

An Unusual Color Pattern Variant in Cricket Frogs (*Acris crepitans*) from Southern Illinois

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ABSTRACT

A new color pattern variant is described in cricket frogs (*Acris crepitans*) from southern Illinois. Because of its geographically intermediate location within the species range, further studies of this color pattern may help elucidate the roles of natural selection versus chance in maintaining the balanced color polymorphism in *A. crepitans*.

The cricket frog, *Acris crepitans*, occurs from northeastern Mexico to southern Wisconsin in the U.S.A. and east to the Atlantic Coast. Thus, the species is adapted to diverse local temperature and moisture conditions ranging from semidesert to swamp. Terrestrial stages exhibit a genetically-based color polymorphism involving the vertebral stripe (Pyburn, 1961 a,b). The stripe can be various shades of red (red, brown, reddish brown), green, or gray (matching the non-red or non-green dorsum of the animal). The gray morph is consistently more abundant than the red or green morph in Illinois (Gray, 1983), Texas and Louisiana (Pyburn, 1961a), Indiana (Issacs, 1971), and other parts of the species range (Nevo, 1973). The background color in Illinois has been described as black, olive, or tan with green, olive, or rusty red markings (Smith, 1961).

Extensive sampling of *A. crepitans* from 32 localities in 25 counties (Gray, 1983) previously documented the frequency and distribution of the red, green, and gray vertebral stripe in Illinois. The background color of frogs in these samples was generally black, gray, or tan and sometimes had a slight greenish cast with small green spots. Samples taken in central Illinois (McLean County) over a three-year period were consistent with this description. However, samples taken over the same three-year period at a study site in LaRue Pine Hills swamp in southern Illinois (Union County) revealed some frogs where the entire dorsal surface was green. The color was much brighter than the normal green vertebral stripe or olive background color, and covered the head, body (including the vertebral stripe area), fore and hind limbs, and feet. The green pattern variant comprised about two percent of the population at this location, was not found anywhere else, and has not been reported previously.

The green color variant was found at a spring-fed pool, 0.8 km south of Winter Pond on the edge of the swamp. Emergent vegetation (watercress, *Nasturtium officinale*) and duckweed (*Lemna* sp.) covered the pool all year providing a constant green background.

The pool was bordered by woods, interspersed with grasses, on each of two opposite sides. A dirt road and steep limestone bluff bordered the other two opposing sides. It is noteworthy that the site is geographically intermediate (i.e., north-east) between cricket frog populations in Texas where vertebral stripe color may be maintained by selective predation (Pyburn, 1961a) and populations in central Illinois where vertebral stripe may be maintained by chance primarily due to small effective breeding sizes (Gray, 1984).

Differential predator selection (Pyburn, 1961a), and physiological (Nevo, 1973) and/or behavioral (Wendelken, 1968) differences may exist among cricket frog color morphs in southern populations (i.e., in Texas). However, Gray (1977, 1979, 1983) found no morph-associated differences in predation susceptibility, shoreline distribution, or selected behavioral, physiological, and life history characteristics (dispersal, growth rates, survivorship) in northern populations (i.e., Illinois), even though occasional annual and geographic differences do occur among morph ratios (Gray, 1983). Whether the bright green color variant described here has any adaptive significance or is being maintained by recurrent mutation is currently unknown. Further studies of this color pattern variant may help elucidate the roles of natural selection versus chance in maintaining the balanced color polymorphism in *A. crepitans*.

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