Avian Use of Wetlands in Reclaimed Minelands in Southwestern Indiana

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Abstract

We studied the use of mineland wetlands by birds and the relationship between avian communities and wetland characteristics. Data were collected from 20 wetlands in Pike County, Indiana, and included wetland size, depth, water conductivity and salinity, aquatic macroinvertebrate abundance, vegetation, and bird use. Principal component analysis showed that physical variables could be explained by two principal component scores and that wetlands could be grouped on the basis of size and conductivity. Principal component analysis could not reduce vegetation variables to fewer principal component scores, meaning that wetland vegetation characteristics were independent of one another and did not show any trend. Most wetlands had low invertebrate density, and wetlands with higher invertebrate density had low invertebrate diversity. Wetlands with similar habitat characteristics (physical, vegetative, and invertebrate) did not necessarily show similarities in bird assemblages. Bird similarity index values ranged from 0 to 59%, implying that each wetland has its own bird community. Stepwise multiple regression analysis ($\alpha = 0.05$) relating bird use and habitat characteristics showed that bird species richness increased with the species richness of submergent vegetation and was correlated negatively with the species richness of emergent vegetation. There was no significant relationship between bird species richness or bird species diversity and wetland size. The number of species within different avian guilds correlated with different habitat characteristics. The species richness of submergent plants was a factor that correlated positively with the number of species of several guilds (dabblers, wading birds, and plunge divers). Wetland age was not a factor that determined bird use.