

Baker, M.C. and D.E. Gammon. 2006. Persistence and change of vocal signals in natural populations of chickadees: annual sampling of the gargle call over eight seasons. *Behaviour* 143:1473-1509.

A study of the gargle call, an agonistic call of the black-capped chickadee *Poecile atricapillus*, for eight successive fall/winter seasons in three resident populations in Colorado (USA) revealed the following:

- (1) Individuals had repertoires of calls averaging 8.1 distinct types per bird (range 2-18).
- (2) Among individuals in a local population many calls shared some of the component syllables constituting the whole gargle calls; often the shared syllables occurred in different locations in the sequences of syllables (syntax) making up the calls.
- (3) Individuals also shared many of the same calls (identical or near identical syllable sequences); thus in a local sample the ensemble of call types in the population (the population repertoire) could be found by recording less than 10 birds.
- (4) In each population, the ensemble of gargle call types found in a given season consisted of a core group of about 10 kinds of gargle calls that persisted over all or nearly all the eight seasons of the study, but also the ensemble included a number of call types that were present for only one or a few seasons, or that occurred intermittently across time.
- (5) The great majority of call types that were lost from a population were explained by the loss of individual birds (carriers) by emigration or death.
- (6) The great majority of call types new in a population in any given season were explained by the occurrence of a new bird in the sample (local recruitment or immigration).
- (7) Both qualitative classification of gargle syllables and whole gargle calls by the method of visual inspection of sound spectrograms and automated quantitative analysis of acoustic features of syllables and calls were carried out in some examples, and these comparisons gave highly concordant results.