Amphibian Conservation Strategies: Translocating an Entire Population of Blanchard's Cricket Frog (*Acris crepitans blanchardi*) in Southeast Michigan

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Abstract

The dramatic decline of amphibian populations worldwide is an urgent conservation issue. The root causes underlying many amphibian declines are unknown. One Michigan species of Special Concern, the Blanchard's cricket frog (*Acris crepitans blanchardi*), is declining at an alarming rate in the northern portions of its range. In May 2004, the National Amphibian Conservation Center (NACC) at the Detroit Zoo initiated a translocation project to reintroduce Blanchard's cricket frog to three manmade wetlands at the northern extent of its range. Calling surveys in southeast Michigan revealed several robust populations of cricket frogs including one site slated for development in the fall of 2004. Working with the developer and the Department of Environmental Quality, we successfully removed about 1,050 frogs and tadpoles from the threatened breeding ponds. The animals were released into two Michigan Department of Natural Resource restored lake plain prairie complexes with wetland features, and into a restored wetland near the NACC in fall of 2004. These translocated populations will be monitored in subsequent breeding seasons to assess the success of the translocation project.

Resumen

La drástica disminución de poblaciones de ranas alrededor del mundo es un problema de conservación urgente. Las causas fundamentales de muchas de estas disminuciones son desconocidas. Una especie de preocupación especial en Michigan, el Blanchard's cricket frog (*Acris crepitans blanchardi*), esta decayendo a una velocidad alarmante en el parte norte de su cobertura. En mayo de 2004, el Centro Nacional de Conservación Anfibio (NACC) en el zoo de Detroit empezó un proyecto de traslocación para re-introducir la rana Blanchards en tres humedales artificiales en la parte norte de su cobertura. Estudios de las llamadas en el suroeste de Michigan ha revelado algunas poblaciones robustas de las ranas, incluyendo un sitio planeado para la construcción de casas en el otoño de 2004. En colaboración con el diseñador y el Departamento de Calidad Ambiental, hemos retirado con buen éxito 1,500 ranas y renacuajos de los estanques amenazados. Los animales fueron liberados en dos lagos restaurados del Departamento de Recursos Naturales con características de humedales, y en un humedal restaurado cerca de NACC en el otoño de 2004. Estas poblaciones translocadas serán vigiladas en las etapas siguientes de cría para evaluar el éxito del proyecto de traslocación.

According to a recent global survey of all 5,743 known amphibian species, almost a third (1,856 species) are threatened with extinction (IUCN, CI, and NatureServe 2004). An additional 1,300 other species are probably also threatened, but scientists did not have sufficient data to assess their status (*Ibid.*). Amphibian populations are declining more rapidly than either birds or mammals (*Ibid.*). While many amphibian declines can be attributed to habitat loss and overexploitation, the root causes of other species declines are unknown. The Blanchard's cricket frog (*Acris crepitans blanchardi*), a Michigan species of Special Concern, is declining in some areas of the Midwest, and scientists have not been able to determine why the species is threatened in the northern extent of its range.

Blanchard's cricket frog is a small (0.6 to 1.5 in), warty-skinned frog with long hind limbs and is related to tree frogs, but lacks toe pads on its feet and does not climb. They usually inhabit the more open edges of permanent ponds, bogs, lakes, and slow-moving streams or rivers (Harding 2000). Blanchard's cricket frog is one of three subspecies of the northern cricket frog (*Acris crepitans*) and ranges from southern Michigan, Wisconsin, and southeastern South Dakota south through Texas, west to northern Mexico, and east to northern Tennessee. The call of this cricket frog resembles a series of metallic clicks, similar to the sound made when two pebbles are tapped together (Harding 2000). Blanchard's cricket frog was named in 1947 after distinguished University of Michigan herpetologist Frank Nelson Blanchard.

Since the late 1970s and 1980s, populations of Blanchard's cricket frog have declined drastically in the northern portions of its range (Harding 2000). These declines have been documented in Ontario, Iowa, Wisconsin, Indiana, Illinois, Michigan, Ohio, and Minnesota. While the species has been extirpated from some areas, such as Ontario and most of southeast Michigan, the cricket frog remains common in the southern and western parts of its range. Potential causes for this decline include contamination of wetlands and waterways by pesticides or other pollutants, successional changes in habitat characteristics, climatic fluctuations, competition and predation from other frog species (e.g., bullfrogs and green frogs), drought, acid rain, and habitat loss and fragmentation (Lehtinen 2004, Harding 2000). Some life history characteristics of this frog, such as a short life span and limited dispersal, might make it especially vulnerable to periodic extinctions at the periphery of its range. To test the hypothesis that cricket frogs are declining in southeast Michigan due to the loss of migration corridors, which allow for recolonization in new areas, Kevin Zippel, former curator of the National Amphibian Conservation Center (NACC), initiated a translocation project to try to establish a self-sustaining population of cricket frogs in a restored wetland at the Detroit Zoo.

Ariana Rickard, a summer intern at NACC, conducted the initial population surveys to identify viable local populations that could be used as source animals for the translocation project. Rickard followed up on population surveys done by Richard Lehtinen on the distribution of Blanchard's cricket frog in southeastern Michigan

Figure 1. *Acris crepitans blanchardi*

(Lehtinen 2002). Between May 18 and July 9, 2001, Lehtinen surveyed 60 sites that historically hosted cricket frog populations. Only two of these sites in southeast Michigan, Ypsilanti and Tecumseh, had cricket frogs and full choruses of males. Lehtinen concluded, "Blanchard's cricket frogs are not only declining, but are nearly extirpated from southeast Michigan." On May 18, 2004, Rickard visited the same site Lehtinen surveyed in Ypsilanti and heard cricket frogs calling from three different sites near Ford Lake. One property, Lakewood Farms, seemed to host the largest population of cricket frogs in the area.

After Rickard located the cricket frog populations from nighttime calling surveys near Ford Lake, she identified the owners and development plans for the breeding ponds. The developer of Lakewood Farms had plans to build condominiums and single-family homes on the property, and intended to fill in the cricket frog breeding ponds for the entrance driveway into the complex. The company had hired a consultant, Applied Science and Technology, Inc. (ASTI), to survey the site for cricket frogs and two threatened plant species. After ASTI concluded that there were no cricket frogs on the property, the developer stated that it didn't "make sense" for them to give NACC permission to relocate the frogs.

ASTI surveyed the site three times in April and May 2004 and concluded, "the site does not contain the preferred habitat for the subject species . . . . None of the subject species were encountered during the assessment" (ASTI Threatened and Endangered Species Survey 2004). However the consultants' survey was performed without proper consideration for the annual cycle of the cricket frogs, and the surveys were conducted when the Blanchard's cricket frogs were unlikely to be found during visual encounter surveys. Calling surveys conducted during this frog's breeding season would have provided a more reliable assessment of the size of the cricket frog population at Lakewood Farms.

Zoo staff contacted the Department of Environmental Quality (DEQ) and a DEQ representative, James Sallee, served as a liaison between NACC and the developer. Sallee convinced the developer to allow NACC to remove the frogs from the property before development began. Representatives of all parties involved surveyed the site in July 2004 and confirmed a significant numbers of cricket frogs. With this information, the DEQ mandated that Edi Sonntag, Senior Zookeeper at NACC, must approve plans for the required mitigation site. Sonntag is researching the habitat requirements of this species and was surveying the extant southeast Michigan populations. This survey information was then applied to the design of the mitigation

Lakewood Farms rescue site.

site to assure replacement of appropriate cricket frog habitat.

Sonntag also began recruiting volunteers for the frog rescue effort. After the Department of Natural Resources (DNR) approved emergency collection permits for the cricket frogs and the Zoo's veterinary staff completed health assessments on the Lakewood Farms frogs to verify that there were no contagious diseases present in the population, groups of volunteers led by Sonntag began collecting frogs 2–3 times a week in August through October 2004. About 1,050 frogs and tadpoles were removed and released into two DNR parks and the wetland near the NACC in September 2004. These sites were selected after careful consideration of habitat qualities, such as shoreline vegetation and water quality, and after health assessments of resident amphibian populations revealed no problematic diseases or parasites.

Sonntag, Zippel, and Rickard visited the three introduction sites approximately one month after the frogs were released and found numerous cricket frogs basking or moving through their new homes. About 10% of the released frogs were seen at all the introduction sites, an encounter rate similar to what we have observed at Lakewood Farms. From our population surveys at Lakewood Farms, we know that the number of individuals seen at any one time is about 10% of the total population. Sonntag and Rickard plan to continue to monitor the translocated populations in the spring of 2005. Hopefully, the cricket frogs will thrive in their new homes, and we will hear strong choruses at all three of the introduction sites next May.

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