

Indiana Audubon Quarterly



Volume 98 Number 2
May 2020



INDIANA AUDUBON QUARTERLY
VOL. 98, NO.2. MAY 2020
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Founded 1898

Incorporated 1939

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INDIANA AUDUBON QUARTERLY

(Formerly the Indiana Audubon Society Yearbook)

Published in February, May, August and November by

The Indiana Audubon Society, Inc.

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Visit our website at indianaaudubon.org

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Cover photo: Ferruginous Hawk at Bear Run Mine, Sullivan County 08 February 2020. Photo by Ryan Sanderson.

Back cover photo: A surprise Gyrfalcon greeted Bob Huguenard at Kankakee Fish & Wildlife Area, Starke County on 01 January 2020.

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Letter from the Editor

Brad Bumgardner, Chesterton, IN

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As I'm writing this, our birding world has been turned upside down. The coronavirus (COVID-19) has cancelled or postponed all the major field trips, workshops, and birding festivals not just here in Indiana, but across the country. Heck, worldwide. As an Audubon organization we've been espousing the need to save the birds, and here we are taking actions now to save ourselves.

The initial reponse to all of this has been rather depressing. Once the initial shock of not doing an activity you've come to enjoy every year subsides, reality hits that the seriousness of the situation dictated the actions be taken. Like every organization, business, and agency that organizes events, we've all been faced with how to take the appropriate measures and response with the coronavirus (COVID-19) on our various operations and activities.



After consultation with our various partnering agencies and organizations Indiana Audubon made the tough decision to cancel all March and April field trips. The threat continues and the number of trips that get cancelled or postpones keeps growing. By the time you read this, even more trips will have fallen on the chopping block.

One event that has grown so dear to so many of us is the Indiana Dunes Birding Festival. I've received countless emails letting me know that participants are coming to bird regardless of what would happen. I've received notes begging me not to cancel. "Hang in there, wait it out," has been the words of encouragement. Believe, me, I have wanted to! I'm as much invested in this great event as everyone else.

As cases of the illness begin to subside, and life returns to normal, or the new normal that we'll be ever conscious of, we as an organization will re-organize and re-evaluate how to move forward in advancing our education, conservation, and research goals. Already, the board of directors are meeting this month to take another look at the budget to see what cuts can be made to programs and projects to re-align with the new reality of lost fundraising through trips and events. I've been humbled, however, to see the mass of response to our funding pleas. To everyone that's donated to Indiana Audubon in the last month, I say a large thank you! It truly shows the dedication of our membership to the causes we all share as important.

I'm hoping that in the coming months we can turn our attention away from our own immediate needs and focus back on the needs of our avian friends. The same needs that never subsided while we were away.

Growth of Indiana Annual Collaborative Species Totals and its Impact on “Big Year” Counts.

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“Big Years” are surprisingly popular among contemporary Hoosier birders. This activity involves making a major effort to identify a maximum number of avian species in a specified geographic area within one calendar year. Unlike in the 2011 movie *Big Year*, in which the birders covered all North America, Hoosiers generally restrict their counting to Indiana. Some seek to set new Big Year records, but many simply hope to reach the magic number of 300. In this context the total number of species reported in the state by everyone, the annual collaborative total (a fitting term coined by Peter E. Scott), is a fundamental factor, as a birder cannot log more species than the total reported by all observers in the state.

Interestingly, Indiana’s collaborative totals have grown rapidly over the past 50 years (see Figure 1): These data were extracted from the state database. Figure 1 reveals that the collaborative total first reached 300 species in 1978 and the current largest annual maximum is the 333 recorded in 2016.

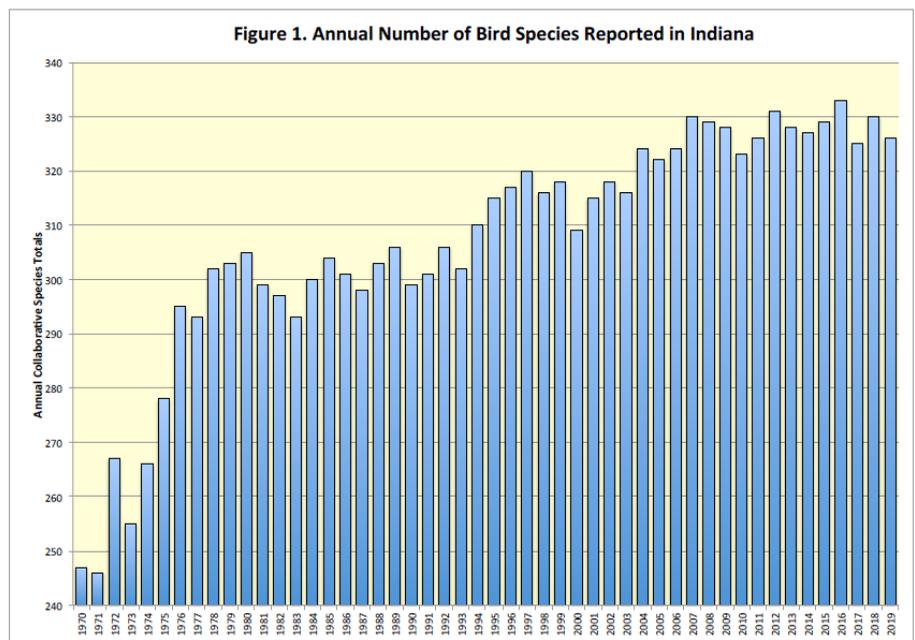
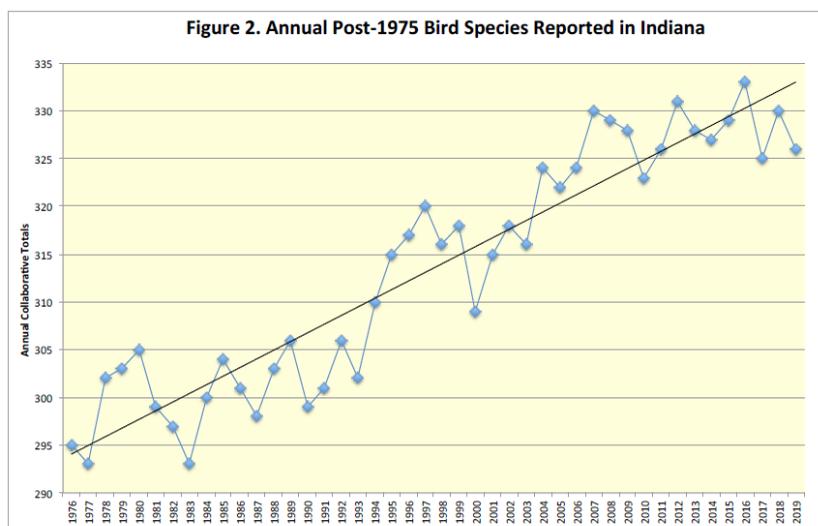


Figure 1 also reveals that collaborative totals in the early 1970s grew rapidly until 1976; thereafter, yearly maxima have increased at an almost linear rate of 0.91 species per annum (see Figure 2). If this current growth rate were to continue until 2050, annual collaborative totals approaching 360 species would occur. Top Big Year birders usually log 96-97 percent of the year’s collaborative total; thus, by 2050 Big Year counts might reach 350 species.

Growth of the collaborative totals

Some 301 of Indiana’s regular species appear in the state almost annually (in at least 19 of the last 20 years). If these regulars plus all extinct and extirpated species, along with the “brown headed Nuthatch,” are deleted some 121 species remain: these are the windfall birds (Table 1, appended).

Indiana birders have often pondered the question of how many species annually pass through the state undetected. Recall the



Brown Booby that was accidentally discovered at a nine-acre Zionsville lake in late May of 2019. It was photographed by two birders who lived on the pond, but departed 25 minutes later and, despite intense searching, was never relocated. If the observers had not observed the bird it would have entirely escaped detection. In addition, the southwestern Ash-throated Flycatcher has never been confirmed in the state. However, many appear along the Atlantic seaboard each autumn. Indeed, this past fall five were detected at a single New Jersey location. Surely many of these flycatchers overfly Indiana. Similar occurrences involving other species suggest that Indiana is a “fly over state” with numerous undetected windfall birds passing through Indiana air space annually. These cryptic phantoms might be dubbed “Virtual” species.

Annual totals of regular migrants and residents remain relatively constant; consequently, most growth of the collaborative total involves windfall species. The sum of all these groups can be referred to as the Golden Number, which is the unknowable total of birds that visit the state annually. That is:

$$GN = M + R + W + V$$

Where GN= the Golden Number, M= migrants, R= residents, W= windfall species, and V= virtual species. The collaborative total is a fraction of the Golden Number. Although the Golden Number is unmeasurable, it establishes a ceiling for collaborative totals.

One might hypothesize that the addition of new species to the Indiana checklist accounts for growth of collaborative totals, as these are windfall birds. However, over the 44 years shown in Fig. 2 some 846 windfall species were logged, whereas only 71 first state records were reported, which constitutes only 8 percent of the windfall total. Clearly, other factors must also contribute to growth of collaborative totals.

The primary factor driving the growth of collaborative totals is a dramatic increase in the number of observers. The American Birding Association currently lists 206 birders for Indiana, which is almost ten times the number back in 1977 (see the following paragraph). As observer numbers have expanded, a larger fraction of the extant birds are detected each year.

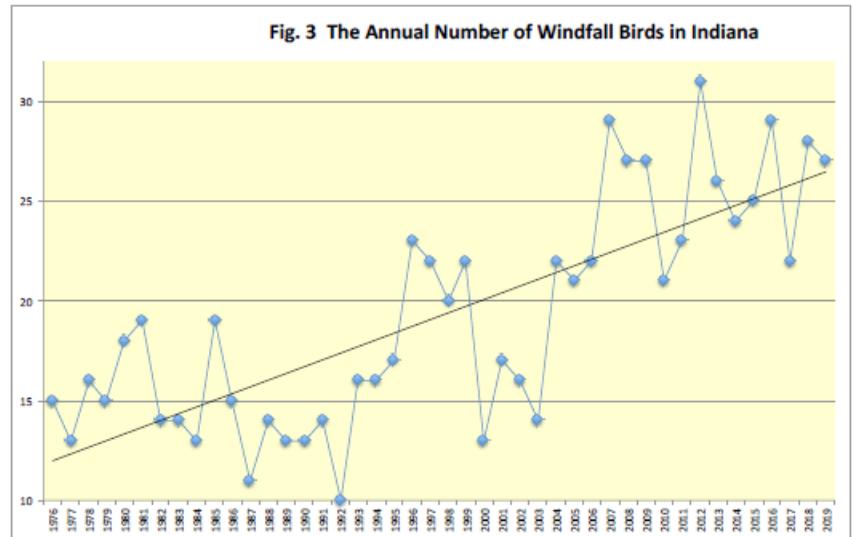
Collaborative Totals and Big Year Lists

A historical perspective is provided by the observation that in 1977 a listing in the journal *Birding* revealed that *no Hoosier birder had yet reached 300 species on their personal Indiana lists*: indeed, the top Indiana list, among the 21 participating birders, was 291. Accordingly, it is quite clear that by 1977 no Indiana birder had yet reached 300 in one year. This is not surprising of course, as Indiana’s collaborative total was below 300 until the year 1978. Further, the author conducted a Big Year in 1980 and logged 286 species. The collaborative total for that year was 305, indicating that 94 percent of the total was logged. A subsequent Big Year analysis by the author concluded that 300 species was not possible in Indiana: this statement was accurate in 1980, but as collaborative totals have increased, it is not even close to being correct today.

Additionally, several new species now breed in the state: e.g., Trumpeter Swan, Wild Turkey, Black-necked Stilt, Eurasian Collared-Dove, Least Tern, Mississippi Kite, and Bald Eagle. All of these have transitioned from the windfall to the regular list, rendering them far easier to find. Items such as superior communication, higher quality optics, and more detailed identification information have also likely contributed to growth of the collaborative totals. As no birder can record more species than are on the collaborative list, the latter imposes an upper boundary for Big Year lists. With diligence (and tremendous luck) an industrious birder might log most

of the regularly occurring species during a Big Year, but it is the windfall species that produce the large Big Year lists.

The 846 windfall species reported since 1975 are plotted in Figure 3. Not surprisingly, windfall numbers have increased along with collaborative totals. In the early years (1976 to 1995) the annual average was near 15, but that number increased to 20 in the mid-range years (1996 to 2008). In recent years (2009 to 2019) the mean has reached 25 species per year. The greatest number of windfall birds occurred in 2012, when 31 were reported.



Conclusion

Accompanying the enormous increase in birders, annual collaborative totals have grown significantly over the last five decades. As a result, both Big Year and annual windfall counts have increased markedly. If this 44-year trend were to continue, future Big Years would render current Big Year high counts trivial, and the magic “300” number might evolve to “350”.

However, as collaborative totals approach the Golden Number their growth will slow. Indeed, totals for the last three years, as shown in Figure 2, may well reflect the incipient decline.

Acknowledgements

Discussions with John Cassady and Lynn Vernon clarified several issues: their suggestions and comments were greatly appreciated.

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Table I. The 121 Windfall birds and the Number of Records

Black-bel Whist-Duck	30	Sharp-tailed Sandpiper	3	White Ibis	30	Varied Thrush	30
Fulvous Whistling-Duck	10	Purple Sandpiper	30	Glossy Ibis	30	Sage Thrasher	1
Barnacle Goose	3	Curlew Sandpiper	7	White-faced Ibis	30	Bohemian Waxwing	30
Brant	20	Pomarine Jaeger	30	Roseate Spoonbill	4	Brambling	1
Eurasian Wigeon	30	Thick-billed Murre	7	Swallow-tailed Kite	30	Eurasian Tree Sparrow	2
Mottled Duck	2	Long-billed Murrelet	4	White-tailed Kite	4	Evening Grosbeak	30
Cinnamon Teal	20	Ancient Murrelet	4	Swainson's Hawk	20	Pine Grosbeak	30
King Eider	30	Black-headed Gull	9	Ferruginous Hawk	10	Hoary Redpoll	30
Barrow's Goldeneye	30	Ross's Gull	1	Burrowing Owl	7	Red Crossbill	30
Western Grebe	30	Black-tailed Gull	1	Black-backed Woodpecker	10	White-winged Crossbill	30
Band-tailed Pigeon	1	Mew Gull	7	Crested Caracara	1	McCown's Longspur	2
Common Ground-Dove	4	California Gull	30	Gyr Falcon	5	Green-tailed Towhee	5
Groove-billed Ani	2	Slaty-backed Gull	5	Prairie Falcon	30	Spotted Towhee	10
Mexican Violetear	2	Kelp Gull	1	Western Wood-Pewee	2	Cassin's Sparrow	2
Anna's Hummingbird	1	Sooty Tern	1	Say's Phoebe	10	Bachman's Sparrow	30
Calliope Hummingbird	1	Gull-billed Tern	3	Vermilion Flycatcher	5	Lark Bunting	5
Rufous Hummingbird	30	White-winged Tern	1	Great Kiskadee	1	Golden-crowned Sparrow	2
Black-chinned Hummingbird	1	Roseate Tern	1	Western Kingbird	30	Great-tailed Grackle	1
Black Rail	30	Arctic Tern	5	Gray Kingbird	1	Bullock's Oriole	1
Purple Gallinule	20	Royal Tern	3	Scissor-tailed Flycatcher	30	Audubon's Oriole	1
Common Crane	1	Black Skimmer	7	Fork-tailed Flycatcher	3	Black-th. Gray Warbler	3
Hooded Crane	1	Yellow-billed Loon	1	Western Scrub-Jay	1	Townsend's Warbler	4
Lesser Sand Plover	1	Band-rumped Storm Petrel	1	Black-billed Magpie	9	Kirtland's Warbler	10
Snowy Plover	6	Wood Stork	30	Common Raven	2	Swainson's Warbler	5
Wilson's Plover	1	Magnificent Frigatebird	7	Cave Swallow	9	Western Tanager	10
Mountain Plover	1	Northern Gannet	8	Boreal Chickadee	11	Black-headed Grosbeak	2
Wandering Tattler	1	Brown Booby	1	Rock Wren	2	Lazuli Bunting	1
Spotted Redshank	1	Neotropic Cormorant	20	Bewick's Wren	30	Painted Bunting	5
Long-billed Curlew	1	Brown Pelican	30	Northern Wheatear	1		
Black-tailed	1	Tricolored Heron	20	Mountain	2		
Red-necked Stint	1	Reddish Egret	2	Townsend's	10		

Number of Indiana Records: 10= 10-20: 20= 21-30: 30= greater than 30

Fall Indiana Winter Notes 2019/2020

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Remarkably, the winter of 2019-20 was unprecedentedly warm (see Table). Although many shallow ponds temporarily froze, many remained open and Lake Michigan was virtually ice free throughout the season.

Until mid-December it appeared that 2019 would be a year with precious few rarities. However, the second half of the 12th month yielded a spate of goodies, including: Vermillion Flycatcher, White-winged Crossbill, Swainson's Thrush, Spotted Towhee, and Golden-crowned Sparrow.

State-wide rarities included: Black-bellied Whistling Duck (first winter record), Brant, California Gull (first winter record), Ferruginous Hawk, Gyrfalcon, Vermilion Flycatcher, Swainson's Thrush, Spotted Towhee, Golden-crowned Sparrow, and Baltimore Oriole.

Abbreviation: "STYM" stands for Indiana's 20-year mean.

Black-bellied Whistling-Duck:- The three birds photographed by Ethan and Ian Wiist at the Gibson Lake area provided Indiana's first winter record.

GEESE & SWANS

Brant:- Jim Seaney discovered (1) at Middlefork Res. (Wayne Co) on 7 December and Ron Williams saw it the following day. After an eleven day absence the bird reappeared and was confirmed by William H. Buskirk on 18 December. This is a first record for the central tier of counties and the fifth inland report.

Tundra Swan:- An Indiana record count was logged 6 January when Peter E. Scott tallied (470) at two sites: 190 at the Universal Mine (Vermillion Co) and 280 in Vigo Co. Two days earlier Eric Michael counted 462 at two southern LaPorte Co sites.

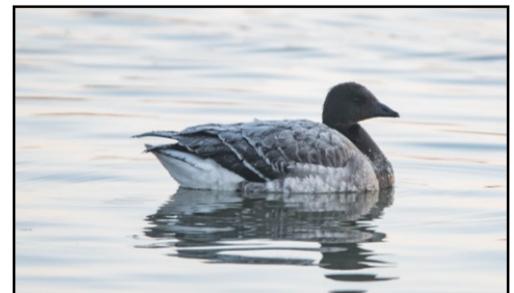
DUCKS

Eurasian Wigeon:- On 28 February Ian Wiist et al. observed a male at Wheeling Bottoms in Gibson Co. Identifiable photographs were taken.

Harlequin Duck:- The season's only record consisted of a female-plumed bird that Bob Huguenard found at the Port of Indiana on 15 February. It lingered through the season's end.

Surf Scoter:- Edward M. Hopkins observed a flock of (18) at Portage Lakefront Park on 18 February. This tally constitutes Indiana's third largest count for the winter period.

Departure from Normal: Indianapolis		
	°F	Precip. Inches
Dec	+5.4	-0.12
Jan	+6.9	+2.27
Feb	+10.5	+0.34



Brant at the Middlefork Reservoir (Wayne Co.) on 19 December 2019. Photo by Randy Vanderbilt.

Red-necked Grebe:- Several records were reported this winter, mostly in December. Except for the (2) reported by Ryan J. Sanderson, at Brookville Res. (Union Co) on 7 December, all were singletons. The season total was 8 (STYM=2.80).

Western Grebe:- The Port of Indiana bird, first reported on 19 November, lingered until at least 7 December (Annie Aguirre). Joe Bailey and Scott Evans Photographed (1) at Fairfax (Lake Monroe) on 14 December.



Horned Grebe and Red-necked Grebe comparison by Evan Speck. Photo taken 20 December 2019 at Somerville Mines (Gibson Co.)

SHOREBIRDS

Purple Sandpiper:- The Portage Lakefront Park bird discovered in late November lingered until at least 1 December (Terry Walsh).

Greater Yellowlegs:- Indiana's first January record was logged at Lake Gibson on the first and again on the 18th (Evan Speck). William Sharkey and Amy Kearns found another in the Goose Pond FWA on 3 February, which is now Indiana's third earliest record,

Long-billed Dowitcher:- Indiana's second winter (and first January) record was logged on 4 January when Lisa Todd photographed two basic plumed birds at the Somerville Mines in Gibson Co.

GULLS

The season's largest gull accumulation was observed at the Elkhart Landfill where a maximum of 2800 Herring Gulls was reported on 4 January (Leland Shaum et al.).

Black-legged Kittiwake:- The (3) that John K. Cassady logged during a 2 December lakewatch at Miller Beach tied Indiana's maximum winter count.

California Gull:- Eric Michael photographed an adult at Bendix Park in South Bend on 15 February, providing Indiana's first winter record.

Iceland Gull:- Good numbers appeared at the Elkhart Landfill and at sites along the St. Joseph River. The season total of 50, was well above the winter STYM of 32.

Glaucous Gull:- Nick Kiehl reported a first-cycle bird at Morse Reservoir on 28 December. This individual

lingered until at least 23 January (Kurt Emmert). Interestingly, this is the same location at which another first-cycle bird spent several weeks last winter. Additionally, at least two (an adult and a first-cycle) were reported regularly at the Elkhart Landfill (Leland Shaum et al.).



Glaucous Gull at Morse Reservoir 16 January 2020 (Hamilton Co.). Photo by Randy Vandebilt.

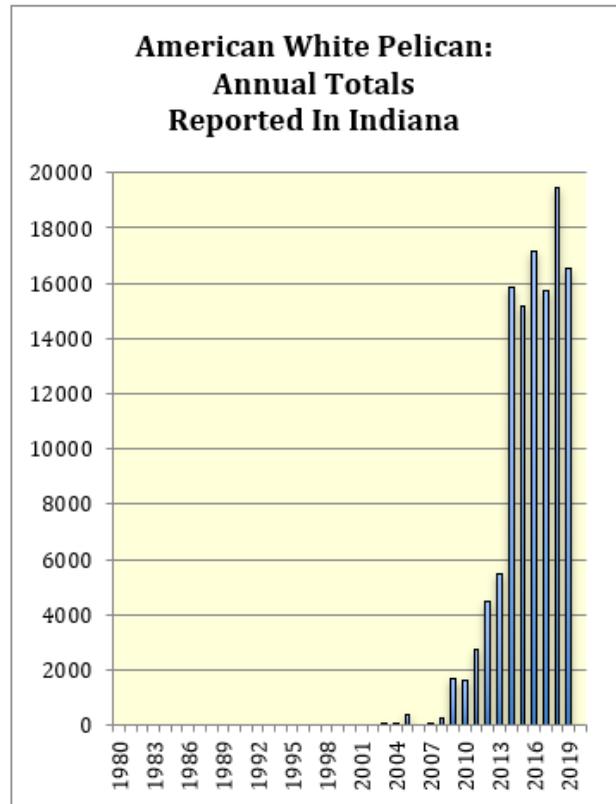
Chandeleur Gull:- For the first winter since 2003-2004 the putative Kelp X Herring Gull hybrid failed to be reported on the Indiana lakefront. Over this 16-year period at least three different individuals (one of which was banded) were reported. An article describing this remarkable occurrence appears in the Indiana Audubon Quarterly (2013, 91:4-6).

American White Pelican:- This invading species has now been reported in 71 counties; however, prior to 2000 it was exceedingly rare in the state. Indiana Pelican numbers exploded just after 2010 (see below graph).

Turkey Vulture:- On 9 February Matt S. Kalwasinski observed an early vulture soaring over Munster. This date tied the lakefront's second earliest record.

Ferruginous Hawk:- Vern Wilkins obtained an excellent photograph of a light-morph adult at the Hawthorn Mine on 1 February. This individual lingered through the winter period, providing Indiana's eleventh record of this western Buteo.

Snowy Owl:- 5 reports this season. Nathan & Megan Thomas reported (1) near Hebron (southern Porter Co) on 10 December. Pete Grube's photos of this bird suggest that it was an adult male. LaPorte had two sightings this winter. Additional singletons were located in Porter and Jasper Counties.



Gyrfalcon:- Bob Huguenard photographed a perched juvenile gray morph at Kankakee FWA (Starke Co) on 1 January, providing Indiana's sixth record.

Vermillion Flycatcher:- On 14 December Dan Collins photographed a female in Gibson Co, providing Indiana's fifth (and second December) record.

Red-breasted Nuthatch:- The 18 birds reported this season constitute the lowest winter total since 2002-03, when nine were reported (the winter STYM=154).

Swainson's Thrush:- Brad K. Jackson documented a lingering bird at the Friends Meditational Woods (Marion Co) on 10 December, providing Indiana's third December record.

Brown Thrasher:- It was a better than average season for this species with 26 birds reported (STYM=10.3).

WINTER FINCHES

Purple Finch:- Rather scarce, with only 63 birds reported (winter STYM=216).

White-winged Crossbill:- Bert Harrison described one at his South Bend home on 14 December, providing Indiana's first record in almost four years.

Common Redpoll:- Only (1). Mark Rhodes reported a singleton at a Schererville residence on 17 February (winter STYM=280).

Pine Siskin:- Like the other winter finches, siskins were quite scarce this season, with only (21) reported (winter STYM=591).

SPARROWS

Spotted Towhee:- Jim and Susan Hengeveld photographed a female near Patoka Lake, Crawford Co, on 20 December.

Lincoln's Sparrow:- Remarkably, Gary Dorman logged (4) near Patoka Lake (Dubois Co) on 27 December. This is an Indiana record winter count, replacing the three that Jeff Curtis found at the Universal Mine on 1 December 2001.

Golden-crowned Sparrow:- Indiana's second record was logged in Dubois Co on Christmas day when Sean Verkamp photographed an immature bird. A seed pile was put in place and the bird lingered through the season's end.

Baltimore Oriole:- On 13 January Loren Bannwart photographed an adult male at his eastern Porter County feeder, which provided the lakefront's first winter record. Interestingly, three days later this same bird appeared at feeders a half-mile away.

WARBLERS

Common Yellowthroat:- Logan Lakins found a male at the Restle Unit of Muscatatuck NWR on 10 December. This is Indiana's 26th record for the 12th month. On 15 December Jeremy Ross found a male at the Patoka River NWR--Hugh Boyd & Maxey Marsh Trail. Matt S. Kalwasinski found a female at Lake George in Hobart on 27 December, which provided the lakefront's fifth record for the 12th month.

Cape May Warbler:- A female frequented feeders at a private Vigo Co residence beginning in mid-December. Don Gorney photographically confirmed the report on 11 February.

Rose-breasted Grosbeak:- On 6 December Susan Ulrich had a first-cycle male at her Warren Co feeder. Two days later Joe Bailey photographed a first-cycle male at his feeder in Monroe Co. Kevin Turner photographed another young male in Jefferson Co on 9 February (winter STYM=0.65).



Dickcissel:-Jeremy Ross observed (1) at his home near Petersburg on 17 December. This is Indiana's 14th December record and the fourth for the southern tier of counties.

Cape May Warbler at a private residence in Vigo County on 11 February 2020. Photo by Don Gorney.

Conventions: Summer totals are frequently compared to average seasonal counts in the 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. Species marked by "" were observed outside the lakefront area.*

Calumet Marsh Bird Monitoring Report: Indiana 2019

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Introduction

The Calumet region, which makes up the southern shore of Lake Michigan, has historically been dominated by wetland habitats (including marshes, swales, and lakes), which were home to dense populations of breeding marsh birds and waterbirds. A lengthy history of industrialization and urbanization has highly altered hydrology of Calumet wetlands, resulting in threats to the long-term sustainability of Calumet wetlands, in particular marshes, because of their dependence on natural and dynamic water conditions. Invasive species such as common reed (*Phragmites australis*) and narrowleaf cattail (*Typha angustifolia*) further degrade marsh conditions as reflected by documented declines of the region's marsh-dependent bird species (Tozer 2016, Tozer and Mackenzie, 2019). The need for increased scientific information that forms the basis for wetland restoration and long-term management has been widely identified as critical in the conservation community. Marsh birds serve as a primary indicator of wetland quality and their charismatic nature and highly visible nature promote great public interest that serves to raise the profile of this large collaboration.



Hatchling Pied-billed Grebe during 2019 marshbird surveys. Photo by Shari McCollough.

The objectives of the Calumet Marsh Bird Survey are to provide important feedback to landowners on marsh bird populations in response to habitat restoration and to use marsh bird density to inform future management actions. As a result of the collaborative marsh bird monitoring work in the Calumet region, our goal is to increase suitable marsh habitat and therefore positively influence marsh bird population trends, especially for species of concern in the states of Illinois and Indiana. In addition to quantifying marsh bird populations at Calumet wetlands, we aim to collect a variety of habitat data including water level, percent cover of emergent vegetation and open water, and aerial imagery. The results of these data collection will inform a larger project investigating habitat associations of marsh birds in the state of Indiana.

Methods

Sites.

During 1 May-15 June 2019, we conducted marsh bird surveys at 25 survey routes at 19 wetland sites grouped within five larger "regions": Grand Calumet River, Indiana Dunes, Little Calumet River, Newton County and Wolf Lake. The Grand Calumet River region consisted of nine survey routes at Clark and Pine, DuPont Natural Area, Gibson Woods & Tolleston Ridge, Grand Calumet Tern Site/Seidner Dune and Swale (also referred to as Kennedy to Cline East/West), Ivanhoe Dune and Swale, Pine Station and Roxana Marsh. A new route was added to Pine Station in 2019 on western side of the unit, which is referred to as "Pine Station West." Indiana Dunes consisted of six routes at Cowles Bog, Miller Woods, Indiana Dunes State Park, and Great Marsh. Little Calumet River consisted of four routes at Chase St. Marsh, Grant St. Marsh, Highland Rookery, Martin Luther

King Drive Wetland. Newton County included five routes at Kankakee Sands and Willow Slough. Wolf Lake consisted of two routes at Strawberry Island and Wolf Lake Pool 6.

Bird Monitoring.

Marsh bird surveys were conducted by volunteer and contracted surveyors using the widely recognized “Standardized North American Marsh Bird Monitoring Protocol” (Conway 2011), developed by the U.S. Fish and Wildlife Survey as a continent-wide, standardized protocol for measuring breeding marsh bird densities.

The seven primary focal species for the study are marsh-dependent species that breed in the Calumet area and tend to be “secretive” and thus not well sampled by other survey methods (Conway, 2011; Table 1). Secondary species are not as secretive, but we included them as important indicators of hemimarsh habitat (Table 1). Some secondary species may or may not respond to future hemi-marsh restoration. Three of these species are colonial or semi-colonial nesters not suited for territory mapping, and dependent upon stochastic processes out of our control (e.g. the presence of suitable rookery trees), as much as they are marsh habitat management. Black Tern, Little Blue Heron, Snowy Egret, Yellow-crowned Night-Heron, and Yellow-headed Blackbird are breeding range peripheral though are included in the survey to monitor potential range shifts.

Table 1. Focal marsh bird species.

PRIMARY FOCAL SPECIES	SECONDARY FOCAL SPECIES
American Bittern (<i>Botaurus lentiginosus</i>)*	American Coot (<i>Fulica americana</i>)
Common Gallinule (<i>Gallinula chloropus</i>)	Black Tern (<i>Chlidonias niger</i>)
Least Bittern (<i>Ixobrychus exilis</i>)	Black-crowned Night-Heron (<i>Nycticorax nycticorax</i>)
King Rail (<i>Rallus elegans</i>)	Blue-winged Teal (<i>Anas discors</i>)
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	Little Blue Heron (<i>Egretta caerulea</i>)
Sora (<i>Porzana carolina</i>)	Marsh Wren (<i>Cistothorus palustris</i>)
Virginia Rail (<i>Rallus limicola</i>)	Snowy Egret (<i>Egretta thula</i>)
	Swamp Sparrow (<i>Melospiza georgiana</i>)
	Yellow-crowned Night-Heron (<i>Nyctanassa viroacea</i>)
	Yellow-headed Blackbird (<i>Xanthocephalus xanthocephalus</i>)

*American Bittern is not included in the audio broadcast.

Following the Standardized North American Marsh Bird Monitoring Protocol (Conway 2011), surveyors conducted three-point counts at each assigned point three times each season (first during May 1-14, May 15-31, and June 1-15). The number of points varied from two to thirteen depending on the size of the site and the amount of marsh habitat therein. Points were distributed at a spacing of one point per 200m grid cell, at an accessible location within the marsh. Each point was visited for 11 minutes in sequence starting 30 minutes prior to sunrise and finishing at the latest three hours post-sunrise. At each point, a pre-recorded playback including vocalizations of each of six of the seven primary focal species will be broadcast, with a five-minute period of silent listening before the recording. All visual and audio detections of primary and secondary species were recorded.

Water level monitoring.

Staff gauges were installed in 2018 at the following Indiana wetlands: Clark & Pine, DuPont Natural Area, Miller Woods, Ivanhoe, Pine Station. Additional gauges were installed following the 2018 marsh bird monitoring season at Highland Rookery, MLK Drive Wetland and Willow Slough. Volunteer bird monitors recorded water levels at staff gauges during regular bird monitoring visits during 1 May through 15 June. We determined the mean water level value between 1 May-15 June in 2018 and 2019.

Analysis.

We estimated occupancy and detection probability parameters for focal species with the unmarked package in R 3.4.3 (Fiske and Chandler 2011). We estimated species-specific occupancy using the likelihood-based method (MacKenzie et al. 2002). We developed separate models for each species based on stacking data from repeated survey visits within years; thus, our “effective sites” were derived from 2 or 3 survey visits at each survey point annually. We treated year as a site-specific covariate in all models.

Under this occupancy model parameterization, the area within 200 m of the survey point (i.e., only detections within 200 m were retained; < 3% of detections omitted) is considered closed to changes in occupancy across all surveys and within years (MacKenzie et al. 2002). Thus, if a given species is detected at a survey point (i.e. site), that point is assumed to be closed to changes in species occupancy for the duration of the breeding season. Therefore, our occupancy response variable can be considered “use” (sensu MacKenzie 2005, MacKenzie et al. 2006) because birds may be temporarily, but not permanently, absent from a given survey point at random times. In this context, our estimate of occupancy describes the proportion of survey points ever occupied, rather than the survey points that are permanently occupied (Kéry and Schaub 2012).

We were interested in accounting for two processes known to influence detection probability of marsh birds during surveys (Conway 2011, Tozer 2016, Wiest et al. 2016): time of day (24 hr) and time of year (ordinal date). Both continuous explanatory variables were standardized to have a mean of zero and standard deviation (SD) of one. We assessed linear and quadratic terms (based on standardized values) for both variables and used Akaike’s Information Criterion (AIC) to compare among models, which included a null (intercept-only) model. The model with the lowest AIC was retained as the top-ranked occupancy model for each focal species.

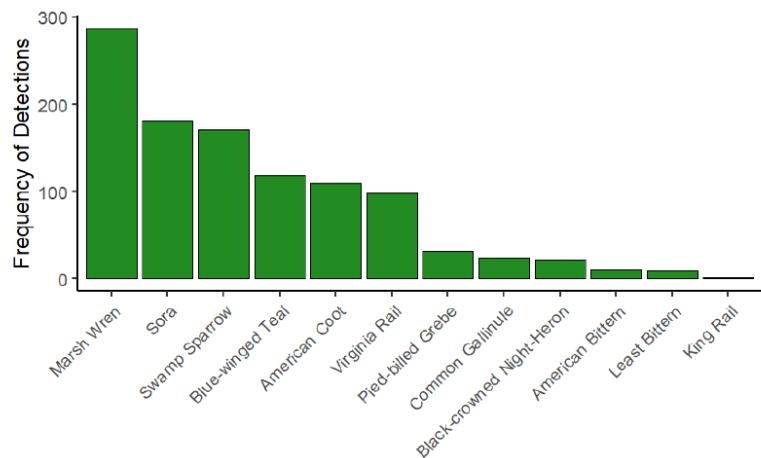


Figure 2. Combined frequency of detections per species at all Calumet Region wetland sites in 2019.

Results

Bird monitoring.

In 2019, ten bird monitors conducted 495 surveys at 170 points (Figure 1A-C) during three two-week sampling periods from 1 May through 15 June 2019. We recorded all seven primary focal species, and five of eleven secondary focal species (American Coot, Black-crowned Night-Heron, Blue-winged Teal, Marsh Wren and Swamp Sparrow; Figure 3). We recorded 1,066 detections of focal marsh bird species during surveys, with Marsh Wren (287 detections) and Sora (182) being the most frequently detected species (Figure 2).

In 2019, the wetland sites with the highest marsh bird species richness were Grant St. Marsh (10 species), Willow Slough (10), DuPont (8) and Kankakee Sands (8) and the sites with the lowest species richness were Kennedy to Cline (2), Miller Woods (2) and Roxana Marsh (1). Marsh Wren, Sora and Swamp Sparrow were detected at the most wetland sites (15/19). Virginia Rail was detected at 14/15 sites and King Rail was only detected at Kankakee Sands (Figure 3).

Marsh bird occupancy.

All but five marsh bird species were included in the species-specific occupancy analysis. King Rail, Little Blue Heron, Snowy Egret, Yellow-crowned Night-Heron, and Yellow-headed Blackbird were excluded due to low detections.

We averaged species-specific occupancy estimates at each site to estimate ‘average marsh bird occupancy’ annually (Figure 4). Overall, marsh bird occupancy was consistently highest at DuPont (along Grand Calumet). Average marsh bird occupancy has increased over time at Indiana Dunes State Park, Roxana Marsh, and Highland Rookery. Sites that have exhibited a decline in marsh bird occupancy include Chase Street (from 2017 – 2018/2019) and DuPont (from 2017 – 2018/2019). Otherwise, occupancy at nearly all sites has remained largely stable over the course of the three-year study period.

Water level monitoring.

Volunteer water level monitoring was not consistent across all sites during 2018-19. However, we had enough samples to compare water levels between years at the following sites: Clark & Pine, DuPont, Ivanhoe and Tolleston Ridge (Figure 5). The initial water level depended on the placement of the gauge. In 2019, water levels rose in comparison to 2018 by approximately 6 inches at Clark & Pine, 13.6 inches at DuPont, 9.7 inches at Ivanhoe and 20 inches at Tolleston Ridge.

Wetland Site	Marsh Wren	Sora	Swamp Sparrow	Virginia Rail	Pied-billed Grebe	Blue-winged Teal	American Bittern	American Coot	Black-crowned Night-Heron	Common Gallinule	Least Bittern	King Rail	Species Richness
Grant St													10
Willow Slough													10
DuPont*													8
Kankakee Sands													8
MLK Drive													7
Cowles Bog													6
Indiana Dunes State Park*													6
Great Marsh													6
Strawberry Island													6
Wolf Lake 6													6
Clark & Pine*													5
Highland Rookery													5
Pine Station*													5
Chase St													4
Ivanhoe*													3
Gibson & Tolleston*													3
Kennedy to Cline*													2
Miller Woods													2
Roxana Marsh													1

Figure 3. Marsh bird species detected during 2019 marsh bird surveys and marsh bird species richness. Bird icons indicate that the species was detected. *Indicate Indiana Dedicated Nature Preserves.

Conclusions

Marsh bird occupancy has been relatively stable at marsh bird sites over the past three years, but a trend of decreasing occupancy at some wetlands may be related to high water levels in 2018 and 2019. DuPont has consistently had the highest marsh bird occupancy of Indiana wetlands in the Calumet region, and this is likely a factor of restoration efforts at this site going back over 25 years.

A future analysis will investigate how marsh bird species are associated with changes in water level as well as habitat variables, such as interspersed emergent vegetation and open water and percent cover of invasive species. We recommend continued monitoring at Indiana Dedicated Nature Preserves in order to inform ongoing restoration efforts in this region and to better understand population trends for multiple species of conservation concern, as well as potential range shifts due to climate change. Audubon will continue to lead marsh bird monitoring in 2020 and will be investigating ways to sustain monitoring into the future.

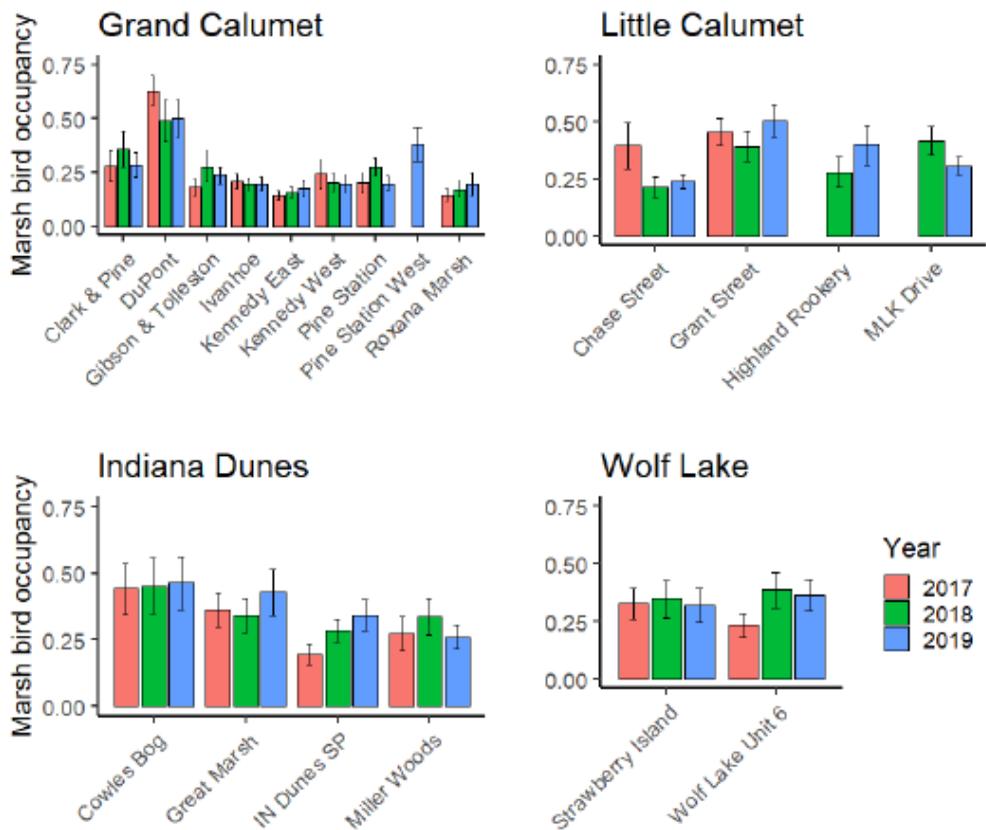


Figure 4. Marsh bird occupancy at wetland sites, grouped by region, for 2017-2019 marsh bird surveys. Not shown here is Newton County, as only included regions with more than one year of data.

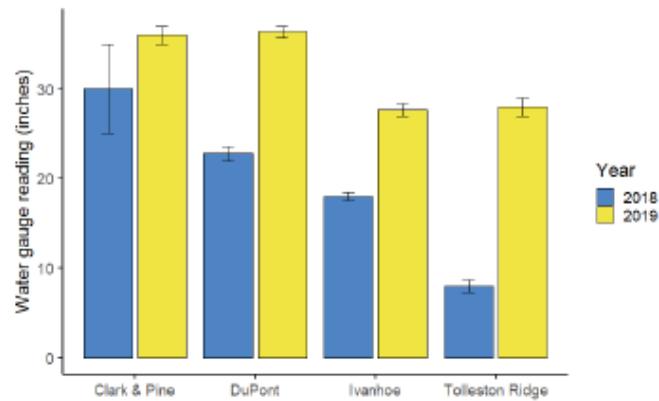


Figure 5. Mean water level recorded at staff gauges at Indiana Calumet marshes during 1 May-15 June 2018 and 2019. We only included staff gauges that had more than one data point per year and two years of data in this visualization.

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2019 Birder's Lists

Brad Bumgardner, Chesterton IN

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List keeping appeals to birders for many reasons—from the spirit of competition, to aiding in scientific documentation, or simply for personal records or pleasure. And because the reasons for listing are so diverse, each of us tends to adapt our lists to suit our own interests. As birders, we can sort and then reclassify a single data set to keep track of various information. While many keep thorough records using the entire spectrum of categories, others may only have interest in one or two areas. And for some birders, ticking a familiar species in a new region reignites an interest in seeing common birds. So, whether interested in specific regions on the map or establishing goal-oriented lists—such as green birding or species photographed—listing provides a little something for everyone.

The following is a platform in which fellow Indiana birders can publish their lists and share stories from their 2019 birding expeditions, whether to distant corners of the world or right in our own backyards. Remember, all are welcome to participate next year—no list is insignificant. And as Richard Garrett reminds us, “Birding is fun!” So, go make it another great year.

World Lists

World Life Lists



Just like it sounds, the following totals include birds logged anywhere on the globe. It's all fair game. While the number of countable bird species in the world depends on the source, perhaps the most widely used list is the Clements Checklist, which recognizes 10,721 species as of the last update from August 2019.

5985	David Ward
4581	Larry Peavler
3813	Susan Ulrich
3811	Ted (Dolph) Ulrich
3681	Bill Buskirk
2107	Marjorie Carmony
2800	John Kendall
2082	Charles Mills

1842	Rick Read
1772	Debbie Read
1352	Elvin Wilmot
1235	Cloyce Hedge
1104	Steve Bell
986	Brad Bumgardner
890	Sara Bettencourt
889	Roger Hedge

820	Kirk Roth
776	Edwin Powers
740	William Sharkey
678	Florence Sanchez
525	Austin Broadwater
419	Kimberly Ehn
379	Margaret Bauer

John Kendall reported birding in Ecuador, Peru, South Africa among world travel highlights. **Chuck Mills** reported two visits to Europe in 2019. **Margaret Bauer** had the opportunity to bird in China in 2019, identifying 46 species, including 43 lifers. **Brad Bumgardner** added Japan and Thailand to his total list of countries birded with visits to each in 2019.

2019 World Year Lists

1355	John Kendall
743	Brad Bumgardner
685	William Sharkey

508	Charles Mills
297	Austin Broadwater
248	Margaret Bauer

239	Kimberly Ehn
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Only 7 birders submitted world year lists for 2019.

North American Lists

North America Life Lists

According to the American Birding Association, "The North America Region includes ... the Aleutian Islands ... Greenland ... islands within 200 nautical miles of the Pacific and Atlantic coasts, the Bahamas, all of the cays and islands lying between Nicaragua and Jamaica, and all of the Greater and Lesser Antilles ... including Grenada and Barbados ... all of Panama and ... the Caribbean Sea halfway to South America..."

1335	John Kendall
1285	Charles Mills
1037	John Cassady
833	Brad Bumgardner
822	Roger Hedge
813	Rick Read

745	Debbie Read
740	William Sharkey
707	Edwin Powers
662	Kirk Roth
544	Bob Decker
482	Austin Broadwater

385	Kimberly Ehn
382	Leland Shaum
381	Terry Ballenger
243	Margaret Bauer
241	Brett Nuff

Both **John Kendall** and **Charles Mills** continue to build their NA list. **William Sharkey** attributes a "fabulous IAS Costa Rica Trip" for boosting his NA Total.

2019 North America Year Lists

685	William Sharkey
590	Brad Bumgardner
498	John Kendall
431	Charles Mills

361	Bob Decker
297	Austin Broadwater
239	Kimberly Ehn
205	Margaret Bauer

198	Edwin Powers
192	Brett Nuff

William Sharkey added an IN Big year to the IAS Costa Rica trip to take the top spot for NA year list.

ABA Area Lists

ABA Area Life Lists

According to the American Birding Association, "The ABA Area ... includes the 49 continental United States, Hawaii, Canada, the French islands of St. Pierre and Miquelon, and adjacent waters to a distance of 200 miles from land..." The current list includes 1116 maximum bird species.

750	Edwin Powers
745	Charles Mills

681	Roger Hedge
677	Florence Sanchez

459	Stephen Elliot
458	Austin Broadwater

729	John Cassady
728	Beggy Harger-Allen
715	Cynthia Powers
702	Kirk Roth
693	John Kendall

658	Sara Bettencourt
593	Steve Bell
572	David Crouch
544	Bob Decker
473	Rick Read

450	William Sharkey
438	Brad Bumgardner
415	Debbie Read
385	Matt Kalwasinski
243	Margaret Bauer

Chuck Mills reported birding twice in Texas (Big Bend and the lower Rio Grande valley), and 3 times in Southeast Arizona. His three ABA lifers were Rufous-capped Warbler, White-throated Thrush, and Yellow-green Vireo. **Kirk Roth** achieved ABA #700 with the Little Stint in August (IL). **Roger Hedge** added 5 ABA lifers in 2019. **Florence Sanchez** reported her best bird by far, a Red-flanked Bluetail that showed up in Los Angeles and added 7 more ABA birds on the IAS Outer Banks Pelagic Tour in 2019. **Sara Bettencourt** got a California Gnatcatcher in 2019, making it her 600th ABA Bird.

ABA Area 2019 Year Lists

431	Charles Mills
385	William Sharkey
377	John Kendall
361	Bob Decker

314	Jonathon Yoerger
313	Whitney Yoerger
297	Austin Broadwater
287	Matt Kalwasinski

239	Kimberly Ehn
205	Margaret Bauer
198	Edwin Powers

Bob Decker traveled across the country in 2019 to Alaska. **Kim Ehn** was fortunate to travel with her 93 year old mom to the Redwoods in California, Maui in Hawaii and a cruise to western Mexico. Those birding experiences mostly included chance encounters and incidental sightings. She joined a half day group birding tour on Maui that enabled her to see some lifers and enjoy varied habitats. Her most memorable life bird of 2019 was the Greater Prairie-Chicken that she saw during an IAS-sponsored trip to Illinois.

Indiana Lists

Indiana Life Lists

While some birds are regular as clockwork and we can almost mark the calendar by certain species, part of the enjoyment for birders is never knowing which birds might show up unannounced. In addition to notable sightings—such as White-tailed Kite, Black Rail, and the discovery of nesting Black-bellied Whistling Ducks in Posey county—Indiana added two new state record birds, the Great Kiskadee in Noble county, as well as the pending 2017 record of Lazuli Bunting.

378	John Cassady
369	John Kendall
360	Roger Hedge
357	Charles Mills
350	Edwin Powers
348	Kirk Roth
346	Brad Bumgardner
338	Marty Jones

332	Bob Decker
330	Leland Shaum
323	Matt Kalwasinski
313	William Sharkey
312	Cynthia Powers
310	Beggy Harger-Allen
310	Steve Bell
306	Austin Broadwater

303	David Crouch
301	Kimberly Ehn
277	Stephen Elliot
252	Florence Sanchez
222	Margaret Bauer
214	Rick Read
204	Brett Nuff
167	Debbie Read

Brad Bumgardner achieved 300 species in Porter County in 2019. **William Sharkey's** big year helped boost his life total for Indiana.

2019 Indiana Year Lists

While none of the submissions this year officially included reports about Big Year totals, the following represents local birder activity in the state during the 2018 calendar year.

305	William Sharkey
301	Richard Garrett
301	Lisa Vanderbilt
300	Randy Vanderbilt
268	John Kendall
267	Leland Shaum
265	John Cassady

257	Brad Bumgardner
251	Charles Mills
247	Whitney Yoerger
244	Jonathon Yoerger
242	Matt Kalwasinski
238	Austin Broadwater
230	Kirk Roth

218	Bob Decker
218	Kimberly Ehn
205	Stephen Elliot
183	Edwin Powers
175	Margaret Bauer
170	Brett Nuff
159	Cynthia Powers

Whitney Yoerger accomplished eBird’s 2019 Checklist-a-day Challenge, submitting 800 complete checklists in 365 consecutive days and actively birding an average of 39 hours per month. She also increased her five-mile-radius (5MR) list to 198 (+17) and her green life list to 150 (+10). Two highlights include finding a Red Knot within her 5MR at Scott Starling Nature Sanctuary, a second record for Eagle Creek Park, and finding a Connecticut Warbler at Elm Street Green, a small community park in Zionsville. It was deeply satisfying to find her own birds in her favorite local patches through a dedicated, daily birding practice.

Matt Kalwasinski wrote, “I never thought I would add an owl to my yard list, but after coming over from work one evening, I saw something fairly large fly from the ground up to a tree. I grabbed a flashlight to scan the trees, and I was pleasantly surprised to find a Great Horned Owl looking at me; yard bird #104.”

Margaret Bauer made this comment, “Back home in Indianapolis, my most interesting sighting was of a Yellow-crowned Night-heron that briefly visited my pond.”

The Indiana 300 Club

A Big Year comes in all shapes and sizes, and some birders seek entrance into what locals refer to as “The 300 Club.” As of 2019, the following 21 birders have taken on this challenge to log at least 300 Indiana bird species within a single calendar year. Birders considering this challenge will find themselves frequenting the lakeshore, trekking around major bird hotspots such as Goose Pond, and zigzagging around the state, as missing any rarity could make all the difference.

Matt Beatty
Brad Bumgardner
John Cassady
Kevin Cornell
Bob Decker
Richard Garrett
Don Gorney

Brendan Grube
Ryan Hamilton
Amy Hodson
Ed Hopkins
John Kendall
Jeff McCoy
Larry Peavler

Aidan Rominger
Kirk Roth
Ryan Sanderson
William Sharkey
Tyler Stewart
Kristin Stratton
Lisa Vanderbilt

Property Lists

Property Life Lists

Perhaps our narrowest focus is the property list, where birders log species observed from around their own homes or other maintained properties. These vary greatly in size and habitat, from apartment balconies or manicured suburban lawns, to farmland or crossover habitats that form rich edges. We should never underestimate the value of our own backyards. In fact, private homes occasionally play host to some of the rarest species—Golden-crowned Sparrow, anyone?

Clint Murray	220	Lye Creek Prairie Burn, 80 acres
Leland Shaum	193	Our property is 24 acres of woods, pasture, and hayfield, with a pond, and is bordered by woods, farmland, a retention pond, and a four lane highway. We have been living here since 1992.
John Kendall	193	Big Chapman Lake Residence
Jeremy Ross	174	Very rural 6 acres adjacent to woods and fields and in close proximity to coal mine reclaimed ground of pits and brushy plantings, a few miles north of the Patoka River bottoms. The property itself consists of prairie grassland/forb planting, young trees and shrubs, a small pond, and native plants spread throughout the entire property.
Peter Scott	167	50 acres in Nevins Township, northeast Vigo County
Marietta Smith	160	116 acre farm with 80 acres in crops. The rest is wooded with a 2 acre marsh.
Marjorie Carmony	159	Rural farm in Rush county
Amy Kearns	141	Young cedar dominated second growth woods
Bob Decker	136	12 acres- 9 acres pioneer field with grasses, wildflowers, cedars, 3 acres secondary growth forest
Charles Mills	136	A 100 by 200 foot wooded suburban lot backed onto 40 acres of forest.
David Ayer	134	60 acres mostly agricultural fields with a ditch line and a few trees.
Steve Bell	133	Suburban garden, 2.5 acres, backing onto mature forest
Tom Hougham	132	2 square mile block of land with a 450 acre lake. It has a couple of CILTI preserves on its periphery
Ed Powers	130	One acre, wooded, rural
Vicky Whitaker	126	17 1/2 acres mixed woods, fields, lots of open areas near house, with lots of shrubs and flower beds.
David Rupp	123	A half-acre lot in Bloomington with a creek and wooded bluff on the back border.
Ryan Slack	119	7 acres of forest with 1 acre pond
Terry Ballenger	114	Residential with shrub/tree-lined fence row
Kirk Roth	110	Half acre suburban yard in Marion County
Matt Kalwasinski	104	My property is a suburban backyard - 75 ft wide x 300 feet long. We have multiple evergreen bushes & trees along with deciduous trees and plants. We utilize water features year round. We maintain bird feeders throughout the year.
Cloyce Hedge	91	Urban 60 X 120
Ed Hopkins	87	Yard
Bob Kissel	80	Older neighborhood with stands of mature pine & hardwood trees and within 2/3 mile of Griffey Lake.
Margaret Bauer	80	Roughly 0.128 acre suburban property in Indianapolis on a retention pond
Benjamin Cvengros	78	Three acres of land in a rural area surrounded by deciduous forest. The forest is many acres and is relatively dense, containing moderately-sized ravines. We do not own any forest, but our property line ends where one begins. I do most of my birding from the edge of my yard next to the woods, especially during migration. No ponds or water source. We also live next to an apple orchard.
Rick Folkening	64	Subdivision with back yard next to farm
Kim Ehn	56	In-town backyard with mature Spruce trees, native plants and man-made running water creek. Nearby mature deciduous trees, park, and 1/2 mile from Little Calumet River. Bird Feeders in back and front yard.
Lucas Wilson	56	An open yard with many mature trees, a birdfeeder, and bushes close to the house. There are nearby fragmented woods.

