



Pigeons are common pests to be seen in urban areas. They are considered just as big of a public health concern as rodents. They leave huge messes wherever they congregate that look unsightly, are unhealthy, and cost money to correct properly. If the fecal matter is not dealt with in a proper fashion it may be ground into dust and sent flying into unsuspecting peoples bodies.



Image 1: Pigeons will gather and fly in large flocks.

Fungal infections are the most common and spread through inhaling fecal matter from the bird. Cryptococcosis and Histoplasmosis are both fungal infections that are caused by spores in the fecal matter. These spores have an even greater chance of becoming airborne when cleaning of the feces. Chlamydiosis is another disease commonly spread by these birds. This is a bacterial infection that is spread by breathing in any dried byproduct of diseased birds. Keeping these birds away from areas that humans frequent will help protect the public populations.

Pigeons are amazing navigators that can find their way to the location they were birthed in to raise their young. The full process of how they navigate has not completely been unraveled, but we do know a couple components involved. They utilize the position of the sun in their navigational skills among other tools, more impressively, however, they can also sense the magnetic grid that encompasses our globe. They accomplish this using at least two methods that constantly check and calibrate each other. This process is called magnetoreception. The first is a small amount of magnetite located in their beak. The second is an enzyme that is located in specialized cells inside a pigeon's eye. These two tools allow these birds to always determine their location and how to get home no matter how far they are from it, or the conditions they face.



Image 2: Optigel is a popular method of pigeon prevention.



Image 3: Pigeon spinners are a common sight. Image from: DaveFilesDrones.com

There are many methods of pigeon prevention, the problem is the most effective methods are costly to install and maintain. Spikes and nets are both examples of this. Spikes are long stakes with sharp points that make areas too hostile to land for the birds. Nets are used as fences that prevent the birds access to areas where they would roost or rest. The birds can sometimes get ensnared in the nets and die, which adds to the public health concern. Another popular method is creating effigies to scare off the birds, but is not a long term solution as the pigeons will shortly discover that the effigy has no life and is no longer afraid. Optigel and spinners reflect light to try to deter the birds from feeling comfortable in landing. Some parties even try to relocate the birds, but this is labor intensive, and most of the time the birds find their way back with their excellent navigational skills. Nest clearing can keep the birds from nesting in an area, but has no effect on the birds that have just come to the area to forage. These are just some of the most common humane ways to deal with pigeons.

For this case study we took a piece of equipment that emits a 120Hz electromagnetic pulse. There is a thin wire wrapped around several posts around the perimeter then inside to ensure the pulse covers the whole area. This equipment was created by Brazilian scientists to make use of pigeon magnetoreception as a deterrent. The pulse makes an area uncomfortable for the birds to land in the affected area, by registering as a surge of light to the pigeon. Pigeons will then seek new homes, even abandoning nests in the affected area.



Image 3 & 4: Many pigeons gathered on the southwest side of the roof.

Our question for this study was “What level of efficacy could people expect this equipment to work?” From this the hypothesis of “The equipment will be successful in displacing all the pigeons in an area” was formed. We conducted the study at a city of Tucson owned building, named Verde Meadows, that had a large pigeon population . This population is fueled by an elderly lady who has consistently fed the birds for 25 years. The methods that Verde Meadows had employed were spinners and optigel, but were still plagued with many birds every day. The southeast side of the roof was the most populated as it gave the birds a prime vantage point to the yard that they got fed in.

This study started with a two week observational period where birds were counted three times a day using wildlife cameras, and a live count conducted every two days. The live counts on the southeast side produced an average of 41, with a maximum of 62 birds and a minimum of seven birds. The whole roof provided a mean of 21.833 pigeons at any time. The birds were most abundant in the evening roughly an hour before sunset, until about 15 minutes before sunset when a large majority of birds would take off at the same time and head west.



Image 5: After the instal the pigeons stopped landing on the roof.

After this observational period the Installation was performed by the company “Flock Off”. Then more counts were conducted with the device on to determine efficacy of this device. The numbers were drastically different in a positive way. Our average pigeon count on the southeast roof after the installation of the building was .8 birds, with a whole roof mean of .5667 pigeons at any given time. After running an one-way variance test we saw that the significant value is less than .001, which means that there is strong statistical evidence that this device is effective.

One-way Analysis of variance On v Off

Descriptives								
#birds	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Off	12	21.8333	22.87449	6.60330	7.2996	36.3671	.00	62.00
On	30	.5667	1.35655	.24767	.0601	1.0732	.00	6.00
Total	42	6.6429	15.36994	2.37163	1.8532	11.4325	.00	62.00

Tests of Homogeneity of Variances					
#birds	Based on	Levene Statistic	df1	df2	Sig.
	Mean	104.059	1	40	<.001
	Median	23.918	1	40	<.001
	Median and with adjusted df	23.918	1	11.291	<.001
	Trimmed mean	95.357	1	40	<.001

Image 7: A one-way analysis of variance shows that the device is highly effective.

Pigeons can be a huge public health concern. From carrying diseases to making unsanitary messes in public, these flying pests are hard to deal with in a humane way. They have proven resilient to our methods of prevention. The prevention method that tend to be effective are also unsightly. This device offers a new, effective, and humane method of thwarting these birds from causing damage to property and infecting people with disease.