Population status of the Illinois chorus frog
(Pseudacris streckeri illinoensis)
in Madison County, Illinois: Results of 2002 surveys

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FINAL REPORT ON 2002 RESULTS

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DISCLAIMER

The findings, conclusions, and views expressed herein are those of the researchers and should not be considered as the official position of the Illinois Department of Transportation.

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EXECUTIVE SUMMARY

A study of the biology of the Illinois chorus frog, *Pseudacris streckeri illinoensis*, is reported. Surveys of Madison County for choruses of the frogs located nine choruses in 2002. These choruses were located at the same sites that choruses were found in 2001. The bulk of the study was conducted using drift fences at the wetland mitigation area adjacent to Sand Road in Sec. 19, T4N, R8W. The primary purpose of the 2002 study was to examine spatial variation in use of the mitigation area by the Illinois chorus frog and to estimate population size and density at the mitigation area. I estimated population size using recaptures of previously marked frogs. Lincoln-Petersen index estimate of population size based on recaptures of previously marked frogs was 245 total frogs for 2002. This is a three-fold increase in population estimate compared to 2001.
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ACKNOWLEDGMENTS

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INTRODUCTION

The Illinois chorus frog, *Pseudacris streckeri illinoensis*, is restricted to the floodplains of the Mississippi and Illinois rivers in Arkansas, Illinois, and Missouri (Conant and Collins, 1991). The frog is listed as a threatened species in Illinois (Herkert, 1992), as a rare species in Missouri (Anonymous, 1992), as a species of special concern in Arkansas (R. Roberg, pers. comm.), and as federal C-2 species (Dodd et al., 1985).


Several previous publications and unpublished reports provide details on the life history of *P. s. illinoensis* including information on underground feeding behavior (Brown, 1978), burrowing behavior (Axtell and Haskell, 1977; Brown et al., 1972; Tucker et al., 1995; Tucker, 1995), chorus sites (Brown and Rose, 1988; Tucker, 1998), fecundity (Butterfield et al., 1989; Tucker and Philipp, 1995; Tucker, 1997a), post-metamorphic growth (Tucker, 1995; Tucker and Philipp, 1995), morphology of newly transformed froglets (Tucker, 1997b); food habits (Tucker, 1997c), thermobiology (Packard et al., 1998), and

This year's activities carried forward objectives from previous years and include an analysis of the impact of the wetland mitigation area. My objectives were:
1. Monitor the distribution of P. s. illinoensis choruses in appropriate habitat in the impact area.
2. Estimate the approximate number of P. s. illinoensis located on the wetland mitigation area.

CHORUS LOCATIONS IN THE SAND ROAD STUDY AREA

MATERIALS AND METHODS

Monitoring of chorus locations in the Sand Road study area (Fig. 1) began on February 23, 2002. The methods used and sites visited were reviewed in previous reports (i.e., Tucker and Philipp, 1996).

RESULTS AND DISCUSSION

In 2002, a total of nine choruses were located (Fig. 1). No new chorus sites were found in 2002.
Figure 1. Sand Road study area showing the location of the wetland mitigation area and known choruses of the Illinois chorus frog (*Pseudacris streckeri illinoensis*) in Madison County, Illinois.
Generally, chorus sites have been stable in the general study area from 1994-2002 with no indication of recolonization of distant sites where this species is thought to have been extirpated (Tucker and Philipp, 1995; Tucker, 1998). This year’s results marked a return to previous years results with the discovery of no new chorus site.

**POPULATION SIZE ESTIMATES**

**MATERIALS AND METHODS**

Population size estimate was made using the Petersen method as modified by Bailey (1951) for estimates of population size when number of recaptures were small (Donnelly and Guyer, 1994). Standard error of was not calculated due to the small number of captures in 2000, 2001, 2002.

**RESULTS AND DISCUSSION**

Petersen estimate of population size was 245 total frogs based on recaptures of previously marked frogs (Table 1). The 2002 estimate was about half the estimate made in 1997 of about 455 adults (the highest population recorded). However, it is much higher then estimated 70 frogs from 2001. Apparently, favorable rainfall in the summer and fall of 2001 increased recruitment in this species for 2002.

This conclusion is supported by the few captures made in 2000 and 2001 compared to 2002 (Table 1). Although only 47 frogs were caught in 2002, the number of frogs caught was 25 times higher than the few frogs caught in 2000 and 4 times the number caught in 2001. This suggests that recruitment from year to year is important in maintaining populations sizes (Tucker, 1995; 1998).
Table 1. Number of Illinois chorus frogs caught from 1996 to 2002.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total number of frogs</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>60</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td>1997</td>
<td>86</td>
<td>47</td>
<td>39</td>
</tr>
<tr>
<td>1998</td>
<td>22</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>1999</td>
<td>151</td>
<td>78</td>
<td>73</td>
</tr>
<tr>
<td>2000</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2001</td>
<td>12</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>2002</td>
<td>47</td>
<td>24</td>
<td>23</td>
</tr>
</tbody>
</table>
Summary
The restored wetland actually became available for the frogs to use in 1998. Coincidentally, 1997 was a severe drought year and the number of frogs caught in the following year (1998) was reduced by one-quarter in that compared to previous years. Despite this reduction, captures in 1999 were the highest ever made. These capture rates are not affected by collecting effort because the same drift fences have been used in all years of the study since 1996.

The 2000 year represents the lowest capture rate for any year of the study at the wetland mitigation area. Despite this extremely low capture rate, some frogs were added to the population. Although 2000 was an extremely dry spring, the wetland retained water throughout the breeding season. The few frogs that did breed in 2000 were able to add to the number caught in 2001. These frogs showed further signs of recovery in 2002 with population estimate increasing from 70 (2001) to 245 (2002).

The question that remains to be determined is "how successful is the wetland mitigation project in maintaining the Illinois chorus frog in Madison County?". This question cannot be fully answered at this time. However, frogs survived the driest spring recorded to date in 2000 and added some frogs in 2001 and significantly more in 2002. Sufficient froglets must have been produced in 1999 and even in the drought year 2000 to colonize this new chorus. Thus early indications are that the wetland project is accomplishing the goals set for it so far as the population status of the Illinois chorus frog is concerned.


