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THE LAW OF INTERSPERSION AND THE PRINCIPLE OF EDGE: OLD ARGUMENTS AND A NEW SYNTHESIS

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ABSTRACT

Leopold's interspersion hypothesis has experienced fluctuating acceptance, opposition and neglect due to its unintentional ambiguous description and seemingly simplistically universal application. Originally developed to describe the positive association between animal density and habitat heterogeneity in the landscape, the hypothesis has been mischaracterized as the principle of edge resulting from Guthery and Bingham's (1992) assertion that the interspersion hypothesis could be modeled by the amount of 'high contrast' edge and that edge density and interspersion were synonymous. We contend that Leopold's original intention was not to promote more edge density is always better but rather to promote interspersion of habitat types within landscapes suitable for bobwhite. We argue that edge density and interspersion are different metrics to describe landscape configuration but are incorrectly used interchangeably. These metrics reflect two unique hypotheses regarding bobwhite relationships with landscape structure. We used a northern bobwhite (*Colinus virginianus*) monitoring dataset to demonstrate the importance of the proper use of edge density and interspersion metrics. We modeled bobwhite abundance at 160 sites across 6 years using an open N-mixture model. We used Fragstats to calculate edge density and interspersion at the landscape scale. These metrics were not correlated ($r < .10$) indicating they describe unique aspects of configurational heterogeneity. Both metrics had positive but varying effects on bobwhite abundance. We recommend scientists have explicit *a priori* hypothesis regarding the differential effects of edge density and interspersion.

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