

ties of crayfish are not available, White Ibises do not breed successfully. Reproductive success of the White Ibis requires the existence of inland wetlands as well as saltwater breeding areas.

Wetland disturbance also has an adverse effect on species richness and density. The evidence from a study carried out in six small Connecticut wetlands during eight seasons showed that both species richness and density were lower on the two most disturbed sites for both marsh species—Red-

winged Blackbird (*Agelaius phoeniceus*) and Swamp Sparrow (*Melospiza georgiana*), and thicket species—Song Sparrow (*M. melodia*), American Goldfinch (*Carduelis tristis*), and Common Yellowthroat (*Geothlypis trichas*) (Craig and Barclay 1992).

Shorebirds

Shorebirds are extremely vulnerable to habitat changes. Wetlands are a critical element in the habitat of the 15 temperate breeding shorebird species

in western North America, and are important to 28 of the 35 shorebirds that winter in that region of the country (Page and Gill 1994). The prairie pothole losses in South and North Dakota and the dramatic decline west of the Rockies, especially in California where 91 percent of the wetlands have disappeared, have been presumed to have had a significant impact on shorebird populations (Page and Gill 1994). Of the remaining wetlands, many have declined in quality because of toxic chemicals or the construction

Table 2. Groups of Prairie Pothole Birds by Habitat Requirement

Group	Definition	Species
<i>Area Sensitive Birds</i>	Birds with large area requirements--generally complexes of wetlands and associated grasslands At least 100 acres of wetland and 640 acres of adjacent land in permanent cover	Trumpeter Swan, Willet Whooping Crane, Sandhill Crane Long-billed Curlew, Marbled Godwit, Northern Harrier, Short-eared Owl
<i>Open Water Birds</i>	Birds that require large, semipermanent wetlands or lakes. Many of the birds are colonial waterbirds or fish-eating species Wetland size greater than 40 acres	All 5 grebe spp. American White Pelican, Great Egret, Great Blue Heron, Green Heron, Black-crowned Night-Heron, Least Bittern, White-faced Ibis, Redhead Canvasback, Ruddy Duck Ring-necked Duck, Common Loon, Franklin's Gull, Forster's Tern, Black Tern
<i>Marsh Generalists</i>	Birds that can use smaller wetlands and require some robust emergent vegetation. At least patches of shallow emergent and deep emergent vegetation.	American Coot, Common Moorhen, Yellow-headed Blackbird, Redwinged Blackbird
<i>Secretive Birds</i>	Secretive birds of shallow marshes including birds that require sedge meadows and wet prairie.	American Bittern, Least Bittern, King Rail, Virginia Rail, Sora, Wilson's Phalarope, Sedge Wren, Marsh Wren, LeConte's Sparrow, Savannah Sparrow, Swamp Sparrow, Henslow's Sparrow, Common Yellowthroat
<i>Dabbling Ducks and Geese</i>	Dabbling ducks and geese often require several kinds of marshes to complete life stages.	Canada Goose, Mallard, Gadwall, Northern Pintail, Green-winged Teal, Blue-winged Teal, Northern Shoveler

Source: Galatowitsch and van der Valk (1994)