

Gammon, D.E. and M.C. Baker. 2004. Song repertoire evolution and acoustic divergence in a population of black-capped chickadees. *Animal Behaviour* 68:903-913.

Socially learned vocalizations, such as the songs of many songbirds, commonly show repertoires and geographical variation or dialects, but we have only a limited understanding of the cultural evolutionary processes that produce these patterns. In this paper we describe the singing behaviour of populations of black-capped chickadees in Fort Collins, Colorado that represents the apparent evolution of a repertoire of song types. In contrast to most black-capped chickadee singing behaviour, which consists of a single song type that is remarkably invariant across North America, chickadees throughout Fort Collins sing three acoustically distinct song types. Individual males have an average repertoire of 2.8 song types and use all of them in dawn bouts and countersinging with neighbouring males. Two of the three song types contain novel introductory notes. These notes and the ratio between the pitches of the two whistled notes used in the song consistently define each song type. Individual birds slightly vary the pitches used during a bout of singing for a particular song type but always maintain a constant pitch ratio for that type. The song type repertoire appears to be restricted to the Fort Collins area and has persisted for several years. We outline some of the cultural evolutionary processes that may have produced this repertoire and conclude by discussing research opportunities that may yield insight into how and why socially learned traditions originate and evolve.