

Martinez, C. T. 1994. Selenium levels in selected species of aquatic birds on Imperial National Wildlife Refuge. M.S. thesis. University of Arizona. Tucson, Arizona. 74 pp.

Five species of waterbirds were collected from five sites on Imperial National Wildlife Refuge between April and August of 1993. There were previous baseline contaminants data for all sites. Sites were of two distinct habitat types. Backwater lakes have a direct connection to the mainstem of the Colorado River, and seep lakes receive river water only via seepage through the soil column. Selenium concentrations in liver, kidney, and muscle tissues were consistently higher in birds collected from backwater lakes than those collected from seep lakes. Eighty-one percent of the birds collected on backwater lakes ($n = 52$) were above the effect threshold for reproductive impairment or embryotoxicity (10 ppm dry weight in livers). Herbivorous birds had significantly ($p < 0.05$) lower tissue selenium levels than those species feeding on animal matter. Of the birds feeding on fish and invertebrates, 83% ($n = 47$) had selenium levels in liver above the effect threshold. Differences in selenium concentrations based on diet suggest food chain cycling of selenium. Eggs from waterbirds as well as those from neotropical migrants were above the 3 ppm embryotoxicity threshold.