |
| Fall electrofishing (min) | 61 |

Morphometry (Figure 1)

| | |
|------------------------|--------|
| Watershed area (acres) | 17,165 |
| Surface area (acres) | 981 |
| Maximum depth (ft) | 41 |
| Mean depth (ft) | 16 |

Ownership and Public Access

Pickerel Lake is a meandered lake managed by the SDGFP. Four public access sites exist on Pickerel Lake; two are located within State Parks on the east and west shores; one at the "Old Pickerel Lake Hatchery Site" located south of the State Park East Unit; and a section line access point, which does not include a boat ramp, in the northwest corner of the lake (Figure 1). Ownership of the Pickerel Lake shoreline includes the State of South Dakota, the Bureau of Indian Affairs, and private ownership. The shoreline of Pickerel Lake is highly developed.

Watershed and Land Use

The Pickerel Lake watershed is comprised of a mix of cropland (62%) and pasture or grassland (38%).

Water Level Observations

Water levels on April 18, 2006 and September 20, 2006 were 1845.6 fmsl (feet above mean sea level) and 1844.7 fmsl, respectively. Water levels on May 9, 2007 and October 17, 2007 were 1846.3 fmsl and 1845.1 fmsl, respectively. The OHWM (Ordinary High Water Mark) is at 1845.6 fmsl and the outlet elevation is at 1844.9 fmsl. Pickerel Lake lies within the Pickerel Protection Project developed by the Day County Conservation District. Through this project numerous non-point source pollution problems were identified. In addition, a sanitary sewer district was formed by lake residents. It is expected that the fishery resource of Pickerel Lake will directly benefit from the water quality improvements and maintenance resulting from this project. Pickerel Lake is classified as eutrophic.

Aquatic Vegetation and Exotics

Less than 5% of the shoreline is covered with emergent vegetation. Submergent vegetation is extensive in the shallow areas of the lake. Common carp were the only exotic species reported during this survey.

Fish Management Information

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

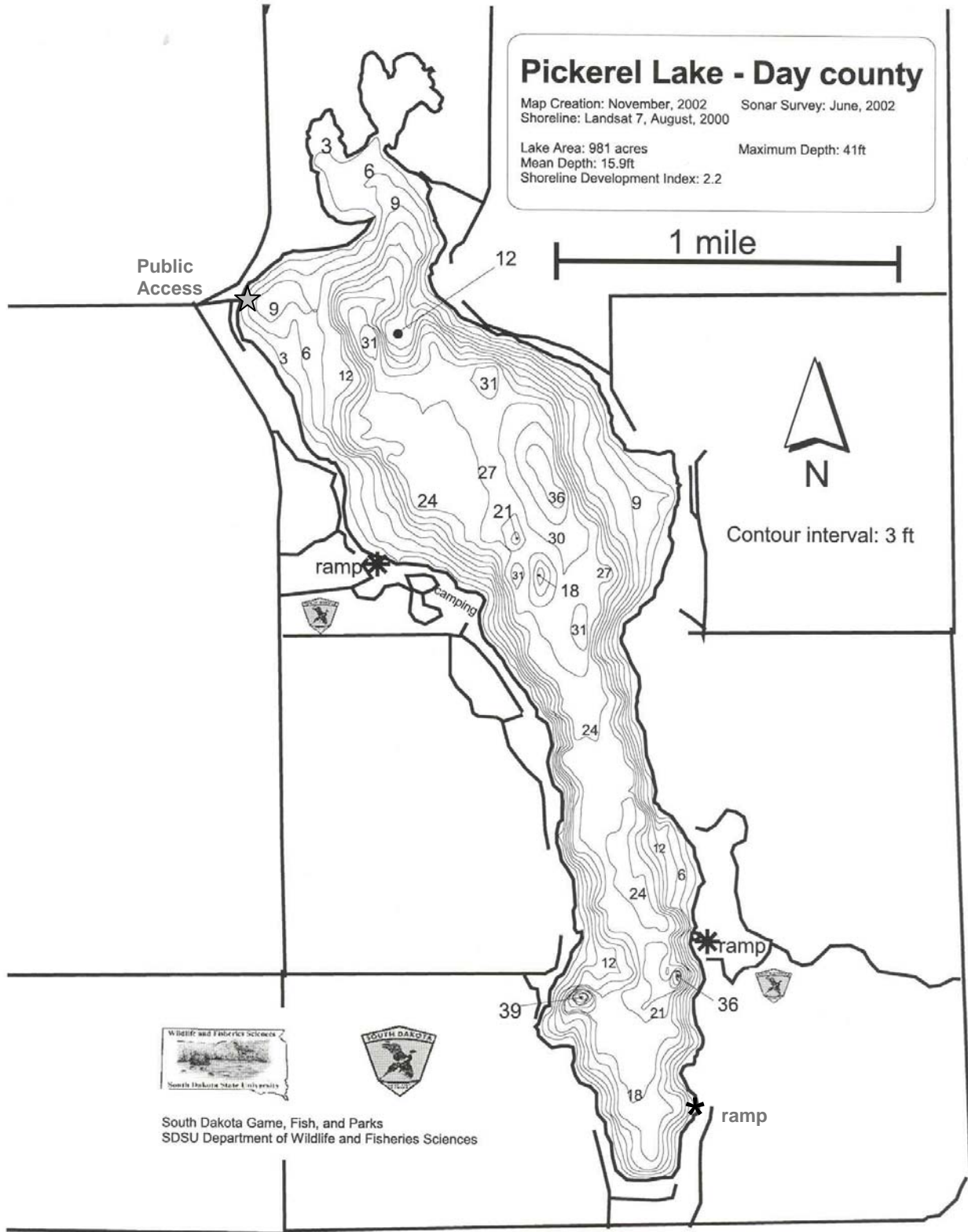


Figure 1. Pickrel Lake contour map.

Management Objectives

- 1) Maintain a mean gill net CPUE of stock-length walleye ≥ 10 , a PSD of 30-60, and an RSD-P of 5-10.
- 2) Maintain a mean frame net CPUE of stock-length black crappie ≥ 15 , a PSD of 30-60, and an RSD-P of 5-10.
- 3) Maintain a mean frame net CPUE of stock-length bluegill ≥ 15 , a PSD of 30-60, and an RSD-P of 5-10.
- 4) Maintain a mean gill net CPUE of stock-length yellow perch ≥ 25 , a PSD of 30-60, and an RSD-P of 5-10.
- 5) Maintain a mean fall night electrofishing CPUE of stock-length smallmouth bass ≥ 30 , a PSD of 40-70, and an RSD-P of 10-40.

Results and Discussion

Pickerel Lake is the uppermost lake in a chain of lakes known as the Waubay Lakes Basin. Pickerel Lake is a very popular recreational destination, especially during the summer months. Pickerel Lake is also highly developed with nearly the entire lake shoreline supporting residential housing and cabins. In addition, Pickerel Lake has two State Parks located on the east and west shores. Currently, Pickerel Lake is primarily managed as a black crappie, smallmouth bass, bluegill, walleye and yellow perch fishery. Overall, as many as 15 fish species contribute to the Pickerel Lake fishery.

Primary Species

Black crappie: In 2007, the mean frame net CPUE of stock-length black crappie was 12.6, an increase from 8.1 observed in 2006 (Tables 1-2). The increase is due to a strong 2005 year-class recruiting to the population (Figure 2). Approximately 81% of the black crappies sampled were from the 2005 year-class. In Pickerel Lake, black crappie abundance is dependent on production of occasional strong year-classes, as recruitment patterns have been sporadic and near total year-class failures are common (Ermer et al. 2005). Mean frame net CPUE values have ranged from a high of 19.7 (2002) to a low of 1.4 (2005) with an average of 9.0 from 2000-2007 (Tables 2-3). Currently, black crappie relative abundance based on the 2007 mean frame net CPUE is considered moderate-low.

Black crappie captured in frame nets during 2007 ranged in total length from 110 to 320 mm (Figure 2). The PSD and RSD-P of black crappie captured in frame nets during 2007 were 20 and 18, respectively (Table 1; Table 3; Figure 2). The decrease in PSD and RSD-P values, compared to 2006, are the result of recruitment from the abundant 2005 year-class.

Black crappie age and growth was assessed using otoliths in 2007. Overall, five year-classes were represented in the 2007 sample. Age-2 black crappie in Pickerel Lake experienced better growth in 2007 than in 2006 with weighted mean length at capture of 153 mm and 139 mm, respectively (Table 6). Growth of age-2 black crappie in 2007 was above the recognized state average of 147 mm (Carlander; 1977). Condition of frame net captured black crappies was good with mean W_r of 117 for stock-length fish (Table 1). A decreasing trend in W_r values was observed as total length increased; however, mean W_r values were 85 or above for all length groups.

Bluegill: The mean frame net CPUE of stock-length bluegill during 2007 was 17.0, an increase from mean frame net CPUE value of 14.2 observed in 2006, and above the minimum objective (≥ 15) for bluegill in Pickerel Lake (Tables 1-3). Ermer et al. (2006) reported that bluegill abundance in Pickerel Lake based on mean frame net CPUE has been low with the 2000-2007 average being 6.7 (Tables 2-3). Length-frequency analysis of frame net captured bluegills indicates consistent recruitment in recent years resulting in increased abundance (Figure 3).

The total length of bluegill captured in frame nets during 2007 ranged from 80 to 250 mm (Figure 3). The PSD and RSD-P for frame net sampled bluegills in 2007 were 58 and 3, respectively (Table 1; Table 3; Figure 3). The PSD falls within the objective range (30-60) and the RSD-P is slightly below the objective range (5-10) indicating a nearly balanced population (Table 3).

No growth information was available for bluegill in 2007. The condition of bluegill in Pickerel Lake during 2007 was good with mean W_r values exceeding 97 for all length groups sampled. However, reported values may be influenced by seasonal sampling biases (i.e., spawning behavior) in Pickerel Lake during 2007.

Smallmouth bass: Currently, fall night electrofishing is used to assess smallmouth bass populations in NE South Dakota. However, concerns regarding the effectiveness of fall night electrofishing at sampling large smallmouth bass have resulted in a Master of Science project being designed to evaluate the most effective approach to sample smallmouth bass. This project began in the spring of 2007 and will continue through 2008.

During 2007, the mean fall night electrofishing CPUE of smallmouth bass was 123.5, a substantial decrease from the 240.0 observed in 2006, but well above the minimum objective (≥ 30 fish/hour) for smallmouth bass in Pickerel Lake (Tables 2-3). Increased smallmouth bass abundance in the fall night electrofishing samples during 2006 and 2007 are likely the result of two relatively-large cohorts of smallmouth bass from 2005 and 2006 recruiting to the population. Since 2000, the mean fall night electrofishing CPUE of stock-length smallmouth bass in Pickerel Lake has ranged from 57.6 (2001) to 240.0 (2006), with a 2000-2007 average of 129.2 (Table 1-3). Length frequency analysis and age structure information of smallmouth bass captured during fall night electrofishing indicates consistent recruitment. There are only two missing cm length-groups (31 cm and 41 cm) from 15 to 43 cm, and continuous year-classes are present from age-1 to age-6 (Table 4; Table 5; Figure 4).

In 2007, smallmouth bass captured during fall night electrofishing ranged in total length from 130 to 430 mm, had a PSD of 33, and an RSD-P of 17 (Table 1; Table 3;

Figure 4). The PSD was below the objective range of (40-70), likely due to consistent recruitment and large year-classes of smallmouth bass entering the population over the past two years. The RSD-P of smallmouth bass in 2007 was within the objective range of (10-40). Approximately 18% of smallmouth bass sampled during fall night electrofishing were within the protected slot and no smallmouth bass captured were above the 457 mm (18 inch) upper slot length in our sample; however, it is thought that fall night electrofishing often is not consistent in capturing larger smallmouth bass (Ermer et al. 2005).

Growth of smallmouth bass in Pickerel Lake has been similar to the regional and statewide average with smallmouth bass reaching quality-length (≥ 280 mm) between age-3 and age-4 (Table 4; Table 5). Condition of smallmouth bass captured during 2007 was acceptable although, below the commonly cited optimum W_r range of 95-100, with mean W_r values ranging from 83 to 101 for all length groups sampled.

Walleye: The mean gill net CPUE of stock-length walleye during 2007 was 12.7 and within the objective (≥ 10 stock length fish/net night) for walleye in Pickerel Lake (Tables 1-3). Since 2000, walleye abundance in Pickerel Lake based on gill net CPUE has ranged from 4.3 (2002) to 21.5 (2004) stock-length walleye/net night with an average of 12.9 (Table 2; Table 3). The gill net CPUE of stock-length walleye during 2007 indicated a moderate density population.

Natural reproduction and recruitment in Pickerel Lake has been consistently poor, with fall night electrofishing catch rates of age-0 walleye commonly below 12/hr (Tables 1-3; Ermer et al. 2005). Therefore, walleye abundance has relied heavily on large fingerling stockings to establish year-classes capable of sustaining the walleye fishery (Ermer et al 2005). Lucchesi (1997) reported that large fall fingerling walleye stockings contributed 79%, 38%, and 66% to the walleye population in 1992, 1993, and 1994, respectively. Large fingerling stockings made in 2001-2004 were well represented in the 2007 gill net catch, indicating good recruitment of stocked fish (Table 8; Table 9). Walleye large fingerlings were stocked in the fall of 2006; however, stocking success will be difficult to assess until 2008, when that cohort fully recruits to the population (Table 8). Unfortunately, because of poor recapture in fall rearing ponds, only a small number of large fingerlings were stocked during the fall of 2007, which will likely have a minimal impact on the population (Table 8).

Walleye captured in gill nets during 2007 ranged in length from 190 to 540 mm (Figure 5). The PSD of walleye captured in gill nets during 2007 was 53 and the RSD-P was one (Table 1; Table 3; Figure 5). The PSD was within the objective range (30-60), and slightly higher than 2006 (Table 1; Table 3). However, the RSD-P was below the objective range (5-10), indicating a lower than desired proportion of preferred-length (≥ 508 mm) walleye in the population. Length frequency analysis of 2007 gill net captured walleye indicated a wider length range than was observed in 2005-2006 (Figure 5). This observation is likely caused by the 2006 year-class beginning to recruit to the gill nets. Approximately 70 percent of the walleye captured in gill nets were above the 356 mm (14 inch) minimum length restriction enforced on Pickerel Lake and available for angler harvest (Figure 5).

Growth of walleyes was good with walleyes reaching 356 mm (14 inches) at age-3 in 2007 (Table 7). If age assignments are correct, gill net sampled walleyes in 2007

grew approximately 25 mm (1 inch) faster than in 2006, with weighted mean length at capture of age-3 of 358 mm in 2007, compared to 333 mm in 2006 (Table 7). Growth rates can be influenced drastically by the length at which large fingerlings are stocked into Pickerel Lake, as the size of stocked fish can vary greatly from year to year. The condition of gill net captured walleye was adequate in 2007, with mean W_r values of 84 for length groups sampled. No length related trends in W_r were apparent during the 2007 survey.

Yellow Perch: The mean gill net CPUE of stock-length (130 mm) yellow perch in 2007 was 43.7 and well above the objective range (≥ 25 fish/net night) for yellow perch in Pickerel Lake (Tables 1-3). Since 2000, the gill net CPUE of stock-length yellow perch has fluctuated with a low of 10.3 (2000) and a high of 55.8 (2006; Table 2; Table 3). Length-frequency analysis of yellow perch captured in gill nets during 2007 indicates consistent recruitment in recent years; however, varying in magnitude (Figure 6). Increased relative abundance from 2006-2007 is due to a relatively-large yellow perch cohort, ranging in length from 160 to 200 mm, entering the population (Tables 1-3; Figure 6). Overall, the yellow perch population in Pickerel Lake is classified as moderate density.

During 2007, yellow perch ranged in total length from 120 to 280 mm, had a PSD of 17, and an RSD-P of 5 (Tables 1-3; Figure 6). The PSD is below the objective range (30- 60) indicating a population dominated by two new year-classes of yellow perch (Table 3; Figure 6). The RSD-P is on the bottom of the objective range (5-10), indicating a fair proportion of preferred-length (250 mm) fish in the population (Table 3). The low numbers of quality- and preferred-length individuals in the 2007 gill net catch is likely the result of high mortality either natural or by angling (Tables 2-3; Figure 6).

No growth information was available for yellow perch in 2007. The condition of yellow perch in Pickerel Lake was good with a mean W_r of stock-length yellow perch of 102 (Table 1). A slight decreasing trend in mean W_r 's was apparent as yellow perch total length increased; however mean W_r values exceeded 90 for all length groups sampled indicating good condition and sufficient prey availability.

Other Species

Largemouth bass: Largemouth bass are present in Pickerel Lake but at a low density. Spring night electrofishing, which is used to assess largemouth bass populations in NE South Dakota, was last conducted in 2000 and 2002. McKibbin (2002) reported sampling no largemouth bass in spring night electrofishing during 2000; and SDGFP personnel sampled only three in 2002.

Northern Pike: Northern pike typically are not sampled consistently using standard lake survey methods; however, northern pike in Pickerel Lake have generally been considered moderate density with a 2000-2007 mean CPUE of stock-length fish of 4.1 for gill nets (Table 1; Table 2). The mean gill net CPUE of stock-length northern pike in Pickerel Lake during 2007 was 6.0 (Table 1). Northern pike relative abundance had declined substantially prior to 2007 (Table 2). Above average precipitation during much

of the 1990's improved habitat conditions (i.e., increased spawning habitat); however, lack of run-off and a substantial spring rise, since 2001 has likely resulted in reduced northern pike recruitment in Pickerel Lake (Ermer et al. 2005). The increase in CPUE observed in 2007 could be due to sampling variability, or could indicate recent reproductive success. Northern pike sampled using gill nets in Pickerel Lake ranged in total length from 470 to 730 mm, had a PSD of 56 and RSD-P of 3 (Table 1).

No growth information was available in 2007. The condition of northern pike was acceptable with mean W_r values ranging from 72 to 88 for all length groups sampled and averaging 80. Overall, it appears that Pickerel Lake contains sufficient food availability for acceptable northern pike condition.

Other: Black bullhead, common carp, rock bass, white bass and white sucker were also captured during the 2007 survey; however, abundance appears low, and the impact on the Pickerel Lake fishery is expected to be minimal (Table 1, Table 2).

Management Recommendations

- 1) Conduct fish population assessment surveys on an annual basis (next survey scheduled in summer 2008) to monitor fish relative abundance, fish population size structures, fish growth, and stocking success.
- 2) Conduct fall night electrofishing on an annual basis to monitor walleye young-of-the-year abundance and to assess the smallmouth bass population.
- 3) Collect otoliths from black crappie, bluegill, walleye, and yellow perch to assess growth rates and age structure of each population.
- 4) Stock walleye at (\approx 25 large fingerlings/acre) to establish additional year-classes if gill netting and/or fall night electrofishing CPUE of age-0 walleye results warrant (i.e., low gill net CPUE of < 250 mm (10 inch) walleye and/or fall night electrofishing CPUE of age-0 walleye < 75 fish/hour).
- 5) Maintain 356 mm (14-inch) minimum length restriction on walleyes in an effort to maintain predator densities, and provide larger walleye to the angler.
- 6) Maintain special regulations on largemouth and smallmouth bass of 3 daily, fish must be less than 12" or longer than 18", but only one 18" or longer can be kept in the daily creel.

Table 1. Mean catch rate (CPUE; gill/frame 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 night electrofishing in Pickerel Lake, 2007. Confidence intervals include 80 percent (\pm CI-80) or 90 percent (\pm CI-90). BLB= black bullhead; BLC= black crappie; BLG= bluegill; COC= common carp; NOP= northern pike; ROB= rock bass; SMB= smallmouth bass; WAE= walleye; WHB= white bass; WHS= white sucker; YEP= yellow perch

| Species | Abundance | | Stock Density Indices | | | | Condition | |
|--------------------------|-----------|-------|-----------------------|-------|-------|-------|-----------|-------|
| | CPUE | CI-80 | PSD | CI-90 | RSD-P | CI-90 | Wr | CI-90 |
| <i>Frame nets</i> | | | | | | | | |
| BLB | 2.6 | 1.1 | 28 | 11 | 9 | 6 | 102 | 1 |
| BLC | 12.6 | 3.7 | 20 | 5 | 18 | 4 | 117 | 1 |
| BLG | 17.0 | 4.4 | 58 | 4 | 3 | 2 | 116 | 4 |
| COC | 0.1 | 0.0 | 100 | --- | 100 | --- | 90 | --- |
| NOP | 0.7 | 0.2 | 67 | 25 | 8 | 15 | 93 | 8 |
| ROB | 4.4 | 1.2 | 42 | 9 | 10 | 6 | 109 | 1 |
| SMB | 5.6 | 1.2 | 61 | 8 | 33 | 7 | 90 | 1 |
| WAE | 0.6 | 0.2 | 80 | 20 | 10 | 18 | 86 | 2 |
| WHB | 1.8 | 1.1 | 100 | 0 | 100 | 0 | 92 | <1 |
| WHS | 0.9 | 0.3 | 100 | 0 | 100 | 0 | 96 | 2 |
| YEP | 2.3 | 1.0 | 22 | 11 | 5 | 6 | 94 | 1 |
| <i>Gill nets</i> | | | | | | | | |
| BLB | 4.5 | 4.2 | 7 | 9 | 0 | --- | 92 | 1 |
| BLC | 16.7 | 6.5 | 3 | 3 | 3 | 3 | 126 | 1 |
| BLG | 1.5 | 1.4 | 56 | 32 | 0 | --- | 119 | --- |
| COC | 1.7 | 1.0 | 100 | 0 | 60 | 30 | 94 | 6 |
| NOP | 6.0 | 2.0 | 56 | 14 | 3 | 4 | 80 | 1 |
| ROB | 1.8 | 1.4 | 55 | 28 | 27 | 26 | 108 | 4 |
| SMB | 1.2 | 0.9 | 43 | 39 | 29 | 35 | 92 | 3 |
| WAE | 12.7 | 3.8 | 53 | 9 | 1 | 2 | 84 | 1 |
| WHB | 1.8 | 1.4 | 100 | 0 | 55 | 28 | 92 | 2 |
| WHS | 3.5 | 1.2 | 100 | 0 | 81 | 15 | 106 | 1 |
| YEP | 43.7 | 15.6 | 17 | 4 | 5 | 2 | 102 | <1 |
| <i>Electrofishing</i> | | | | | | | | |
| SMB ¹ | 123.5 | 26.0 | 33 | 7 | 17 | 5 | 90 | 1 |
| WAE ¹ (age-0) | 12.0 | --- | --- | --- | --- | --- | --- | --- |

¹ fall night electrofishing.

Table 2. Historic mean catch rate (CPUE; gill/frame nets = catch/net night, electrofishing = catch/hour) of stock-length fish for various fish species captured in experimental gill nets, frame nets, and electrofishing in Pickerel Lake, 2000-2007. BLB= black bullhead; BLC= black crappie; BLG= bluegill; COC= common carp; EMS= emerald shiner; LMB= largemouth bass; NOP= northern pike; ROB= rock bass; SMB= smallmouth bass; SPS= spottail shiner; WAE= walleye; WHB= white bass; WHS= white sucker; YEP= yellow perch

| Species | CPUE | | | | | | | | Mean |
|--------------------------|------|------|------|-------|-------|------|-------------------|-------------------|-------|
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 ³ | 2007 ³ | |
| <i>Frame nets</i> | | | | | | | | | |
| BLB | 0.1 | 0.2 | 3.1 | 4.3 | 0.8 | 2.0 | 1.8 | 2.6 | 1.9 |
| BLC | 5.7 | 14.2 | 19.7 | 6.3 | 3.8 | 1.4 | 8.1 | 12.6 | 9.0 |
| BLG | 0.6 | 1.4 | 3.9 | 5.6 | 6.3 | 4.2 | 14.2 | 17.0 | 6.7 |
| COC | 0.2 | 0.1 | 0.0 | 0.2 | 0.1 | 0.0 | 0.2 | 0.1 | 0.1 |
| LMB | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| NOP | 0.8 | 1.1 | 0.4 | 0.4 | 0.1 | 0.5 | 0.3 | 0.7 | 0.5 |
| ROB | 2.7 | 2.7 | 11.8 | 4.7 | 3.8 | 7.6 | 4.7 | 4.4 | 5.3 |
| SMB | 1.6 | 0.9 | 4.7 | 3.2 | 1.6 | 1.9 | 5.6 | 5.6 | 3.1 |
| SPS ¹ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| WAE | 0.3 | 0.4 | 0.3 | 0.5 | 0.2 | 0.2 | 0.7 | 0.6 | 0.4 |
| WHB | 1.0 | 0.3 | 0.1 | 0.1 | 1.1 | 0.0 | 0.2 | 1.8 | 0.6 |
| WHS | 0.7 | 11.8 | 1.4 | 1.2 | 0.9 | 0.3 | 0.2 | 0.9 | 2.2 |
| YEP | 0.5 | 0.1 | 0.5 | 0.3 | 1.6 | 0.8 | 1.2 | 2.3 | 0.9 |
| <i>Gill nets</i> | | | | | | | | | |
| BLB | 0.3 | 0.2 | 0.3 | 0.0 | 0.0 | 0.0 | 0.2 | 4.5 | 0.7 |
| BLC | 10.0 | 15.7 | 9.7 | 12.3 | 13.2 | 3.2 | 1.8 | 16.7 | 10.3 |
| BLG | 0.0 | 2.5 | 0.0 | 0.2 | 0.0 | 0.2 | 0.5 | 1.5 | 0.6 |
| COC | 0.7 | 0.2 | 0.5 | 0.0 | 0.2 | 0.0 | 2.5 | 1.7 | 0.7 |
| EMS ¹ | 0.0 | 0.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| NOP | 8.7 | 5.2 | 4.2 | 4.8 | 1.5 | 0.5 | 1.8 | 6.0 | 4.1 |
| ROB | 2.2 | 0.5 | 1.3 | 0.3 | 2.2 | 0.5 | 1.0 | 1.8 | 1.2 |
| SMB | 0.2 | 0.7 | 1.3 | 3.2 | 0.5 | 3.3 | 2.0 | 1.2 | 1.6 |
| SPS ¹ | 0.7 | 0.0 | 0.0 | 0.3 | 2.2 | 0.0 | 0.0 | 0.0 | 0.4 |
| WAE | 11.3 | 10.2 | 4.3 | 10.3 | 21.5 | 11.7 | 21.3 | 12.7 | 12.9 |
| WHB | 0.7 | 0.7 | 0.8 | 2.0 | 1.8 | 0.8 | 0.7 | 1.8 | 1.2 |
| WHS | 5.7 | 6.7 | 3.5 | 4.3 | 1.5 | 3.2 | 2.3 | 3.5 | 3.8 |
| YEP | 10.3 | 28.5 | 34.5 | 50.3 | 28.5 | 33.5 | 55.8 | 43.7 | 35.6 |
| <i>Electrofishing</i> | | | | | | | | | |
| SMB ² | 96.1 | 57.6 | 93.1 | 126.2 | 205.6 | 91.2 | 240.0 | 123.5 | 129.2 |
| WAE ² (age-0) | 10.6 | 10.0 | 0.0 | 6.0 | 0.0 | 7.6 | 9.9 | 12.0 | 7.0 |

¹ all fish sizes.

² fall night electrofishing.

³ 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 (CPUE; gill/frame nets = catch/net night, electrofishing = catch/hour) of stock-length fish, proportional stock density (PSD), relative stock density of preferred-length fish (RSD-P), and relative weight (Wr) for selected species captured in experimental gill nets, frame nets, and electrofishing in Pickerel Lake, 2000-2007. BLC= black crappie; BLG= bluegill; SMB= smallmouth bass; WAE= walleye; YEP= yellow perch

| Species | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 ² | 2007 ² | Average | Objective |
|-----------------------|------|------|------|------|------|------|-------------------|-------------------|---------|-----------|
| <i>Frame nets</i> | | | | | | | | | | |
| BLC | | | | | | | | | | |
| CPUE | 6 | 14 | 20 | 6 | 4 | 1 | 8 | 13 | 9 | ≥ 15 |
| PSD | 21 | 62 | 99 | 97 | 96 | 100 | 99 | 20 | 74 | 30-60 |
| RSD-P | 21 | 2 | 5 | 78 | 62 | 60 | 99 | 18 | 43 | 5-10 |
| Wr | 113 | 112 | 102 | 103 | 101 | 104 | 94 | 117 | 106 | --- |
| BLG | | | | | | | | | | |
| CPUE | 1 | 1 | 4 | 6 | 6 | 4 | 14 | 17 | 7 | ≥ 15 |
| PSD | 60 | 96 | 91 | 48 | 98 | 74 | 38 | 58 | 70 | 30-60 |
| RSD-P | 20 | 15 | 66 | 18 | 10 | 57 | 15 | 3 | 26 | 5-10 |
| Wr | 126 | 120 | 118 | 125 | 129 | 126 | 115 | 116 | 122 | --- |
| <i>Gill nets</i> | | | | | | | | | | |
| WAE | | | | | | | | | | |
| CPUE | 11 | 10 | 4 | 10 | 22 | 12 | 21 | 13 | 13 | ≥ 10 |
| PSD | 47 | 20 | 58 | 32 | 5 | 3 | 40 | 53 | 32 | 30-60 |
| RSD-P | 6 | 7 | 4 | 8 | 2 | 0 | 0 | 1 | 4 | 5-10 |
| Wr | 84 | 85 | 86 | 86 | 86 | 86 | 89 | 84 | 86 | --- |
| YEP | | | | | | | | | | |
| CPUE | 10 | 29 | 35 | 50 | 29 | 34 | 56 | 44 | 36 | ≥ 25 |
| PSD | 63 | 60 | 76 | 50 | 68 | 93 | 21 | 17 | 56 | 30-60 |
| RSD-P | 5 | 15 | 24 | 15 | 15 | 51 | 10 | 5 | 18 | 5-10 |
| Wr | 103 | 110 | 101 | 107 | 101 | 114 | 101 | 102 | 105 | --- |
| <i>Electrofishing</i> | | | | | | | | | | |
| SMB ¹ | | | | | | | | | | |
| CPUE | 96 | 58 | 93 | 126 | 206 | 91 | 240 | 124 | 129 | ≥ 30 |
| PSD | 15 | 33 | 16 | 11 | 44 | 55 | 32 | 33 | 30 | 40-70 |
| RSD-P | 8 | 13 | 0 | 3 | 4 | 24 | 13 | 17 | 10 | 10-40 |
| Wr | 90 | 89 | 94 | 99 | 96 | 109 | 95 | 90 | 95 | --- |
| WAE ¹ | | | | | | | | | | |
| CPUE (age-0) | 11 | 10 | 0 | 6 | 0 | 8 | 10 | 12 | 7 | --- |

¹ fall night electrofishing.

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").

Table 4. Mean back-calculated length (mm) at age and standard error (SE) for smallmouth bass captured during fall night electrofishing in Pickerel Lake, 2007.

| Year | Age | N | Age | | | | | | |
|-------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | |
| 2006 | 1 | 81 | 87 | | | | | | |
| 2005 | 2 | 71 | 103 | 188 | | | | | |
| 2004 | 3 | 11 | 80 | 174 | 263 | | | | |
| 2003 | 4 | 21 | 92 | 165 | 255 | 321 | | | |
| 2002 | 5 | 4 | 98 | 180 | 258 | 310 | 355 | | |
| 2001 | 6 | 5 | 80 | 160 | 228 | 280 | 330 | 371 | |
| Mean | --- | 193 | 90 | 173 | 251 | 304 | 343 | 371 | |
| SE | --- | --- | 4 | 5 | 8 | 12 | 13 | 0 | |
| <i>Mean Comparison</i> ¹ | | | | | | | | | |
| | | | 98 | 180 | 241 | 291 | --- | --- | |
| | | | 92 | 169 | 237 | 304 | 335 | --- | |
| | | | 96 | 179 | 249 | 316 | 339 | --- | |
| | | | 91 | 171 | 242 | 300 | 333 | --- | |

¹ Willis et al. 2001.

Table 5. Mean back-calculated length (mm) at age and standard error (SE) for smallmouth bass captured using frame nets in Pickerel Lake, 2007.

| Year | Age | N | Age | | | | | | |
|-------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2006 | 1 | 2 | 109 | | | | | | |
| 2005 | 2 | 34 | 106 | 196 | | | | | |
| 2004 | 3 | 12 | 86 | 186 | 279 | | | | |
| 2003 | 4 | 30 | 95 | 165 | 261 | 327 | | | |
| 2002 | 5 | 16 | 95 | 194 | 264 | 322 | 370 | | |
| 2001 | 6 | 5 | 78 | 146 | 223 | 277 | 353 | 386 | |
| 2000 | 7 | 4 | 87 | 195 | 263 | 302 | 337 | 375 | 418 |
| Mean | --- | 103 | 94 | 180 | 258 | 307 | 353 | 380 | 418 |
| SE | --- | --- | 4 | 8 | 9 | 11 | 10 | 5 | 0 |
| <i>Mean Comparison</i> ¹ | | | | | | | | | |
| | | | 98 | 180 | 241 | 291 | --- | --- | --- |
| | | | 92 | 169 | 237 | 304 | 335 | --- | --- |
| | | | 96 | 179 | 249 | 316 | 339 | --- | --- |
| | | | 91 | 171 | 242 | 300 | 333 | --- | --- |

¹ Willis et al. 2001.

Table 6. Weighted mean length at capture (mm) for black crappie captured using frame nets in Pickerel Lake, 2006-2007.

| Year | N | Age | | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 2007 | 332 | --- | 153 | 213 | --- | 273 | 286 | --- | --- | 299 |
| 2006 | 20 | 100 | 139 | --- | --- | 270 | --- | --- | 291 | |

Table 7. Weighted mean length at capture (mm) for walleye captured in experimental gill net sets in Pickerel Lake, 2000-2007. Note: sampling was conducted at approximately the same time during each year allowing comparisons among years to monitor growth trends.

| Year | N | Age | | | | | | | | | |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2007 ¹ | 81 | 211 | 295 | 358 | 388 | 445 | 433 | 489 | --- | --- | --- |
| 2006 ¹ | 128 | --- | 300 | 333 | 387 | 398 | 469 | --- | --- | 495 | --- |
| 2005 ¹ | 75 | --- | 255 | 310 | 349 | --- | --- | 408 | --- | --- | --- |
| 2004 | 135 | 187 | 293 | 330 | 388 | 443 | --- | 511 | 584 | --- | --- |
| 2003 | 96 | 197 | 251 | 357 | 406 | 427 | 520 | 587 | --- | --- | --- |
| 2002 | 33 | 145 | 298 | 377 | 401 | 485 | --- | --- | --- | --- | --- |
| 2001 | 61 | --- | 270 | 319 | 384 | 419 | --- | --- | 642 | --- | --- |
| 2000 | 73 | 273 | 294 | 395 | 457 | 477 | 485 | --- | --- | --- | 690 |

¹ Age assignments made using otoliths; scales were used in previous years.

Table 8. Stocking history including size and number for fishes stocked into Pickerel Lake, 1996 - 2006. LMB= largemouth bass; SMB= smallmouth bass; WAE= walleye

| Year | Species | Size | Number |
|------|---------|------------------|---------|
| 1996 | WAE | large fingerling | 16,339 |
| 1997 | WAE | large fingerling | 23,644 |
| 1998 | WAE | large fingerling | 14,960 |
| 2001 | LMB | large fingerling | 13,420 |
| 2001 | WAE | large fingerling | 56,250 |
| 2002 | WAE | large fingerling | 13,420 |
| 2003 | WAE | large fingerling | 18,582 |
| 2004 | SMB | fingerling | 700 |
| | WAE | large fingerling | 26,940 |
| 2006 | LMB | fingerling | 101,500 |
| | WAE | large fingerling | 25,146 |
| 2007 | WAE | large fingerling | 765 |

Table 9. Numbers of walleye sampled (n) by year class and associated stocking history (Number stocked x 1,000) for walleye captured in Pickerel Lake, 2000-2007.

| Survey Year | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 | 2001 | 2000 | 1999 | 1998 | 1997 | 1996 |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2007 ^{1,2} | | 6 | 2 | 31 | 15 | 8 | 16 | 3 | | | | |
| 2006 ^{1,2} | | | | 26 | 34 | 15 | 49 | 3 | | | 1 | |
| 2005 ¹ | | --- | | | 12 | 15 | 47 | | | 1 | | |
| 2004 | | --- | --- | | 6 | 22 | 101 | 1 | 2 | | 2 | 1 |
| 2003 | | --- | --- | --- | | 7 | 54 | 17 | 5 | 6 | 4 | |
| 2002 | | --- | --- | --- | --- | | 7 | 2 | 6 | 15 | 3 | |
| 2001 | | --- | --- | --- | --- | --- | | | 7 | 40 | 7 | 3 |
| 2000 | | --- | --- | --- | --- | --- | --- | | 2 | 34 | 15 | 15 |
| Number stocked | | | | | | | | | | | | |
| fry | | | | | | | | | | | | |
| small fingerling | | | | | | | | | | | | |
| large fingerling | 0.8 | 25 | | 27 | 19 | 13 | 56 | | | 15 | 24 | 16 |

¹ Age assignments made using otoliths; scales were used 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").

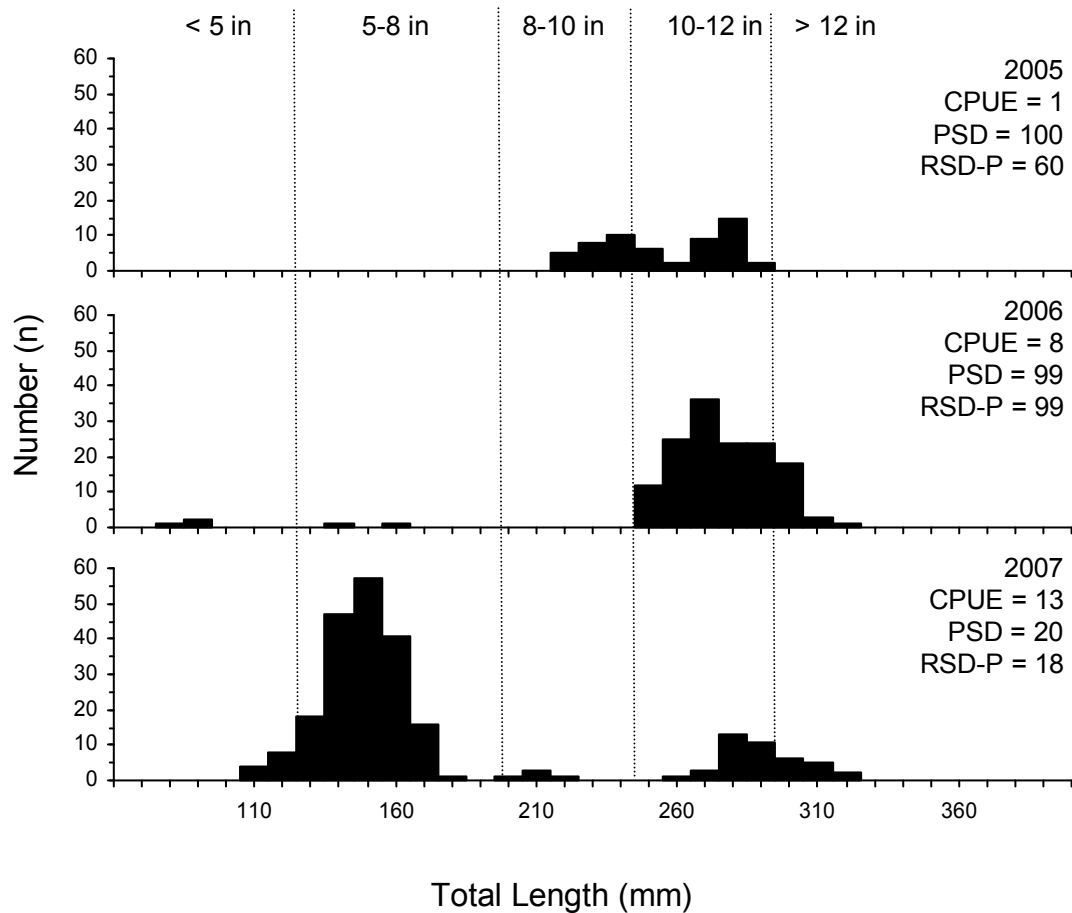


Figure 2. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for black crappie captured in frame nets in Pickerel Lake, 2005-2007.

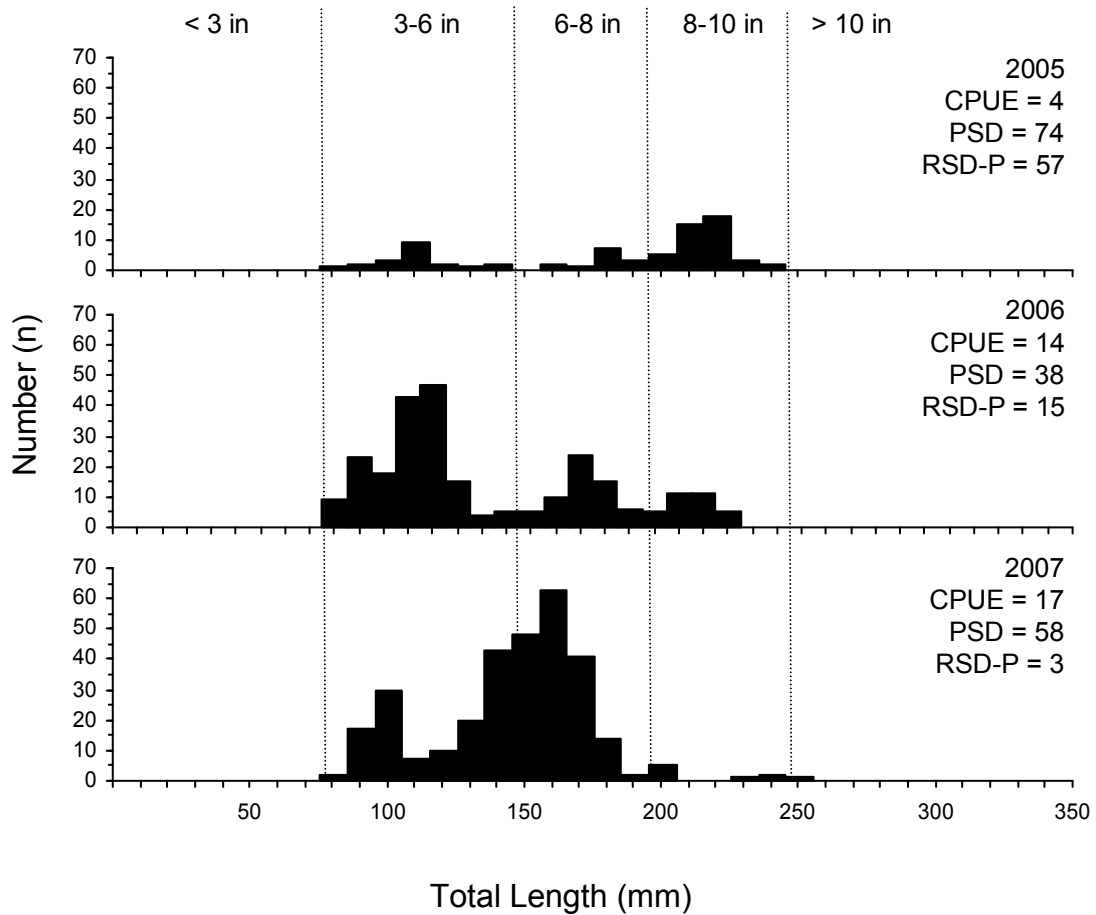


Figure 3. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for bluegill captured in frame nets in Pickerel Lake, 2005-2007.

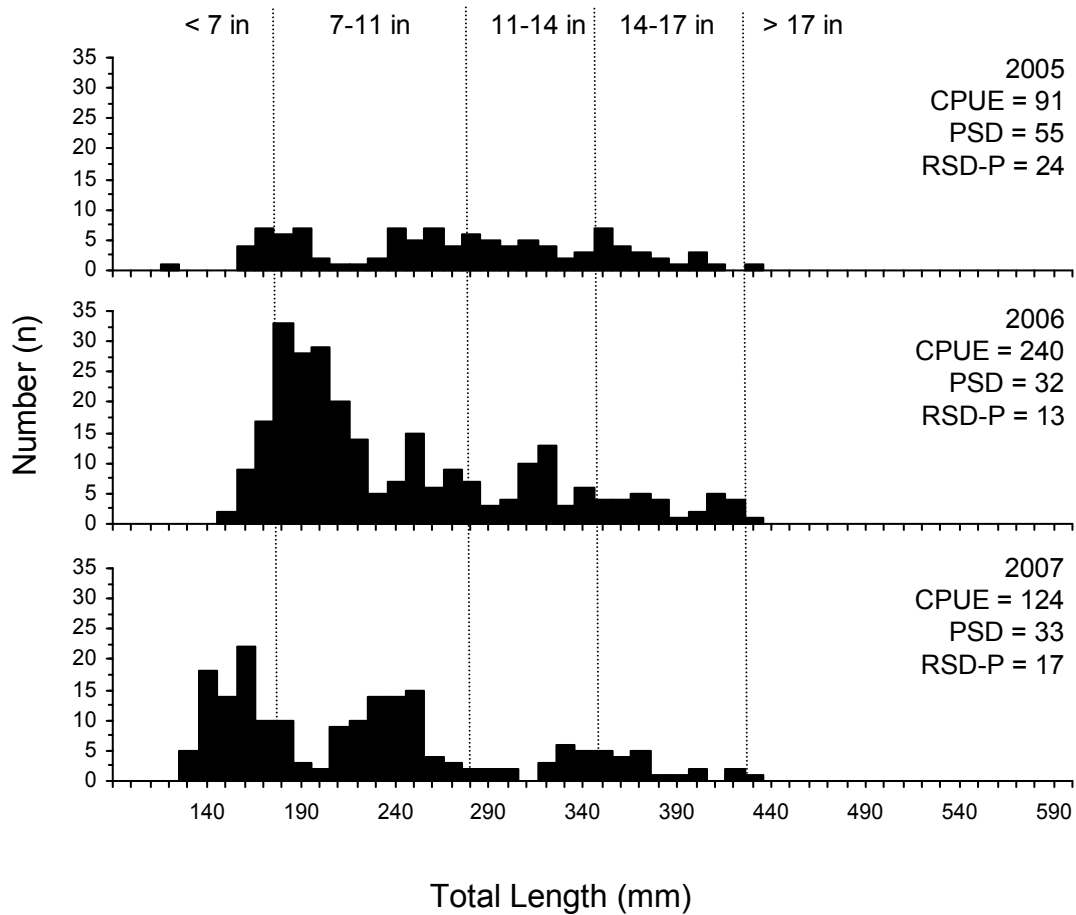


Figure 4. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for smallmouth bass captured during fall night electrofishing in Pickerel Lake, 2005-2007.

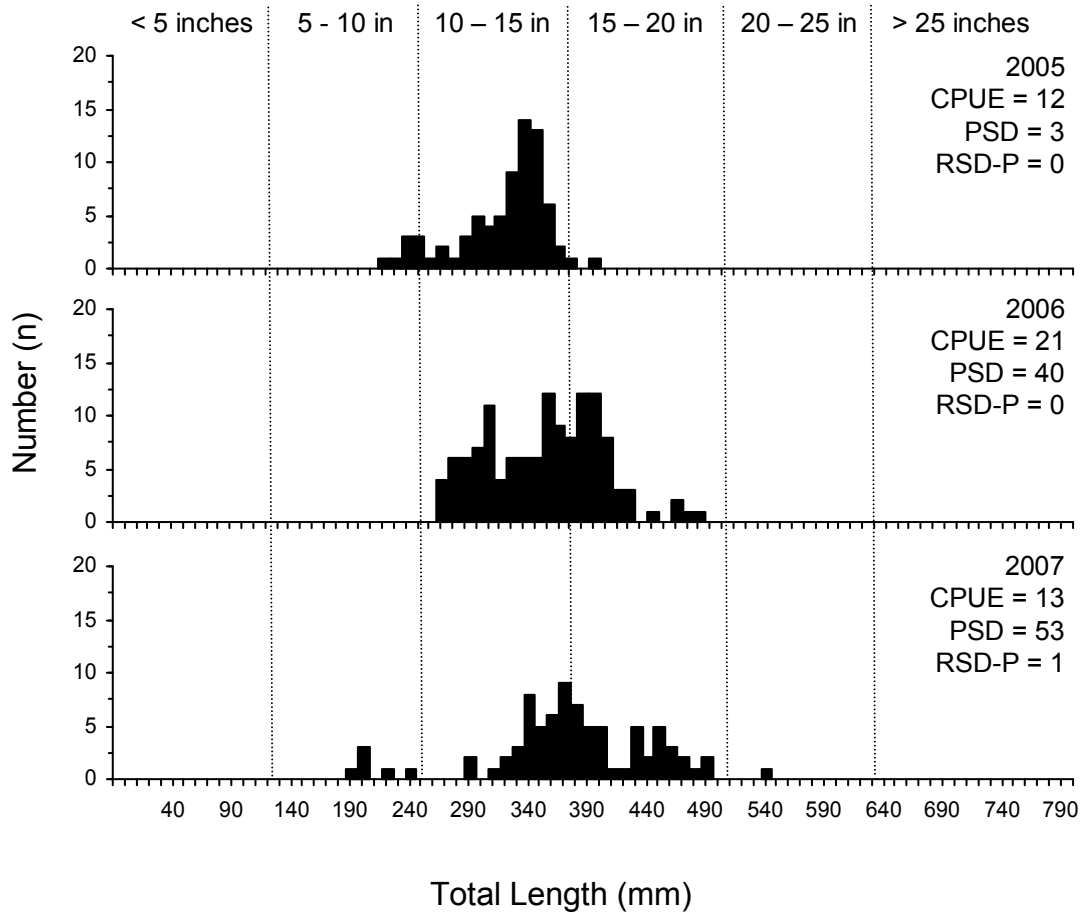


Figure 5. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for walleye captured in gill nets in Pickerel Lake, 2005-2007.

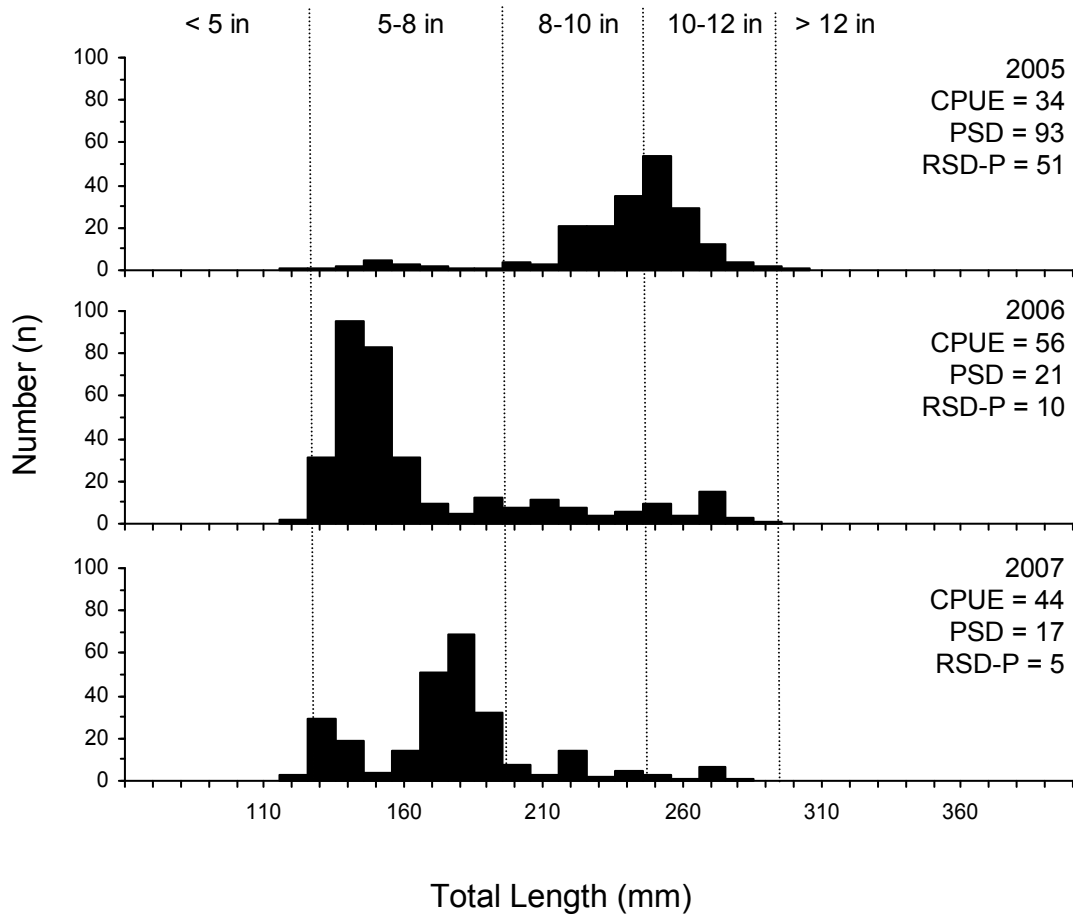


Figure 6. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional stock density (PSD), and relative stock density of preferred-length fish (RSD-P) for yellow perch captured in gill nets in Pickerel Lake, 2005-2007.