2019 Summary Report of the Avian Breeding Community at Amboy Marsh Nature Preserve and Gremel Wildlife Sanctuary

Amboy Marsh Nature Preserve

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November 2019

INTRODUCTION

Many bird species are declining and while there are many factors as to why this is happening, one that sticks out is habitat loss. This is not only due to development as some may think, but also due to non-native plant species that have come in and taken over once native habitats. These species often grow fast and inhibit the growth of native plants. Managing and restoring native habitat has been shown to positively impact bird communities over time (Ortega-Álvarez and Lindig-Cisneros 2012).

In fact, restoring habitat that birds depend on is considered not only useful, but also necessary for effective bird recovery plans (Bird Restoration Monitoring 2017). Bird diversity can also be a good indicator of good environmental health. Habitat restoration efforts may cause bird populations to change as the habitat changes, and understanding the relationships between the cause and effect of changes that drive variation in bird populations is important (Bird Restoration Monitoring 2017). Also, understanding bird population trends on a larger scale, especially in migratory species, is beneficial to interpreting if restoration efforts could be playing a critical role in species survival, such as providing critical stopover habitat. Because habitat restoration can also be time consuming and costly, understanding how different restoration efforts affect animal communities over time is very important. Birds are studied throughout the world, can be studied relatively easy and are good indicators of environmental health, which make them an ideal group to focus on for learning about effective ways to restore habitat.

This study looks at two different study sites, Amboy Marsh Nature Preserve and Gremel Wildlife Sanctuary, both located in Amboy, IL. For the remainder of this report these sites will be referred to as Amboy and Gremel respectively. Amboy is a 302 acre complex that was purchased by the Illinois Audubon Society in 2012. It is interspersed with many wetlands, oak savannas, sedge meadows, sand prairies and ponds. Gremel is a 395 acre complex that was formerly the Green Wing Environmental Laboratory, but was purchased by the Illinois Audubon Society in 2016 from Augustana College. Sites are within one mile of each other.

METHODS

Researchers may use different methods to survey bird populations. For the purpose of this long-term study point counts will be used. A point count is when a single observer tallies all the birds detected by both sight and sound at a stationary position for a standardized period of time. This method is widely used to not only inventory bird species, but to also monitor bird population trends over time (Ralph et al. 1995). This study will allow us to be able to determine how habitat restoration methods affect bird populations over time. Information for the protocol design for this study was gathered from both Ralph et al. 1995 and the Illinois Natural History Survey Critical Trends Assessment Protocol, which also compares land use change over time with bird species trends.

Each point count will last 10 minutes. From a stationary location at the census point, the observer records all the birds detected by sight or sound during the 10-minute period. A watch is used to keep track of the time, so that data can be broken up by time to compare with other studies, or to compares species probability of detection based on survey time. The data sheet (Appendix A) also provides space to record time.

When conducting the point counts, absolutely no coaxing is allowed. The observer remains silent.

The observer records the estimated distance to each bird, being particularly careful to note which birds are detected within or beyond 50 meters of the census point.

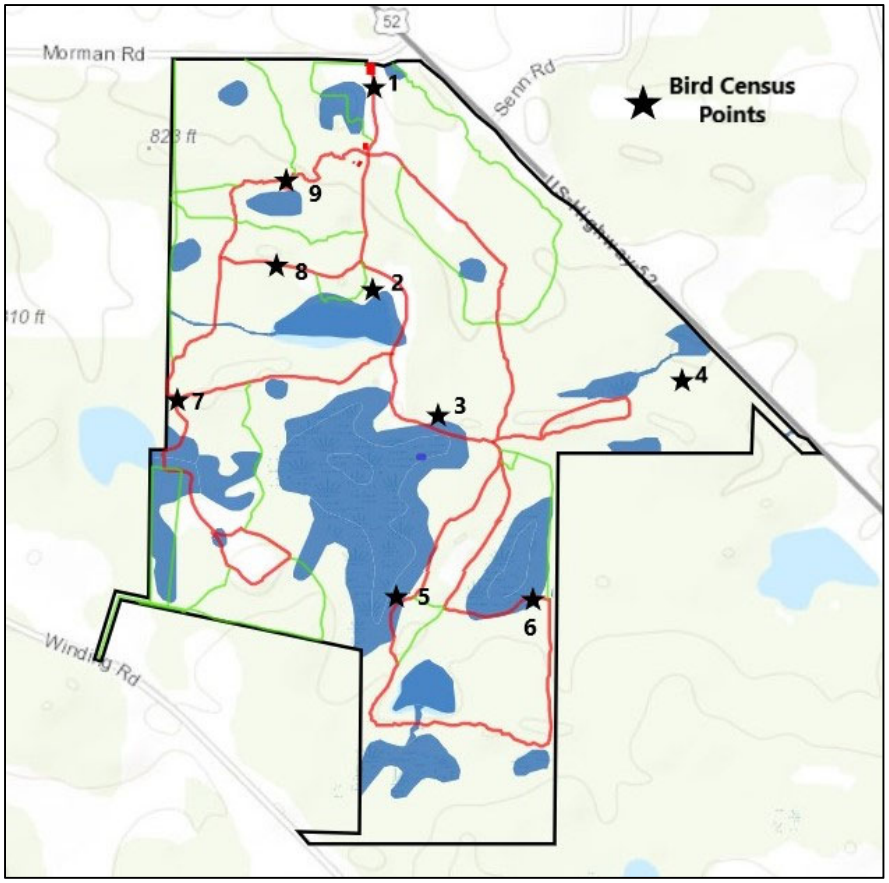
The data sheet also provides space to record comments. For instance, if you think individuals are young birds, or if the bird is just flying over (FO), like a raptor, you can make note.

For same species occurring in large flocks, or near each other, number of individuals are recorded under the species column. Also, if unsure of an ALPHA code (Abbreviated 4 letter code to denote specific species, Appendix B) or if it can be easily confused with another ALPHA code, the full species name is recorded in the species column.

Finally, although the purpose of the point counts is not to provide an inventory of birds at a given site, interesting birds are often detected before or after a point count is conducted, or while walking to the points. Even though these birds are not recorded during the point counts, they often provide important information about a site. Therefore, the data sheet provides space to record these additional bird sightings.

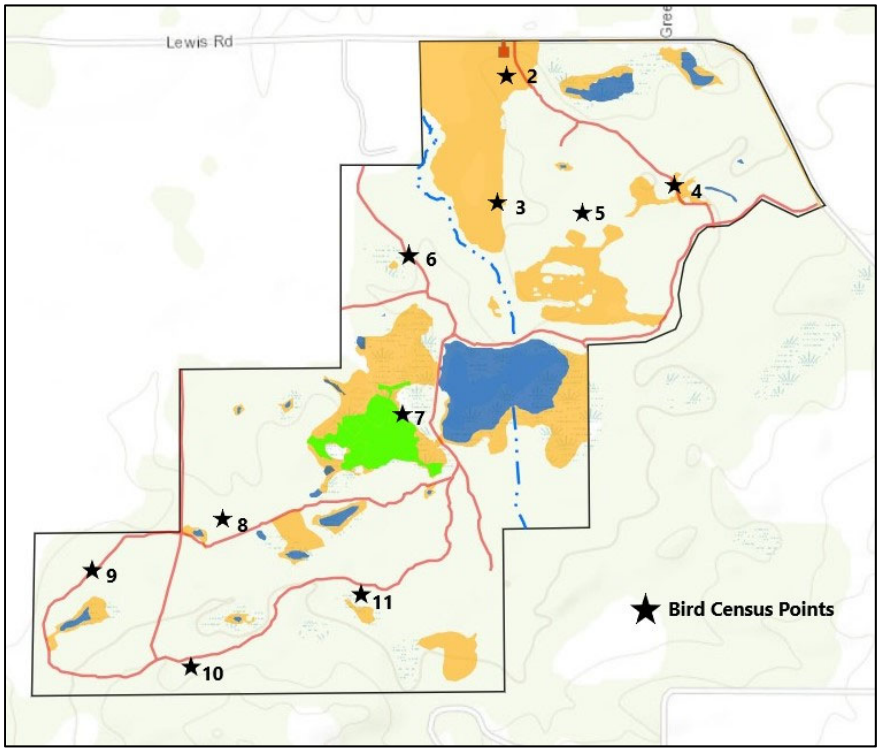
For this study there were 9 point counts established in Amboy (Figure 1) and 10 point counts (small amount of deviation) that were previously established in 2017 at Gremel were surveyed (Figure 2). To try and be all inclusive, points were spread among different habitat types (wetlands, forests, and grasslands). That being said, many of the points had overlapping habitats, so greater diversity might be expected at these points.

Because species differ not only among breeding times but also in behavior, three different census periods were established to try and cover the full breeding season. Census periods were at the end of May, June, and July, respectively. Points were surveyed in the same order each time so that specific point bird data can be compared in the future.



https://illinoisaudubon.org/location/amboy-marsh-nature-preserve/

Figure 1: Amboy Marsh Nature Preserve bird point count locations.



https://illinoisaudubon.org/location/gremel-wildlife-sanctuary/

Figure 2: Gremel Wildlife Sanctuary bird point count locations.

RESULTS

There were 65 species detected at Amboy, 4 of which were heard outside of census times, and 73 at the Gremel, 5 of which were heard outside of the census times (Figure 3).

Relative Abundance

The top ten species of the 65 species detected at Amboy represented half (50%) of the relative abundance (890 individuals) and the top 20 species detected represented nearly three quarters of the relative abundance (73%) (Figure 4). The top ten species of the 65 species detected at Gremel represented almost half (44%) of the relative abundance (855 individuals) and the top 20 species detected represented nearly three quarters of the relative abundance (72%) (Figure 5).

Frequency of occurrence during breeding season

There were three different times both sites were surveyed in 2019. The frequency of species detection by survey period can be seen in Figure 6 for Amboy and Figure 7 for Gremel.

Also assessed were the number of species detected during each survey window (May, June, and Juley). At Amboy the number of species detected for each window were 45 in May, 45 in June, and 34 in July. At Gremel the number of species detected for each window were 53 in May, 49 in June, and 47 in July.

Distribution

Most species detected at nearly all the points at both sites are what we consider to be relatively common species (Figure 8 and 9), contrary to some specialist species (require specific habitat type) that were not found at many points. Of the 61 species detected at Amboy, 27 were detected at half or more of the point count locations (Figure 8). Of the 69 species detected at Gremel, 22 were detected at half or more of the point count locations (Figure 9).

DISCUSSION

With the staggering report recently released showing that almost 1/3 (nearly 3 billion) of all breeding birds in North America have been lost since 1970, protecting ecosystems on which they depend is critical (Rosenberg et al. 2019). Because of the diversity of habitat types in both Amboy and Gremel, breeding birds are offered resources that would otherwise be more challenging to find in our fragmented landscape of Illinois. It is also possible these sites could be critical stopover sites for migrating birds.

Two species of interest in this study are Red-headed Woodpecker and Ovenbird. Both species have been declining across North America. Red-headed Woodpeckers were seen throughout

Amboy, however only one individual was found at Gremel. At Amboy the birds were observed in the open oak grasslands, and many were also observed on the groups of dead oaks. Groups of large dead trees (snags) have been found to be very important to the breeding success of Red-headed Woodpeckers, so this could be one of the main reasons Red-headed Woodpeckers are doing so well at Amboy (Dempsey 2013). Also, something to note is that groups of dead trees like this are very important to Myotis bat species, which have drastically declined across North America due to White-Nose Syndrome. They will use cavities and the bark if present.

Ovenbirds were detected at both Amboy (n=8) and Gremel (n=33). At Amboy they were detected during both the May (n=5) and June (n=3) survey periods. While not found in high abundance, it is important to note that studies have found that Ovenbird abundance can vary based on habitat structure (Smith and Shugart 1987). At Gremel they were also found in both the May (n=21) and June (n=12) monitoring periods. While there were more in May, suggesting some migrating individuals, the 12 detected at 7 of the survey points in June indicate probable breeding birds. Further surveys will be needed to assess future trends of both these species.

Not only specific bird species but groups of unique birds have also seen declines such as nightjars and secretive marsh birds. During the 2020 surveys, monitoring for these two groups of birds by surveying earlier in the day as well as using playback (recorded species call broadcasted to target species for a response) is suggested.

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https://illinoisaudubon.org/location/gremel-wildlife-sanctuary/

https://www.inhs.illinois.edu/files/4514/5555/5142/CTAP_monitoring_protocols_with_addendum.pdf

Amboy		Gremel	
Alpha Code	**Species**	**Alpha Code**	**Species**
ALFL	Alder Flycatcher	ACFL	Acadian Flycatcher
AMCR	American Crow	ALFL	Alder Flycatcher
AMGO	American Goldfinch	AMCR	American Crow
AMRO	American Robin	AMGO	American Goldfinch
BAOR	Baltimore Oriole	AMRO	American Robin
BCCH	Black-capped Chickadee	AMWO	American Woodcock
BDOW	Barred Owl	BAOR	Baltimore Oriole
BEKI	Belted Kingfisher	BARS	Barn Swallow
BGGN	Blue-gray Gnatcatcher	BBCU	Black-billed Cuckoo
BHCO	Brown-headed Cowbird	BCCH	Black-capped Chickadee
BLJA	Blue Jay	BDOW	Barred Owl
BLPW	Blackpoll Warbler	BEKI	Belted Kingfisher
CAGO	Canada Goose	BGGN	Blue-gray Gnatcatcher
CARW	Carolina Wren	BHCO	Brown-headed Cowbird
CEDW	Cedar Waxwing	BLJA	Blue Jay
CHSP	Chipping Sparrow	BRTH	Brown Thrasher
CHSW	Chimney Swift	CAGO	Canada Goose
COGR	Common Grackle	CARW	Carolina Wren
CONI	Common Nighthawk	CEDW	Cedar Waxwing
COYE	Common Yellowthroat	CHSP	Chipping Sparrow
DICK	Dickcissel	COGR	Common Grackle
DOWO	Downy Woodpecker	COHA	Cooper's Hawk
EABL	Eastern Bluebird	COYE	Common Yellowthroat
EAKI	Eastern Kingbird	DICK	Dickcissel
EATO	Eastern Towhee	DOWO	Downy Woodpecker
EAWP	Eastern Wood-Pewee	EABL	Eastern Bluebird
FISP	Field Sparrow	EAKI	Eastern Kingbird
GBHE	Great Blue Heron	EATO	Eastern Towhee
GCFL	Great Crested Flycatcher	EAWP	Eastern Wood-Pewee
GRCA	Gray Catbird	FISP	Field Sparrow
GREG	Great Egret	GBHE	Great Blue Heron
HAWO	Hairy Woodpecker	GCFL	Great Crested Flycatcher
HOME	Hooded Merganser	GHOW	Great Horned Owl
HOWR	House Wren	GRCA	Gray Catbird
INBU	Indigo Bunting	GRHE	Green Heron
KILL	Killdeer	HAWO	Hairy Woodpecker
MODO	Mourning Dove	HOWR	House Wren
NOCA	Northern Cardinal	INBU	Indigo Bunting
NRWS	Northern Rough-winged Swallow	KEWA	Kentucky Warbler
ORIOR	Orchard Oriole	KILL	Killdeer
OVEN	Ovenbird	LEFL	Least Flycatcher
PBGR	Pied-billed Grebe	MODO	Mourning Dove
PIWO	Pileated Woodpecker	NOCA	Northern Cardinal

Amboy		Gremel	
Alpha Code	**Species**	**Alpha Code**	**Species**
RBGR	Rose-breasted Grosbeak	OVEN	Ovenbird
RBWO	Red-bellied Woodpecker	PIWA	Pine Warbler
REVI	Red-eyed Vireo	PIWO	Pileated Woodpecker
RHWO	Red-headed Woodpecker	RBGR	Rose-breasted Grosbeak
RTHU	Ruby-throated Hummingbird	RBWO	Red-bellied Woodpecker
RWBL	Red-winged Blackbird	REVI	Red-eyed Vireo
SACR	Sandhill Crane	RHWO	Red-headed Woodpecker
SCTA	Scarlett Tanager	RNPH	Ring-necked Pheasant
SOSP	Song Sparrow	RTHU	Ruby-throated Hummingbird
TEWA	Tennessee Warbler	RWBL	Red-winged Blackbird
TRES	Tree Swallow	SACR	Sandhill Crane
TUVU	Turkey Vulture	SCTA	Scarlett Tanager
VEER	Veery	SEDW	Sedge Wren
WAVI	Warbling Vireo	SOSP	Song Sparrow
WBNU	White-breasted Nuthatch	SWSP	Swamp Sparrow
WODU	Wood Duck	TRES	Tree Swallow
WOTH	Wood Thrush	TUTI	Tufted Titmouse
YBCH	Yellow-breasted Chat	VEER	Veery
YBCU	Yellow-billed Cuckoo	VESP	Vesper Sparrow
YSFL	Yellow-shafted Flicker	WAVI	Warbling Vireo
YTVI	Yellow-throated Vireo	WBNU	White-breasted Nuthatch
YWAR	Yellow Warbler	WEVI	White-eyed Vireo
		WIFL	Willow Flycatcher
		WITU	Wild Turkey
		WODU	Wood Duck
		WOTH	Wood Thrush
		YBCU	Yellow-billed Cuckoo
		YSFL	Yellow-shafted Flicker
		YTVI	Yellow-throated Vireo
		YWAR	Yellow Warbler

Figure 3: Species detected during point counts and outside of 10-minute point counts (gray highlight) at Amboy and Gremel.

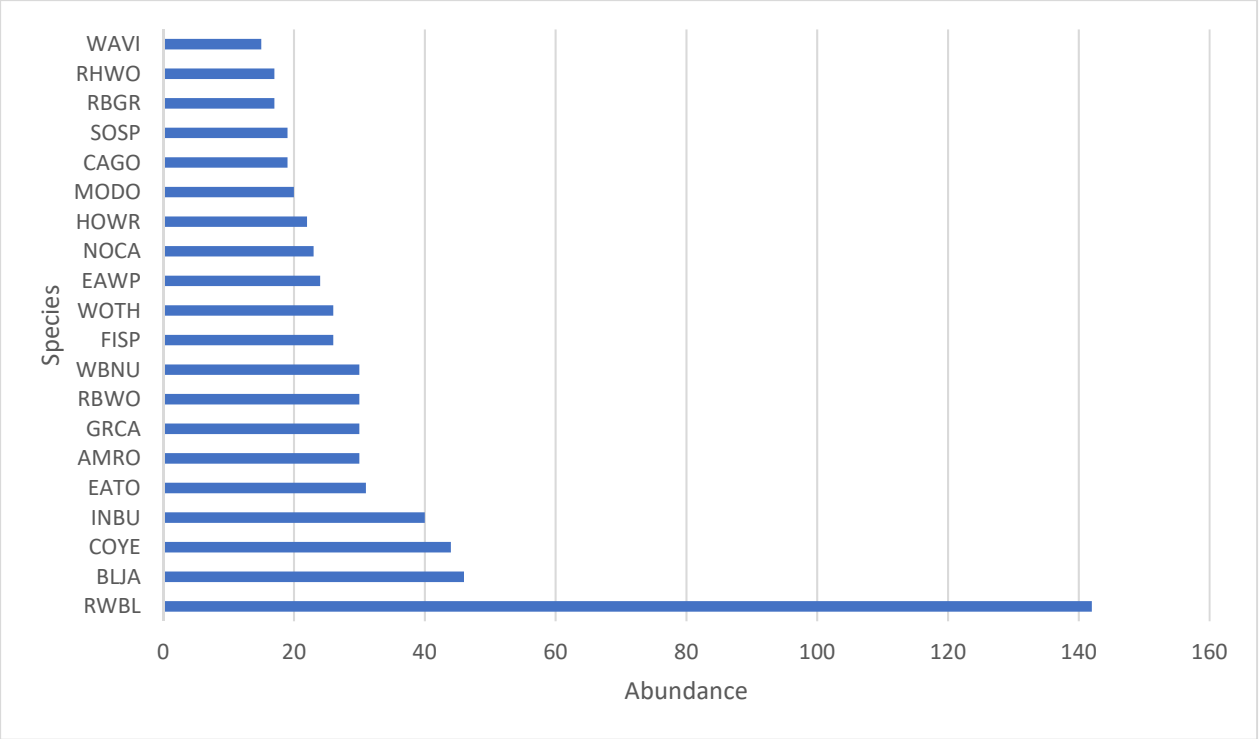

Figure 4: Bird species with the highest relative abundance at Amboy in 2019.

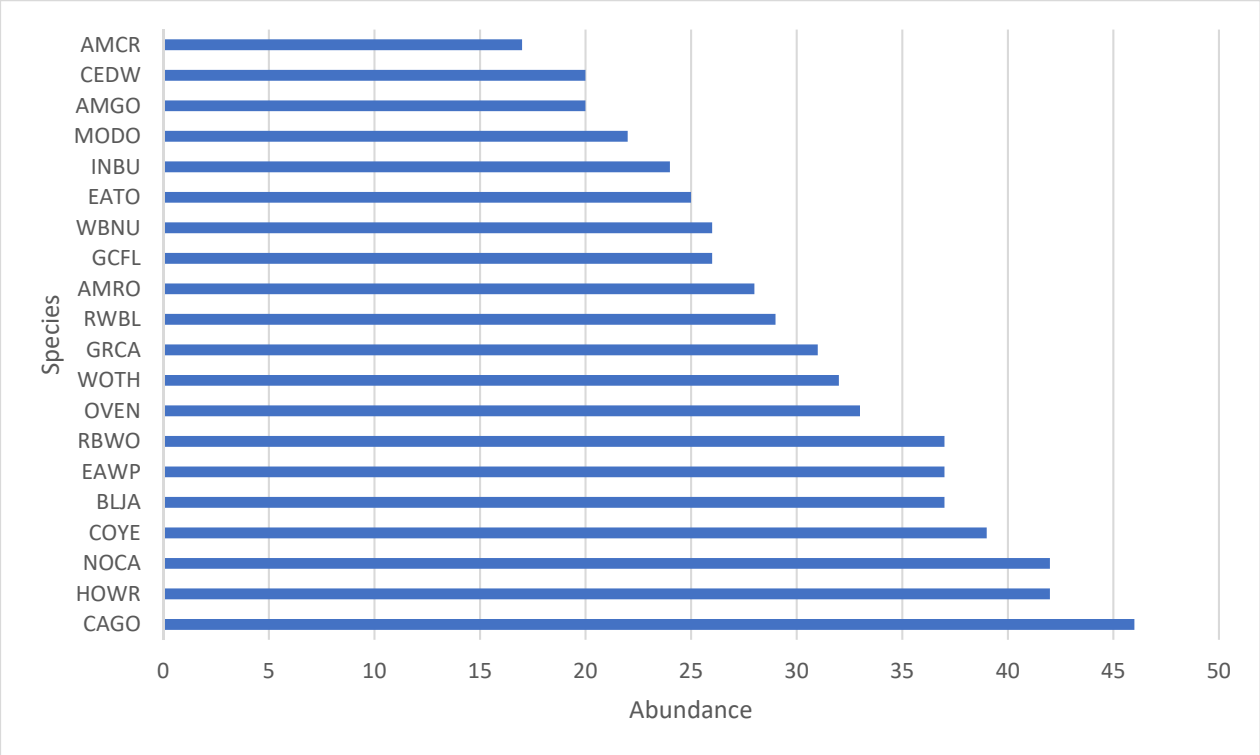

Figure 5: Bird species with the highest relative abundance at Gremel in 2019.

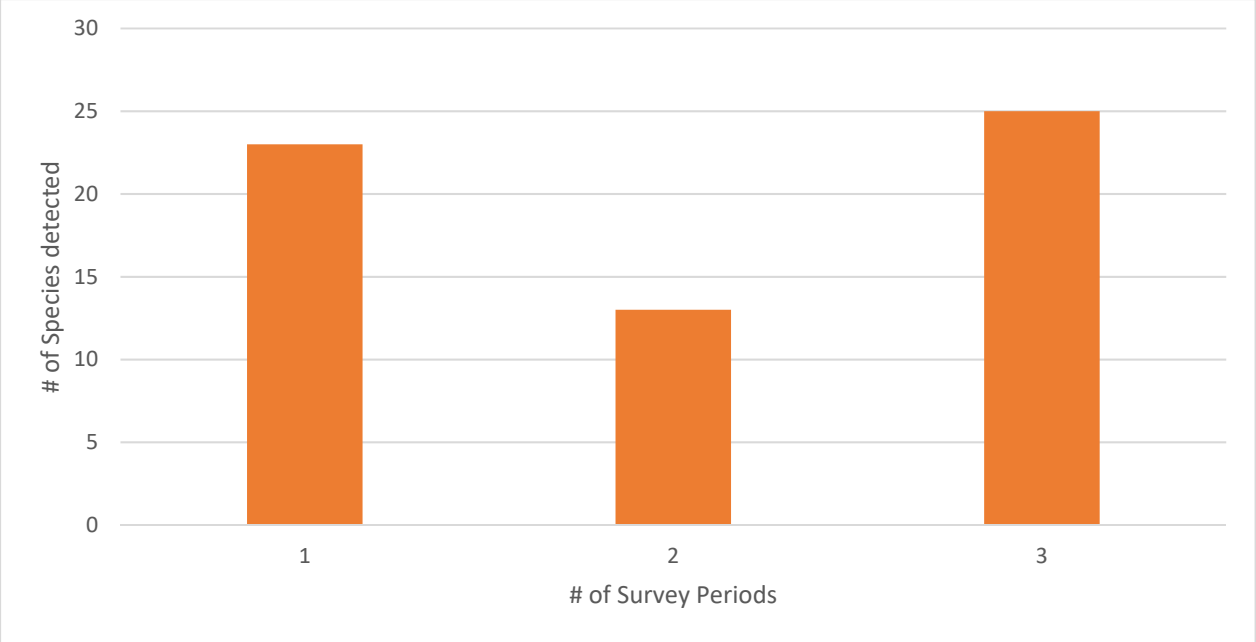

Figure 6: Frequency of species detection during bird surveys at Amboy in 2019.

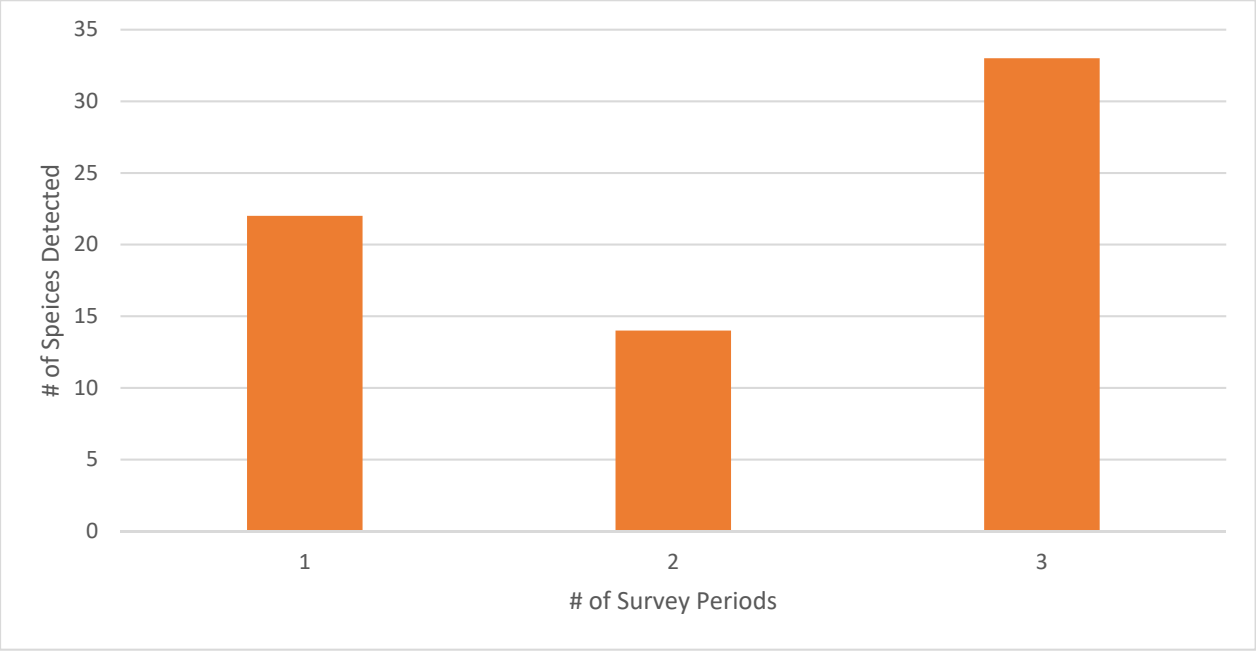

Figure 7: Frequency of species detection during bird surveys at Gremel in 2019.

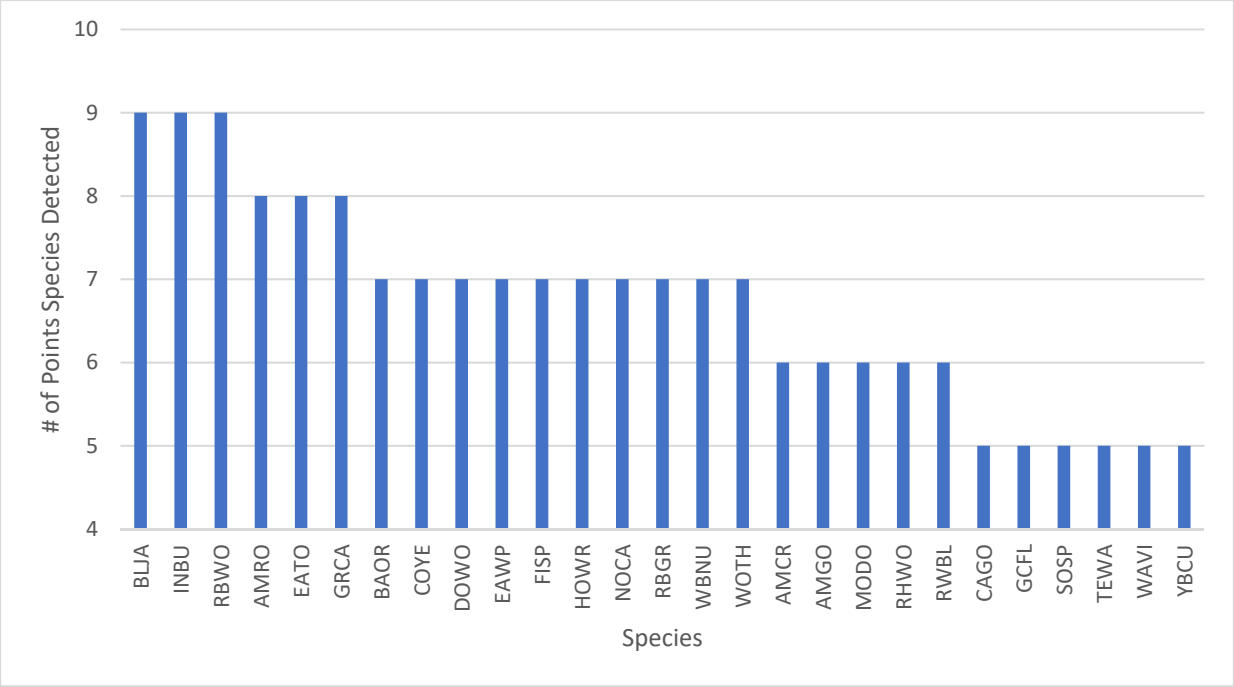

Figure 8: Frequency of species occurring at survey points at Amboy in 2019.

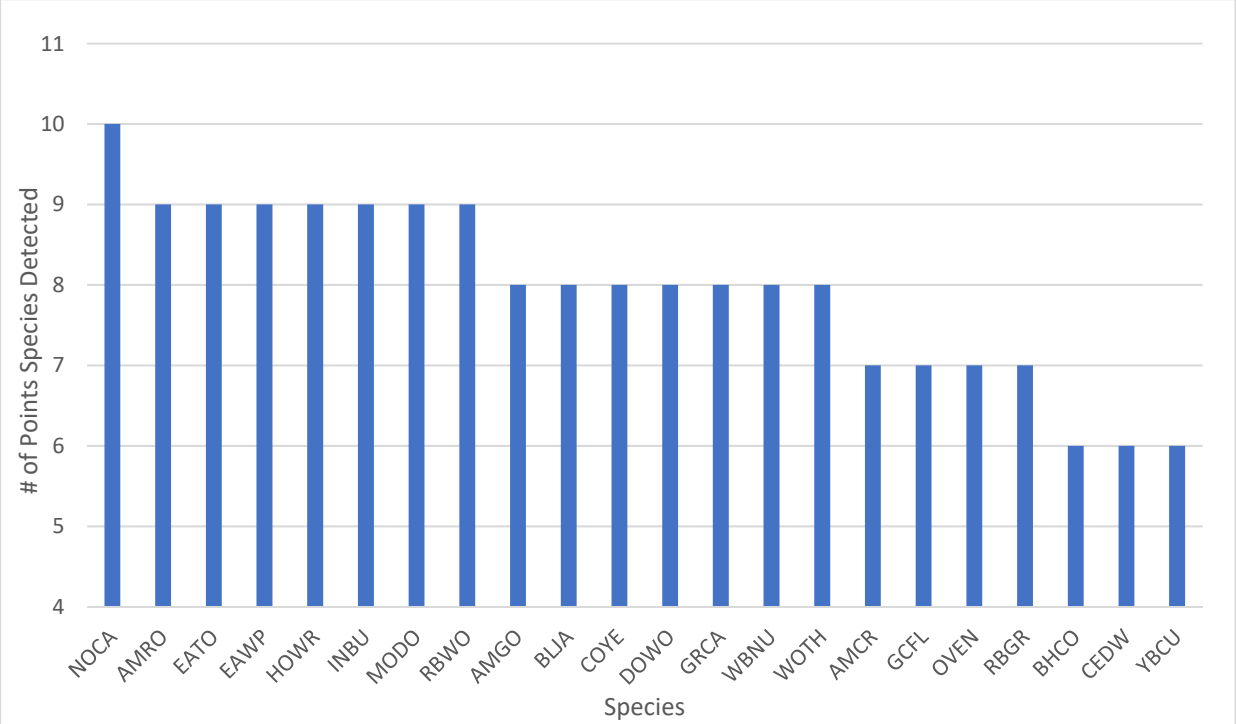

Figure 9: Frequency of species occurring at survey points at Amboy in 2019.

APPENDIX A

Point Count

YEAR: 2019

Site		Temp		Clouds	0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% ☐
Habitat	For. ☐ Grassl. ☐ Wetl. ☐ Other_____			Precip	None ☐ Fog ☐ Drizzle ☐ Showers ☐ Haze ☐
Date		Observer		Noise[a]	0 ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% ☐
Point#		Start time		Wind[b]	0-1 ☐ 1-3 ☐ 4-7 ☐ 8-12 ☐ 13-18 ☐ 19-24 ☐
UTMs				Notes:	

Species	Species Code	Time[c]	Sex/ Age[d]	How?[e] V	S	C	Distance[f] (m)	Comments (e.g., on approach, in tree, group size, flyover [FO], etc. For wetlands, indicate individuals detected during playback)

Species observed outside of count:_____

[a]**Noise:** percent of time hearing was significantly impaired. [b]**Wind:** smoke rises vert. (0-1), wind dir. shown by smoke drift (1-3), wind felt on face; leaves rustle (4-7), leaves in const. motion (8-12), raise dust (13-18), small trees sway (19-24). [c]**Time**: either write actual minute (e.g., 632) or count minute (i.e., 1-10). [d]**Sex**/**Age**: Male (M), female (F), juvenile (J), or unknown (U). M or F implies adult, J includes dependent or independent young of the year. [e]**How**: (V)isual, (S)ong, (C)all, or combinations thereof. [f]**Distance**: distance (in m) when observed or, if the bird moved, minimum distance (e.g., originally observed at 75, moved to 35 – record 35).

APPENDIX B

ALPHA SPECIES CODE INTERPRETATION	
ALPHA Code	**Species**
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WEVI	White-eyed Vireo
WIFL	Willow Flycatcher
WITU	Wild Turkey
WODU	Wood Duck
WOTH	Wooth Thrush
YBCU	Yellow-billed Cuckoo
YBCH	Yellow-breasted Chat
YSFL	Yellow-shafted Flicker
YTVI	Yellow-throated Vireo
YWAR	Yellow Warbler