

Double-Crested Cormorant Colony Effects on Soil Chemistry, Vegetation Structure and Avian Diversity in a Southeastern Reservoir System

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ABSTRACT: Ornithogenic material delivered by Double-crested Cormorants (*Phalacrocorax auritus*) from their nesting colonies have been documented to effect vegetation, soil chemistry and tree and plant health in the northern breeding grounds of Canada and the United States (U.S.). However, little work has been done on impacts to avian communities or in temperate forest ecosystems. We compared soil chemistry, vegetation and tree structure and diversity and effects on avian communities among colony islands, uninhabited islands and abandoned colony islands within Guntersville Reservoir, a temperate forest ecosystem. Concentrations of potassium (K), phosphorus (P) and nitrate (NO_3^-) in soil were negatively related to cormorant use, while tree diversity was lower on historic (tree mean = 4.35 ± 2.46 species) and colony (tree mean = 3.91 ± 3.12 species) islands relative to control islands (tree mean = 9.11 ± 3.88 species). Canopy cover was less (min: < 20%), and midstories denser on colony and historic islands relative to control islands. Avian diversity was lower for colony islands (mean = 6 ± 3 species) than both control (11 ± 7 species) and historic (10 ± 7 species) islands. These effects of cormorant nesting can be seen even after 10 years of colony abandonment supporting that cormorants can have long-term effects on insular habitats even in temperate forest ecosystems.

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