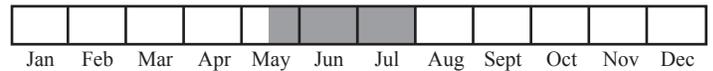


Best Survey Period



**Status:** State threatened

**Global and state rank:** G5T5/S2S3

**Family:** Hylidae (treefrog family)

**Range:** The Blanchard's cricket frog is found from southern Michigan and western Ohio west to southeastern South Dakota and eastern Nebraska, and south to northern Tennessee in the east and northern Mexico in the west (Conant and Collins 1998). An isolated colony has been documented in northeastern Colorado. Several populations also have been reported from Point Pelee and Pelee Island in Ontario, Canada, although these are believed to be extirpated. Blanchard's cricket frogs also are believed to be extirpated from Minnesota. The northern cricket frog (*Acris crepitans crepitans*) occurs to the east and south of this subspecies, and the coastal cricket frog (*A. crepitans paludicola*) occurs along the Louisiana coast.

**State distribution:** Historically, Blanchard's cricket frogs were distributed over much of the southern half of the Lower Peninsula of Michigan. Museum records from 1900 to 1950 documented cricket frogs from 19 counties in southern Michigan. Field surveys and museum specimens after 1950 recorded cricket frogs from five more counties including Leelanau County, which is highly unusual since this is so far north of its typical range. It is unknown whether this is a relict population from a warmer postglacial period or a recent introduction. However, since the early to mid-1980's, this species has declined dramatically in Michigan, particularly in southeast

Michigan. Since 1985, cricket frog populations have been reported from less than 10 sites in four counties in southeast Michigan (Lenawee, Washtenaw, Oakland and Lapeer) and about 40 sites in seven counties in southwest Michigan (Allegan, Barry, Berrien, Calhoun, Kalamazoo, Kent and Van Buren).

**Recognition:** The Blanchard's cricket frog is a tiny, non-climbing member of the treefrog family. Adults range in length from **0.6 to 1.5 inches** (Harding 1997). Cricket frogs have moist, **warty skin** and an acutely rounded snout. They are usually **tan, brown, gray, or olive green** in color, sometimes with bright green, tan, black or reddish blotches or stripe down the back. Most individuals have a **dark, triangular mark on the back of the head between the eyes**, a light line from each eye to the shoulder, and numerous vertical light bars on the snout. Other markings include a dark stripe from the shoulder to the groin, a dark stripe on the inner side of each thigh and dark stripes on the upper surface of the hind legs. Tadpoles are olive or brown mottled with black on their upper surface, and have an iridescent pale yellow to white belly. Their tail is very long with a black tip and a narrow dark line along the upper margin of the tail. During the breeding season, males are distinguished from females by their darker throat and yellow vocal pouch. The males also have a distinctive **breeding call which consists of a rapid series of metallic clicks**, similar to the sound made when two pebbles or marbles are tapped together.

Michigan frogs similar in appearance to the Blanchard's cricket frog include the western chorus frog (*Pseudacris triseriata triseriata*) and the northern spring peeper



(*Pseudacris crucifer crucifer*). The western chorus frog can be distinguished by the whitish stripe along its upper lip and brownish stripes through the eyes from the nostril to the groin and down the middle and sides of its back. The western chorus frog does have a dark triangular shaped mark or stripe on the top of its head. The spring peeper has an imperfect X-shaped mark on its back, and lacks the warty appearance of the Blanchard's cricket frog. The calls of these species also differ from that of the Blanchard's cricket frog.

**Best survey time:** The best time to survey for this species is during the breeding season which typically is from mid- to late May to mid-July. The best way to survey for this species is to listen in the evening (after sunset) for the distinctive clicking calls of the males during the breeding season. Optimal weather conditions for frog call surveys include air temperatures above 60°F and high humidity or light rain; calling activity, in general, decreases on cold or windy nights (Karns 1986).

**Habitat:** Blanchard's cricket frogs inhabit the open edges of permanent ponds, lakes, floodings, bogs, seeps and slow-moving streams and rivers (Harding 1997). They prefer open or partially vegetated mud flats, muddy or sandy shorelines, and mats of emergent aquatic vegetation in shallow water. Quiet, reasonably permanent water is essential for this species, with transient shallow pools occupied only if near a larger body of water. Cricket frogs also can be found in farm ponds, drainage ditches, gravel ponds and strip mine ponds, although polluted water is poorly tolerated (Minton 1972). In Michigan, many known cricket frog sites are located along ponds and lakes that are alkaline in nature often with fen habitat along the shoreline. This frog is thought to be the most aquatic of North American treefrogs, and usually does not leave the vicinity of water after the breeding season, except during rainy weather (Oldham & Campbell 1986).

**Biology:** Cricket frogs usually emerge from hibernation in late March to early April and breed from mid-to late May through mid-July. Frogs begin calling each year in the daytime, but as the temperature increases, they also call at night (Blair 1961, Burkett 1984). Males call from mats of vegetation in the water and along the mud banks of ponds and lakes. Amplexus (i.e., mating) and egg-laying occur in warm, shallow water near the calling sites (Harding 1997). Between 200 and 400 eggs are laid and attached either singly or in clusters to submerged vegetation (Harding 1997). The eggs hatch within a few days, and metamorphosis occurs in five to ten weeks after hatching. The newly transformed froglets are tiny, from 0.4 to 0.6 inches long, but they grow rapidly and some reach breeding size by the following spring (Harding 1997). Blanchard's cricket frogs are reluctant to hibernate and have been found active in Illinois as late as December and as early as February (Smith 1961). Individuals overwinter in cracks, depressions or vegetation along the shoreline.

Blanchard's cricket frogs are opportunistic feeders and eat throughout the day and night. Their diet consists of terrestrial and aquatic insects and other small invertebrates. Causes of mortality include desiccation, predation, parasitism, winter kill, and natural death. Predators include dragonfly larvae, leeches, aquatic spiders, turtles, fish, other frogs, snakes, birds, raccoons, and opossums.

During the latter part of the breeding season, the population shifts in less than a month from a mostly adult population to one consisting almost entirely of juveniles. This is due to rapid mortality of adults and rapid recruitment of young (Burkett 1984). Individuals are very short-lived, generally surviving only one, or in some cases, two breeding seasons (Burkett 1984, Harding 1997). Burkett (1984) found the average life expectancy of cricket frogs in Kansas to be about four months, with about 5% of the population surviving the winter and less than 0.1% living into the following fall. He suggests that complete population turnover occurs in about sixteen months, with only one age class represented in a breeding population. This life history differs from that of most anurans which typically live through more than one breeding season, and the breeding population usually consists of several age classes.

Cricket frogs tend to remain in fairly small areas; nearly 50% of the recaptures in a study in Kansas were within 25 feet of the previous place of capture (Burkett 1984). Dispersal requires moist habitat conditions and generally occurs during and following rains (Burkett 1984). A study in Texas documented average dispersal distances for different age classes ranging from 74 to 160 feet (Pyburn 1958), while a study in Kansas reported average movements of 64 to 82 feet (Burkett 1984). If cricket frog populations function as metapopulations requiring dispersal and intermixing among sub-populations, then their limited ability to disperse and short generation times suggest that populations need to be connected by suitable habitat and/or distances.

**Conservation/management:** Although the reasons for the decline of Blanchard's cricket frogs are not entirely clear, it is likely that habitat loss and degradation are the most significant problems for this species. Vast amounts of Michigan's original wetlands have been destroyed, and many of the remaining areas are affected by pollution. Much of the lakefront property in southern Michigan has been developed for homes and flood protection, eliminating many of the mud flats and vegetated shallow water areas required by this frog. It is critical that some portion of these habitats be protected from development and human-induced disruption, particularly at sites where cricket frogs still occur. Vegetation succession also has likely contributed to habitat loss. Hay (1998) contends that a reduction in cattle grazing in Wisconsin has reduced suitable habitat for cricket frogs at some known sites and has increased habitat for species such as green frogs. Maintaining open or sparsely vegetated areas along the shorelines of suitable waterbodies



would provide potential habitat for this species.

Given their highly permeable skin, amphibians, in general, tend to be very susceptible to pesticides and other chemical pollutants. Since cricket frogs are highly restricted to aquatic habitats, they may be especially susceptible to aquatic pollutants (Oldham & Campbell 1986, Minton 1972). High levels of DDE and PCB have been reported in Blanchard's cricket frogs from Pelee Island, Ontario, a predominantly agricultural area (Campbell 1978). Paralyzed cricket frogs have been found in rice fields in Texas immediately following treatment with the pesticide carbofuran (Flickinger et al. 1980). The use of agricultural or residential chemicals in areas with cricket frog populations may pose a threat to this species. Avoiding or limiting the use of these chemicals in areas where runoff would impact cricket frog sites would likely benefit the species. Maintaining buffers of natural vegetation or shoreline habitat between water bodies and agricultural fields or developed areas also would help reduce the input of chemical runoff into cricket frog habitat.

Another threat may be the stocking of lakes and ponds with non-native game fish, many of which consume both tadpoles and adult frogs (Harding & Holman 1992). Even native species such as bluegill (*Lepomis macrochirus*) and largemouth bass (*Micropterus salmoides*) can impact amphibian populations when they are stocked in upland ponds where they were previously not resident (Thurow 1994). Bronmark and Edenhamn (1994) report that several breeding populations of European cricket frogs disappeared as soon as fish were introduced but returned when the fish were removed. Fish introductions into extant cricket frog sites should be re-examined, and avoided or discontinued when possible.

Despite being a native species, the bullfrog (*Rana catesbeiana*) may pose an additional threat to the Blanchard's cricket frog. This species tends to tolerate habitat disturbances, and in altered environments, may increase in numbers to the detriment of other species (Thurow 1994). Adult bullfrogs consume other frog species, including Blanchard's cricket frogs, and their tadpoles will eat frog eggs (Oldham & Campbell 1986). However, it is questionable whether the bullfrog poses a problem in Michigan, where it has not notably increased and is less likely to occur in the same habitats as Blanchard's cricket frogs (Harding pers. comm.).

Although the species is listed only as special concern, the Blanchard's cricket frog is protected in Michigan under the Director's Order No. DFI-166.98, Regulations on the Take of Reptiles and Amphibians, which is administered by the Michigan Department of Natural Resources' Bureau of Fisheries. It is unlawful to take a cricket frog from the wild except as authorized under a permit from the Director (legislated by Act 165 of the Public Acts of 1929, as amended, Sec.302.1c (1) and 302.1c (2) of the Michigan Compiled Laws). Public land managers and the general

public should be informed that this species is protected and should not be collected or harmed.

**Research needs:** An assessment of the current distribution and abundance as well as the long-term viability of Blanchard's cricket frogs in the state is needed. Additional surveys are needed to confirm and monitor populations, and to continue to document new populations. More research on this species' life history, particularly its habitat requirements at local and landscape scales and dispersal capability, is warranted. More information on the species' population structure and dynamics should be obtained to develop appropriate and effective management and conservation strategies. The specific factors contributing to the species' decline in Michigan (and regionally) need further elucidation. Also, potential impacts of various management and land use practices such as prescribed burning and the use of herbicides should be investigated. Finally, the need for and likelihood and implications of successfully relocating or reintroducing cricket frogs to sites with suitable habitat should be examined.

**Related Abstracts:** Prairie fen, mat muhly, prairie dropseed, prairie Indian-plantain, small white lady's-slipper, Blanchard's cricket frog, Blanding's turtle, blazing star borer moth, Culver's root borer, eastern box turtle, eastern massasauga, Mitchell's satyr, red legged spittlebug, spotted turtle.

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