

BIRDS OF THE GRAND CALUMET RIVER BASIN

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ABSTRACT. Bird life in the Grand Calumet River Basin is unusually rich. The literature reveals that a minimum of 163 species was recorded in the pre-settlement era. Current data document that the basin hosts at least 41 species in winter, 64 species during the breeding season, and more than 167 migrants. Four of the breeding period species and four of the recorded migrants are on the Indiana Endangered Species list. Roxanna Pond, which lies within a Grand Calumet River meander near Roxanna Street, provides excellent habitat for migrating shorebirds and possesses the potential for development into a shorebird management site.

Keywords: Birds, Grand Calumet River, Indiana

Birdlife, and especially breeding birds, constitutes a very sensitive environmental barometer. Therefore, it is surprising that, despite years of abuse, the Grand Calumet River Basin still supports a remarkably diverse avifauna. In recent decades, the sluggish channel and lush wetlands of the river's floodplain have provided breeding habitat, resting areas, and foraging sites for numerous birds. Contemporary records suggest that at least 64 species either nest or forage on the river floodplain during the breeding season. Four of these species, the American Bittern, Least Bittern, Black-crowned Night-Heron, and Black Tern, are listed among Indiana's endangered species (Buskirk 1993). More than 167 species use the channel, ponds, and wetlands of the river corridor for resting and feeding during migration. Four of these migrants, the Osprey, Northern Harrier, Peregrine Falcon, and Golden-winged Warbler, are on Indiana's endangered species list. The open waters of the channel provide winter habitat for at least 41 avian species.

Data from the pre-settlement era are sparse, but they suggest the following minimum counts: 32 species were summer residents, 126 species were migrants, and 15 species were winter residents. These estimates are extremely conservative, since the pre-settlement Grand Calumet River Basin surely supported an exceedingly luxuriant selection of avian habitats.

Our current knowledge about the birdlife of the Grand Calumet River Basin, including

pre-settlement data, is summarized in this paper. Species names and phylogenetic arrangement follow the 6th Edition of the *American Ornithologists' Union Checklist* (1983) and subsequent supplements.

PRE-SETTLEMENT BIRD LIFE

The primary historical data sources available are Butler (1898), Woodruff (1907), and Ford et al. (1934). For the most part, historical evidence of pre-settlement birdlife is circumstantial. Of the birds known to have nested in northwestern Indiana or the Chicago region, only those that would frequent Grand Calumet River habitats are considered part of the river's avifauna. When available, however, specific references to the birds of the Grand Calumet River Basin are cited. Pre-settlement avian communities were almost certainly far richer in species composition than is indicated by the following list.

Pre-Settlement Summer Residents

Pied-billed Grebe (*Podilymbus podiceps*).—Butler (1898) states that this species is present throughout the greater part of Indiana. Pied-billed Grebes almost certainly nested in the wetlands along the Grand Calumet River.

Horned Grebe (*Podiceps auritus*).—This species probably never nested in the marshes along the Grand Calumet River; however, Woodruff (1907) reported that a downy juvenile was collected on 24 May 1878 at Sheffield (now part of Hammond). West (1956) questioned the validity of this report.

American Bittern (*Botaurus lentiginosus*).—Butler (1898) noted that this species was a summer resident at suitable localities, especially in northern Indiana. In addition, Ford et al. (1934) state that numerous breeding records are available for the Chicago area. *Botaurus lentiginosus* probably nested in the cattail marshes on the Grand Calumet River floodplain.

Least Bittern (*Ixobrychus exilis*).—According to Butler (1898), the Least Bittern was a summer resident at suitable localities, which almost certainly included the wetlands along the river.

Great Blue Heron (*Ardea herodias*).—Several authors, including Butler (1898), suggest that the Great Blue Heron was a common nesting species across the northern half of Indiana. No evidence for local nesting exists, but *A. herodias* almost certainly occupied the Grand Calumet River floodplain during its late summer dispersal.

Green Heron (*Butorides striatus*).—Both Butler (1898) and Woodruff (1907) list this species as a common summer resident. The Green Heron very likely inhabited scrubby trees along the river.

Black-crowned Night Heron (*Nycticorax nycticorax*).—Woodruff (1907) quotes the following statement by E.W. Nelson: "The first of July, 1874, I saw a few young of the year in the Calumet Marshes." Birds present at this date could represent either locally fledged individuals or post-nesting dispersals from colonies outside the Grand Calumet River Basin.

Mallard (*Anas platyrhynchos*).—Butler (1898) suggests that this species was a permanent resident in Indiana. The Mallard probably nested on the floodplain.

Blue-winged Teal (*Anas discors*).—Butler (1898) referred to this small duck as a local summer resident. The Blue-winged Teal very likely nested in wetlands on the Grand Calumet River floodplain.

Northern Shoveler (*Anas clypeata*).—Mumford & Keller (1984) state that Butler (no reference or date given) reported nesting in Lake County. The wetlands along the Grand Calumet River would have included appropriate nesting habitat for this dabbling.

Ruddy Duck (*Oxyura jamaicensis*).—Without specifying the exact locations, Mumford & Keller (1984) state that *O. jamaicensis*

nested in Lake County in 1953, 1959, 1961, 1962, and 1965. Historical nestings probably occurred along the Grand Calumet River.

King Rail (*Rallus elegans*).—During the 19th Century, this species was a summer resident north of the Wabash Valley (Butler 1898). King Rails almost certainly occupied the marshes on the Grand Calumet River floodplain.

Virginia Rail (*Rallus limicola*).—Butler (1898) referred to Virginia Rails as local summer residents, principally in northern Indiana. This rail undoubtedly nested in the wetlands along the Grand Calumet River.

Sora (*Porzana carolina*).—According to Butler (1898), the Sora was a common breeder in northern Indiana.

Common Moorhen (*Gallinula chloropus*).—*Gallinula chloropus*, a summer resident that breeds in the more extensive swamps (Butler 1898), almost certainly nested in the wetlands along the Grand Calumet River.

American Coot (*Fulica americana*).—Butler (1898) deemed *F. americana* to be a common summer resident in northern Indiana.

Wilson's Phalarope (*Phalaropus tricolor*).—According to Butler (1898), *P. tricolor* was a common breeding species in extreme northwestern Indiana. The last recorded nesting was in 1941 (Mumford & Keller 1984).

Black Tern (*Chlidonias niger*).—Black Terns were summer residents in the marshes north of the Kankakee River; they bred commonly at some locations (Butler 1898). Mumford & Keller (1984) indicate that 40 nests were found near Wolf Lake in 1924, making it highly likely that some nested within the Grand Calumet River Basin.

Marsh Wren (*Cistothorus palustris*).—Butler (1898) referred to this species as an abundant resident of Indiana's marshes. *Cistothorus palustris* surely nested at every site that provided the requisite cattail stands.

Gray Catbird (*Dumetella carolinensis*).—Woodruff (1907) deemed *D. carolinensis* to be an abundant summer resident in the Chicago region. The catbird probably nested in dense shrubbery on the river's floodplain.

Cedar Waxwing (*Bombycilla cedrorum*).—A common summer resident in the Chicago region (Woodruff 1907), *Bombycilla cedrorum* very likely foraged, and perhaps nested, on the Grand Calumet River floodplain.

Yellow Warbler (*Dendroica petechia*).—This species was an abundant summer resident of the Chicago region (Butler 1898). Undoubtedly, *D. petechia* nested along the Grand Calumet River.

Common Yellowthroat (*Geothlypis trichas*).—Butler (1898) referred to this species as a common summer resident of the Chicago region. The Common Yellowthroat almost certainly nested in cattail marshes on the Grand Calumet River floodplain.

Indigo Bunting (*Passerina cyanea*).—According to Woodruff (1907), *P. cyanea* was a common summer resident in the Chicago region, and this species probably nested in scrubby trees on the river's floodplain.

Nelson's Sharp-tailed Sparrow (*Ammodramus nelsoni*).—Woodruff (1907) quotes Nelson: "The 12th of June, 1875, I saw several of these birds in the dense grass bordering Lake Calumet, where they were undoubtedly breeding." Although Lake Calumet is slightly outside the study area, this report raises the intriguing possibility of historical nestings along the Grand Calumet River. No modern evidence exists to support the belief that the Sharp-tailed Sparrow breeds anywhere in the Chicago region.

Song Sparrow (*Melospiza melodia*).—Butler (1898) characterized *M. melodia* as a permanent Chicago area resident; no doubt a few individuals nested in scrubby habitat on the floodplain.

Swamp Sparrow (*Melospiza georgiana*).—Woodruff (1907) deemed this species to be a common summer resident of the Chicago region, where it almost certainly nested in the floodplain marshes.

Red-winged Blackbird (*Agelaius phoeniceus*).—This widespread and common species (deemed to be an abundant summer resident by Butler (1898)), almost certainly nested in the cattail marshes along the river.

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*).—According to Butler (1898), *X. xanthocephalus* was a summer resident at some localities in northwestern Indiana. This species probably inhabited some of the cattail marshes along the Grand Calumet River.

Common Grackle (*Quiscalus quiscula*).—Butler (1898) considered *Q. quiscula* a common summer resident; the birds probably foraged on the river's floodplain.

Brown-headed Cowbird (*Molothrus ater*).—According to Butler (1898), *M. ater* was a common summer resident in Indiana. This species was undoubtedly present on the floodplain.

American Goldfinch (*Carduelis tristis*).—This species, deemed to be a permanent resident of the Chicago region by Butler (1898), almost certainly bred in the Grand Calumet River marshes.

Pre-Settlement Migrants

The elongate geometry of Lake Michigan imposes a major geographical limit on southbound migrants, directing thousands to the southern tip of Lake Michigan and across the Grand Calumet River (Brock 1986). Untold numbers surely passed over the Grand Calumet River during pre-settlement migrations. Those species preferring habitats provided by the river floodplain probably stopped to feed and rest. The literature provides little first-hand evidence as to what migratory species were actually observed on the Grand Calumet River; indeed, specific references were available for only two species.

Osprey (*Pandion haliaetus*).—Woodruff (1907) reports seeing migrants on both Lake Calumet and Berry Lake. Osprey probably hunted over the waters of the Grand Calumet River.

Le Conte's Sparrow (*Ammodramus leconteii*).—Woodruff (1907) quotes E.W. Nelson, who refers to a specimen collected in May 1875: "... The specimen in my possession was flushed from a small depression in the prairie near the Calumet River [in Illinois] ..."

Species known to migrate through the Chicago region, whose habitat preferences included the types provided by the Grand Calumet River, are listed in Table 1.

CURRENT BIRD LIFE

Data Sources

Information included below concerning the current avifauna in the Grand Calumet River Basin is drawn from recent publications and from unpublished field data. Contemporary literature sources include Brock (1986), Mumford & Keller (1984), Mierzwa et al. (1991), and Mlodinow (1984). Unpublished field data include observations made by the author and various other competent observers. Unless ex-

Table 1.—Pre-settlement winter residents. The following species include those birds known to nest in the Chicago area (Woodruff 1907) or in north-western Indiana (Butler 1898) that probably wintered in the wates or marshes of the Grand Calumet River.

Common name	Genus and species
Canada Goose	<i>Branta canadensis</i>
Mallard	<i>Anas platyrhynchos</i>
Bufflehead	<i>Bucephala albeola</i>
Red-breasted Merganser	<i>Mergus serrator</i>
American Coot	<i>Fulica americana</i>
American Crow	<i>Corvus brachyrhynchos</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Northern Shrike	<i>Lanius excubitor</i>
American Tree Sparrow	<i>Spizella arborea</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Common Grackle	<i>Quiscalus quiscula</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Common Redpoll	<i>Carduelis flammea</i>
American Goldfinch	<i>Carduelis tristis</i>

plicitly stated in the text, the observation was made by the author. These data, which include more than 100,000 individual records, are stored in computer files accessible by personal computer.

Field data are not distributed uniformly along the river; a disproportionate fraction of the reports are concentrated at easily accessible sites. The most thoroughly sampled locations, in order of descending importance, are the Roxanna Marsh, Hammond Sanitary District, Lagoons, DuPont, and Gary Sanitary District Reaches (Table 3).

Modern data reveal that the watershed supports an unusually rich avifauna. The wetlands provide breeding or summer foraging habitat for at least 64 species, including several that are on Indiana's endangered and threatened species lists. In addition, the floodplain serves as a resting and feeding area for numerous migrants. Indeed, the greatest avian diversity is seen during periods of migration.

Considerable species diversity is obvious in the monthly data collected at the DuPont property by Mierzwa et al. 1991 (fig. 1). The maximum number of species occurs during the May and August migration peaks, and the winter months have the lowest diversity.

Table 2.—Winter resident bird species in the Grand Calumet River corridor. Those species marked with an asterisk (*) are rare (not present in most years).

Common name	Genus and species
*Pied-billed Grebe	<i>Podilymbus podiceps</i>
*Double-crested Cormorant	<i>Phalacrocorax auritus</i>
*Great Blue Heron	<i>Ardea herodias</i>
*Black-crowned Night Heron	<i>Nycticorax nycticorax</i>
Canada Goose	<i>Branta canadensis</i>
*Green-winged Teal	<i>Anas crecca</i>
American black duck	<i>Anas rubripes</i>
Mallard	<i>Anas platyrhynchos</i>
*Northern Shoveler	<i>Anas clypeata</i>
*Redhead	<i>Aythya americana</i>
Common Goldeneye	<i>Bucephala clangula</i>
Bufflehead	<i>Bucephala albeola</i>
*Hooded Merganser	<i>Lophodytes cucullatus</i>
Common Merganser	<i>Mergus Merganser</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Ring-necked Pheasant	<i>Phasianus colchicus</i>
*Common Moorhen	<i>Gallinula chloropus</i>
American Coot	<i>Fulica americana</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Herring Gull	<i>Larus argentatus</i>
Glaucous Gull	<i>Larus hyperboreus</i>
Rock Dove	<i>Columba livia</i>
Mourning Dove	<i>Zenaida macroura</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Blue Jay	<i>Cyanocitta cristata</i>
American Crow	<i>Corvus brachyrhynchos</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
European Starling	<i>Sturnus vulgaris</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
American Tree sparrow	<i>Spizella arborea</i>
*Fox Sparrow	<i>Passerella iliaca</i>
Song Sparrow	<i>Melospiza melodia</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Common Grackle	<i>Quiscalus quiscula</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
House Finch	<i>Carpodacus mexicanus</i>
*Common Repoll	<i>Carduelis flammea</i>
American Goldfinch	<i>Carduelis tristis</i>

Contemporary Breeding Species and Summer Residents

Habitat availability and quality are the most critical factors for breeding birds. The typical avian habitats in the Grand Calumet River Basin include sluggish perennial streams, ponds,

cattail marshes, lakes, artificial ponds, and marshes infested with exotic plant species. Several of these provide important breeding habitat for many species on Indiana's list of endangered and threatened species. Many wetland breeding species have successfully adapted to cattail marshes, but none appear to have adapted to habitats infested with common reed and purple loosestrife, two common exotics.

Current data indicate that 63 species occupy the Grand Calumet River floodplain during the summer breeding season (June and July). Recent changes in the river's bird population include a significant increase in non-breeding herons and egrets. In addition, a substantial decrease in nesting by Common Moorhens and American Coots was noted during the 1990's. Two species, the Black Tern and Yellow-headed Blackbird, have been extirpated as breeding species in the Grand Calumet River Basin. Data not cited in the following accounts were taken from Mierzwa et al. 1991.

Pied-billed Grebe (*Podilymbus podiceps*).—This grebe is a common summer resident on the channel; the species is seen regularly from late April through early October but is most frequently reported in July and August. The observation of three juveniles at Roxanna Pond in August 1984 and five young at Bongji Pond in June 1991 confirms local breeding.

American Bittern (*Botaurus lentiginosus*).—This Indiana-endangered species has virtually disappeared as a breeding species from Indiana. The only summer record for the watershed consists of a single bird flushed from the cattail marshes on the DuPont property on 11 July 1991.

Least Bittern (*Ixobrychus exilis*).—*Ixobrychus exilis*, an Indiana-endangered species, is a rare summer resident of the cattail marshes on the river's floodplain. The species was seen at Roxanna Pond in August 1983, and at least two adults were found at that location in July 1984 (seen by author). The most recent summer reports were made in the DuPont wetlands, where one or two pairs were present throughout the summer in 1991.

Great Blue Heron (*Ardea herodias*).—Though evidence of nesting is lacking, foraging birds are seen regularly along muddy banks of the channel and especially at Roxanna Pond. During 1996, this species nested

on the nearby Little Calumet River floodplain in Lake County (Brock pers. obs.).

Great Egret (*Ardea albus*).—Over the last decade, observations of this species have increased dramatically, paralleling the establishment of a nesting colony at nearby Lake Calumet, Illinois. This expansion is especially encouraging because *A. albus* is currently on Indiana's "species of special concern" list. Today, birds are frequently observed feeding along the channel and especially at Roxanna Pond. During June and July at Roxanna Pond, a mean of 9.3 birds per year was recorded over the past 12 years; the peak count was 30 on 15 June 1996. No evidence of nesting is available for the Grand Calumet River floodplain; presumably, the summer birds represent either foraging individuals from the Illinois colony or non-breeding wanderers.

Green Heron (*Butorides striatus*).—During the summer, small numbers of *B. striatus* are seen regularly along the channel. A peak count of three was recorded at Roxanna Pond on 3 July 1985. Though nesting has not been confirmed, this species probably breeds sparingly in scrubby trees along the channel.

Black-crowned Night Heron (*Nycticorax nycticorax*).—Currently on Indiana's endangered species list, *N. nycticorax* is a common summer visitor to the Grand Calumet River floodplain. At Roxanna Pond, a mean of 5.5 birds per year was observed during June and July over the past dozen years. The 11 birds counted at Roxanna Pond on 8 July 1986 were probably post-nesting dispersals from the Lake Calumet rookery in Illinois. Evidence of local nesting is lacking; most of the birds observed are presumed to be foraging birds from the Lake Calumet colony.

Canada Goose (*Branta canadensis*).—This species is an abundant summer resident that frequently nests on the floodplain.

Wood Duck (*Aix sponsa*).—*Aix sponsa* is seen regularly on the channel during the summer. The species may occasionally nest in the watershed; two young birds were observed at Roxanna Pond on 1 June 1985. A peak summer count of 12 was seen on 5 June 1987.

Mallard (*Anas platyrhynchos*).—Substantial numbers of Mallards can be seen in the channel of the Grand Calumet River during the summer. The peak summer count was 60 at Roxanna Pond on 10 July 1982. Counts of downy young at Roxanna Pond include seven

Table 3.—The following species are migrants through the Grand Calumet River Basin. The Indiana status of each of these migrants is defined according to Buskirk (1993): en = endangered; th = threatened; sc = special concern; and ex = extirpated as a breeding species.

Common name	Species name	Historical	Modern	Status
Red-throated Loon	<i>Gavia stellata</i>		●	
Common Loon	<i>Gavia immer</i>		●	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	●	●	
Horned Grebe	<i>Podiceps auritus</i>		●	
Red-necked Grebe	<i>Podiceps grisegena</i>		●	
Eared Grebe	<i>Podiceps nigricollis</i>		●	
American White Pelican	<i>Pelecanus erythrorhynchos</i>		●	
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	●	●	ex
American Bittern	<i>Botaurus lentiginosus</i>	●	●	en
Least Bittern	<i>Ixobrychus exilis</i>	●	●	en
Great Blue Heron	<i>Ardea herodias</i>	●	●	
Great Egret	<i>Ardea albus</i>	●	●	
Cattle Egret	<i>Bubulcus ibis</i>		●	
Green Heron	<i>Butorides striatus</i>	●	●	
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	●	●	en
Tundra Swan	<i>Cygnus columbianus</i>	●	●	
Mute Swan	<i>Cygnus olor</i>		●	
Canada Goose	<i>Branta canadensis</i>	●	●	
Snow Goose	<i>Chen caerulescens</i>		●	
Wood Duck	<i>Aix sponsa</i>	●	●	
Green-winged Teal	<i>Anas crecca</i>	●	●	
American Black Duck	<i>Anas rubripes</i>	●	●	
Mallard	<i>Anas platyrhynchos</i>	●	●	
Northern Pintail	<i>Anas acuta</i>	●	●	
Blue-winged Teal	<i>Anas discors</i>	●	●	
Northern Shoveler	<i>Anas clypeata</i>	●	●	
Gadwall	<i>Anas strepera</i>	●	●	
American Wigeon	<i>Anas americana</i>	●	●	
Canvasback	<i>Aythya valisineria</i>	●	●	
Redhead	<i>Aythya americana</i>	●	●	
Ring-necked Duck	<i>Aythya collaris</i>	●	●	
Greater Scaup	<i>Aythya marila</i>		●	
Lesser Scaup	<i>Aythya affinis</i>	●	●	
Black Scoter	<i>Melanitta nigra</i>		●	
White-winged Scoter	<i>Melanitta fusca</i>		●	
Common Goldeneye	<i>Bucephala clangula</i>		●	
Bufflehead	<i>Bucephala algeola</i>	●	●	
Hooded Merganser	<i>Lophodytes cucullatus</i>	●	●	
Common Merganser	<i>Mergus merganser</i>	●	●	
Red-breasted Merganser	<i>Mergus serrator</i>	●	●	
Ruddy Duck	<i>Oxyura jamaicensis</i>	●	●	
Osprey	<i>Pandion haliaetus</i>	●	●	en
Northern Harrier	<i>Circus cyaneus</i>	●	●	en
Cooper's Hawk	<i>Accipiter cooperii</i>	●	●	
Red-tailed Hawk	<i>Buteo jamaicensis</i>	●	●	
American Kestrel	<i>Falco sparverius</i>	●	●	
Peregrine Falcon	<i>Falco peregrinus</i>	●	●	en
Virginia Rail	<i>Rallus limicola</i>	●	●	sc
Sora	<i>Porzana carolina</i>	●	●	
Common Moorhen	<i>Gallinula chloropus</i>	●	●	
American Coot	<i>Fulica americana</i>	●	●	
Black-bellied Plover	<i>Pluvialis squatarola</i>	●	●	
American Golden Plover	<i>Pluvialis dominicus</i>	●	●	

Table 3.—Continued.

Common name	Species name	Historical	Modern	Status
Semipalmated Plover	<i>Charadrius semipalmatus</i>	●	●	
Killdeer	<i>Charadrius vociferus</i>	●	●	
American Avocet	<i>Recurvirostra americana</i>		●	
Greater Yellowlegs	<i>Tringa melanoleuca</i>	●	●	
Lesser Yellowlegs	<i>Tringa flavipes</i>	●	●	
Solitary Sandpiper	<i>Tringa solitaria</i>	●	●	
Spotted Sandpiper	<i>Actitis macularia</i>	●	●	
Hudsonian Godwit	<i>Limosa haemastica</i>		●	
Marbled Godwit	<i>Limosa fedoa</i>		●	
Ruddy Turnstone	<i>Arenaria interpres</i>		●	
Red Knot	<i>Calidris canutus</i>		●	
Sanderling	<i>Calidris alba</i>		●	
Semipalmated Sandpiper	<i>Calidris pusilla</i>	●	●	
Western Sandpiper	<i>Calidris mauri</i>		●	
Least Sandpiper	<i>Calidris minutilla</i>	●	●	
White-rumped Sandpiper	<i>Calidris fuscicollis</i>		●	
Baird's Sandpiper	<i>Calidris bairdii</i>		●	
Pectoral Sandpiper	<i>Calidris melanotos</i>	●	●	
Dunlin	<i>Calidris alpina</i>	●	●	
Stilt Sandpiper	<i>Calidris himantopus</i>	●	●	
Buff-breasted Sandpiper	<i>Tryngites subruficollis</i>		●	
Ruff	<i>Philomachus pugnax</i>		●	
Short-billed Dowitcher	<i>Limnodromus griseus</i>	●	●	
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	●	●	
Common Snipe	<i>Gallinago gallinago</i>	●	●	
American Woodcock	<i>Scolopax minor</i>	●	●	
Wilson's Phalarope	<i>Phalaropus tricolor</i>	●	●	ex
Red-necked Phalarope	<i>Phalaropus lobatus</i>		●	
Franklin's Gull	<i>Larus pipixcan</i>		●	
Bonaparte's Gull	<i>Larus philadelphia</i>	●	●	
Ring-billed Gull	<i>Larus delawarensis</i>		●	
Herring Gull	<i>Larus argentatus</i>		●	
Caspian Tern	<i>Sterna caspia</i>		●	
Forster's Tern	<i>Sterna forsteri</i>	●	●	ex
White-winged Tern	<i>Chlidonias leucopterus</i>		●	
Black Tern	<i>Chlidonias niger</i>	●	●	en
Mourning Dove	<i>Zenaida macroura</i>		●	
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>		●	
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>		●	
Common Nighthawk	<i>Chordeiles minor</i>		●	
Chimney Swift	<i>Chaetura pelagica</i>		●	
Belted Kingfisher	<i>Ceryle alcyon</i>	●	●	
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>		●	
Northern Flicker	<i>Colaptes auratus</i>		●	
Olive-sided Flycatcher	<i>Contopus borealis</i>		●	
Eastern Wood-pewee	<i>Contopus virens</i>		●	
Alder Flycatcher	<i>Empidonax alnorum</i>	●	●	
Willow Flycatcher	<i>Empidonax trailii</i>	●	●	
Least Flycatcher	<i>Empidonax minimus</i>	●	●	
Eastern Phoebe	<i>Sayornis phoebe</i>	●	●	
Eastern Kingbird	<i>Tyrannus tyrannus</i>	●	●	
Purple Martin	<i>Progne subis</i>	●	●	
Tree Swallow	<i>Tachycineta bicolor</i>	●	●	
N. Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	●	●	
Bank Swallow	<i>Riparia riparia</i>	●	●	

Table 3.—Continued.

Common name	Species name	Historical	Modern	Status
Cliff Swallow	<i>Hirundo pyrrhonota</i>	●	●	
Barn Swallow	<i>Hirundo rustica</i>	●	●	
Blue Jay	<i>Cyanocitta cristata</i>	●	●	
American Crow	<i>Corvus brachyrhynchos</i>	●	●	
Black-capped Chickadee	<i>Parus atricapillus</i>	●	●	
Brown Creeper	<i>Certhia americana</i>	●	●	
House Wren	<i>Troglodytes aedon</i>		●	
Winter Wren	<i>Troglodytes troglodytes</i>	●	●	
Marsh Wren	<i>Cistothorus palustris</i>	●	●	th
Golden-crowned Kinglet	<i>Regulus satrapa</i>	●	●	
Ruby-crowned Kinglet	<i>Regulus calendula</i>	●	●	
Gray-cheeked Thrush	<i>Catharus minimus</i>	●	●	
Swainson's Thrush	<i>Catharus ustulatus</i>	●	●	
Hermit Thrust	<i>Catharus guttatus</i>	●	●	
Wood Thrust	<i>Hylocichla mustelina</i>	●	●	
American Robin	<i>Turdus migratorius</i>	●	●	
Gray Catbird	<i>Dumetella carolinensis</i>	●	●	
Brown Thrasher	<i>Toxostoma rufum</i>	●	●	
American Pipit	<i>Anthus spinoletta</i>	●	●	
Cedar Waxwing	<i>Bombycilla cedrorum</i>	●	●	
European Starling	<i>Sturnus vulgaris</i>	●	●	
Warbling Vireo	<i>Vireo gilvus</i>		●	
Red-eyed Vireo	<i>Vireo olivaceus</i>	●	●	
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	●	●	en
Tennessee Warbler	<i>Vermivora peregrina</i>	●	●	
Orange-crowned Warbler	<i>Vermivora celata</i>	●	●	
Nashville Warbler	<i>Vermivora ruficapilla</i>	●	●	
Northern Parula	<i>Parula americana</i>		●	
Yellow Warbler	<i>Dendroica petechia</i>	●	●	
Magnolia Warbler	<i>Dendroica magnolia</i>	●	●	
Cape May Warbler	<i>Dendroica tigrina</i>	●	●	
Yellow-rumped Warbler	<i>Dendroica coronata</i>	●	●	
Black-throated Green Warbler	<i>Dendroica virens</i>	●	●	
Blackburnian Warbler	<i>Dendroica fusca</i>	●	●	
Palm Warbler	<i>Dendroica palmarum</i>	●	●	
Bay-breasted Warbler	<i>Dendroica castanea</i>	●	●	
Blackpoll Warbler	<i>Dendroica striata</i>	●	●	
American Redstart	<i>Setophaga ruticilla</i>	●	●	
Ovenbird	<i>Seiurus aurocapillus</i>	●	●	
Northern Waterthrush	<i>Seiurus noveboracensis</i>	●	●	
Connecticut Warbler	<i>Oporornis agilis</i>		●	
Mourning Warbler	<i>Oporornis philadelphia</i>	●	●	
Common Yellowthroat	<i>Geothlypis trichas</i>	●	●	
Wilson's Warbler	<i>Wilsonia pusilla</i>	●	●	
Canada Warbler	<i>Wilsonia canadensis</i>	●	●	
Indigo Bunting	<i>Passerina cyanea</i>	●	●	
Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>	●	●	
Fox Sparrow	<i>Passerella iliaca</i>	●	●	
Song Sparrow	<i>Melospiza melodia</i>	●	●	
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	●	●	
Swamp Sparrow	<i>Melospiza georgiana</i>	●	●	
White-throated Sparrow	<i>Zonotrichia albicollis</i>	●	●	
White-crowned Sparrow	<i>Zonotrichia eucophrys</i>	●	●	
Dark-eyed Junco	<i>Junco hyemalis</i>	●	●	

Table 3.—Continued.

Common name	Species name	Historical	Modern	Status
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	●	●	
Yellow-headed Blackbird	<i>X. xanthocephalus</i>	●	●	
Eastern Meadowlark	<i>Sturnella magna</i>		●	
Rusty Blackbird	<i>Euphagus carolinus</i>	●	●	
Common Grackle	<i>Quiscalus quiscula</i>	●	●	
Brown-headed Cowbird	<i>Molothrus ater</i>	●	●	
House Finch	<i>Carpodacus mexicanus</i>		●	
Pine Siskin	<i>Carduelis pinus</i>		●	
American Goldfinch	<i>Carduelis tristis</i>	●	●	

on 12 July 1984, six on 1 June 1985, 18 on 5 June 1987, and 20 on 3 July 1987.

Blue-winged Teal (*Anas discors*).—*Anis discors* is an uncommon visitor during the summer. The peak summer count was four at Roxanna Pond on 26 July 1986, and a mean of one bird per year has been recorded at that location during the past 12 years. Though probable, breeding in the Grand Calumet River Basin has not been confirmed.

Ruddy Duck (*Oxyura jamaicensis*).—Though several nesting records are known for this species in the Calumet region, the only summer observation within the Grand Calumet River Basin was a breeding, plumed male sighted at Roxanna Pond on 24 June 1983 (seen by author). Recent nesting has occurred on the Little Calumet River floodplain (Brock 1986).

Red-tailed Hawk (*Buteo jamaicensis*).—During the summer period, this species is regularly seen flying above the floodplain. No nests have been found.

American Kestrel (*Falco sparverius*).—This diminutive falcon is seen regularly in the Calumet region during the summer. Breeding on the floodplain has not been confirmed, but a few birds might nest there.

Ring-necked Pheasant (*Phasianus colchicus*).—This introduced species has been recorded regularly throughout the summer at Roxanna Pond (seen by author) and was also noted on the DuPont property in June 1991.

Virginia Rail (*Rallus limicola*).—Though rarely seen, *R. limicola*, an Indiana "species of special concern," is a fairly common breeder in the cattail marshes on the floodplain. Summer period birds were observed at Roxanna Pond on 20 July 1982 (seen by author) and in the DuPont wetlands in 1991. Specific

records at the latter site included a pair seen on 15 June, and a family group (two adults and two young) observed on 11 July 1991.

Sora (*Porzana carolina*).—The distribution of the Sora is similar to that of the Virginia Rail. June and July records include an adult with three young in the DuPont Marsh on 11 July, an adult at Ivanhoe on 11 June, and a single bird in a Clark and Pine swale on 8 June 1991. In addition, fully-feathered juveniles have been recorded at Roxanna Pond on four occasions during the fall; the largest count was five on 16 September 1995 (seen by author).

Common Moorhen (*Gallinula chloropus*).—An abundant nesting species at Roxanna Pond during the 1980's, *G. chloropus* has declined markedly in numbers during the past six years. The mean summer count between 1980 and 1989 was 17.5 per year; in contrast, the average for annual June–July counts between 1990 and 1995 was only 1.3. Peak counts of young during the halcyon 1980's included 50 on 28 June 1984 and 13 on 26 July 1986.

American Coot (*Fulica americana*).—Nesting coot populations on the floodplain, like those of Sora and Common Moorhen, have declined in recent years. During the 1980's, numerous nestings were recorded at Roxanna Pond; the peak downy young count was 15 on 16 July 1983 (seen by author). Breeding has not been confirmed at Roxanna Pond since 1990. The most recent confirmed nesting on the floodplain was in the DuPont marshes, where two young were found on 15 June 1991.

Killdeer (*Charadrius vociferus*).—This species is a common summer resident on the floodplain and breeds when appropriate nest-

ing habitat is available. Young birds were recorded at Roxanna Pond on 5 June 1987. Peak counts during the summer period include 11 at Roxanna Pond on 25 June 1988 and four at DuPont on 15 June 1991.

Spotted Sandpiper (*Actitis macularia*).—*Actitis macularia* is fairly common along the Grand Calumet River during June and July and almost certainly breeds on the floodplain. Spotted Sandpipers have been recorded at Roxanna Pond 13 times during the summer; the peak count was three on 9 July 1988 (seen by author). In addition, two birds were observed in appropriate breeding habitat at Bongi Pond on 8 June 1991.

American Woodcock (*Scolopax minor*).—This secretive species frequents the DuPont property, where it undoubtedly breeds. Mierzwa et al. (1991) recorded woodcocks during the summer period (four on 7 June, three on 25 June, and one on 11 July 1991) at DuPont.

Ring-billed Gull (*Larus delawarensis*).—Though this species does not breed in the Grand Calumet River Basin, foraging birds are abundant throughout the summer. The peak count of 60 was observed at the Cline Avenue crossing on 24 June 1995.

Black Tern (*Chlidonias niger*).—This Indiana-endangered species, which is on the brink of extirpation as a breeding species in Indiana, formerly nested on the floodplain. Black Terns were last recorded breeding in the Grand Calumet River Basin in June 1991 when a nest containing three eggs was discovered in the DuPont marsh; the nest was abandoned by early July. Eggs were previously discovered at this site in 1986 and 1987 (Indiana Department of Natural Resources, unpubl. data). The decline of the Black Tern is graphically illustrated by the decrease that has been observed in annual summer counts. During the 1980's, a mean of seven terns per year was recorded during the summer. In contrast, only 1.2 birds per breeding season were recorded in the 1990's (based on the reports of all observers who visited the site during the nesting period). Summer period Black Terns have not been reported from the watershed since 1991, suggesting the total absence of breeding birds.

Rock Dove (*Columba livia*).—An abundant resident of nearby industrial sites, *C. livia* is frequently seen in flocks flying over the floodplain. On occasion, a few individuals can

be seen feeding on the exposed mudflats at Roxanna Pond.

Mourning Dove (*Zenaidura macroura*).—Small numbers of this species are seen frequently during the summer. *Zenaidura macroura* probably nests, on occasion, in scrubby floodplain trees. The peak count of five individuals was taken on three different dates in 1988 (seen by author) and twice in 1991.

Black-billed Cuckoo (*Coccyzus erythrophthalmus*).—Although this species may occasionally nest in floodplain shrubs or oak savanna, *C. erythrophthalmus* is rare along the Grand Calumet River. The only summer record of this species was an observation at Roxanna Pond on 11 July 1981.

Yellow-billed Cuckoo (*Coccyzus americanus*).—The distribution and occurrence of *C. americanus* is similar to that of the Black-billed Cuckoo. Summer records include the observation of lone birds at Roxanna Pond on 25 July 1987 (seen by author) and at Ivanhoe on 15 June 1991.

Great Horned Owl (*Bubo virginianus*).—Active *B. virginianus* nests have been observed in the cottonwoods along the Grand Calumet River in the USX Reach.

Common Nighthawk (*Chordeiles minor*).—Although this species does not nest on the floodplain, birds forage above the river throughout the summer. Records during the summer include two birds at Roxanna Pond on 21 July 1988 (seen by author) and one on the DuPont property on 11 July 1991.

Chimney Swift (*Chaetura pelagica*).—Although the floodplain probably contains no appropriate nesting habitat for *C. pelagica*, the species is frequently seen foraging above the Grand Calumet channel and nearby ponds. A peak summer count of 20 individuals was observed over Roxanna Pond on 23 June 1990.

Belted Kingfisher (*Ceryle alcyon*).—The kingfisher is seen occasionally along the channel, and the species may nest in sandy embankments on the floodplain. Summer records include three at Bongi Pond, three at Roxanna Pond, two at the Cline Avenue bridge, and one at DuPont.

Downy Woodpecker (*Picoides pubescens*).—Although nesting has not been confirmed on the floodplain, *P. pubescens* is occasionally observed foraging in the marshes and scrubby vegetation of the floodplain dur-

ing the summer. One was noted at the DuPont marsh on 25 June 1991, and two were seen at that location on 11 July 1991.

Northern Flicker (*Colaptes auratus*).—This species has been observed foraging in scrubby vegetation on the floodplain and in the oak savanna habitat on the DuPont property. The Northern Flicker was recorded at the latter site on 7 June and 11 July 1991.

Willow Flycatcher (*Empidonax traillii*).—*Empidonax traillii* is sighted regularly during the summer and very likely breeds in the floodplain marshes. Summer period records include five birds at DuPont and three at Roxanna Pond. The peak count was three at DuPont on 25 June 1991.

Eastern Kingbird (*Tyrannus tyrannus*).—The kingbird probably breeds locally on the floodplain, where it is seen regularly during the summer. Breeding period records include eight birds on the DuPont property during the summer of 1991 and singletons at Roxanna Pond in 1985, 1986, and 1991 (seen by author).

Purple Martin (*Progne subis*).—This large swallow is occasionally observed foraging over the floodplain during the summer. In addition, late July pre-migratory flocks are sometimes noted on the power lines at the Grand Calumet Lagoons (e.g., 20 birds were seen on 25 July 1995).

Tree Swallow (*Tachycineta bicolor*).—A few individuals of *T. bicolor* very likely nest locally on the floodplain wherever the requisite cavities or nest boxes are available. Many others forage over the waterways and wetlands of the Grand Calumet River. Summer period records include seven birds at DuPont, four at Roxanna, and one at the Cline Avenue bridge.

Barn Swallow (*Hirundo rustica*).—*Hirundo rustica* is an abundant summer resident of the floodplain; the species may nest beneath the bridges that span the channel. The peak summer count was 70 at Roxanna Pond on 23 June 1990.

Blue Jay (*Cyanocitta cristata*).—This widespread corvid is regularly noted on the floodplain during the summer.

American Crow (*Corvus brachyrhynchos*).—Crows occasionally forage on the floodplain during the summer. The largest count was four birds at Roxanna Pond on 23 June 1990.

House Wren (*Troglodytes aedon*).—This species breeds sparingly in oak savanna and scrubby second-growth areas on the floodplain.

Marsh Wren (*Cistothorus palustris*).—*Cistothorus palustris*, a threatened species in Indiana, is a common nesting species in the cattail stands along the channel and the adjacent marshes. Summer records include 31 birds (over 14 years) at Roxanna Pond and 35 at the DuPont marsh in 1991. Birds performing display flights were observed at the latter site on 11 July 1991.

American Robin (*Turdus migratorius*).—This widespread species is occasionally observed in the Grand Calumet River Basin during the summer. The robin may nest in oak savanna or scrubby second-growth areas on the floodplain. The peak summer period count was 30 on the DuPont property on 11 July 1991.

Gray Catbird (*Dumetella carolinensis*).—*Dumetella carolinensis* is a common summer resident on the floodplain. The species almost certainly breeds where the requisite scrubby habitat is available. The peak summer count was three on the DuPont property on 11 July 1991.

Brown Thrasher (*Toxostoma rufum*).—The thrasher is a local breeder that frequents the oak savanna habitat. Mierzwa et al. (1991) recorded this species regularly on the DuPont property.

Cedar Waxwing (*Bombycilla cedrorum*).—*Bombycilla cedrorum* is a fairly common summer resident and sporadic breeder on the floodplain. A peak summer count of four was recorded by Mierzwa et al. (1991).

European Starling (*Sturnus vulgaris*).—This invasive species, first recorded in the Chicago area in 1925 (Mlodinow 1984), is now abundant throughout the watershed. Although nesting habitat for this species is quite limited on the floodplain, flocks of brownish juveniles from nearby residential areas fly into the river corridor. By early June, these flocks are common along the river. The largest count was 25 juveniles at Roxanna Pond on 5 June 1987.

Yellow Warbler (*Dendroica petechia*).—*Dendroica petechia* is a fairly common summer resident on the floodplain, and the species probably breeds there in small numbers. Summer records include two reports from the

DuPont property—one at Roxanna Pond and another at the Cline Avenue bridge.

Common Yellowthroat (*Geothlypis trichas*).—A common species in the cattail marshes, *G. trichas* nests regularly on the floodplain. The peak summer period count was five at the DuPont marsh on 11 July 1991. One individual was performing display flights.

Northern Cardinal (*Cardinalis cardinalis*).—Small numbers of this species frequent scrubby vegetated and oak savanna habitats on the floodplain.

Indigo Bunting (*Passerina cyanea*).—This colorful species is a common summer resident in the woods of the Grand Calumet River Basin. Summer records have come from Roxanna Pond, the DuPont property, and the Cline Avenue bridge.

Eastern Towhee (*Pipilo erythrophthalmus*).—The towhee nests in oak savanna habitat on the floodplain. A young bird in fresh juvenile plumage was seen on the DuPont property on 25 June 1991.

Song Sparrow (*Melospiza melodia*).—This sparrow is a common summer resident on the floodplain, where I assume it breeds. The peak count was seven song sparrows on the DuPont property on 11 July 1991.

Swamp Sparrow (*Melospiza georgiana*).—*Melospiza georgiana* is a fairly common floodplain resident during the summer, and multiple reports have been made from both Roxanna Pond and the DuPont property. The peak count was two at the DuPont site on 25 June 1991.

Red-winged Blackbird (*Agelaius phoeniceus*).—The Red-winged Blackbird is an abundant breeding species in the floodplain marshes. The species is present at virtually any site that supports substantial cattail growth. A peak summer count of 17 was recorded on the DuPont property on 11 July 1991.

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*).—This species, which is currently listed among Indiana's threatened birds, formerly nested on the Grand Calumet River floodplain. Yellow-headed Blackbirds are now believed to be absent as a breeding species from all of Indiana. *Xanthocephalus xanthocephalus* nested at Roxanna Pond in 1984 (at least two pair), 1985 (at least one pair), and 1986 (at least one pair). At least one pair nested in the cattails just east of the Ken-

nedy Avenue bridge (DuPont Reach) in 1986 and 1987.

Common Grackle (*Quiscalus quiscula*).—Foraging grackles are common on the floodplain during the summer. The peak summer count was nine at the DuPont site on 7 June 1991.

Brown-headed Cowbird (*Molothrus ater*).—Small numbers of this widespread nest parasite are common along the floodplain during the summer. The peak count was two at DuPont on 11 July 1991.

Baltimore Oriole (*Icterus galbula*).—Although the Grand Calumet River Basin provides sub-optimal breeding habitat for *I. galbula*, a few individuals of this species probably nest in isolated trees along the floodplain margin. One bird was recorded at DuPont on 11 July 1991.

House Finch (*Carpodacus mexicanus*).—Beginning in the early 1980's, *C. mexicanus* invaded the Calumet region. The species is now a common resident throughout the year. Birds have been recorded at Roxanna Pond, DuPont, and the Cline Avenue bridge during the summer.

American Goldfinch (*Carduelis tristis*).—*Carduelis tristis* is a common summer resident that almost certainly breeds in the marshes along the Grand Calumet River. The peak summer count was five birds at the DuPont marsh on 11 July 1991.

House Sparrow (*Passer domesticus*).—This species nests abundantly in the suburban and industrial areas adjacent to the river. Foraging birds frequently appear along the floodplain in the summer.

Contemporary Migrants

Probably every species that regularly migrates through the Chicago area has passed over the floodplain; however, only those species actually recorded on or above the Grand Calumet River system are included in this list of migrants. All the migrants that have been recorded in the Grand Calumet River Basin are tabulated in Table 2. An annotated list of rare and uncommon migrants is provided below. The rarity of these species is listed in Brock (1986). Dominating the migrant list are 26 waterfowl species and 30 shorebird species.

Red-throated Loon (*Gavia stellata*).—One

was seen on the Grand Calumet Lagoons on 1 April 1979.

Common Loon (*Gavia immer*).—A common migrant on Lake Michigan, this species occurs rarely on the Grand Calumet Lagoons.

Red-necked Grebe (*Podiceps grisegena*).—This species, rare throughout the Chicago region, has been sighted twice at the Grand Calumet Lagoons: once in November 1993 and again in November 1995.

Eared Grebe (*Podiceps nigricollis*).—A single bird was present on Roxanna Pond from 19 August 1978 until the pond froze over on 25 November 1978. Another was seen on the pond on 27 September 1980.

American White Pelican (*Pelecanus erythrorhynchos*).—One was present on the Grand Calumet Lagoons during the summer of 1967 (Brock 1986).

Cattle Egret (*Bubulcus ibis*).—A breeding-plumed bird was seen at Roxanna Pond on 26 May 1989.

Tundra Swan (*Cygnus columbianus*).—In the fall, migrants occasionally land on the Grand Calumet Lagoons. A flock of 108 birds was noted at this location on 1 December 1985.

Snow Goose (*Chen caerulescens*).—Although this species regularly migrates across the Calumet region, it rarely lands there. *Chen caerulescens* was recorded three times at Roxanna Pond (twice in the fall and once in the spring). The largest count (six) was seen on 11 April 1987.

Greater Scaup (*Aythya marila*).—Though common on Lake Michigan in the winter, *Aythya marila* is rarely seen away from the lake. The only report in the Grand Calumet watershed consists of two birds seen at Roxanna Pond on 24 April 1982.

Black Scoter (*Melanitta nigra*).—This species, which is a regular fall migrant on Lake Michigan, was seen on the Grand Calumet Lagoons on 26 October 1980.

White-winged Scoter (*Melanitta fusca*).—A single bird was seen on the Grand Calumet Lagoons on 14 March 1992 (Brock pers. obs.).

Osprey (*Pandion haliaetus*).—This Indiana-endangered species has been recorded at Roxanna Pond on four occasions during its migration period.

Peregrine Falcon (*Falco peregrinus*).—Evidence that this federally-endangered spe-

cies occasionally forages on the floodplain was provided by the sighting of an adult perched on a transmission tower adjacent to Roxanna Pond on 31 October 1987 (Brock pers. obs.).

American Avocet (*Recurvirostra americana*).—A singleton was observed at Roxanna Pond on 11 May 1980.

Hudsonian Godwit (*Limosa haemastica*).—Eight birds were seen at Roxanna Pond on 11 May 1978. This record is the largest number ever recorded in Indiana (Mumford & Keller 1984).

Marbled Godwit (*Limosa fedoa*).—One bird was seen at Roxanna Pond on 10 and 11 May 1978 (Brock 1986).

Ruddy Turnstone (*Arenaria interpres*).—A flock of 15 birds was seen at Roxanna Pond on 26 May 1988.

Red Knot (*Calidris canutus*).—This species is rarely recorded away from the sandy beaches of Lake Michigan. A juvenile was seen along the muddy channel banks in the Hammond Sanitary District Reach on 17 August 1977.

Sanderling (*Calidris alba*).—A Sanderling was seen at Roxanna Pond on 28 May 1983.

Western Sandpiper (*Calidris mauri*).—This species, which is remarkably rare in the Calumet region, has been recorded four times near Roxanna Pond and the adjacent Hammond Sanitary District Reach.

White-rumped Sandpiper (*Calidris fuscicollis*).—Fall migrants have been recorded on four occasions at Roxanna Pond.

Baird's Sandpiper (*Calidris bairdii*).—Juveniles were seen at Roxanna Pond on 19 August 1988 (two) and 21 September 1989 (one).

Buff-breasted Sandpiper (*Tryngites subruficollis*).—This rare shorebird was observed on the extensive mudflats near Roxanna Pond during a period of low water on 10 September 1988.

Ruff (*Philomachus pugnax*).—A female was seen in a Gary Sanitary District settling pond on 9 and 10 August 1986 (Peterjohn 1987).

Wilson's Phalarope (*Phalaropus tricolor*).—*Phalaropus tricolor* has become quite rare in the Calumet Region during the past decade; consequently, the 28 birds recorded at Roxanna Pond on 9 May 1978 (Kleen 1979) are noteworthy.

Red-necked Phalarope (*Phalaropus lob-*

Table 4.—The following bird species were identified within the Grand Calumet River Basin. Please note that the data are based on limited sampling; data for each reach were collected only at those sites accessible from land. For a description of the sampling areas, see Last & Whitman 2002 (this volume, pages 45–81). Abbreviations: CV = Culverts Reach, HM = Hammond Sanitary District Reach, RX = Roxanna March Reach, EC = East Chicago Sanitary District Reach, DP = DuPont Reach, GY = Gary Sanitary District Reach, and LG = Lagoons Reach.

Common name	Species	CV	RX	EC	DP	GY	LG
Red-throated Loon	<i>Gavia stellata</i>						X
Common Loon	<i>Gavia immer</i>						X
Pied-billed Grebe	<i>Podilymbus podiceps</i>	X	X		X		X
Horned Grebe	<i>Podiceps auritus</i>		X				X
Red-necked Grebe	<i>Podiceps grisegena</i>						X
Eared Grebe	<i>Podiceps nigricollis</i>		X				
American White Pelican	<i>Podiceps erythrorhynchus</i>						X
Double-crested Cormorant	<i>Phalacrocorax auritus</i>		X			X	X
American Bittern	<i>Botaurus lentiginosus</i>				X		
Least Bittern	<i>Ixobrychus exilis</i>		X		X		
Great Blue Heron	<i>Ardea herodias</i>		X	X	X	X	X
Great Egret	<i>Ardea albus</i>		X	X		X	
Cattle Egret	<i>Bubulcus ibis</i>		X	X			X
Green Heron	<i>Butorides striatus</i>		X		X		X
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	X	X		X		
Tundra Swan	<i>Cygnus columbianus</i>						X
Mute Swan	<i>Cygnus olor</i>		X				X
Canada Goose	<i>Branta canadensis</i>	X	X		X		X
Snow Goose	<i>Chen caerulescens</i>		X				
Wood Duck	<i>Aix sponsa</i>		X		X		X
Green-winged Teal	<i>Anas crecca</i>	X	X				X
American Black Duck	<i>Anas rubripes</i>	X	X				X
Mallard	<i>anas platyrhynchos</i>	X	X	X	X	X	X
Northern Pintail	<i>Anas acuta</i>		X				
Blue-winged Teal	<i>Anas discors</i>		X		X		X
Northern Shoveler	<i>Anas clypeata</i>	X	X				
Gadwall	<i>Anas strepera</i>		X				X
American Wigeon	<i>Anas americana</i>		X				
Canvasback	<i>Aythya valisineria</i>		X				X
Redhead	<i>Aythya americana</i>		X				X
Ring-necked Duck	<i>Aythya collaris</i>		X				X
Greater Scaup	<i>Aythya marila</i>		X				
Lesser Scaup	<i>Aythya affinis</i>		X			X	
Black Scoter	<i>Melanitta nigra</i>						X
White-winged Scoter	<i>Melanitta fusca</i>						X
Common Goldeneye	<i>Bucephala clangula</i>						X
Bufflehead	<i>Bucephala albeola</i>		X				X
Hooded Merganser	<i>Lophodytes cucullatus</i>		X				X
Common Merganser	<i>Mergus merganser</i>						X
Red-breasted Merganser	<i>Mergus serrator</i>		X				X
Ruddy Duck	<i>Oxyura jamaicensis</i>		X				X
Osprey	<i>Pandion haliaetus</i>		X				
Northern Harrier	<i>Circus cyaneus</i>		X				
Cooper's Hawk	<i>Accipiter cooperii</i>		X				X
Red-tailed Hawk	<i>Buteo jamaicensis</i>		X		X		X
American Kestrel	<i>Falco sparverius</i>		X		X	X	
Peregrine Falcon	<i>Falco peregrinus</i>		X				
Virginia Rail	<i>Rallus limicola</i>		X		X		
Sora	<i>Porzana carolina</i>	X	X		X		
Common Moorhen	<i>Gallinula chloropus</i>	X	X		X		

Table 4.—Continued.

Common name	Species	CV	RX	EC	DP	GY	LG
American Coot	<i>Fulica americana</i>	X	X		X		X
Black-bellied Plover	<i>Pluvialis squatarola</i>		X				
American Golden Plover	<i>Pluvialis dominicus</i>		X				
Semipalmated Plover	<i>Charadrius semipalmatus</i>		X			X	
Killdeer	<i>Charadrius vociferus</i>	X	X		X	X	
American Avocet	<i>Recurvirostra americana</i>		X				
Greater Yellowlegs	<i>Tringa melanoleuca</i>		X				
Lesser Yellowlegs	<i>Tringa flavipes</i>	X	X			X	
Solitary Sandpiper	<i>Tringa solitaria</i>	X	X			X	
Spotted Sandpiper	<i>Actitis macularia</i>	X	X			X	
Red Knot	<i>Calidris canutus</i>	X					
Hudsonian Godwit	<i>Limosa haemastica</i>		X				
Marbled Godwit	<i>Limosa fedoa</i>		X				
Ruddy Turnstone	<i>Arenaria interpres</i>		X				
Sanderling	<i>Calidris alba</i>	X	X				
Semipalmated Sandpiper	<i>Calidris pusilla</i>	X	X		X		
Western Sandpiper	<i>Calidris mauri</i>	X	X		X		
Least Sandpiper	<i>Calidris minutilla</i>	X	X		X		
White-rumped Sandpiper	<i>Calidris fuscicollis</i>		X				
Baird's Sandpiper	<i>Calidris bairdii</i>		X		X		
Pectoral Sandpiper	<i>Calidris melanotos</i>	X	X		X		
Dunlin	<i>Calidris alpina</i>	X	X				
Stilt Sandpiper	<i>Calidris himantopus</i>	X	X			X	
Ruff	<i>Philomachus pugnax</i>					X	
Buff-breasted Sandpiper	<i>Tryngites subruficollis</i>		X				
Short-billed Dowitcher	<i>Limnodromus griseus</i>	X	X			X	
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>		X				
Common Snipe	<i>Gallinago gallinago</i>	X	X			X	
American Woodcock	<i>Scolopax minor</i>		X		X		
Wilson's Phalarope	<i>Phalaropus tricolor</i>		X				
Red-necked Phalarope	<i>Phalaropus lobatus</i>		X				
Franklin's Gull	<i>Larus pipixcan</i>						X
Bonaparte's Gull	<i>Larus philadelphia</i>		X				
Ring-billed Gull	<i>Larus delawarensis</i>	X	X		X		X
Herring Gull	<i>Larus argentatus</i>		X		X		X
Caspian Tern	<i>Sterna caspia</i>		X				
Forster's Tern	<i>Sterna forsteri</i>		X				
White-winged Tern	<i>Chlidonias leucopterus</i>		X				
Black Tern	<i>Chlidonias niger</i>		X		X		
Mourning Dove	<i>Zenaidura macroura</i>	X			X		
Common Nighthawk	<i>Chlordeiles minor</i>		X		X		
Chimney Swift	<i>Chaetura pelagica</i>		X		X	X	
Belted Kingfisher	<i>Ceryle alcyon</i>	X	X		X		X
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>		X				X
Downy Woodpecker	<i>Picoides pubescens</i>				X		
Northern Flicker	<i>Colaptes auratus</i>	X	X		X		X
Olive-sided Flycatcher	<i>Contopus borealis</i>				X		
Eastern Wood-pee-wee	<i>Contopus virens</i>				X		
Willow Flycatcher	<i>Empidonax trailii</i>		X		X		
Least Flycatcher	<i>Empidonax minimus</i>				X		
Eastern Phoebe	<i>Sayornis phoebe</i>		X		X		
Eastern Kingbird	<i>Tyrannus tyrannus</i>		X		X		
Purple Martin	<i>Progne subis</i>		X		X		X
Tree Swallow	<i>Tachycineta bicolor</i>		X		X		
N. Rough-winged Swallow	<i>S. serripennis</i>		X		X		

Table 4.—Continued.

Common name	Species	CV	RX	EC	DP	GY	LG
Bank Swallow	<i>Riparia riparia</i>		X		X		
Cliff Swallow	<i>Hirundo pyrrhonota</i>		X				
Barn Swallow	<i>Hirundo rustica</i>	X	X		X		X
Blue Jay	<i>Cyanocitta cristata</i>		X		X		X
American Crow	<i>Corvus brachyrhynchos</i>	X	X		X		X
Black-capped Chickadee	<i>Parus atricapillus</i>		X		X		
Brown Creeper	<i>Certhia americana</i>		X				
House Wren	<i>Troglodytes aedon</i>		X		X		
Winter Wren	<i>Troglodytes troglodytes</i>		X				
Marsh Wren	<i>Cistothorus palustris</i>		X		X		
Golden-crowned Kinglet	<i>Regulus satrapa</i>		X				
Ruby-crowned Kinglet	<i>Regulus calendula</i>		X				
Gray-cheeked Thrush	<i>Catharus minimus</i>		X				
Swainson's Thrush	<i>Catharus ustulatus</i>		X		X		
Hermit Thrush	<i>Catharus guttatus</i>		X		X		
American Robin	<i>Turdus migratorius</i>	X	X		X		
Gray Catbird	<i>Dumetella carolinensis</i>		X		X		
Brown Thrasher	<i>Toxostoma rufum</i>				X		
American Pipit	<i>Anthus spinoletta</i>		X				
Cedar Waxwing	<i>Bombycilla cedrorum</i>		X		X		X
European Starling	<i>Sturnus vulgaris</i>		X		X		X
Warbling Bireo	<i>Vireo gilvus</i>		X				
Red-eyed Vireo	<i>Vireo olivaceus</i>		X		X		
Golden-winged Warbler	<i>Vermivora chrysoptera</i>				X		
Tennessee Warbler	<i>Vermivora peregrina</i>		X		X		
Orange-crowned Warbler	<i>Vermivora celata</i>		X				
Nashville Warbler	<i>Vermivora ruficapilla</i>		X		X		
Northern Parula	<i>Parula americana</i>		X				
Yellow Warbler	<i>Dendroica petechia</i>		X		X		
Magnolia Warbler	<i>Dendroica magnolia</i>		X		X		
Cape May Warbler	<i>Dendroica tigrina</i>		X		X		X
Yellow-rumped Warbler	<i>Dendroica coronata</i>	X	X		X		X
Black-throated Green Warbler	<i>Dendroica virens</i>		X		X		
Blackburnian Warbler	<i>Dendroica fusca</i>				X		
Palm Warbler	<i>Dendroica palmarum</i>		X		X		
Bay-breasted warbler	<i>Dendroica castanea</i>		X		X		
Blackpoll Warbler	<i>Dendroica striata</i>	X	X		X		
American Redstart	<i>Setophaga ruticilla</i>		X		X		
Ovenbird	<i>Seiurus aurocapillus</i>				X		
Northern Waterthrush	<i>Seiurus noveboracensis</i>		X		X		
Connecticut Warbler	<i>Oporornis agilis</i>				X		
Mourning Warbler	<i>Oporornis philadelphia</i>				X		
Common Yellowthroat	<i>Geothlypis trichas</i>		X		X		
Wilson's Warbler	<i>Wilsonia pusilla</i>		X		X		
Canada Warbler	<i>Wilsonia canadensis</i>				X		
Indigo Bunting	<i>Passerina cyanea</i>		X		X		
Eastern Towhee	<i>Pipilo erythrophthalmus</i>				X		
Fox Sparrow	<i>Passerella iliaca</i>		X		X		
Song Sparrow	<i>Melospiza melodia</i>	X	X		X		
Lincoln's Sparrow	<i>Melospiza lincolni</i>		X				
Swamp Sparrow	<i>Melospiza georgiana</i>		X		X	X	
White-throated Sparrow	<i>Zonotrichia albicollis</i>		X		X		
White-corned Sparrow	<i>Zonotrichia eucophrys</i>				X		X
Dark-eyed Junco	<i>Junco hyemalis</i>	X	X		X		X
Red-winged Blackbird	<i>Agelaius phoeniceus</i>		X				

Table 4.—Continued.

Common name	Species	CV	RX	EC	DP	GY	LG
Yellow-headed Blackbird	<i>X. xanthocephalus</i>	X	X		X		X
Rusty Blackbird	<i>Euphagus carolinus</i>		X				
Eastern Meadowlark	<i>Sturnella magna</i>				X		
Common Grackle	<i>Quiscalus quiscula</i>	X	X		X		
Brown-headed Cowbird	<i>Molothrus ater</i>	X	X		X		
House Finch	<i>Carpodacus mexicanus</i>	X	X		X		X
American Goldfinch	<i>Carduelis tristis</i>	X	X		X		X

atus).—This species has been recorded only once in the Grand Calumet watershed. A single bird was seen at Roxanna Pond on 15 July 1982.

Franklin's Gull (*Larus pipixcan*).—An adult bird was observed on the Grand Calumet Lagoons on 5 November 1991.

White-winged Tern (*Chlidonias leucop-terus*).—Indiana's only record of this Eurasian species is a bird seen at Roxanna Pond on 19 July 1979 (Brock 1983).

Golden-winged Warbler (*Vermivora chrysoptera*).—This Indiana endangered species was recorded at the DuPont wetlands on 23 August 1991.

Northern Parula (*Parula americana*).—This warbler, which is rare in the Calumet region, was observed in the cottonwoods along the Grand Calumet River in the Hammond Sanitary District Reach on 27 September 1980.

Connecticut Warbler (*Oporornis agilis*).—On 24 May 1991, a migrant was flushed from the oak savanna at DuPont.

Contemporary Winter Residents

Birds that winter in the Grand Calumet River corridor are primarily aquatic species that take advantage of the open water created by the effluent from local industries. All the species listed in Table 2 have been recorded on or above the floodplain during the winter (December through February). If open water were not present, far fewer species would be present during the winter. Those species marked with an asterisk (*) are rare (not present in most years).

IMPACT OF DREDGING

Considerable evidence suggests that the muddy substrate of the Grand Calumet River is contaminated (U.S. Fish and Wildlife Ser-

vice 1996). The detection of mercury and PCB residues in failed eggs at the East Chicago Peregrine Falcon nest site (U.S. Fish and Wildlife Service 1996) indicates that some contaminants have entered the avian food web and poses a potential risk for birds that feed in the channel. Many birds spend extensive time foraging in this contaminated environment. For example, on 30 December 1995, 970 Mallards, plus other waterfowl species, were counted in the Roxanna Pond and Hammond Sanitary District Reaches. These birds winter on the river, apparently feeding exclusively on channel vegetation. Although the long-term effects of prolonged exposure to Grand Calumet River pollutants on birds are unknown, lengthy exposure is certainly undesirable.

Perhaps at even greater risk are the migrant shorebirds that consume members of the invertebrate infauna living within the substrate. Most migrant shorebirds depart within a few days, rendering their exposure brief, but the potential for accumulating toxins is high because they feed on organisms extracted directly from the contaminated sediment. Thus, removal of the contaminated sediment through dredging will have a positive long-term effect on the avifauna. A major concern is that the dredging operation itself might increase contamination through the resuspension of sediment during dredging. This possibility should be examined carefully within the context of the dredging methods employed.

OPPORTUNITIES

Roxanna Pond lies within a meander of the Grand Calumet River north of Roxanna Street and about 0.4 km to the west of Indianapolis Boulevard (Roxanna Reach of the Grand Calumet River). Water levels in this shallow pond fluctuate widely, and they are seemingly more

dependent upon the rate of effluent discharge from local industries than on precipitation rates. Low water levels expose extensive mudflats, which provide feeding habitat for migrant shorebirds. When water levels are appropriate, the pond serves as a resting and feeding area for hundreds of spring and fall shorebird migrants. High water conditions, however, entirely eliminate the mudflats; on these occasions, shorebirds cannot land at the pond.

At least 29 different shorebird species have been recorded at Roxanna Pond. The most common species are the Lesser Yellowlegs, Least Sandpiper, and Pectoral Sandpiper. Several rare shorebirds (*sensu* Mumford & Keller 1984) have also been recorded at Roxanna Pond. Among the rarities are the American Avocet, Marbled Godwit, Hudsonian Godwit, Red Knot, Western Sandpiper, White-rumped Sandpiper, Baird's Sandpiper, Buff-breasted Sandpiper, Long-billed Dowitcher, and Red-necked Phalarope.

Shorebird numbers at Roxanna Pond vary widely from year to year depending upon the availability of mudflats during migration (April through May and July through October). In August 1988, a year when low water generated extensive mudflats, 1150 Pectoral Sandpipers were counted at the site. In contrast, during August of the following year, water levels were very high, and only 11 birds were recorded. The positive correlation between shorebird numbers and mudflat exposure holds for all other shorebird species.

As was pointed out by Helmers (1992), shorebirds need staging areas for rest before continuing their migration. For this reason, the management of water levels at Roxanna Pond would prove extremely beneficial to migrating shorebirds. The establishment of a site managed solely for migrating shorebirds would provide a sorely needed resting and feeding area for these long range migrants.

In addition to dredging, site preparation will require the restoration of a muddy substrate and the construction of a low dike and gate between the pond and the channel. The soft sediment floor will provide habitat for an invertebrate infauna, which constitutes the primary food source of migrating shorebirds. The dike will restrict flow to and from the

river, allowing water levels in the pond to be adjusted through the gate. If the gate proves inadequate for regulating water levels, it may be necessary to install a pump.

Routine maintenance (e.g., Helmers 1992) will involve monitoring water levels to ensure that: 1) appropriate habitat is available during critical migration periods (April–May and July–October), that 2) pre-migration water levels are appropriate for development of an adequate invertebrate infauna on which the shorebirds can feed, and that 3) vegetation is controlled to maintain the mudflat habitat. Vegetation will be controlled by flooding during the non-migratory periods.

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