

Abstract

Amphibian populations have been declining worldwide, with several documented species extinctions in the past two decades. Although monitoring population health can present challenges, surveys of breeding choruses are relatively effective methods for assessing populations and population trends of many frog and toad species. We analyzed data from breeding chorus surveys conducted throughout Illinois from 1986 to 1989. Of the 20 species native to Illinois, 9 were stable or increasing during the survey period whereas the trends for other species were either inconsistent or indicated a decline in population size. To better assess population trends for Illinois frogs, we advocate re-establishment and regular monitoring of choruses, and improved training for volunteers who conduct the surveys.

Introduction

- Amphibian populations have declined worldwide [1,3], even in natural areas [2].
- Long-term monitoring is crucial to the understanding of both pattern and process in population decline [4].
- We assessed population trends for Illinois frog species using historical data from breeding chorus surveys conducted between 1986-1989.

Materials & Methods

- Surveyors completed three runs during early spring, late spring, and summer.
- 65 routes were surveyed, each having 20 sampling points spaced 0.8 km apart.
- We plotted population trends for each species for all years and calculated coefficients of correlation.

Fig. 1 – Map of Illinois counties, with the number of survey routes identified. Values of 0.5 denote a route that overlapped between counties.

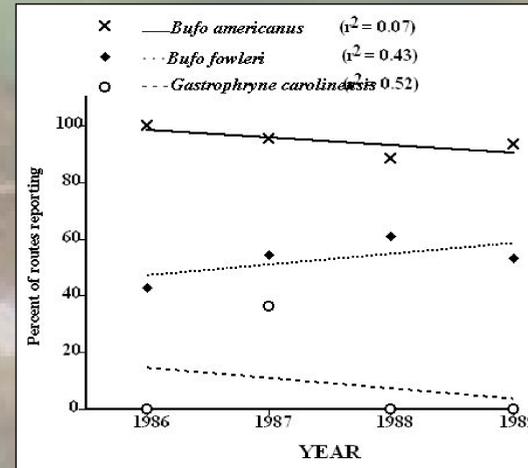
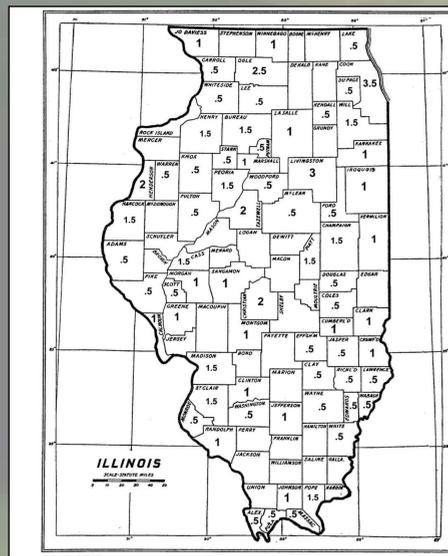


Fig. 2- Percent of routes reporting breeding calls of 3 anuran species between 1986-1989.

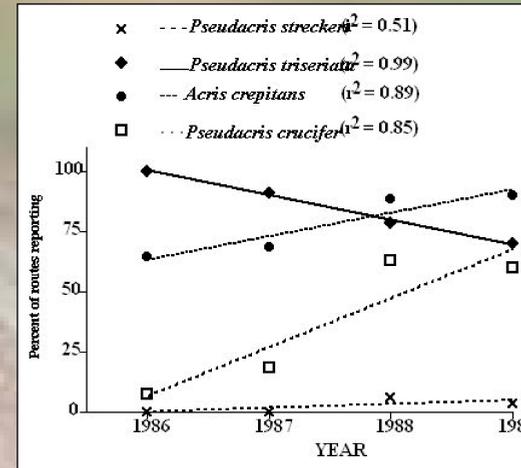


Fig. 3- Percent of routes reporting breeding calls of 4 small hylid species between 1986-1989.

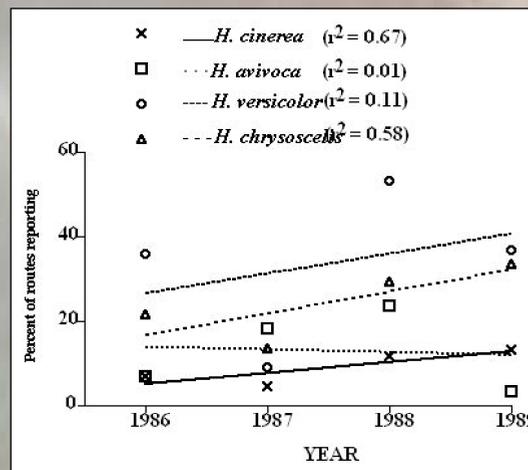


Fig 4- Percent of routes reporting breeding calls of 4 treefrog species between 1986-1989.

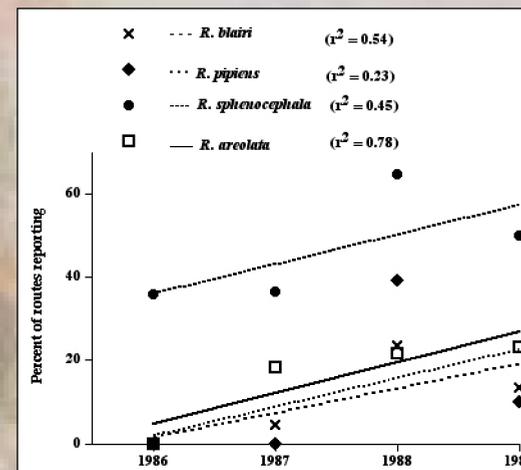
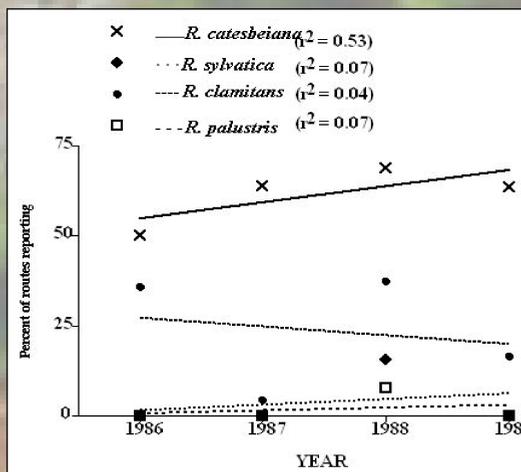


Fig. 5- Percent of routes reporting breeding calls of leopard and crayfish species between 1986-1989.

Fig. 6- Percent of routes reporting breeding calls of 4 ranid species between 1986-1989.



Results & Discussion

- Of the toad species populations of *Bufo fowleri* increased, whereas no trends were apparent for either *B. americanus* or *Gastrophryne carolinensis*. (*Scaphiopus holbrooki* was not reported).
- Of the four smaller hylid species *Pseudacris crucifer* and *Acris crepitans* increased, *P. triseriata* decreased, but no trend was apparent for *P. streckeri illinoensis* (Fig. 3)
- Of the four *Hyla sp.*, *H. cinerea* and *H. chrysoscelis* increased, whereas *H. versicolor* and *H. avivoca* were not apparent. (Fig. 4)
- Populations of *Rana blairi*, *R. areolata*, *R. sphenoccephala* and *R. catesbeiana* increased during the study period. (Fig. 5)
- Population trends for *R. pipiens*, *R. clamitans*, *R. sylvatica*, and *R. palustris* were not apparent. (Fig. 6)
- Definitive assessment of Illinois frog populations is lacking for several species because of inconsistent route coverage.
- Future survey efforts in Illinois could be improved with more intensive training of volunteers to properly identify breeding sites and species.

Literature Cited

- Blaustein & Kiesecker, 2002. *Ecol. Letters* 5:597-608.
- Collins & Storer, 2003. *Diversity & Distributions* 9:89-98.
- Guerry & Hunter, 2002. *Conservat. Biol.* 16:745-754.
- Semlitsch *et al.*, 1996. Pp. 217-248 in *Long-Term Studies of Vertebrate Communities* (ed. Cody & Smallwood), Academic Press, San Diego, Calif.

Acknowledgments

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