

Seasonal Variation in Bird Community Structure along an Elevational Gradient in Taiwan

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During the autumn and winter seasons, certain sedentary landbirds in Taiwan experience altitudinal migrations. This phenomenon results in a season-variation bird community at a given altitudinal location. In this study, we investigated the seasonal variations of bird community structures at four forest plots of Mt. Jade: a lowland broadleaf forest (700 m in elevation), a mid-elevation broadleaf forest (1800 m), a mid-elevation coniferous forest (2500 m), and a highland coniferous forest (3200 m). We used a point-count method to estimate bird densities during non-breeding (from October to January) and breeding (from March to June) seasons. Results suggest that bird community characteristics, such as number of species, community composition, guild structure, and population density, vary between the seasons at a particular study plot. Furthermore, degree of the variations intensifies with increasing elevation. During the non-breeding season, most birds flocked and rove searching for food, and the bird communities are unstable and have variable composition. The niche dimensions, such as elevational distribution, microhabitat selection, and diet, were wider for most birds during this season. The altitudinal migration patterns of birds can be classified as light-elevation-extent rove, huge-elevation-extent rove, upward migration, and downward migration. The patterns of altitudinal migration in birds might be related to seasonal dynamics, such as food supply along an elevational gradient and the metabolic rate of a particular species. It might also connect to avian physiological adaptation to various food characteristics.