Geographic Variations in Songs of Yellow-bellied Prinia (Prinia flaviventris)

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In this study, we demonstrated patterns and processes of two major types of song geographic variations in *Prinia flaviventris*: physical song characters and note types. In addition to the description of patterns, we further examined the effects of the environmental variables on the geographic variations in physical song characters, and the effects of geographic barriers and neutral evolution on the variations in note types.

**Variations in Song Physical Characters**

- PCA revealed that song variations can be summarized into two major orthogonal components. The PC1 represented the frequency-related characters, and the PC2 represented the time-related characters.
- Moran's I Statistic was used to assess the presence of spatial autocorrelation in each song character. The solid points represent I values which significantly deviate from zero (P < 0.05).  

**Measurements of Song Characteristics**

- Seven physical characteristics of the song were measured from a spectrogram and a spectrum.

**Principal Component Analysis (PCA)**

- The topology of Taiwan and the predefined group boundaries in this study.

**Variations in Note Types among Partial Isolated Geographic Populations**

- Tests of neutrality were performed with the approach developed by Lynch & Baker (1993). The results showed that note composition in each group was not significantly deviated from the prediction of neutral evolution in exception to the NE population.

**Summary**

- Song physical characters of *Prinia flaviventris* does show spatial structure.
- The frequency-related song characters were positively associated with the mean temperature in the breeding season at the macro-geographic scale, whereas at the micro-geographic scale, they were negatively correlated with the mean temperature in the breeding season.
- The time-related characters varied among the northern, the southwest, and the southeast populations at inter-population scale.
- The variations in note types should be the results of the isolating effects of geographic barrier and the accumulation of neutral variations.