Dead bird effigies: A nightmare for gulls?

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Abstract: Bird control at and around airfields is critical to safe airfield operation. Numerous bird-control products and strategies are available, all of which have limitations because of rapid habituation, ineffectiveness, expense or other factors. There is a need for new methods to manage birds at airports and other locations. In recent years, realistic effigies of dead turkey vultures (*Cathartes aura*) have proven effective as a species-specific means to disperse roosting vultures. To determine if this concept can be expanded to deter other birds that are a problem at airfields, we conducted trials using prepared ring-billed (*Larus delawarensis*) and herring (*L. argentatus*) gulls as effigies at landfills, a nesting colony, and a containment disposal facility (CDF) next to an airport. Results at landfills varied with distance to the active dumping area (active face) and time of year. In winter, gulls loafing away from the active face would stay clear of effigies for up to 4 weeks. When set on or adjacent to the active face, gulls would initially disperse but then return within hours to weeks. Effigies were not effective in nesting colonies. Gull reaction to effigies at a CDF showed initial good response, especially when reinforced with pyrotechnics and lethal control but habituation occurred after 2 months of exposure. We conclude that gull effigies can reduce gull presence in specified areas when used as part of an integrated bird control program. However, effigies alone will not keep gulls away from extensive areas.

Introduction

From 1990 to 2005, bird strikes annually caused an estimated $556 million of loss to civil aviation in the United States. Most strikes (81%) occur at or below 1,000 feet above ground level (AGL) (Cleary et al. 2006) while 66% of strikes resulting in substantial damage to the aircraft occur ≤ 500 feet AGL (Dolbeer 2006). Air traffic has also increased approximately 2% annually from 1980 to 2005 (Federal Aviation Administration 2006). At the same time populations of bird species hazardous to aircraft (see Dolbeer et al. 2000) are generally increasing (Sauer et al. 2006). Therefore, bird control at or around airports is critical to safe airfield operation.

It is not always possible or desirable to kill large numbers of nuisance birds (Dolbeer 1986, 1998; Dornbush et al. 1996, Smith et al. 1999); thus, there is need for effective nonlethal techniques to deter bird use of problem sites. Numerous harassment and frightening techniques for reducing conflicts involving birds are available (Solman 1994, Cleary 1994, Dolbeer et al. 1995). Many of these techniques are expensive, ineffective, require multiple years to achieve desired results, produce temporary results, or have not been evaluated quantitatively (Bomford and O'Brien 1990, Belant et al. 1998). Realistic dead bird effigies of gulls and turkey vultures (*Cathartes aura*) have shown promise as species specific frightening devices (Saul 1967, Stout et al. 1975, Stout

and Schwab 1979, Stout and Schwab 1980, Avery et al., 2002, Tillman et. al. 2002, Seamans 2004). However, carrion crows (*Corvus corone corone*) did not show a definite avoidance to the hanging of dead carrion crows in corn fields (Naef-Daenzer 1983). Canada goose (*Branta canadensis*) effigies also did not show promise as effective goose control devices (Seamans and Bernhardt 2004).

We wanted to determine what effect gull effigies would have on the behavior of loafing, feeding and nesting gulls. The National Wildlife Research Center Animal Care and Use Committee approved procedures before the start of the study.

Methods

Ring-billed (*Larus delawarensis*) and herring (*L. argentatus*) gull carcasses were obtained from USDA Wildlife Services biologists working at airports in Ohio and New York. The skins were prepared with the wings hanging down such that when the effigy was hung in a head down position the wings extended down beyond the head. In all tests, effigies were hung from a pole in a head down position with their wings just above ground level.

Landfills. One landfill in northern Ohio and 1 in upstate New York were observed to determine the number of gulls using various portions of the landfill. During the study period, the Ohio and New York landfills received a mean volume of 285 and 635 metric tons of anthropogenic trash per day, respectively. When an area was observed to be consistently used by gulls, gull effigies were placed within the area. The New York landfill was dominated by herring gulls; therefore herring gull effigies were used. The Ohio landfill was dominated by ring-billed gulls so ring-billed gull effigies were used at that landfill.

New York. The New York landfill had an active gull dispersal program in place before the start of this study. The control program, conducted during the hours of landfill operation, included the use of pyrotechnics and lethal control when necessary. Gulls did not loaf at the landfill but did feed on the active face after the landfill had shut down for the day. Foraging activity occurred in spite of an 8 cm layer of sand that was placed over the refuse at the end of the working day. After a 5-day pretreatment period in which gulls were counted but not harassed, 4 herring gull effigies were placed about 45 m apart in a straight line on the 107- x 16-m open face after the landfill had ceased operations for the day. Gulls were observed for 1 hour after placing the effigies and then the effigies were removed. These observations continued for 5 days.

Ohio. Three trials were conducted over 12 months in Ohio as follows: test 1 was conducted November – December 2005; test 2 was conducted July – September 2006; test 3 was conducted October – November 2006. In each test, distance of the closest gulls to the effigies was measured with a range finder. When possible, the closest gull was lined up with an effigy so that the distance was calculated by subtracting the 2 distances as measured from the observer. When gulls could not be lined up, a right triangle was formed by the observer moving to a point in which the distance of the gull and effigy from the observer was measured and then the Pythagoras theorem was used to calculate distance.

In test 1, 4 ring-billed gull effigies were placed in a rectangle, 23- x 21-m in the southwest quadrant of a new 5.4-ha cleared area, approximately 150-m from the active

face. An observation point was established about 100-m from the effigies where the area was observed through December when the gull population at the landfill declined as a result of migration.

In test 2, 4 ring-billed gull effigies were placed about 30 m apart to form a square with the closest side about 100-m from the active face. One week after placing the 4 effigies, 3 more effigies 76 m apart were placed in a line, beginning 76 m from the effigy square and extending through a gull loafing area that was about 200-m from the active face. After gulls habituated to the effigies and began loafing by the effigies we conducted a 4-day program from 0800 – 1600 hours each day during which we fired pyrotechnics at gulls coming to the landfill, preventing them from feeding or loafing at the landfill. During the first day of harassment the effigies were moved to new locations but the same distances between effigies were maintained. Following the pyrotechnic program, we monitored gull distance to the effigies until habituation was noted.

In test 3, 4 weeks after test 2, a total of 8 effigies were placed in 2 squares, each 30-m on a side, in commonly used loafing areas. The first square was placed about 60 m from the active face while the second square was offset about 200 m from the active face. Gulls were again observed until habituation was noted in both locations. A 5-day pyrotechnic program from 0800 – 1600 hours each day was initiated and supplemented with lethal control when gulls would not leave the landfill after being harassed with pyrotechnics. Following the harassment program, we monitored gull distance to both sets of effigies until habituation was noted.

Airport. A fully certified Federal Aviation Regulation part 139 airport in northern Ohio with an active bird control program used herring and ring-billed gull effigies as part of an effort to keep gulls from using a 26 hectare containment disposal facility (CDF) located adjacent to the airport. The CDF has been receiving dredge material since 1998. From April 2005 – March 2006 approximately 1,400 gulls used the CDF and were exposed to pyrotechnics and lethal control.

From April 2006 – May 2007 we maintained a count of gulls using the CDF as well as methods used to disperse gulls before new dredge material was added. Ten days prior to dredge material being pumped into the CDF, effigies were placed within the CDF in areas that would receive dredge material and had been used by gulls in 2005. The methodology of adding dredge material was modified in 2006 so that the material was maintained in a more concentrated area than in previous years. Counts and dispersal activities continued throughout the rest of the year. Scare tactics in addition to pyrotechnics were used and included mylar flagging in the dredge area, propane cannons, spotlights, and water-filled paintballs.

Nesting Colony. In March, 2007 we set 7 ring-billed gull effigies in a ring-billed gull nesting colony in Cleveland, Ohio before nests were constructed. Three effigies were hung from tripods 18–m apart such that the wing tips of the effigies were just off the ground. Four effigies were hung from posts driven into piles of dirt approximately 1-m tall and about 9-m apart such that the effigy wing tips brushed the top of the pile. We counted the number of ring-billed gull nests within a 5-m radius of each effigy 3 and 7 weeks after effigy placement.

Results

Landfills. New York. From 17 January to 02 February 2006 gulls were present on the landfill 6 of 10 days; when present the mean number of gulls was 537 (range of 350 – 700). When effigies were placed on the active face from 13 – 21 February, gulls were present on 4 of 5 days and when present the mean number using the landfill was 699 (range of 550 – 775). On day 1 of effigy placement, no gulls landed on the active face but about 400 circled above the active face. On days 2 – 5 the gulls circled and then landed on the active face amongst the effigies (figure 1).

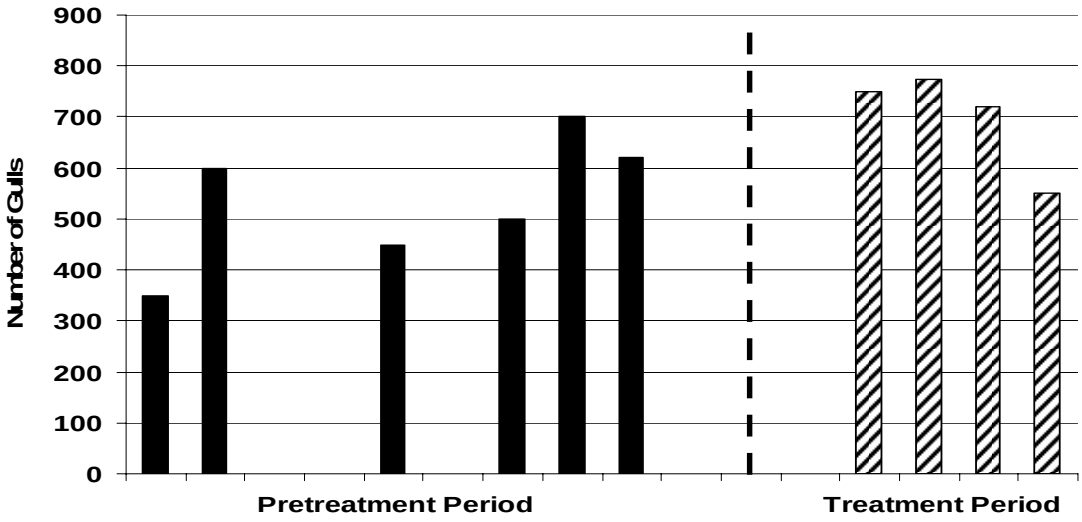

Figure 1. The number of gulls on the active face of an upstate New York landfill with and without herring gull effigies in place, January – February 2006.

Ohio. In test 1, effigies were in place for 3 weeks before gulls left the landfill due to winter weather. During deployment, the mean (± standard deviation) distance of gulls to the effigies ranged from 54 (± 34.5) m in week 1 to 100 (± 14.1) m in week 3 (Figure 2). The percentage of gulls at the entire landfill using the portion of the landfill in which the effigies were deployed remained similar to pretreatment levels (Figure 3).

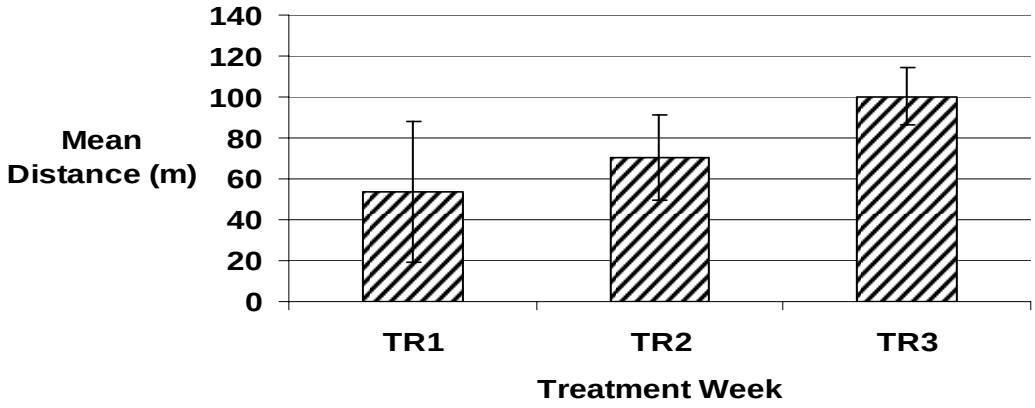

Figure 2. Mean distance of gulls from effigies placed in a 23- x 21-m rectangle at a northern Ohio landfill, Erie County, November – December, 2005.

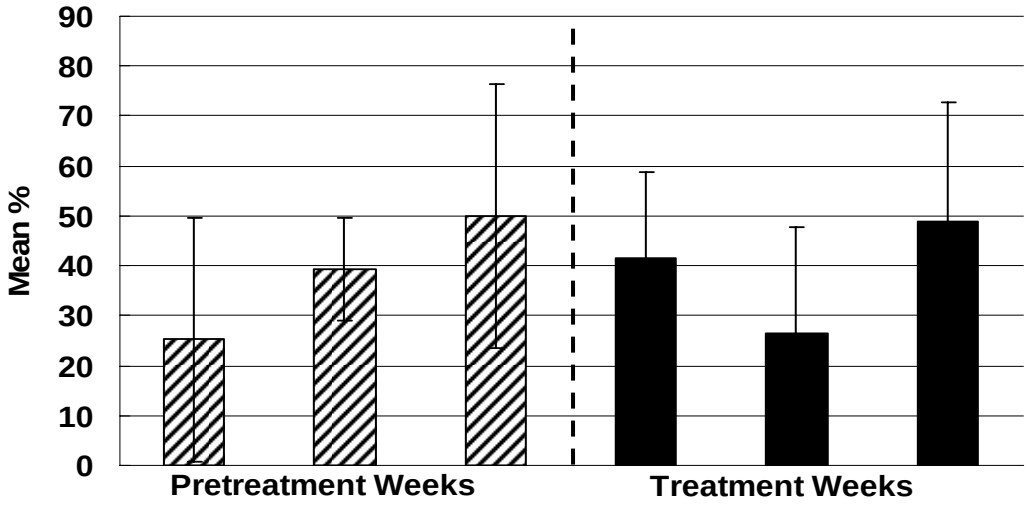

Figure 3. The percentage of the population of gulls at a northern Ohio landfill using the south liner for the 3 weeks prior to and after effigy deployment, Erie County, November – December 2005.

In test 2 the mean distance of gulls to effigies decreased steadily from 72 (±16) m to < 5 (±2.3) m within 4 weeks (Figure 4). Following a 6-week effigy deployment period we conducted a 4-day pyrotechnic harassment program in which we fired an average of 12 pyrotechnics per hour per day (range of 7.4 – 16.8) and prevented gulls from landing at the landfill. Following the harassment program we again measured distance of gulls to effigies and found that after 1 day of observation (3 days following the end of harassment), gulls were < 15 m from the effigies (Figure 5).

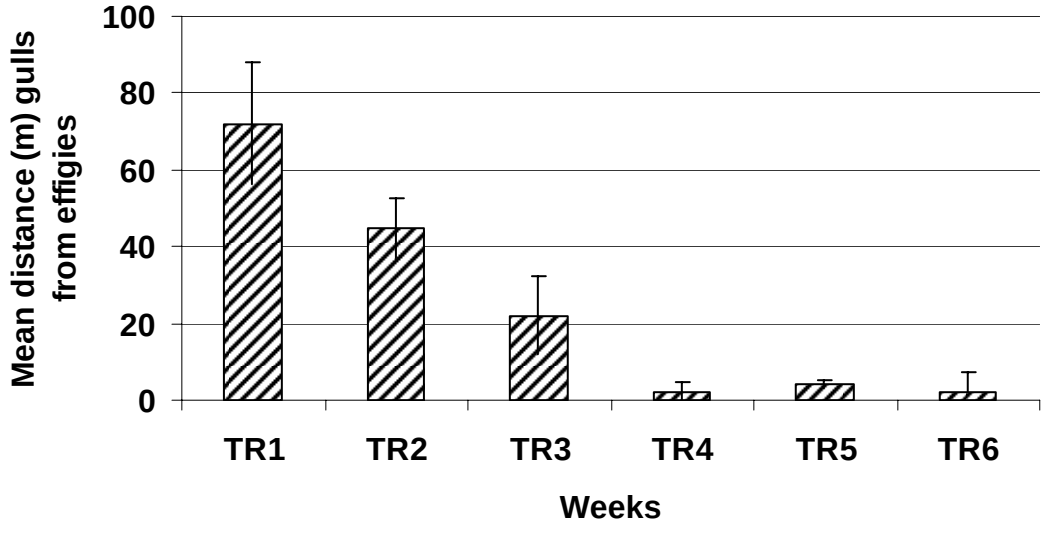

Figure 4. Mean distance of gulls from effigies deployed at a northern Ohio landfill, Erie County, August, 2006.

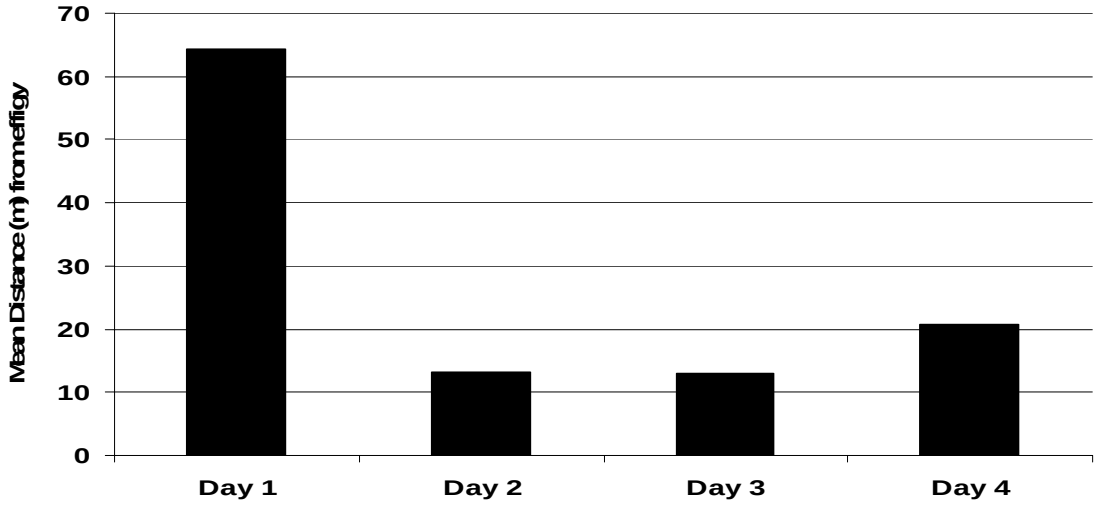

Figure 5. The mean distance of gulls from effigies at a northern Ohio landfill following 4 days of harassment with pyrotechnics, Erie County, September, 2006.

In test 3, effigies were deployed and within 1 day, gulls were within about 15 m of the effigies (Figure 6). After the initial 7 days of effigy deployment we conducted a 5-day harassment program using pyrotechnics supplemented with lethal control. We fired a mean of 24 pyrotechnics per hour per day (range of 7.1 to 43.6). On day 4, 8 ring-billed gulls were killed from 1 flock that would not leave the landfill after being harassed with pyrotechnics. The mean distance of gulls to the effigies in the week following harassment ranged from 100 m on days 2 and 3 to 5 m on day 5 (Figure 7).

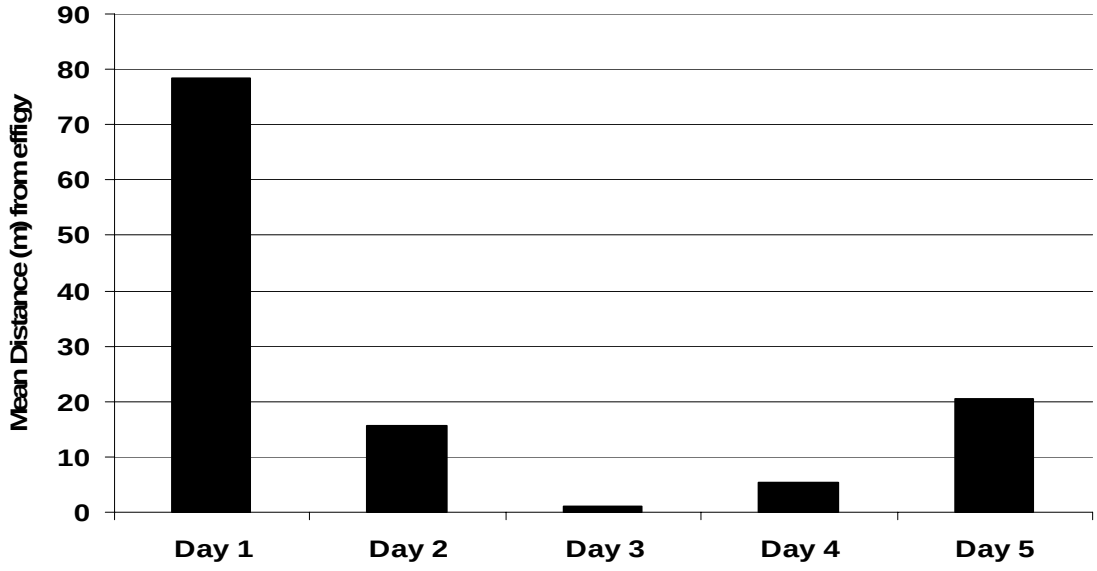

Figure 6. Mean distance of gulls from effigies deployed at a northern Ohio landfill, Erie County, October, 2006.

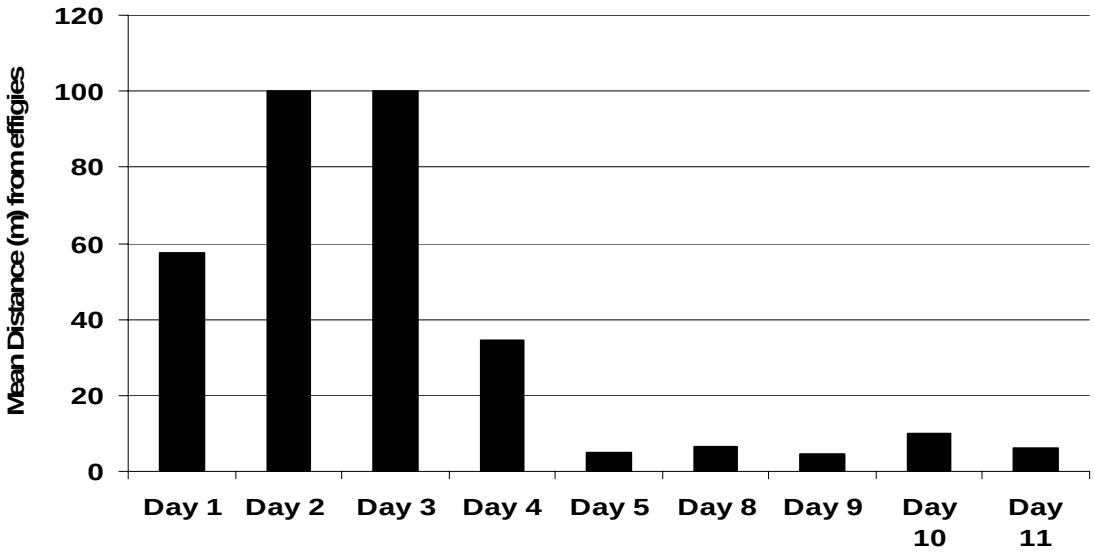

Figure 7. The mean distance of gulls from effigies at a northern Ohio landfill following 5 days of harassment with pyrotechnics supplemented with lethal control, Erie County, October, 2006.

Airport. From April 2005 – March 2006, prior to effigy placement, 1,438 gulls were observed in the CDF. From April 2006 – March 2007, during the time when effigies, mylar ribbon, pyrotechnics, propane cannons, and lethal control were deployed, 179 gulls were observed in the CDF (Figure 8).

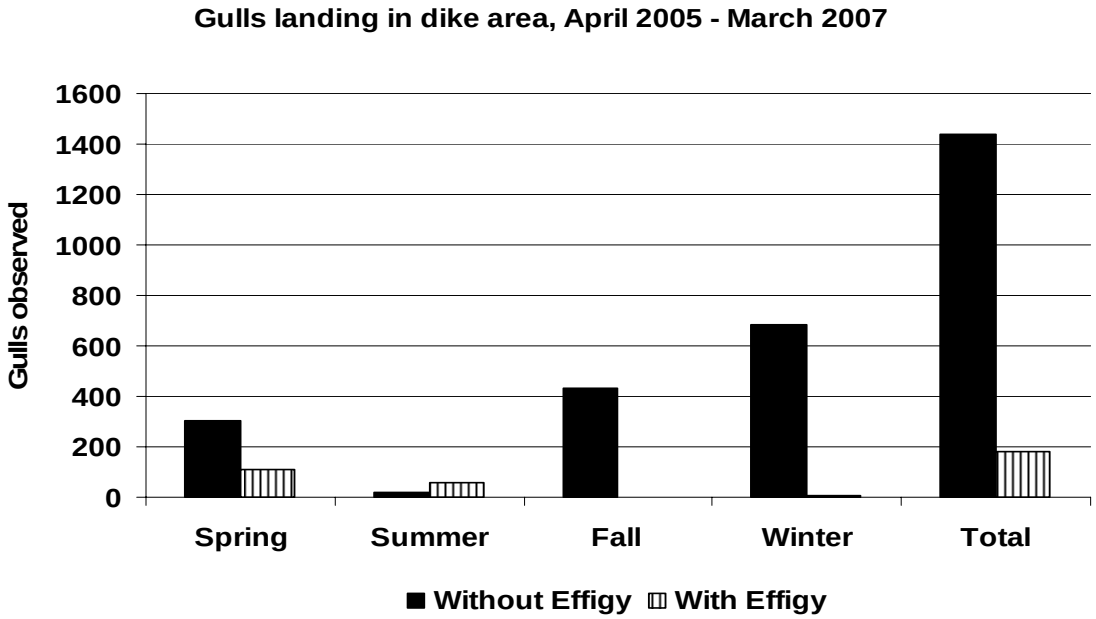

Figure 8. The number of gulls landing in a containment disposal facility on an airport adjacent to Lake Erie both with and without gull effigies, and mylar ribbon present, April 2005 – March 2007.

Nesting Colony. Three weeks after effigy placement we found a mean of 2.5 nests (range of 0-4 nests) within 5 m of the effigies above the dirt piles. The tripod supported effigies had a mean of 10 (range of 8 – 13) nests within 5 m of each effigy. Approximately 71% of these nests had no eggs. Seven weeks after effigy placement we found a mean of 18 (range of 10 – 32) nests with eggs within 5 m of each effigy above the dirt piles. The tripod supported effigies had a mean of 48 (range of 36 – 55) nests within 5 m of each effigy. Approximately 81% of all nests within 5 m had 3-egg clutches.

Discussion

Gull reactions to a hanging gull effigy differed based on the situation in which the gulls confronted the effigy. When the effigy was in a location that was highly desired by gulls and there were no alternative areas readily available, gulls used the site in the presence of effigies. This was especially noticeable at nest sites and single source food sites (e.g. the active face at a landfill). However, when effigies were placed in desired loafing areas, away from food sources, gulls used alternative areas and refrained from using loafing areas with effigies on them for an extended time.

When effigies were used as part of an integrated bird management program results differed with regards to the value of the effigies. The variability of response might have been due to the different management strategies that were being followed. At the Ohio landfill, we waited to employ both pyrotechnics and eventually lethal control only after gulls had habituated to the effigies at all locations within the landfill. In this scenario, the scare and lethal techniques did not enhance the effigies. However, at the airport, where an integrated approach was used before and through effigy placement, gulls did appear to avoid the area in which effigies were deployed. It should be noted for the airport, that despite the presence of other scare tactics, gulls were observed to hover over areas where effigies alone were present and then to leave the area without further efforts to employ other scare tactics.

Used alone, gull effigies had limited effectiveness at altering gull behavior. However, when used as part of an aggressive, integrated gull management program, effigies enhanced the dispersal of unwanted gulls.

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