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Cover photo: Hudsonian Godwit in breeding plumage 20 April 2019. Photo by Ryan Sanderson in Dyer, IN (Lake Co.).

Back cover photo: Adult male Bobolink and large flock in rural Martin County, 10 May 2019. Photo by John Lindsey.

CLASSES OF MEMBERSHIP IN THE INDIANA AUDUBON SOCIETY

Life Membership	\$675.00	Individual	\$30.00
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Letter from the President

Amy Wilms, Connersville, IN

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The Indiana Audubon Quarterly has evolved over the organization's rich history. Initially printed once a year as the Yearbook, the publication provides a venue for a variety of research topics. Various bird counts, field notes, breeding birds of interest and importance, and too many others to list here, have replaced stories of how house sparrows are discouraged from using platform feeders. The importance of IAQ articles, aside from being of personal interest, is revealed when copies of back issues are requested from researchers across the nation. The Indiana Audubon Society's membership should be proud of this publication's contribution to birders and researchers expanding knowledge of bird-life in Indiana and Indiana's international avian connections.



In today's technical world it is easy to fall into habitual routines that focus upon topics we subscribe to. Interactions via Facebook, eBird, and so on, are wonderful connections. The IAQ provides a nudge to break our bird related routines and expand our understandings and ideas about bird research and trends. I invite you to enjoy this issue's stories and accounts, and reflect on how you could contribute an article about a research project in your life that other IAS members could benefit from in the future.

Current Research Projects

MOTUS –Wood Thrush – Breeding Nest Preference

The MGBS is studying Wood Thrush breeding to understand where breeding occurs in relation to invasive plant dominance or native plant dominance using Nanotag technology.

MOTUS – Northern Saw-whet Owls (NSWO) Migration Patterns

The MGBS is studying if NSWOs overwinter on the property along with migration locations when they leave.

MOTUS – Bird Migration Flyovers: Who's Stopping By?

The MOTUS network is tracking birds who have been fitted with Nanotag transmitters. Over 32 individual detections have been observed!

Hummingbirds – Ruby-throated Hummingbird's (RTHU) – What Does the Data Show Us?

When do RTHU start breeding? When do the young fledge the nest? Do our birds have multiple broods? The MGBS is trying to help answer these questions.

Breeding Bird Surveys, Christmas and May Day Counts– Indiana Audubon is helpign to compile and organize these critically important long term bird surveys.

Please help me in promoting the Indiana Audubon Society research and future of birds! We have many important projects that can always use your support.

Thank you for being a member!

Developing and Evaluating an Outreach Campaign to Conserve Whooping Crane Populations in Indiana

Indiana DNR, Division of Fish and Wildlife

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CURRENT STATUS

First year of a three-year project

FUNDING SOURCES AND PARTNERS

State Wildlife Grant Program (T7R25)

Purdue University

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BACKGROUND AND OBJECTIVES

Whooping cranes (*Grus americana*) are listed as a federal and state endangered species and a Species of Greatest Conservation Need in the 2015 Indiana State Wildlife Action Plan. Whooping cranes came close to extinction in the 1940s and '50s, with the global population reaching an all-time low of about 20 individuals. In 2001, the Whooping Crane Eastern Partnership began releasing captive-bred whooping cranes into wetlands in Wisconsin. Using ultralight aircraft, scientists established a migration route for the population with a southern terminus in Florida. All whooping cranes in this distinct eastern migratory population of about 100 birds spend the summer in Wisconsin, but during the migration and wintering periods, they scatter across the lower Midwest and southeastern United States from southern Indiana to Florida. Since reintroduction efforts began, there has been an increase in the number of confirmed shootings of whooping cranes. Five shootings occurred between 1970 and 2000, compared to 22 from 2001 to 2017. This represents more than an eight-fold increase. These shootings are disproportionately



An undergraduate conducts intercept surveys at Goose Pond FWA. (Photo by Anders Sjostrand)

from southern Indiana to Florida. Since reintroduction efforts began, there has been an increase in the number of confirmed shootings of whooping cranes. Five shootings occurred between 1970 and 2000, compared to 22 from 2001 to 2017. This represents more than an eight-fold increase. These shootings are disproportionately

affecting the reintroduced populations, which are struggling to become self-sustaining. Other sources of mortality include powerline collisions and predation, the latter of which may be due to loss and alteration of wetland habitats. Indiana has the highest number of shootings (five between 2009 and 2017) in the eastern migratory population. Most shootings are not conducted by hunters engaged in legal hunting who misidentify their target, but likely by vandals, most of whom are probably unaware that the species is endangered. Little is known about people's awareness and attitudes toward whooping cranes in Indiana. Because whooping cranes now use two state Fish & Wildlife Areas (FWAs) as stopovers during migration, coupled with a concurrent increase in shootings, conservation of this endangered species in Indiana has become increasingly important. Successful conservation requires that citizens and resource users be aware of the importance of this species as part of Indiana's natural history, as well as the activities that can further endanger these highly imperiled birds. Programs that familiarize the public with a particular species may benefit populations in the long run. Baseline levels of knowledge, awareness, and attitudes of Indiana residents toward whooping cranes, particularly in areas where they congregate, should first be assessed before developing a social marketing campaign to increase guardianship of the species, create pride in local communities, and advertise the harsh penalties associated with harming an endangered species. The objectives of this project are to: 1. Conduct a statewide baseline survey of Indiana residents including specific targeted communities in the areas of Goose Pond and Jasper-Pulaski FWAs, as well as of the users of these properties. 2. Develop and implement an informational campaign based on baseline survey results. 3. Assess developed materials by conducting a statewide survey and facilitating a focus group discussion with conservation partners. 4. Conduct post-campaign surveys of Indiana residents including specific targeted communities in the areas of Goose Pond and Jasper-Pulaski FWAs, and the users of those properties.

METHODS

To gain preliminary insights and test survey questions, an online survey was distributed in spring 2018 to 396 urban residents throughout Indiana using Survey Sampling International (SSI). Urban residents were characterized as living in areas where ZIP codes overlapped with any part of a Tiger Urban Area, as defined by the U.S. Census Bureau. In summer 2018, a five-wave survey was distributed by mail with the goal of reaching 1,200 randomly selected respondents throughout Indiana. The response rate was 26.8%. Additionally, two five-wave regional mail surveys were distributed to 200 addresses within a 10-mile radius of Goose Pond and Jasper-Pulaski FWAs. One survey wave used a drop-off/pick-up methodology to increase response rate. This methodology involved physically delivering and retrieving surveys to every house in the regional samples. This approach yielded response rates of 34.1% for Goose Pond FWA and 41.5% for Jasper-Pulaski FWA. Our last step was to conduct in-person surveys at Goose Pond and Jasper-Pulaski FWAs during the spring and fall migrations to assess property users' awareness and interactions with whooping cranes. These surveys took about 10 minutes and included questions about their visit to the property and their knowledge and awareness of whooping cranes.



**Sandhill cranes fly over Goose Pond FWA.
(Photo by Anders Sjostrand)**

PROGRESS TO DATE

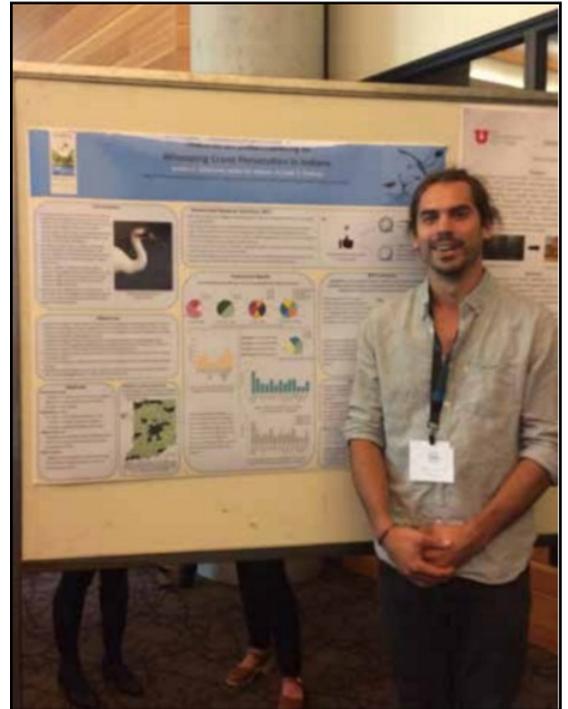
A total of 62 in-person surveys were completed. All other surveys are closed, and analysis is underway. During spring migration in February and March 2019, more careful planning will allow field workers to maximize the number of FWA visitors encountered during each visit. Preliminary analysis of survey results suggests the following:

- Respondents generally reported high levels of awareness and moderate ability to identify whooping cranes in the wild.
- Knowledge of whooping crane's endangered status was relatively high statewide, but knowledge of their physical characteristics was lower than expected.
- Respondents generally held highly positive attitudes toward whooping cranes.
- Statewide, there were extremely low rates of visitation to FWAs, particularly Jasper-Pulaski and Goose Pond, the two FWAs where whooping cranes primarily occur in Indiana. Visitation rates were marginally higher on the regional surveys.
- Respondents' engagement in recreational activities on public lands was also particularly low. Data from these four surveys will be used to develop and disseminate an outreach and education campaign throughout Indiana. To more creatively design this campaign, an undergraduate course at Purdue University is scheduled for the 2019 spring semester. Patterned after the success of a similar idea for an outreach program for freshwater mussel conservation on the Tippecanoe River (State Wildlife Grant T7R16), this course will allow students to use conclusions from the survey to creatively develop material for the informational campaign.

COST: \$277,034 FOR THE COMPLETE THREE-YEAR PROJECT



**Sandhill cranes fly over Goose Pond FWA.
(Photo by Anders Sjostrand)**



**Results from the SSI survey were presented at the International Association of Society and Nature Resources conference in June 2018.
(Photo by Linda Prokopy)**

Spring Indiana Field Notes 2018-2019

Ken Brock, Chesterton, IN

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Season Highlights

A number of rarities occurred during the spring of 2019, including Yellow Rail, Buff-breasted Sandpiper, Prairie Falcon, Common Raven, and Kirtland's Warbler.

Temperature & Precipitation at Indy: Departure from Normal		
	Temp (°F)	Rainfall (in.)
Mar	-4.0	+1.46
Apr	+1.1	+1.15
May	+1.5	-0.89

SPECIES ACCOUNTS

Black-bellied Whistling Duck:- One at Goose Pond on 23 April (Allisyn Gillet) provided the sixth consecutive year in which spring Black-bellieds have occurred in Indiana. Jim Brown reported (3) at Goose Pond on 11 May and a flock of (10) was reported in Bartholomew Co on 16 May (Larry McIntosh).

Greater White-fronted Goose:- A northern tier record was set 2 March when Jeffrey J. McCoy found (10,000) at the flooded gravel pit on Ind. 39 just south of U.S. 30. The previous northern tier maximum was 2100.

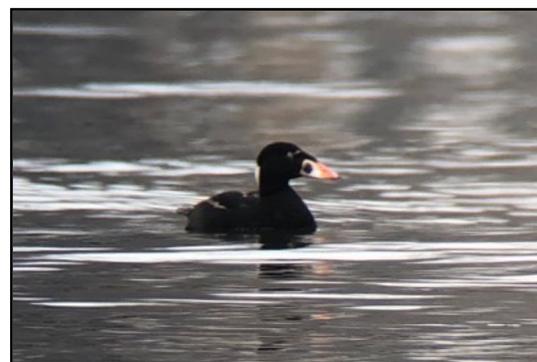
DUCKS

Puddle ducks fared quite well with only the Green-winged Teal below average. Bay ducks were uniformly reported in above normal numbers, and other than the unreported Harlequin Duck, sea duck numbers were above average. Red-breasted Mergansers were down slightly, but otherwise the mergansers were fine.

Green-winged Teal:- The 4669 reported was well below the STYM of 5916.

Surf Scoter:- Inland birds occurred at Geist Res. where three were logged on 5 April (Nick Kiehl) and a singleton was in the Beman area (Marshall Co).

Long-tailed Duck:- This elegant duck was more prevalent than normal on Lake Michigan with 606 tallied (TYM=150). Excellent numbers were reported off the Green Tower site, Porter Co., where the peak count of 151 was logged on 6 April (Brad Bumgardner & Matthew Beatty). At inland sites singletons were reported at four different locations.



Surf Scoter male at Geist Reservoir, Marion Co., 23 March 2019. Photo by Logan Knaphus.

RAILS

It was a good spring for rails with only King Rail numbers below average.

Yellow Rail:- Kyle Wiktor logged this difficult to find species on 3 May. It was flushed from the Great Marsh just west of the Old Hobart Road in Lake Co.

King Rail:- Only 2 birds were reported, which is the lowest spring total in three years (STYM=8.00).

Virginia Rail:- This rail was reported in record numbers with 233 logged (STYM=69.1). The peak daily count of (10) was recorded at Eagle Marsh (Fort Wayne) on 13 April (David Ward).

Sora:- An Indiana record daily count of (159) was logged at Grant Street Wetland in Gary on 3 May (Michael A. Topp). Additionally, for the first time a quadruple digit season total was recorded for the state with 1145 birds tallied (STYM=356).

American Coot:- Edward M. Hopkins set a new Indiana record when he logged (21000) at Willow Slough FWA on 13 April. Interestingly, Geoff Williamson was there the same day and put the number at 6600.



**Virginia Rail at Cowles Bog,
Porter Co., 04 May 2019.
Photo by Jeff McCoy.**

SHOREBIRDS

Overall the shorebird season was near average. Leading the below average species was the Western Sandpiper, which was not reported (STYM=0.75). Other species that were significantly below average were American Golden Plover, Wilson's Phalarope, and Dunlin. On the positive side a spring rarity (Buff-breasted Sandpiper) was logged and Hudsonian Godwits appeared in record numbers.

Black-bellied Plover:- On 16 May Steve Bell tied Indiana's second largest daily count with (54) birds near Owensville (Gibson Co).

American Avocet:- Brad Bumgardner observed a flyby flock of (11) at the Green Tower site, Porter Co., on 18 April. This report constitutes the lakefront's second earliest record (by one day).

American Golden-Plover:- A stunningly low season total of 330, the lowest since 1998, was logged this spring (STYM=3770).

Hudsonian Godwit:- A record spring total of 26 was logged this season (STYM=4.05). On 16 April Susan Zelek photographed (17) in the wetland on 121st Ave in west central Lake County (west of Cedar Lake). The birds remained throughout the day and were seen by many. This is Indiana's fourth earliest record and the state's largest spring count.

Marbled Godwit:- The one that David Ayres photographed in Spencer Co on 12 April tied Indiana's fourth earliest record. While driving home on I-94 John K. Cassidy saw (2) in the Reynolds Creek G.H.A. area on 16 April. This report is a new earliest record early for the lakefront.

Buff-breasted Sandpiper:- On 13 May Clay Bliznick logged Indiana's fifth spring record a couple of miles southwest of Lake Gibson (photo was obtained).

Semipalmated Sandpiper:- A state record count was logged 22 May by Jeremy Ross at the Francisco Mine when he estimated that (1000) were present. Jeremy's description of the sighting was, "Dense flock spread

over a few hundred yards of shallow water and mud.” Indiana’s next largest count is 588 and was made at Goose Pond FWA on 19 May 2016.

Short-billed Dowitcher:- Although Clay Bliznick deemed the (150) that he reported on 14 May in a Gibson Co flooded field an “underestimate,” this total constitutes Indiana’s second largest count.

Spotted Sandpiper:- The (202) that Kyle Wiktor logged at the Green Tower site, Porter Co., on 9 May provided Indiana’s second largest count behind Brendan J. Grube’s 314 that were observed at the same site on 15 May 2015.



Semipalmated Sandpiper at Wolf Lake (Lake Co.) on 25 May 2019. Photo by Ryan Sanderson.

GULLS

The spring gull flight was near normal: it included a feeble Glaucous Gull count and strong Bonaparte’s numbers.

Bonaparte’s Gull:- The spring flight was the best in a decade with 4763 logged (STYM=1834). The peak daily count was (824), which were logged by Sean Verkamp at Patoka Lake on 9 April. The latter is Indiana’s largest inland spring count.

Lesser Black-backed Gull:- Matthew Beatty logged (4), three adults and a third-cycle, in the fields at Reynolds Creek G.H.A. on 12 April, establishing a first record for this site.

Glaucous Gull:- The scarcity of this gull continued this spring with only three birds reported for the season (TYM=13.5). A first-cycle bird at Paynetown (Lake Monroe) on 2 May (Amy Kearns et al.) provided a rare spring report for the southern tier.

TERNS

Overall the tern flight was above average with only Common Terns below normal.

Caspian Tern:- One at the east end of Lake Lemon on 3 March established a new early arrival date for Indiana (Jim & Susan Hengeveld). The previous early date was 17 March 2007 at Wolf Lake. Additionally, Amy Kearns, set a new daily maximum with (1338), which she counted during a 20 May nest survey on the East Chicago lakefront.

Forster’s Tern:- The individual that Steve Bell photographed at Fairfax on 26 March provided Indiana’s fourth earliest record.

LOONS

The loon flight was quite strong with numbers of both regular species well above normal.

Red-throated Loon:- Inland singletons were reported at Geist Res. on 1 March (Nick Kiehl), on Lake Lemon (Monroe Co) on 21 March (Jim & Susan Hengeveld), and 14 April at Eagle Creek Park (Ryan J. Sanderson).

Common Loon:- Although lakefront numbers were low, the statewide flight was quite strong with 1744 reported (STYM=774).

HERONS & EGRETS

This group staged a near average spring flight. However, Little Blue Herons were in unusually short supply with only one reported.

Little Blue Heron:- The season's single record came from Cane Ridge where Scott Atteberry photographed an adult flyby on 21 May (STYM=6.8).

Glossy Ibis:- Allisyn-Marie Gillet reported (1) at Bloomington on 8 May and Clay Bliznick observed another at Tern Bar Slough on 14 May. Evan Speck obtained identifiably photographs of the later bird.

White-faced Ibis:- Richard Garrett found (1) at Cane Ridge on 27 April. This bird lingered and was seen by many. A flyby was also photographed at this site on 14 May (Heath Harlan & Logan Harlan).

PIGEONS

White-winged Dove:- On 3 May one was photographed at the Vanderburgh Co feeder of Evan Speck. Another appeared at a LaGrange Co feeder on 11 May (Sam Plew et al.). Sharp-shinned Hawks executed one of their weaker flights and Red-shouldered Hawks and Bald Eagles made unusually strong showings.



White-winged Dove by Evan Speck, 03 May 2019 in Vanderburgh County.

DIURNAL RAPTORS

Both Northern Goshawk and Swainson's Hawk went unreported: otherwise, the spring flight was rather strong.

Sharp-shinned Hawk:- For the second consecutive spring counts of this small Accipitor fell below the STYM of 294. The spring 2019 total was 215.

Merlin:- It was a record season for this small falcon with 89 reported (STYM=33.4). The spring's peak tally was (4) that Kyle Wiktor logged on 17 April at the Green Tower site. Importantly, in late May Kevin B. Ryan reported that the pair that attempted nesting in Chesterton last year had returned.

Prairie Falcon:- Lowell Hobbs photographed one north of Francisco (Gibson Co) on 5 March.

Northern Flicker:- An Indiana record flight occurred at the Green Tower site, Porter Co., on 7 April with (1239) birds counted. The state's previous maximum was (1127) reported at this same site on 10 April 2011. This count is also one of the highest counts ever for the Midwest.

FLYCATCHERS

Numbers of every member of this group were far above average; indeed, this might well have been the strongest spring flycatcher migration on record.

Olive-sided Flycatcher:- It was a record spring for this normally hard to find species with 47 reported (STYM=19.2). The singing bird that Kathy McClain found in Dubois Co on 28 April constitutes Indiana fourth earliest record. On 25 May Jeffrey J. McCoy, John K. Cassady, Randy Pals, Ryan Sanderson, and KJB tallied (5), providing the state's second highest daily count.



Yellow-bellied Flycatcher by John Kendall at Cowles Bog, Porter Co., on 23 May 2019.

Yellow-bellied Flycatcher:- On 25 May Jeff McCoy's group logged (13) along the lakefront, which tied Indiana's third largest count.

Willow Flycatcher:- On 17 April Joseph Caruson reported a singing bird in New Albany, providing a new early arrival date for Indiana. John Castrale logged the previous earliest report on 26 April 1987 in Lawrence Co.

Western Kingbird:- The Evansville Airport birds arrived on 5 May (Logan Harlan). In addition, Kyle Wiktor observed a flyby at the Green Tower site, Porter Co., on 28 May, providing the fifth record for this site. Interestingly, four of these five reports occurred within the interval 23-28 May.

Loggerhead Shrike:- Out of range singletons were reported at Oakland City on 22 April (Jeremy Ross), at Prophetstown S.P. on 4 May (Sean Verkamp), and in LaGrange Co on 15 May (Sam Plew).

VIREOS

It was a wonderful spring for vireos, as every species was reported in numbers well above their TYMs.

Blue-headed Vireo:- It was a record season for this attractive vireo with 306 birds reported (STYM=109). Joseph Drapac logged the largest daily count of (7) at Oak Ridge Prairie on 13 May. The singleton that Matt S. Kalwasinski found in Munster on 17 April established a new early arrival date for the lakefront (by one day).

Fish Crow:- On 20 and 21 March Ben Cvengros heard (4) calling in Dobbs Park, Terre Haute. This is the fourth Vigo Co record, and also the earliest report for that county. Ben also established the first Vermilion Co record with (3) calling birds on 25 May.

COMMON RAVEN:- Kyle Wiktor also identified the season's best bird as it flew past the Green Tower, Porter Co., on 13 March. Kyle commented, "Flew west. I first noticed it when I heard it croaking a few times. Very large Corvid with signature wedge shaped tail." If accepted by the Indiana Bird Records Committee this will constitute Indiana's first record since 17 October 1953 when one was sighted at Miller Beach.

SWALLOWS

The spring of 2019 brought one of the better swallow migrations: every species was tallied in numbers well above their respective STYMs.

Cliff Swallow:- Landon Neumann identified (1) at Celery Bog, Tippecanoe Co., on 27 March, which provided Indiana's third earliest arrival date.

WRENS

Every member of this group was reported in numbers far above their STYM.

Golden-crowned Kinglet:- A singing late migrant was seen and heard in the Hammond Sanctuary on 17 May (Matt S. Kalwasinski et al.). This date tied the lakefront's fourth latest spring record.

THRUSHES

Superb thrush numbers were reported this spring with all species far above their respective STYMs.

Gray-cheeked Thrush:- Following a superb flight last spring another fine migration occurred this year with 415 birds reported (STYM=130). Leland Shaum logged the maximum daily count with (16) birds at Potato Creek S.P. on 17 May.

WINTER FINCHES

Despite a smattering of Evening Grosbeaks, 2019 was not a good spring for winter finches. Both crossbills were absent and both Redpolls and Siskins were well below average. Indeed, among the migrant species only the Purple Finch was above average.

Common Redpoll:- The only significant report was a flyby flock of (30) that Kyle Wiktor logged at the Green Tower site on 12 March (TYM=32.2).

Evening Grosbeak:- Linda Mote's long staying male surely set a new endurance record for the longest duration at a feeding station. The bird arrived 7 December 2018 (Randy and Lisa Vanderbilt) and remained until 4 May 2019 (Linda Motes).



Jim Hengeveld captured this amazing male Evening Grosbeak on 31 March 2019 in Monroe County.

LONGSPURS

Lapland Longspur:- The spring Lapland flight was quite poor with only 679 reported (STYM=1845). Lynn H. Vernon logged the season's largest daily count with (125) in Marshall Co on 5 March.

Smith's Longspur:- It was a fine spring for this illusive longspur with 1,615 birds scattered across seven counties (TYM=926). The season's peak count occurred at Pine Creek G.H.A. when Aidan Rominger counted (500) on 3 April. Although Aidan stated that this total, was "Possibly an undercount," it constitutes Indiana's fourth largest daily count.

SPARROWS

The statewide sparrow flight was quite good, the only absentee was Nelson's Sparrow. The Grasshopper Sparrow was also reported in slightly below average numbers. Otherwise all sparrows were well above average.

Harris's Sparrow:- Two were reported this spring (STYM=1.0). Scott Robeson had the first in Bloomington on 28 April: it



Harris's Sparrow in Bloomington, Monroe County, 03 May 2019. Photo by Lisa Vanderbilt.

remained until 3 May. The second showed up at Angie Quinn's feeder in Fort Wayne on 2 May and lingered through 4 May.

Western Meadowlark:- On 24 March John Meredig found a singing bird on Eskew Road, providing Warrick County's fourth record.

Yellow-headed Blackbird:- Five singletons were reported at five different locations (STYM=7.45), but none lingered.

Brewer's Blackbird:- It was the best spring ever for this Icterid on the lakefront with an amazing 193 reported (TYM=11.8). The two flocks found at Reynolds Creek G.H.A. on 16 April (John K. Cassady, Lynea S. Hinchman, Lynn H. Vernon, & KJB) totaled (43), which is both a Porter County record and the lakefront's second largest count. This record, however, had a brief lifetime, as Brad Bumgardner logged (75) at Reynolds Creek on 18 April.

Orchard Oriole:- It was a record spring for this petit oriole with a record 806 reported (STYM=339). The peak daily count was (17) that Kyle Wiktor recorded at the Green Tower site, Porter Co., on 6 May.

WARBLERS

All 35 of Indiana's regular warblers were reported in above average numbers. The poorest performance was made by the Mourning Warbler with 76 reported, (STYM=51.5) and the best by the Black-throated Blue with 147 reported (STYM=45.0).

Bay-breasted Warbler:- The (36) that David Ward reported at Fox Island Park, Allen Co., on 13 May constitute Indiana's fifth largest daily count.

Black-throated Blue Warbler:- A record season was highlighted by the new maximum daily count of (11) that David Ward observed at Fox Island Park (Allen Co) on 13 May.

Canada Warbler:- The 23 birds that John C. Kendall tallied on 23 May at Cowles Bog (22) and Howes Prairie (one), Porter Co., constitute Indiana's fourth largest daily count.

TANAGERS

Summer Tanager:- This tanager staged an extraordinary spring flight with 908 reported (STYM=279). The peak daily count of (27), which James H. Campbell logged in the Tecumseh area (Warrick Co) on 16 May, constitutes Indiana's fourth largest count.

WESTERN TANAGER:- An incredible four males visited Indiana this spring (STYM=0.45). The first visited feeders at a private South Bend residence in mid-April. The homeowners noted that the bird had been present for three days prior to the first birding visitor. This is Indiana's earliest date for this colorful tanager. A second bird arrived at a LaPorte Co grape jelly feeder on 9 May: Lynea S. Hinchman photographed this male the following day. The third was photographed near Boone Grove (Porter Co) on 13-16 May



Western Tanager in Porter County on 17 May 2019. Photo by Matt Kalwasinski.

and seen well by Indiana Dunes Birding Festival participants. The fourth bird was observed in Dubois Co on 17 May (Kathy McClain).

SUMMER FINCHES

PAINTED BUNTING:- For the first time two birds were recorded in the state in the same year (and season). On 30 April Evan Speck photographed a male at Saunder's Woods in Gibson Co. This is Indiana's fourth record: all of which were males. However, Anne Lewis Brown photographed Indiana's first female at her Tippecanoe Co feeder on 16 May.



Indiana's fourth record Painted Bunting at Saunder's Woods in Gibson County. Photo by Evan Speck, 30 April 2019.

Explanation of abbreviations Season totals are frequently compared to average seasonal counts in the "Dunes area" (Calumet Region or lakefront) over the past 20 years, including the present year. This value is abbreviated "TYM" for Twenty Year Mean. The term "STYM" refers to the twenty-year mean for the entire state.

Identifying Habitat Associations and Management

Impacts for Critical Marshbirds of Indiana

Indiana DNR, Division of Fish and Wildlife

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CURRENT STATUS

First year of a three-year project

FUNDING SOURCES AND PARTNERS

State Wildlife Grant Program (T7R26)

Audubon Great Lakes

Indiana Audubon Society

Indiana University Northwest

PROJECT PERSONNEL

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BACKGROUND AND OBJECTIVES

Six secretive marshbird species that breed in Indiana are designated as respective Species of Greatest Conservation Need (SGCN) and listed as endangered in the Indiana State Wildlife Action Plan (SWAP). These species are the American bittern (*Botaurus lentiginosus*), least bittern (*Ixobrychus exilis*), black rail (*Laterallus jamaicensis*), king rail (*Rallus elegans*), Virginia rail (*R. limicola*), and common gallinule (*Gallinula galeata*).

These species are, in general, experiencing declines throughout North America due to the rapid loss of suitable wetland habitat. In addition, little is known about their habitat requirements and the effects of management activities on their populations. Therefore, a rigorous investigation of marshbird abundance and habitat associations throughout Indiana is warranted. The objective of this project is to identify habitat and landscape characteristics (e.g., interspersion, percent of invasive species, water depth) that significantly affect the presence and occupancy of secretive marshbirds in Indiana. This project aims to inform best management practices, so that suitable habitat can be created, and land managers have the tools to manage for these species over the long-term. This project also will form the foundation to a more comprehensive monitoring program that will inform statewide population trends of secretive marshbird species.



American coots feed in an emergent wetland marsh at Wolf Lake in Hammond. (Photo by Libby Keyes)



Several marshbird survey points were accessed by kayak. Surveys took place in the morning and were led by a team of volunteers and partners. (Photo by Dr. Peter Avis)

METHODS

Marshbird surveys were conducted along routes at eight designated wetland complexes across Indiana. Survey routes were visited three times, with visits placed at least 10 days apart. Visits occurred during two-week periods between mid-April and mid-June. Start dates were dictated by the designated regional survey window (e.g., northern site visits began on May 1, whereas visits to southern sites began on April 15). Survey design was adapted from the North American marshbird monitoring protocol by the U.S. Fish & Wildlife Service. Each survey consisted of five minutes of passive listening followed by six minutes of audio broadcasts of six target species vocalizations. These species were the king rail, least bittern, sora (*Porzana carolina*), Virginia rail, common gallinule, and pied-billed grebe (*Podilymbus podiceps*). Target species not included in the broadcast were the American bittern and black rail.

Surveyors recorded detections (seen or heard) of all eight target species during the 11-minute count period. Secondary focal species were voluntarily recorded and included American coot (*Fulica americana*), black-crowned night-heron (*Nycticorax nycticorax*), black tern (*Chlidonias niger*), blue-winged teal (*Spatula discors*), little blue heron (*Egretta caerulea*), marsh wren (*Cistothorus palustris*), snowy egret (*E. thula*), swamp sparrow (*Melospiza georgiana*), yellow-crowned night-heron (*Nyctanassa violacea*), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

Habitat data collection included on-the-ground habitat surveys, drone surveys and water-level recordings at designated survey points. On-the-ground habitat surveys were conducted in June and July to measure the percent cover of dominant vegetation types and percent cover of open water within 100 meters of each survey point. Drone imagery surveys occurred in May and June at select survey points. Water depth data were collected by marshbird monitors at gauges that were installed in open water at wetland sites.

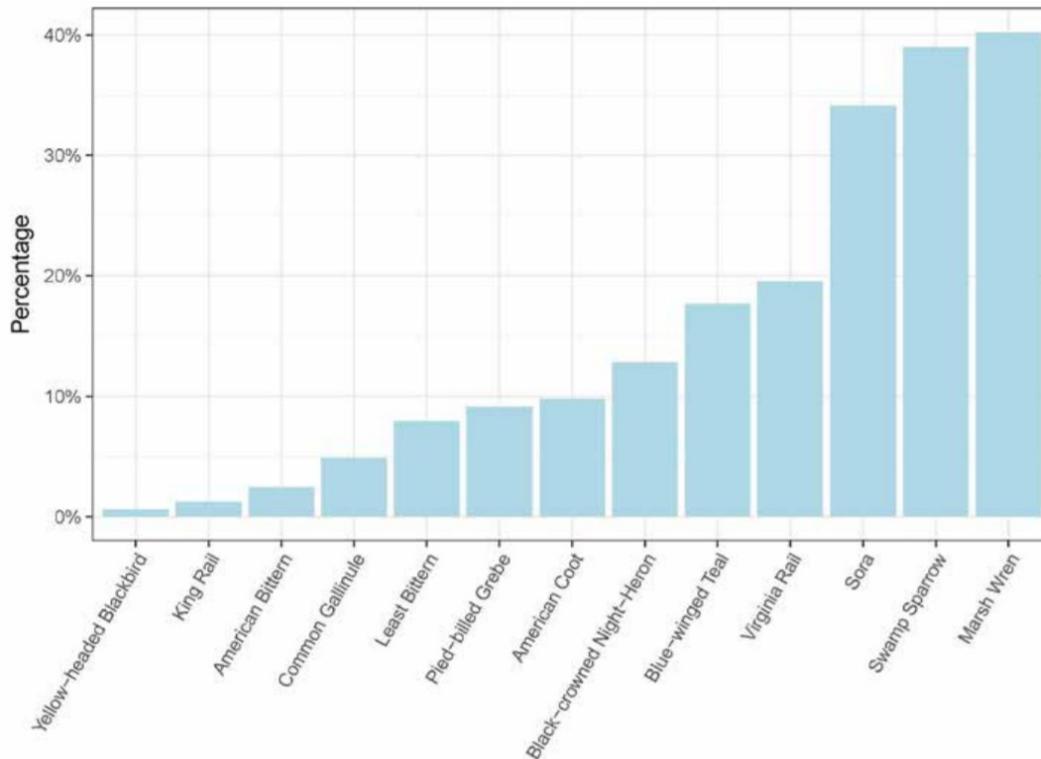
PROGRESS TO DATE

Northern Indiana

In 2018, a total of 164 points were surveyed on 24 routes. Wetlands were monitored at the following state properties and Indiana Dedicated Nature Preserves (a category that includes properties with mixed landownership): Clark and Pine Nature Preserve, DuPont Natural Area, Gibson Woods, Tolleston Ridges, Grand Calumet Tern Site/Seidner Dune and Swale, Indiana Dunes State Park, Ivanhoe Dune and Swale, Pine Station Nature Preserve, Roxana Marsh, and Willow Slough Fish & Wildlife Area (FWA). Monitoring was also conducted at Indiana Dunes National Lakeshore (National Park Service), Beemsterboer (private property managed by The Nature Conservancy), Highland Heron Rookery, Kankakee Sands (The Nature Conservancy), and wetlands along the Little Calumet River (Little Calumet River Basin Development Commission).



Fourteen points were surveyed at Tern Bar Slough Wildlife Diversity Area. This is a Virginia rail found during the first survey period of 2018. (Photo by Evan Speck)



Percentage of 164 survey points that were occupied by focal marshbird species. Thirteen of 18 focal species were detected during surveys. Marsh wrens occupied the highest percentage of points, followed by swamp sparrows and sora.

Thirteen of 18 (72%) focal species were detected, including all six for which audio broadcasts were used. Species detected were American bittern, American coot, black-crowned night-heron, blue-winged teal, common gallinule, king rail, least bittern, marsh wren, pied-billed grebe, sora, swamp sparrow, Virginia rail, and yellow-headed blackbird. Drone imagery was collected at Indiana Dunes State Park. Habitat surveys were conducted at Tolleston Ridges, Pine Station Nature Preserve, and three wetland sites along the Little Calumet River (Chase Street Marsh, Grant Street Marsh, and MLK Drive Wetland). Water depth was recorded at 14 water gauges.

In 2019, marshbird surveys will be repeated at the same routes that were surveyed in 2018. Drone imagery and habitat surveys will be expanded to include all or most wetland sites at which landowner permission has been granted. We are making progress on classifying drone imagery and will have classification methods refined in time to process the latest imagery starting in the summer of 2019.

Southern Indiana

Goose Pond FWA, Muscatatuck National Wildlife Refuge (NWR), Patoka River NWR, Cane Ridge Wildlife Management Area (WMA), and Tern Bar Slough Wildlife Diversity Area (WDA) hosted 26 marshbird routes in southern Indiana. Only 25 routes consisting of 77 points were surveyed in 2018. A total of 264 unique detections was recorded of target species. Soras were the most numerous, with 133 detections, whereas king rails were the least numerous among species that were detected, with two. No black rails were observed.

Because the number of survey points varied among sites (e.g., Goose Pond FWA had 26 points, whereas Tern Bar Slough WDA had 14), species presence was evaluated using occupancy rather than the number of detections to avoid biases associated with number of survey points. Occupancy is the likelihood that a site hosted at least one individual of the target species. This can be determined by dividing the number of survey points that hosted a particular species by the total number of points surveyed at the site.

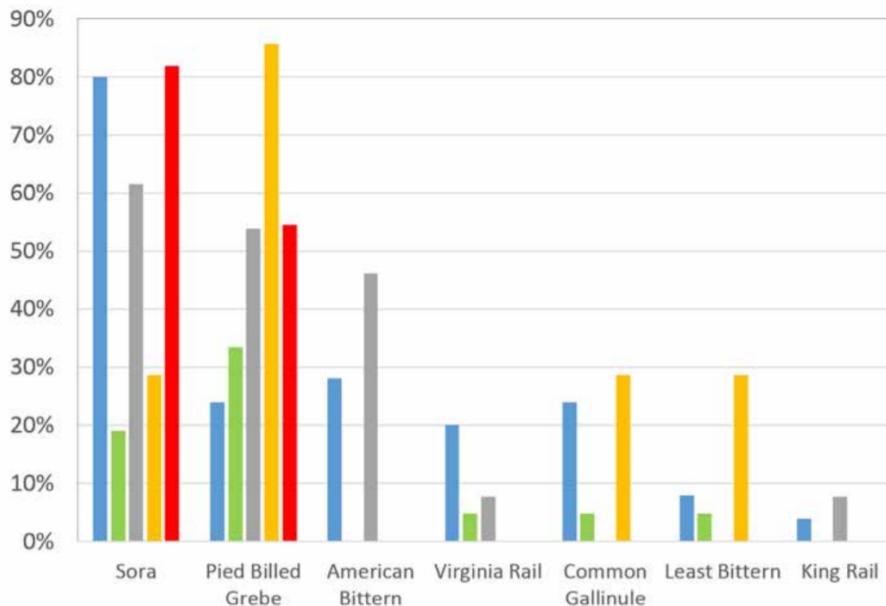
For example, if at least one sora

was observed at seven of 14 total survey points at Tern Bar Slough WDA, then occupancy for sora would be 50%. In other words, the likelihood of observing a sora at Tern Bar Slough WDA would be 50%.

Sora occupancy was highest at Patoka River NWR (82%) and lowest at Muscatatuck NWR (19%). Piedbilled grebe occupancy was highest at Cane Ridge WMA (86%) and lowest at Goose Pond FWA (24%). American bittern occupancy was highest at Tern Bar Slough WDA (46%) but the species was not detected at Muscatatuck NWR, Cane Ridge WDA, or Patoka River NWR. Virginia rail occupancy was highest at Goose Pond FWA (20%) but it was not detected at Cane Ridge WMA or Patoka River NWR. Common gallinule and least bittern occupancy was highest at Cane Ridge WMA (29% for both species) but it was not detected at Tern Bar Slough WDA or Patoka River NWR. Last, king rail occupancy was highest at Tern Bar Slough WDA (8%) but the species was not detected at Muscatatuck NWR, Cane Ridge WMA, and Patoka River NWR. The absence of detections of American bittern, least bittern, black rail, king rail, Virginia rail, and common gallinule at at least two sites is not surprising. Rather, it is consistent, given the status of each as a state-endangered species. Drone imagery was collected at Goose Pond FWA. Habitat surveys were not conducted in 2018, and water depth was not recorded because gauges were not yet deployed. The first year of the project was designated as a pilot year due to several challenges that were encountered, such as staffing losses. In 2019, marshbird surveys will be repeated at the same routes that were surveyed in 2018.

Drone imagery, water gauge monitoring, and habitat surveys will be expanded to include all or most wetland sites at which landowner permission has been granted. We are making progress on classifying drone imagery and will have classification methods refined in time to process the latest imagery beginning summer

COST: \$406,284 FOR THE COMPLETE THREE-YEAR PROJECT



Occupancy of target marshbird species at five sites in southern Indiana.

From the Archives: 1938 Indiana Audubon Yearbook
Preliminary Nesting Studies in Indiana State Parks

**Howard Michaud,
Fort Wayne, IN**

Many field identification records on birds have been kept in the Indiana State Parks especially during the months of June to early September, during the past ten years. Also there are other bird identification records available from state parks, which have helped considerably to determine the avifauna of our state.

During the summer of 1937, however, the writer prepared a special report blank to record bird nests, together with space provided to add interesting and useful data. It is believed that such records are needed to help determine more accurately the breeding range of Indiana species. Also such records should add some knowledge of bird habits, and may further contribute information on the value of state parks as bird sanctuaries.

The records referred to are kept by the nature guides in the state parks; individuals qualified through training to make such observations. The report blank is tabulated as follows:

Date	Name of Bird	Where Found	How Near Ground	Remarks
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In the nesting studies which follow a number of records are included for the summer of 1936. During 1937, records were kept at Brown County, Clifty Falls, Dunes, McCormick's Creek, and Turkey Run State Parks. It is hoped that these records will be continued in the parks as they will thus become increasingly valuable.

Included in the following record are a total of 45 species, representing 117 individual nests. There were 20 phoebe nests observed, representing the greatest number for any single species, and 15 robin nests make a close second. Over a period of years such records would also help establish frequency ratios among species and possibly add to the knowledge concerning numbers and the mortality rate of certain species.

Symbols: C. F.—Clifty Falls State Park.
 D.—Dunes State Park.
 B. C.—Brown County State Park.
 Mc.—McCormick's Creek State Park.
 T. R.—Turkey Run State Park.

A. O. U.	Bird	Park	Date	Remarks
117	Turkey Vulture	C. F.	7-1-37	Ledge of cliff 60 ft. up. Young half grown. Left nest third week of Sept.
		C. F.	6-14-37	On ground between 2 boulders. Young $\frac{3}{4}$ grown. Predators took both young.
118	Black Vulture	Mc.	1937	Nest on ground between large rocks. Two young reared between May and August. Same nest observed since 1932.
161	King Rail	T. R.	7-3-37	11 miles east of Park, along roadside in weeds of low area. 7 young.
201	Spotted Sandpiper	Mc.	6-28-37	On ground near White river. 4 eggs.
280	Rock Dove	Mc.	5-6-36	2 eggs.
282	Mourning Dove	Mc.	7-19-36	2 eggs.
		T. R.	8-22-37	15 ft. up. Young.
		B. C.	1937	In tree.
310	Ruby-throated Hummingbird	Mc.	7-17-36	30 feet up. Beech tree.
		D.	Aug., '37	1 nest 10 ft. up. Fall nesting. Nest destroyed by boy after 2 eggs laid. 1 nest 12 ft. up. Appeared to be getting ready to nest.
312	Flicker	C. F.	July, '37	In dead tree stub 15 ft. up. Used during July.
315	Red-headed Woodpecker	T. R.	7-13-37	80 ft. up. Dead tree top.
319	Downy Woodpecker	B. C.	1937	Hollow tree trunk.
324	Kingbird	D.	June, '37	30 ft. up, in Cottonwood. Parents feeding young.
		D.	Aug., '37	Near top of tree (maple). Feeding young.
330a	Crested Flycatcher	T. R.	6-22-37	90 ft. up, hole in limb of dead tree. No snake skin available.
331	Phoebe	Mc.	4-28-37	2 eggs. Deserted after Cowbird laid 2 eggs.
		Mc.	6-25-37	3 ft. up over water. Occupied.
		Mc.	6-25-37	4 ft. up over water. Occupied.
		Mc.	6-25-37	6-7 ft. up over water. 5 young eaten by pilot black snake.
		Mc.	6-30-37	6 ft. up, door frame. Occupied.
		Mc.	6-30-37	3 ft. over water. 4 eggs. Hatched July 6.

	C. F.	6-13-37	6 ft. up. Young in nest.	
	C. F.	6-16-37	8 ft. up over water. Incubating.	
	C. F.	6-16-37	12 ft. up over water. Incubating.	
	C. F.	6-18-37	10 ft. up. Incubating.	
	C. F.	7-11-37	4 ft. up. 3 young half grown.	
	T. R.	6-20-37	5½ ft. up. 4 eggs.	
	T. R.	6-24-37	6 ft. up. 4 eggs.	
	T. R.	6-24-37	6 ft. up. Unoccupied.	
	B. C.	1937	6 nests observed on Cottages and shelter houses.	
334	Acadian Fly-catcher	Mc.	1936	10 ft. up. Occupied.
337	Wood Pewee	D.	Aug., '37	25 ft. up. Nesting.
345	Rough-winged Swallow	C. F.	6-13-37	5 ft. up over creek. 5 eggs.
		T. R.	6-24-37	10 ft. up. Young.
347	Barn Swallow	Mc.	5-15-36	4 eggs.
		D.	June, '37	Garage—Nest destroyed before laying.
		D.	July, '37	8 ft. up., outside garage. Building.
354	Blue Jay	Mc.	1936	7 ft. up in Red Cedar. 5 eggs.
		D.	July, '37	8 ft. up. Young about to leave nest.
358	Crow	B. C.	1937	Top of small walnut tree.
364	Car. Chickadee ..	C. F.	7-12-37	30 ft. up in dead limb. Unoccupied.
371	House Wren	D.	July, '37	Shopping Bag—Tourist Camp. 4 ft. up.
		D.	July, '37	Newspaper box. Eggs in nest.
		D.	July, '37	Newspaper box. Eggs in nest.
		D.	July, '37	Newspaper box. Eggs in nest. Above were all different boxes at the Dunes.
		D.	Aug., '37	6 ft. up hollow tree. Young.
374	Carolina Wren ...	Mc.	1936	Canyon Inn Garage. 7 eggs.
		Mc.	7-1-37	7-8 ft. up. Young in nest.
378	Catbird	Mc.	5-16-36	4 eggs. Museum.
		C. F.	7-30-37	6 ft. up. 1 egg. Bird sitting.
		T. R.	6-19-37	2½ ft. up. 4 young. Left nest about 6-22-37.
379	Brown Thrasher..	T. R.	6-19-37	8 ft. up. Eggs. Bittersweet.
381	Robin	Mc.	1936	3 ft. up. 4 eggs. Deserted.
		T. R.	6-19-37	5 ft. up in Elm tree. Two young.
		T. R.	6-19-37	7 ft. up, in apple tree. Three young, left nest 6-19.
		T. R.	6-23-37	40 ft. up in oak tree. Brooding.
		T. R.	7-21-37	25 ft. up, oak tree. Eggs.
		T. R.	8-18-37	12 ft. up, elm tree. Eggs.
		B. C.	1937	6 nests in oak and maple trees near cottages.
		D.	June, '37	10 ft. up. Nesting.
		D.	June, '37	10 ft. up. Nesting.
384	Woodthrush	Mc.	5-16-36	4 eggs.
		Mc.	7-9-37	12-14 ft. up. Parents feeding young.
		T. R.	6-19-37	11 ft. up. Eggs.

		T. R.	6-23-37	12 ft. up. Eggs. Bur oak.
		D.	June, '37	10 ft. up. Young ready to leave nest.
		D.	June, '37	5 ft. up. 3 Woodthrush eggs, 1 cowbird egg.
389	Bluebird	T. R.	6-24-37	6½ ft. up in Birdhouse. Eggs.
392	Blue-gray Gnatcatcher	T. R.	7-13-37	40 ft. up in Hemlock. Eggs young.
		B. C.	1937	White oak tree.
400	Cedar Waxwing	T. R.	7-18-37	25 ft. up, osage orange tree.
		D.	June, '37	35 ft. up. Sycamore tree. Parents feeding young.
		D.	Aug., '37	Top of maple tree. Parents feeding young.
410	Red-eyed Vireo	Mc.	6-10-37	6 ft. up, sugar maple. 3 eggs. 2 disappeared and nest was deserted.
		Mc.	6-25-37	7-8 ft. up. Female observed on nest.
		T. R.	7-16-37	9 ft. up. Eggs. Young.
		D.	June, '37	5 ft. up, witchhazel. Young about to leave nest.
		B. C.	1937	Maple tree near cottage.
442	Prairie Warbler	Mc.	7-6-37	6 ft. up in Pine. Parents feeding young.
447	Kentucky Warbler	Mc.	6-14-36	Ground. Young left nest 6-14.
451	Northern Yellowthroat	B. C.	1937	Shrub near ground.
452	Yellow-breasted Chat	Mc.	1-11-36	2 ft. up, berry bush. 4 eggs.
456	American Redstart	D.	July, '37	12 ft. up. Parents nesting.
460	Meadowlark	B. C.	1937	Field near bathhouse.
465	Baltimore Oriole	B. C.	1937	Elm tree, 1 nest.
473	Scarlet Tanager	D.	July, '37	35 ft. up. Nesting.
		D.	July, '37	9 ft. up. With eggs.
		D.	Aug., '37	20 ft. up. Feeding young.
474	Summer Tanager	B. C.	1937	Low branch of Maple.
475	Cardinal	Mc.	6-2-36	3 ft. up, red cedar. 2 eggs.
		C. F.	7-24-37	30 ft. up, in gooseberry above gorge. One young.
		T. R.	7-26-37	20 ft. up. Young.
		D.	7-20-37	Near top of dogwood. Young in nest.
478	Indigo Bunting	Mc.	6-10-36	Poison Ivy Vine. 2 eggs.
		T. R.	6-14-37	2 ft. up, shrub. 4 Bunting eggs, 1 cowbird egg.
492	Goldfinch	D.	Aug., '37	Top of Cottonwood tree. Nesting.
		D.	Aug., '37	15 ft. up, Maple tree. Observed beginning of nesting period until young left the nest.
510	Lark Sparrow	T. R.	6-27-37	On ground, open field. Eggs.
516	Chipping Sparrow	Mc.	8-6-36	Low barberry bush. 3 young reared and left nest July 5.
		Mc.	8-9-37	18 inches up, barberry. Observed parents feeding young.
		T. R.	6-19-37	14 ft. up.
		B. C.	1937	White pines (3 nests).
519	Field Sparrow	T. R.	6-21-37	4 ft. up, small tree. Eggs. Destroyed by—(?).

