USDA-Wildlife Services' Annual Report for GFL Environmental Zion Landfill July 2011 Through June 2022

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Introduction

This report will summarize the observations and management actions that USDA APHIS Wildlife Services (WS) has performed at the GFL Environmental Zion Landfill located in Zion, IL from July 15, 2011, through June 30, 2022.

Overview GFL Environmental

GFL Environmental operates a sanitary landfill located at 701 Green Bay Road in Zion, IL. The facility accepts municipal, industrial, commercial, and construction waste. Materials are typically accepted between the hours of 6:30 am and 4:30 pm Monday through Friday and 7:00 am to 11:00 am on Saturday. The "open face" of the facility is covered at the end of each day and over the weekend. During operating hours, ever present trash provides a strong wildlife attractant, especially to certain species of birds.

Large flocks of birds drawn to the site led GFL Environmental to request assistance from WS in implementing an integrated wildlife damage management program that would significantly reduce the number of birds utilizing the site. The increased bird use at the site creates potential disease threats, property damage, and nuisance issues resulting from the deposition of fecal droppings at loafing and roosting areas which may also be in the surrounding communities.

Bird Surveys

From July 15, 2011, to June 30, 2022, bird surveys were conducted at GFL Environmental Zion Landfill 2 to 5 times per month. The surveys used are a time-area sampling design based on a modified version of the U.S. Fish and Wildlife Services' Breeding Bird Survey. In addition to providing a report on the current use of the landfill by birds, this assessment provides a baseline of information with which landfill personnel can evaluate the effectiveness of their wildlife management program in the future.

An assumption of this survey method is that all birds present are observed and identified. This assumption was undoubtedly violated due to the presence of small, solitary species that occasionally went unnoticed. However, this violation is acceptable because the intent of this survey is to provide an index of the presence and behavior of larger-bodied or flocking birds as these birds have the potential to create conflicts at the landfill and in the surrounding community.

Six permanent observation stations were selected to monitor the landfill and the surrounding neighborhood (Figure 1). Data point number 6 is not represented in Figure 1, as it is located at the Winthrop Harbor beach. It should also be noted that data point 1 is a "roaming point" in that data are collected on the open face of the landfill, which moves throughout the year. Data were collected at each station for three minutes in 360 degrees out to a distance of 400 meters from the survey point. Binoculars were used to identify species and obtain counts, but not to search for birds. The starting point for each survey was randomly selected, and surveys were conducted between dawn and dusk; each survey required approximately 1 hour to complete. At each station, WS recorded the species of wildlife observed, and for each observation we recorded the number of individuals, the behavior, and cover type that the individuals were utilizing.

Figure 1: Survey Points used in GFL Environmental Zion Landfill point count survey.

Results of the Surveys

On Landfill

GFL attracts the suite of birds that would be expected to utilize a landfill in Northern Illinois. This includes gulls (herring and ring-billed), European starlings, turkey vultures, and American crows. These are the species that cause most of the wildlife conflicts at the landfill and will be the groups that this report focuses on. Figure 2 depicts the species of wildlife observed during surveys on the landfill from July 2011 through June 2022. As shown in Figure 2, ring-billed gulls and herring gulls make up approximately 62% of the birds observed at the landfill and European Starlings made up almost 31%. In total, 50 species of birds were observed on the landfill. The "all other species" group shown in Figure 2 represents the remaining species of birds observed on the landfill including: American kestrels, barn swallows, brown-headed cowbirds, Canada geese, eastern meadowlarks, horned larks, killdeer, mallards, red-tailed hawks, and red-winged blackbirds.

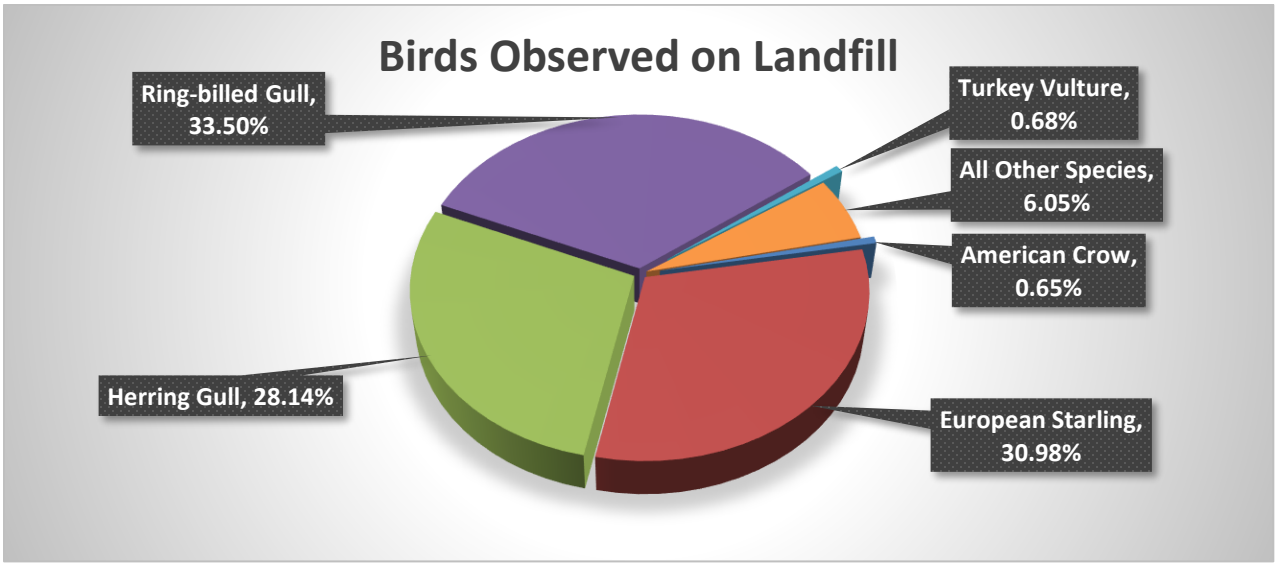

Figure 2: Percentages of birds observed during surveys July 2011 through June 2022.

To analyze the trend of bird activity on the landfill, data were broken down into birds observed per survey (Figure 3). Different numbers of surveys were conducted each month; therefore, breaking the data into observations/survey standardizes it and allows for comparison of each month's data against another. Figure 4 illustrates the number of birds observed per survey per month since the initiation of the project. It must be noted that all the July 2011 data were collected prior to management actions taking place at the landfill and therefore July 2011 data can serve as a baseline to compare data from July 2012-June 2022. After direct control work began, there was a drop in the number of wildlife observed, which was expected. In July 2011, a total of 2,148 gulls were recorded during the surveys that month. Comparing that to the total number of gulls observed during surveys in June 2022, which was 118, it shows a reduction of 94.5%. To further illustrate the success of the management program, data from July through June 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 are compared graphically (Figure 5).

In the 2011 period, the number of birds observed per survey on the landfill varied drastically, as the birds associated the landfill with no longer providing a hospitable environment for feeding and loafing. When compared to the 2012 data, it is apparent that fewer birds were utilizing the landfill. This is likely due to the birds that were previously using the site showing a "learned" response of avoiding the landfill due to the management efforts. In 2013, it is evident that even fewer birds were utilizing the landfill with the exception of the winter months. The harsh 2013/2014 winter caused an increased number of birds visiting the landfill to forage as there was less food available in the surrounding areas, resulting in the bird's feeding behavior to become persistent around the open face. It may also be true that birds which may normally winter farther north were pushed south into IL due to these harsh conditions. This may have attributed to the increase in birds frequenting the landfill during this time. We observed an increase in bird use of the landfill during the winter of 2014/2015 at a lesser scale compared to the previous winter (Figure 4). In winter of 2015/2016, northern IL experience a rather mild winter resulting in a noticeable lower presence of birds. It is likely that the duration of cold weather coupled with large amounts of snowfall will be a predictor of bird use at the landfill in future winters.

Much of the management efforts at the landfill are focused on gulls and European starlings, as they represent 93% of all birds observed on the landfill from July 2011 through June 2022 (Figure 2). The July-June periods of 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 can be compared graphically, and the analysis indicates gull numbers observed per survey have been noticeably lower since the inception of the management program outside of the winter months (Figure 6, Figure 7). Excluding this winter timeframe, there has also been much less fluctuation in the gull population on the landfill, indicating that the management program has been successful at reducing the attractiveness of the landfill to migrant or passing birds. Gulls are extremely gregarious, and if large numbers of local birds are allowed to feed and loaf at a site, other gulls will be attracted to the area, exacerbating the conflicts. It appears that most of the local birds that had been utilizing the landfill as a food source have moved on to other locations, and the feeding pattern has been broken.

European starlings frequently utilize the landfill as a foraging, roosting and nesting site. In the fall and winter of 2011, a large number of European starlings were trapped and removed from

the landfill. This reduction in starling numbers seemed to have carried over through the 2012-2013 timeframe. Throughout the years there has been an increase in European starling activity within the winter and spring months (Figure 8, Figure 9). This increase in the starling population within the winter months can be attributed to the colder temperatures. The colder temperatures require the starlings to feed regularly for survival and the landfill provides a reliable food source. This results in an overall increase in starling's attractiveness to the landfill. There is a low success rate in starling trapping during the winter months. However, harassment, lethal reinforcement and trapping techniques are utilized in efforts of reducing the number of starlings continuing to use the landfill. The increased population during the spring is contributed to the marked increase in starlings residing at the landfill. During the spring and early summer months trap success is high due to the increase of juveniles.

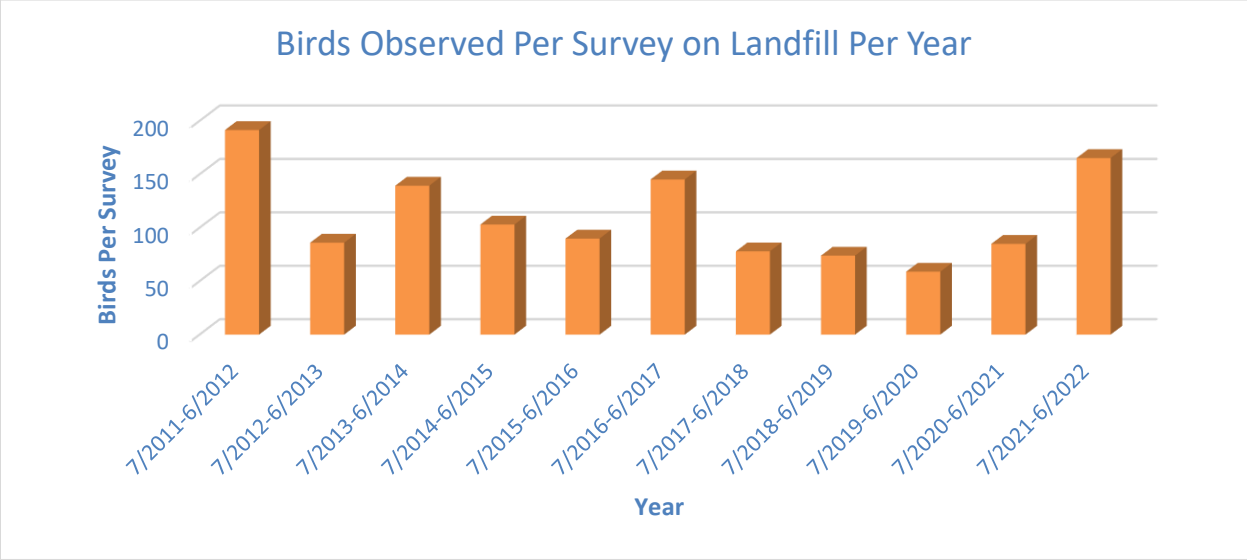

Figure 3: Total number of birds observed per survey from July to June of 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22.

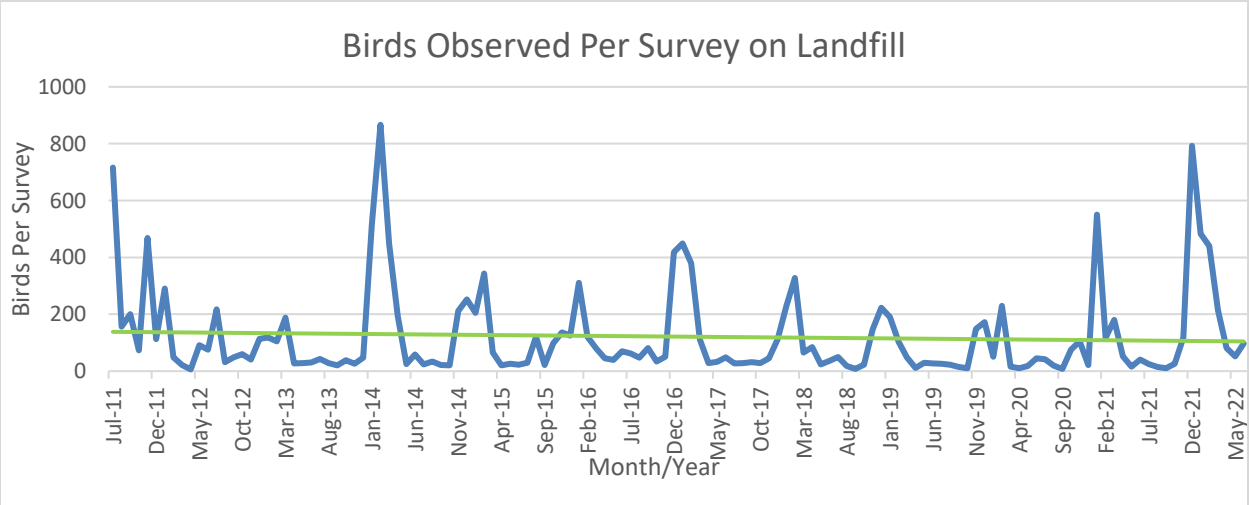

Figure 4: Number of birds observed per survey on the landfill from July 2011 through June 2022.

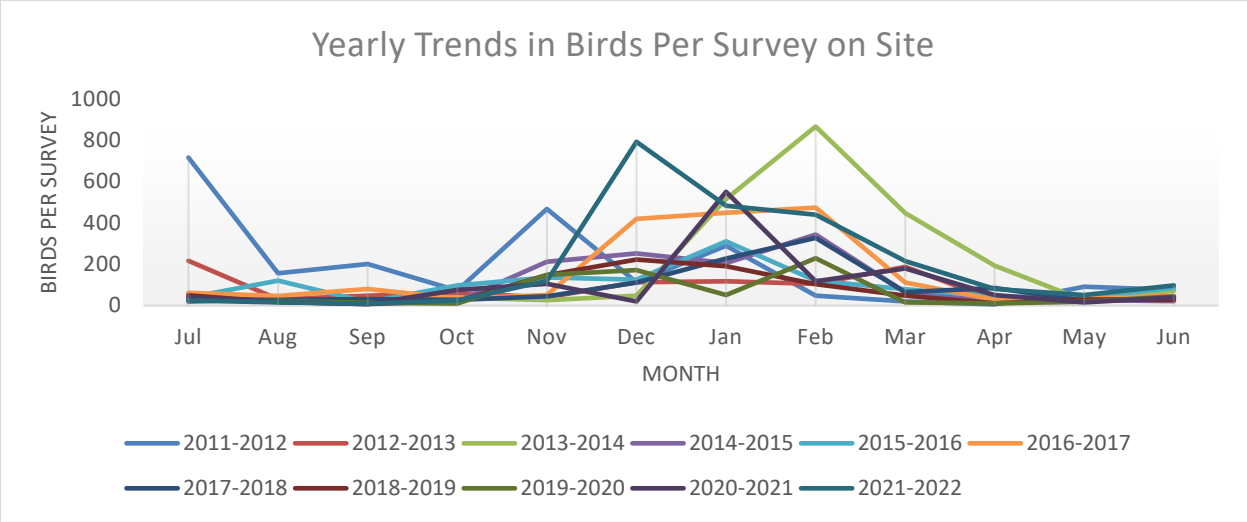

Figure 5: Total birds observed/survey for July-June 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 respectively.

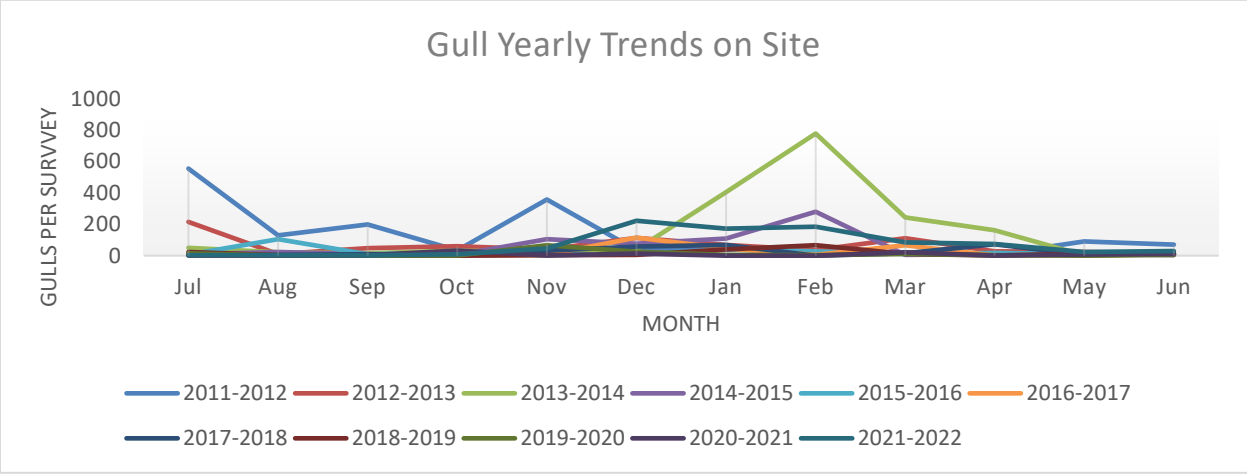

Figure 6: Gulls observed/survey for July-June 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 respectively.

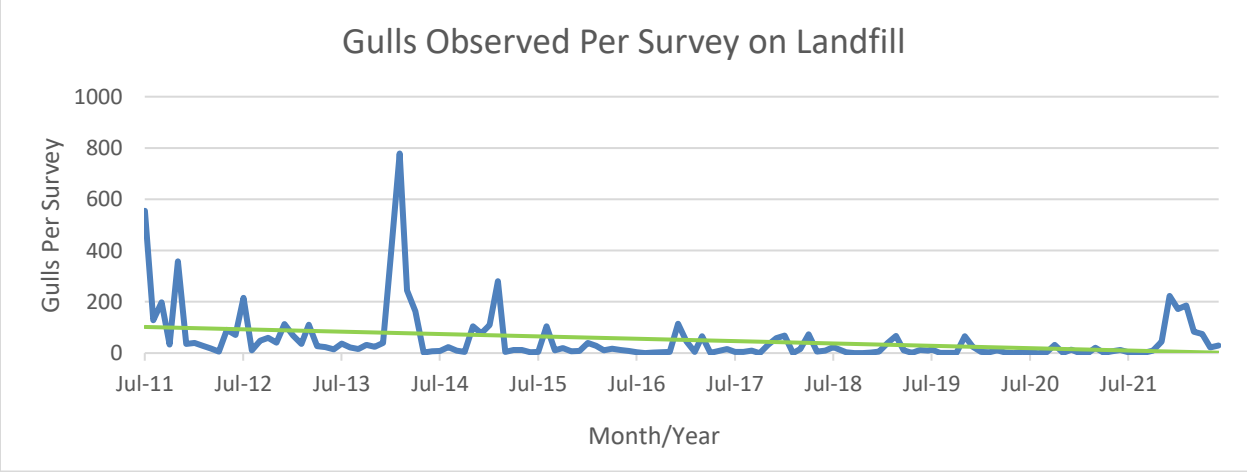

Figure 7: Gulls observed during surveys in July through June of 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 respectively.

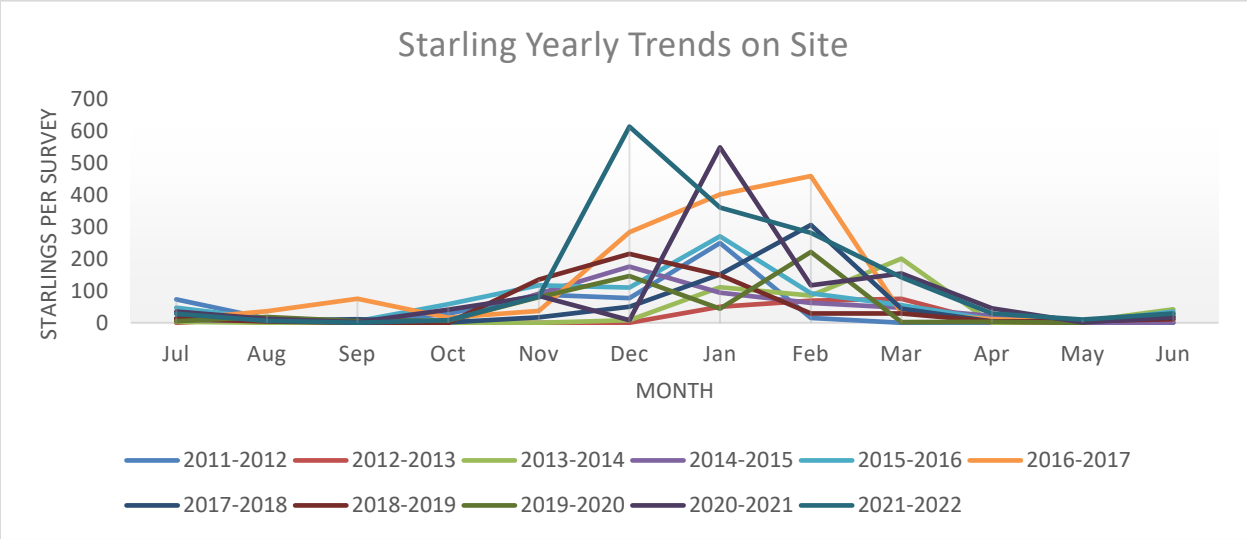

Figure 8: European starlings observed/survey for July-June 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 respectively.

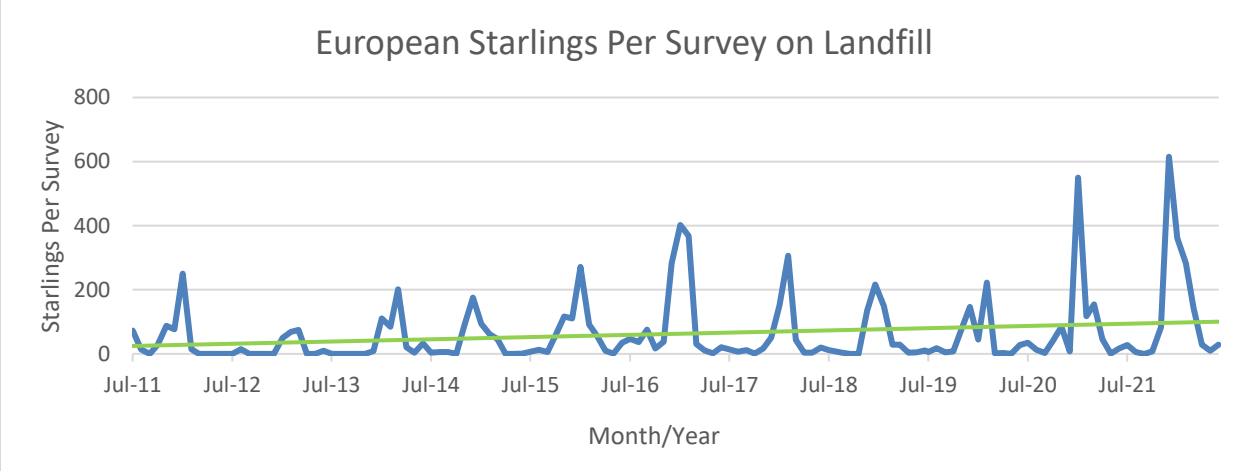

Figure 9: European Starlings observed during surveys in July through June of 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 respectively.

The main habitat type used by birds during the observation period was bare soil areas, which are generally located near the open face of the landfill (Figure 10). The open face contains the largest amount of exposed trash making it the main attractant for most species observed at the landfill. The bare soil areas adjacent to the open face area account for the highest level of wildlife use. The birds utilizing the bare soil are loafing waiting for the heavy machinery to clear from the open face before returning to forage until the machinery returns. Birds also loaf on the bare soil areas after feeding. Many birds, especially gulls, seemed to be more comfortable in open areas where they can detect approaching predators. Loafing habitat, coupled with a high-quality food source, makes the landfill attractive to many species. It should also be noted that during the spring of 2014 the open face transferred to a new cell east of the previous cell. The old cell was capped and seeded which decreased the amount of bare soil. In the winter of 2021, a

new cell was created south of the active open face. Increased perching activity has been observed in the dead trees and woodland area surrounding the marsh (SP 2) after this cell became active.

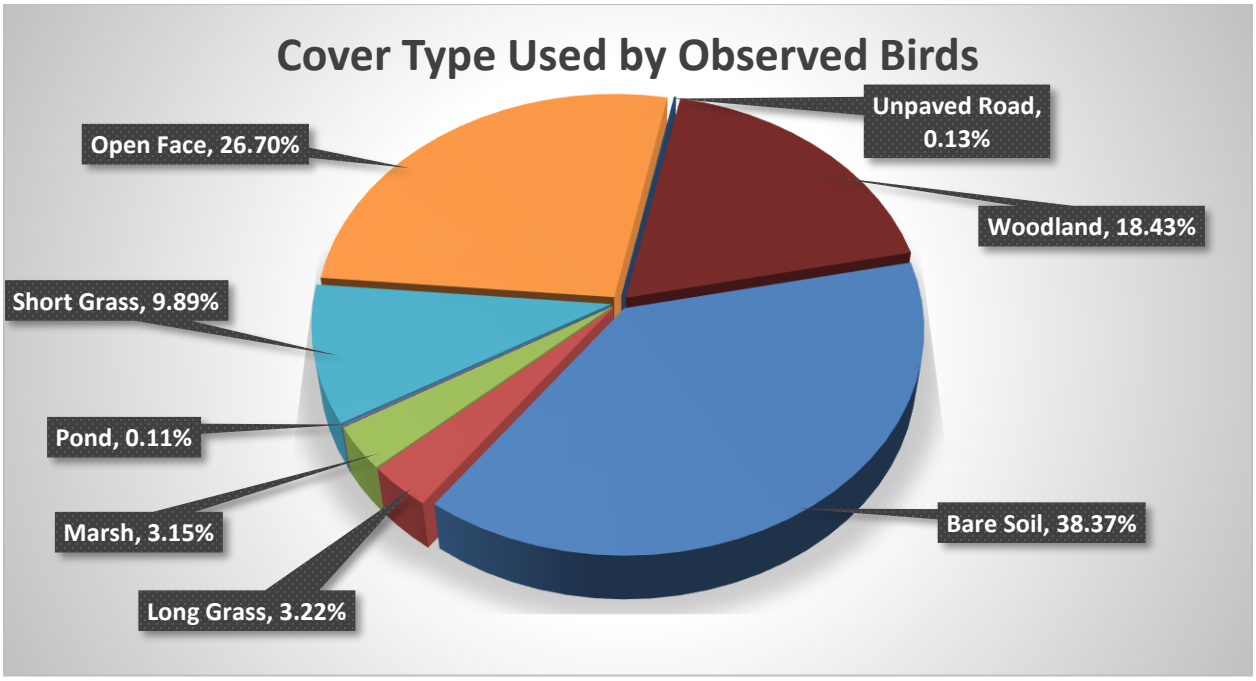

Figure 10: Cover types observed being used by birds from July 2011 to June 2022.

Offsite

Offsite locations around the landfill are also being monitored for bird activity. The primary focus of the offsite monitoring is to observe trends in the total population of birds using the offsite locations, and to monitor if our wildlife damage management assistance is influencing these populations in the surrounding communities. Figure 11 illustrates the number of birds observed per survey away from the landfill. As expected, the number of birds in the surrounding communities increased immediately following the implementation of direct control in August 2011. Birds (mainly herring and ring-billed gulls) were pushed off the landfill into these surrounding communities. This trend was expected as the birds that utilized the landfill as a forage source learned the landfill was no longer an easily available food source. The number of birds per survey remained low until January 2014, when the number of birds increased dramatically. There was an additional spike in gull numbers at Winthrop Harbor (SP 6) in May and June of 2014 due to the beach being closed for a restoration project. With no public activity allowed, large numbers of gulls were observed loafing on the beach. The area reopened in late June 2014 and the number of birds on the beach subsequently decreased. Wildlife Services attributes the reduced bird activity to an increase in human activity on the beach, consequently deterring the birds, mainly gulls, from utilizing it as a loafing area. This could also explain why there are small spikes in activity every spring, as the beaches clear of snow, but are still too cold to be used by the public. These offsite areas will continue to be monitored in the future and efforts will be made to harass birds at offsite locations close to the landfill if permission is obtained. It should also be noted that due to the COVID-19 pandemic, Illinois Beach State Park

(SP 6) was closed during the end of March and all of April, thus we were unable to conduct surveys at this time.

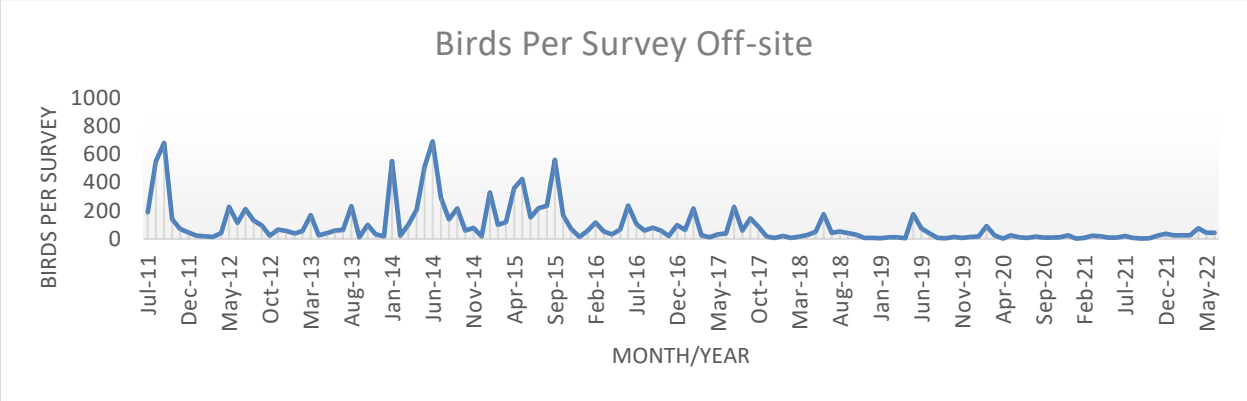

Figure 11: Off-site birds observed per survey July 2011 through June 2022.

Management Activities

Wildlife Services employs an integrated wildlife management approach to reduce the number of birds utilizing the landfill; methods include various harassment tools, trapping, and lethal reinforcement. Full time staffing is needed to successfully implement the program due to the number of birds present on the landfill and the overall attractiveness of the landfill to wildlife, particularly birds. If management efforts are decreased, an increase in the bird usage of the landfill and surrounding areas is expected. The main species of concern to the landfill staff are ring-billed gulls, herring gulls, European starlings, and turkey vultures. Lethal management of most of these species requires depredation permits from both the United States Fish and Wildlife Service and the Illinois Department of Natural Resources to reinforce dispersal techniques. Wildlife Services maintains all necessary permits while implementing the Wildlife Damage Management Program at GFL Environmental Zion Landfill. Management actions for each species causing conflicts will be discussed below.

Ring-billed and Herring Gulls

Gulls were one of the most abundant species observed on the landfill from July 2011 through June 2022 (Figure 2), making gull management the primary focus of the wildlife damage management program. The main tactic used to keep gulls away from the landfill is the use of pyrotechnics, coupled with lethal reinforcement when needed. Propane cannons were previously utilized to keep birds from the area when a regular patrol of the landfill was not possible but were removed from the landfill in the summer of 2014. Remote activated propane cannons were also placed at two adjacent properties (the FedEx building and the closed landfill across the street from the active landfill). Gulls were observed leaving the active landfill when harassed and loafing at these sites waiting for harassment efforts to cease before returning to the landfill to feed. The gulls are no longer observed at the closed landfill and therefore propane cannons are no longer in use. The propane cannons were also removed from the FedEx buildings in the fall of 2015 due to WS gaining permission to use pyrotechnics on site in December 2014, which has

proven to be a more reliable harassment tool, although no gulls have been observed loafing at the FedEx buildings. In late 2016, WS received permission to harass gulls that were observed loafing on the Kiefer Swim Shop building off Rosecrans Road. In late 2017, WS also received permission to harass gulls at the Woodstone Apartments near the Kiefer Swim Shop. By harassing gulls at the FedEx, Kiefer, and Woodstone Apartment buildings, WS have been "training" these birds that adjacent areas around the landfill are also off limits and encouraging them to move elsewhere to forage and loaf further from the landfill. Since WS began harassment at these properties, 11,034 gulls have been dispersed from the FedEx property, 32,041 gulls have been dispersed from the Kiefer building, and 2,420 have been dispersed from the Woodstone Apartments, and the employees and tenants are happy with the results. Gull effigies were utilized for a short time in the summer and fall of 2011 as part of the integrated wildlife damage management program, but they did not appear to be very effective.

Additional harassment tools were used or tested on the landfill. For example, a device called the "Scary Man" (a human effigy or scarecrow) was tested, however it proved ineffective at keeping gulls away from the area. A remote controlled "falcon" was demonstrated to landfill staff in late July 2012. After learning the extremely high cost of the unit, WS staff purchased a remote-controlled aircraft and painted it black to mimic the color of a large raptor. High winds, which are common at the landfill, made flying the aircraft very difficult. Additionally, during January of 2014 and 2015, multiple bald eagles were observed soaring over the landfill at the same time gulls were on site and they appeared to pay very little attention to the eagles**.** Neither of these tactics were as successful as other techniques being used, and their use was suspended. WS continues to look for new techniques to test. In 2015, WS started using a new pyrotechnic called the "silver comet" which leaves a spark trail while flying. The new pyrotechnic has been very effective on rainy, foggy, or low ceiling days due to the additional visual stimulus provided by the pyrotechnic.

Since the spring of 2013, WS identified two gull nesting colonies near Waukegan. WS staff conducted nest/egg destruction on these sites to reduce the number of hatch-year birds that would potentially utilize the landfill as a food source. At one of these locations, gulls nested both on the rooftop and the ground. After damage to the structural integrity of the roof was discovered, WS personnel and plant employees were prohibited from accessing the rooftop to oil these eggs due to safety concerns. WS will continue to oil all ground nesting gulls at this location in the future. WS was notified in the summer of 2017 of a new potential nesting site near the lakeshore in Waukegan. WS was granted permission to access this area after the 2017 nesting season was over. Management of this new colony would have taken place in the spring of 2018, but no gulls nested in the area in 2018, 2019, 2020, 2021, and 2022. WS will also continue to search for nesting colonies in areas close to the landfill. Just as at the site WS currently manages, the nests and eggs found in any newly discovered colony will be treated and rendered unviable to further reduce the population of hatch year gulls in the area if permission is granted by the property owner. WS will also search for new loafing and feeding areas adjacent to the landfill being used by gulls and will work to gain landowner permission to harass the birds there with the goal of continuing to move the birds further from the landfill.

To date, 282 ring-billed gull nests containing 346 eggs and 616 herring gull nests containing 1164 eggs were destroyed between these two colonies. On the landfill property, as of June 2022,

783,360 ring-billed gulls and 1,033,543 herring gulls were dispersed (Figure 12), and an additional 1,804 ring-billed gulls and 1,667 herring gulls were lethally removed to reinforce WS' harassment efforts (Figure 13). Pyrotechnics and lethal reinforcement of those harassment techniques still appear to be the best tools for keeping gulls away from the landfill area.

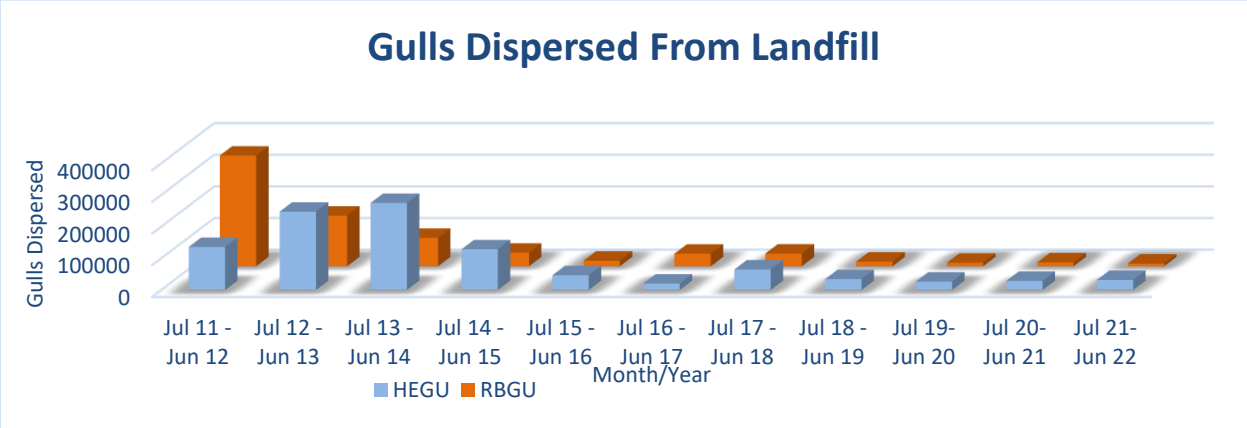

Figure 12: Herring gulls (HEGU) and Ring-billed gulls (RBGU) dispersed from landfill July 2011 through June 2022.

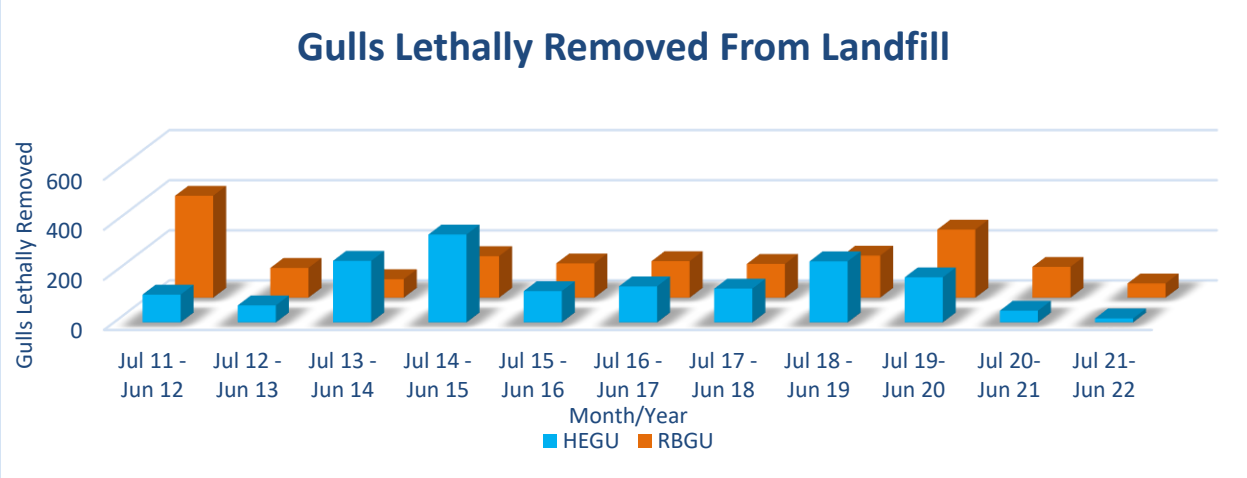

Figure 13: Herring gulls (HEGU) and Ring-billed gulls (RBGU) lethally removed from landfill July 2011 through June 2022.

European Starlings

European starlings frequently utilize landfills and GFL Environmental Zion Landfill is no exception. During the late spring/summer months relatively few starlings are generally observed on the landfill. Conversely large flocks are usually observed utilizing the landfill as a food source in the fall/winter months each year (Figure 7, Figure 9). Harassment efforts, like those used for gulls, were implemented with some success. In addition to harassment, trapping has proven effective at maintaining a low population of starlings utilizing the landfill once these winter flocks disband. Two decoy traps built by WS have been deployed at strategic sites around the landfill to capture these birds. Starlings are attracted to the traps by the bait used (fat pellets, a livestock feed high in fat content) and the presence of other birds in the traps. After capture, the birds are euthanized in a CO^2 chamber. Starlings are a non-native, invasive species that

competes with native wildlife for resources and are offered no federal or state protection. To date, 330,596 starlings have been dispersed (Figure 14) and 23,464 starlings have been lethally removed from the property (Figure 15). In the future, if starling populations continue to increase on the landfill, efforts will increase to continue harassment efforts, lethal reinforcement of harassment techniques and trapping to reduce the population using the landfill. In addition, new techniques will be explored and tested as they become available and /or feasible.

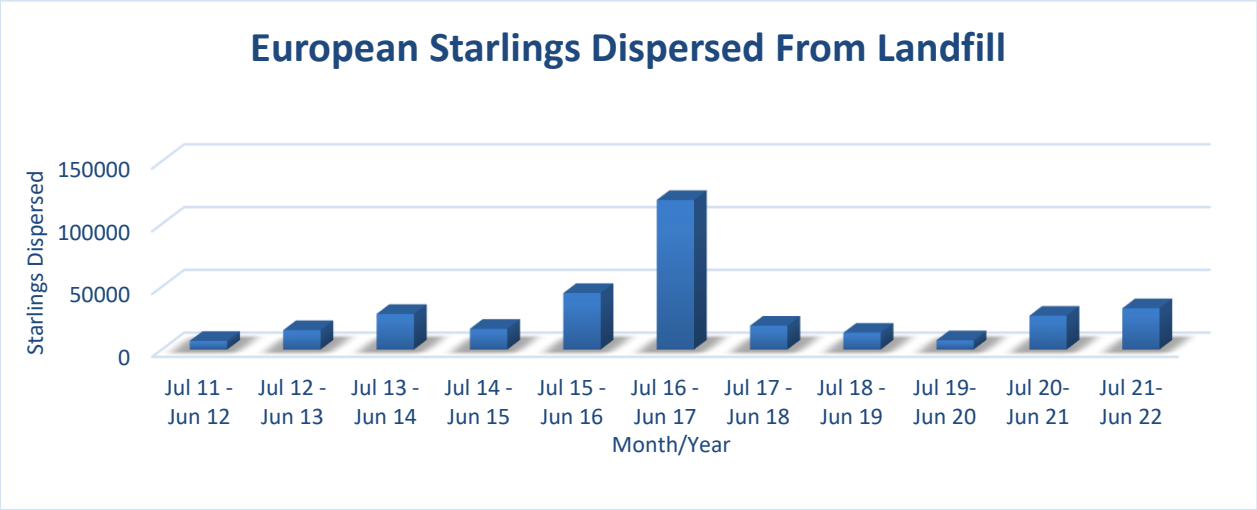

Figure 14: European starlings dispersed from landfill July 2011 through June 2022.

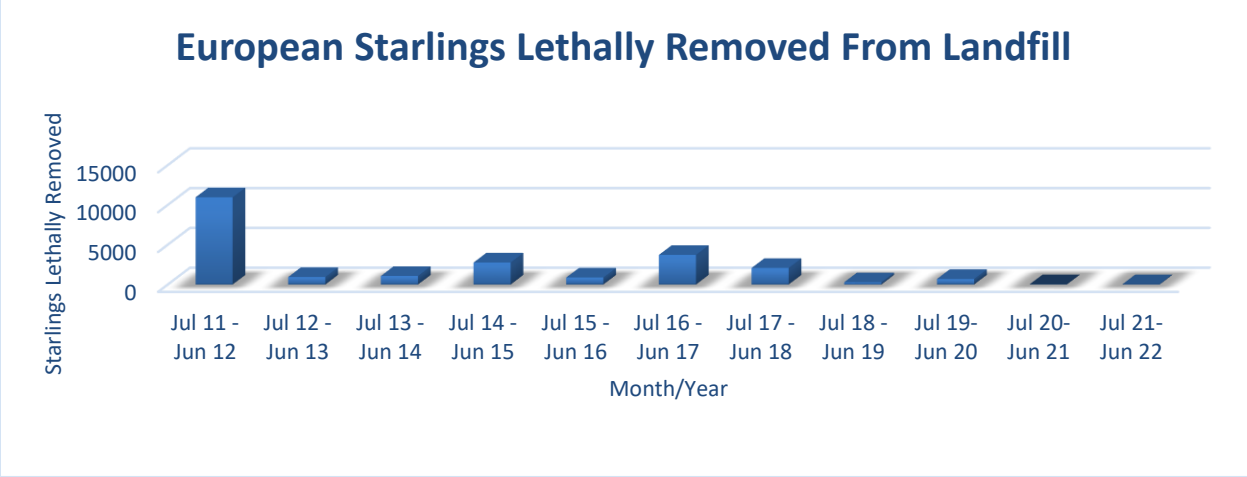

Figure 15: European starlings lethally removed from landfill July 2011 through June 2022.

Turkey Vultures

Turkey vultures were first observed on the landfill from July 2011 through September 2011 and continue to make an appearance every spring through fall. Their highest numbers were observed in July 2011, with 1332 vultures observed on site (Figure 16). Initially the management strategy for turkey vultures was like that employed for gulls. Pyrotechnics were utilized to harass vultures from the landfill; however, the birds quickly habituated to harassment efforts. In order to increase the effectiveness of our efforts in encouraging vultures to move elsewhere, WS used

both “artificial” and “real” turkey vulture effigies. The “artificial” effigies were made from Kevlar Canada goose decoys painted black. They were suspended head down from poles with wings outstretched and placed near vulture loafing areas on landfill property. The “artificial” effigies were somewhat effective, but a few vultures continued to utilize the landfill. The use of “artificial” effigies was followed with the deployment of “real” effigies. “Real” effigies were collected by lethally removing vultures during management operations on the landfill and suspended in the same manner and locations as the “artificial” effigies. This method proved to be much more effective in dispersing vultures from the landfill, therefore this is the preferred method, if real effigies are obtainable. Significantly fewer turkey vultures were observed in 2012 and 2013, however vultures seem to frequent the landfill during the late spring, summer and early fall before they migrate south for the winter months. Since June 2014, WS specialists have lethally removed 17 vultures to use as effigies, which again proved effective. July 2017 to June 2018 saw a slight increase in vulture activity around the landfill. This led to more focus on harassing and removing the vultures, mainly increasing the amount taken as compared to previous years (Figure 17). If vulture numbers continue to rise, WS will continue to harass and remove birds as necessary. To date, 4,620 turkey vultures have been harassed and 90 lethally removed from the landfill. It should also be noted that large number of turkey vultures have been spotted “towering” in areas around the landfill, but did not come onto the landfill, and left the area without harassment.

In 2011, the Heritage Faith Christian Center (HFCC) contacted the landfill about turkey vultures loafing on the roof of their worship center. In response, WS placed an “artificial” effigy on the roof of the church during the weekdays and removed it prior to worship services on Sunday morning. In 2012, the church allowed the effigy to remain on the roof throughout the week, including Sundays and the vultures left the area and HFCC was pleased with the results. Since 2012, vultures frequently returned to either the landfill or HFCC and each time harassment, lethal reinforcement and effigies were used to disperse the birds. To further increase our success, WS was approved to use pyrotechnics as another harassment tool at the HFCC but are only used as a last resort and only during the week during the middle of the day. To date, 339 turkey vultures have been harassed from the church. In the winter of 2020, HFCC was purchased by DLB Ministries. In subsequent reports, the church will be referred to as HFCC/DLB.

American Crows

Relatively few American crows have been observed at the landfill, though their populations have been rebounding and an increase in the population at the landfill should be expected. Management of crows is very similar to the management protocol implemented for gulls; harassment with pyrotechnics and reinforced by lethal means as necessary. To date 3,650 crows have been harassed from the landfill and 6 have been lethally removed.

Mammals

The landfill requested assistance with reducing nuisance mammals that were reported on adjacent properties. A trapping program was implemented and in addition to trapping on the landfill, WS has trapped mammals on 3 adjacent properties as requested by the landfill. To date,

8 striped skunks, 3 opossums, and 28 raccoons have been removed from the landfill and neighboring properties. Any future conflicts regarding these species are encouraged to be reported and WS will be happy to address these issues.

Conclusion

Wildlife Services looks forward to continuing its working relationship with GFL Environmental Zion Landfill in implementing the integrated wildlife damage management program. A cooperative service agreement is in place to continue this assistance through July 31, 2023. WS will continue to research and incorporate new methods to better manage bird numbers at the landfill. Additionally, WS will continue efforts to identify gull nest colonies and new loafing sites around the landfill. If you have any questions regarding this report or the work being completed, please contact WS at 773-686-6955.

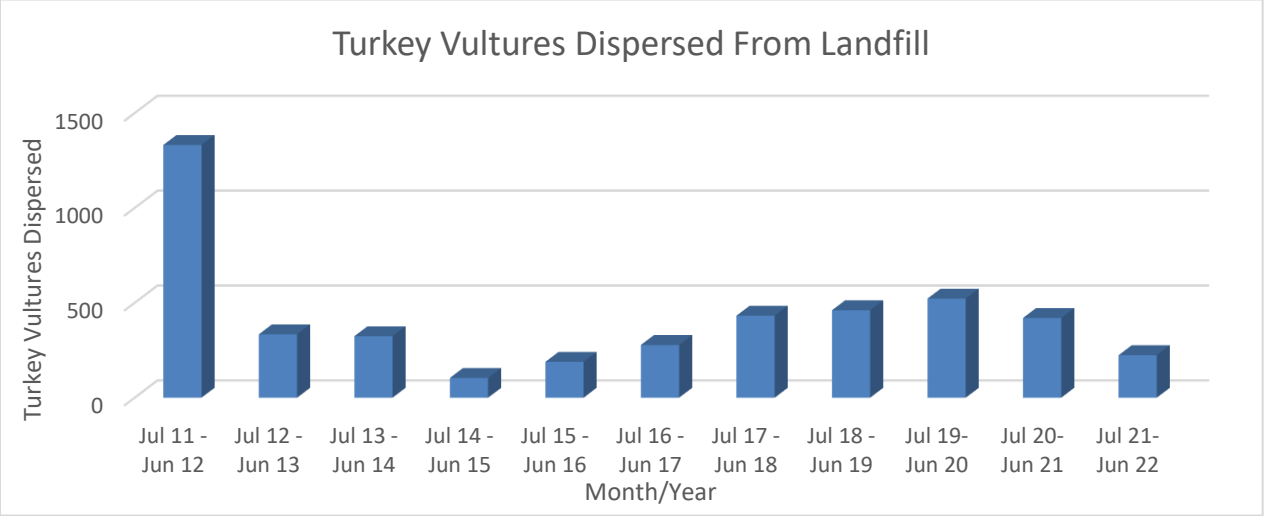

Figure 16: Turkey vultures dispersed from the landfill in July through June of 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 respectively.

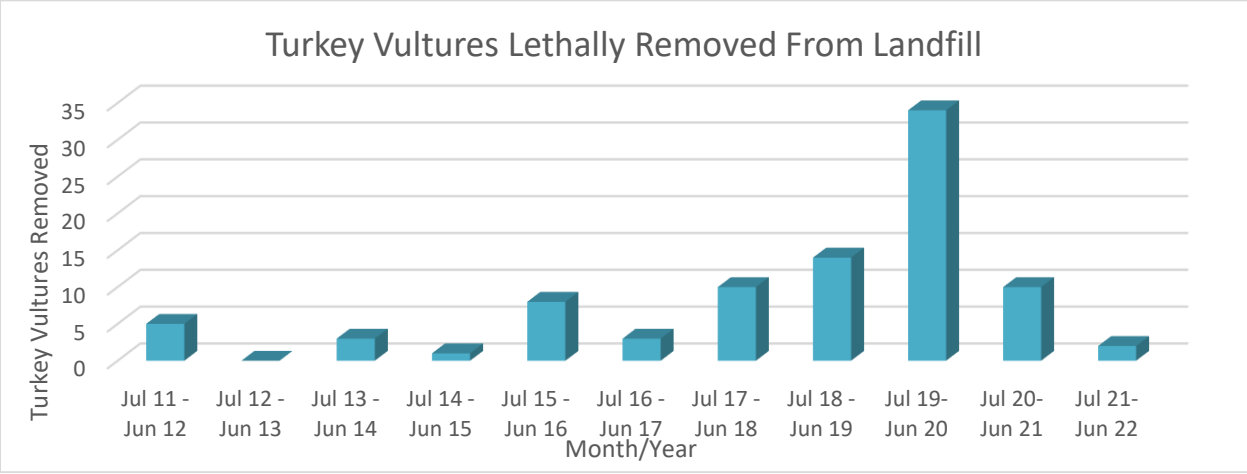

Figure 17: Turkey vultures lethally removed from the landfill in July through June of 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 respectively.