

THE EFFECTS OF FISH DENSITY ON WADING BIRD USE OF SEDIMENT PONDS ON AN EAST TEXAS COAL MINE

Author: Donna Hubbard Renfrow

Wading bird use of sediment ponds was studied on the Big Brown Mine, located near Fairfield, Texas, from April to October of 1992. Five species of wading birds were seen regularly on ponds: Great Blue Heron (*Ardea herodias*), Great Egret (*Casmerodius albus*), Little Blue Heron (*Egretta caerulea*), Snowy Egret (*Egretta thula*), and Green-backed Heron (*butorides virescens*). Bird surveys were conducted 2-3 times per week; species and number of birds present on each pond were recorded. Eighteen habitat characteristics were determined for 32 ponds. No differences in bird use ($P \geq 0.25$) were found due to mining or grazing history of ponds. Of 16 characteristics used in multiple regression models, shoreline length and the number of perching sites over water were most related to bird use of ponds. Potential disturbances associated with mining activity did not appear to influence bird use of the study area, although they may have had a short-term effect on individual pond use. A group of nine ponds was chosen for an intensive investigation of the effects of fish density on wading bird use of ponds. Experimental design consisted of three treatments: a control and two experimental treatments of different fish density (low density, 57 kg/ha and high density, 227 kb/ka) with three ponds assigned to each treatment. The six experimental treatment ponds were cleared of fish by the application of 4 ppm rotenone and stocked with 75 mm golden shiners (*Notemigonus crysoleucas*). Through incomplete kill or re-invasion, experimental treatment ponds had multi-species fish assemblages suggest that bird use was affected by a combination of fish density and fish size.

Masters Thesis
Department of Wildlife and Fisheries Sciences
Texas A&M University
College Station, Texas 77843