2006 Electrofishing Survey of Indian Mountain State Park Lake

Submitted to

The Tennessee Department of Environment and Conservation

Prepared by

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INTRODUCTION

The Tennessee Wildlife Resources Agency Region IV reservoir data collection unit was asked to sample several Tennessee State Park lakes during the spring of 2006. This work was conducted under an agreement with the Tennessee Department of Environment and Conservation, Division of State Parks to follow a protocol for care of state park lakes. The goal of this management effort is to enhance the quality of fisheries for the enjoyment of park visitors and Tennessee anglers. One of the lakes sampled is contained within Indian Mountain State Park located in Campbell County.

The 1991, 1999, and 2003 fishery survey reports of the Indian Mountain lake were used for historical comparison of fish assemblages (Bettoli 1991, Negus 1999, Negus 2003). The sampling methods used by Bettoli were significantly different than those employed during our 1999 through 2006 efforts so only very general inferences can be made.

STUDY AREA

The lake we electrofished is located within Indian Mountain State Park (Figure 1, pond B). It is a small, 2.4 hectare borrow pit constructed in the early 1950s (Bettoli 1991). The park is adjacent to the Elk River which occasionally floods over to this lake. Most of the shoreline is accessible to anglers. No private boats are allowed in the lake, but paddle boats are available.

There are several other small lakes located within the park that we were not able to electrofish. They could not be accessed with our large boat and would be best surveyed using a portable electrofishing boat like those used by our stream survey unit.

METHODS

Electrofishing is the most efficient method to collect black bass and other game fish in pond and lake situations. Therefore, we used standardized electrofishing procedures outlined in our 1998 reservoir fisheries assessment guidelines to sample this lake (TWRA 1998).

A 5.5 m electrofishing boat was used to sample the fish population. The boat was equipped with a front-mounted electrode system with two independent pole mounts terminating in cable arrays. The arrays had six droppers of 9.5 mm stainless steel cable spread 45.7 cm apart. Collections were made using pulsed DC current set at 120 pulses per second and 7-8 amps.

Three electrofishing runs totaling 0.84 hr were performed on May 31, 2006. All bass, crappie, and channel catfish were collected, but sunfish and rough fish were only netted to determine the species composition in the lake. Fish were measured to the nearest millimeter and weighed to the nearest gram and released.

Analysis of data included calculations of proportional stock density (PSD), relative stock density (RSD), and relative weight (Wr) (Wege and Anderson 1978; Anderson 1980; Alexander and Brown 1987). National standard weights were used in the relative weight analysis.

RESULTS

Eleven fish species were collected during the 0.84 hours of electrofishing in 2006 (Table 1). Largemouth bass, golden redhorse, bluegill, and gizzard shad made up the majority of the sample.

The catch per unit effort (CPUE) of largemouth (66.6/hr) was greater than that observed in 1999 through 2003. Seventeen percent were greater than 16-inches and six were over 20-inches (Figure 2). A fair number of small, substock largemouth were present in the sample and these will help enhance the quality of the fishery for the next several years. There were gaps in the length frequency suggesting that reproduction has been variable over time.

Relative weight (Wr) values for largemouth were generally good indicating largemouth have an adequate food supply and are not in an over-crowded situation.

An acceptable forage base is available to largemouth. We observed a good number of gizzard shad and sunfish of various sizes which are valuable food items for game fish.

The 15 white crappie collected were less than 10-inches. The manager mentioned that anglers routinely catch quality size fish, but this sample indicates a rather poorly structured population.

MANAGEMENT RECOMMENDATIONS

Creel limits for Indian Mountain are the same as those imposed by the TWRA statewide. Park rangers are encouraged to continue enforcing these limits and promote the catch and release of largemouth bass in particular because of the low density and quality of the fishery.

Crappie are numerous, but the size structure is poor. It is generally accepted that crappie are poorly suited for small impoundments. They tend to over populate and few reach harvestable-size. They are not overly abundant in the lake suggesting anglers are harvesting adequate numbers to keep this species in check.

Three channel catfish were collected in the sample and are very popular with local angers. Channel catfish are readily available from a variety of sources and a stocking program using this species is encouraged. The TWRA arranged to have 750 pounds of channel catfish stocked in June of 2003 and this should be continued on an annual basis.

Future sampling might also include shoreline seining. This is an easy method of locating smaller, shoreline oriented species and gives one an estimate of spawning success in impoundments such as this. Perhaps local youth groups could seine during July or August to predict the spawning success of the various game fish species.

LITERATURE CITED

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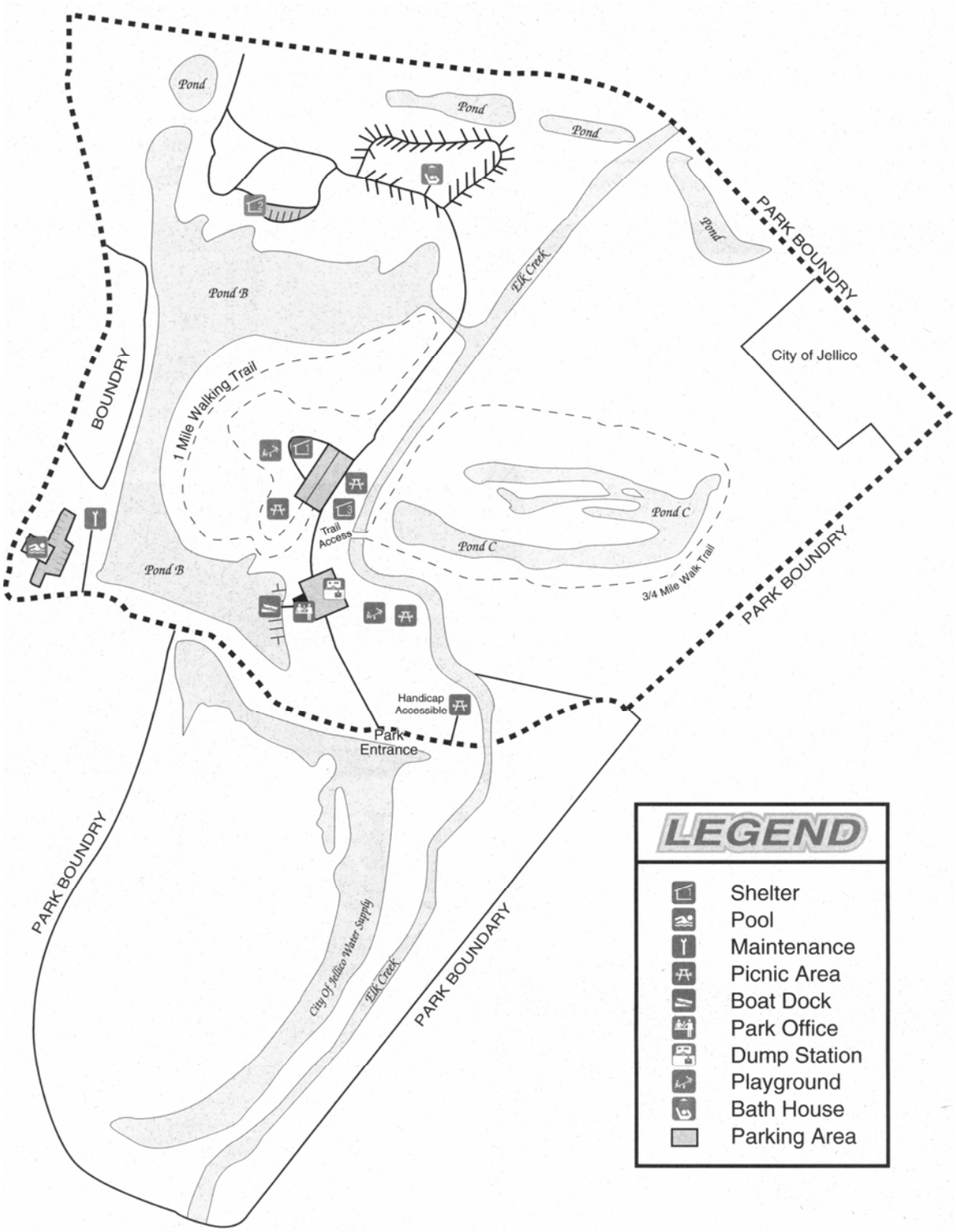

Figure 1. Map of Indian Mountain State Park.

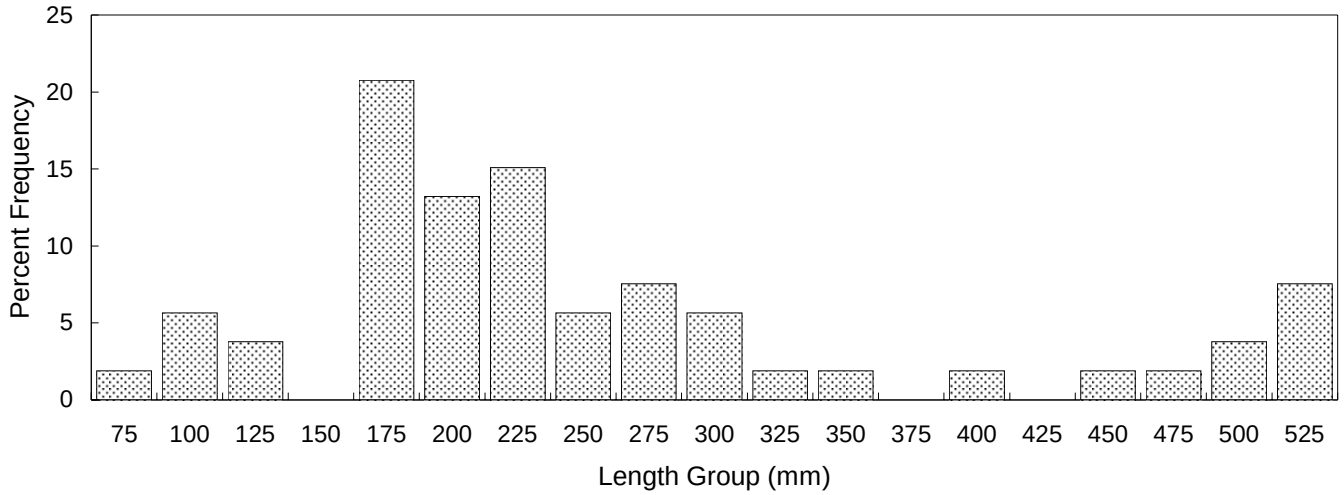

Figure 2. Indian Mountain State Park Lake largemouth bass length frequency by percent for 2006 electrofishing sample (n=53)

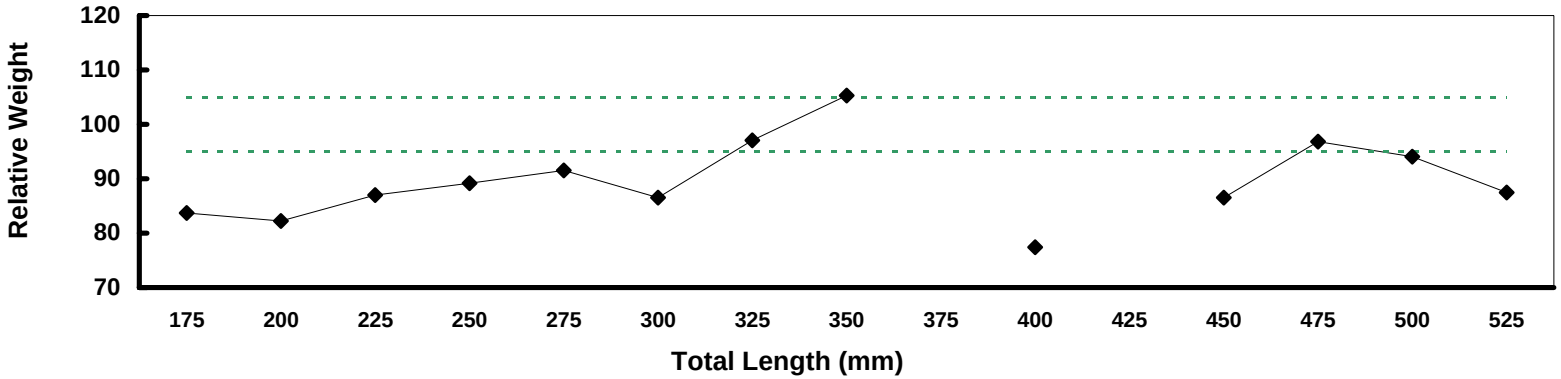

Figure 3. Indian Mountain State Park Lake largemouth bass mean relative weight values from the 2006 electrofishing sample (n=47).

Table 1. Species collected from Indian Mountain State Park Lake in 2006.

Species Collected
Bluegill
Channel Catfish
Common Carp
Gizzard Shad
Golden Redhorse
Largemouth Bass
Northern Hogsucker
Redear Sunfish
Warmouth
White Crappie
White Sucker