Report on effect of Bird Free on a night roost of feral pigeons

Test conducted by: the Department of Biology, University of Pisa, Italy

Introduction

In order to assess the efficacy of the product *Bird Free* in repelling feral pigeons we performed a test on a night roost site at the Veterinary Clinic of the University of Pisa in San Piero a Grado (Pisa). The night roost subject of the study was located on the north and south rooves of a building which houses heating equipment. Hot air from the equipment is expelled through vents on either side of the building. The warm air from the vents creates an ideal night roost for pigeons.

Materials and methods

In order to document the presence of the birds before and after treatment video-cameras were installed on each roof. The south roof was treated with *Bird Free*; the north roof was treated with empty PET dishes. The cameras recorded a picture every minute.



Figure 1. South roof prior to cleaning and treatment.

The south roof is 9.09 m wide x 4.15 m deep. The area where pigeons roosted was approximately 80 cm deep towards the centre of the roof, tapering to approximately 50 cm at the sides.



Figure 2. South roof before sunset (18:33) on 26th of March 2017, three days before the installation of *Bird Free*.



Figure 3. South roof after cleaning.

On 29th March 2017, more than 100 kg of pigeon faeces were manually removed from the south roof, which was then washed and disinfected.



Figure 4. South roof treated with *Bird Free*.



Figure 5. The area of the south roof treated with *Bird Free* was approximately 9m x 1.8m.

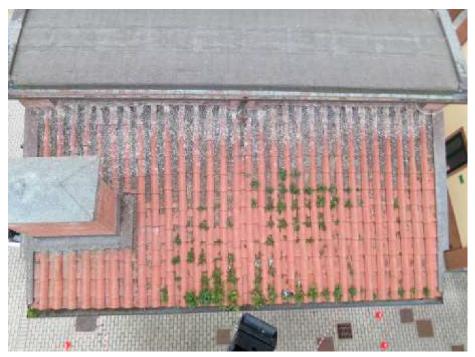


Figure 6. North roof prior to cleaning and treatment.



Figure 7. North roof before sunset (18:45) on the 27_{th} of March 2017, three days before the installation of the empty PET dishes.



Figure 8. North roof after cleaning.

On 30th of March 2017, more than 100kg of pigeon faeces were removed from the north roof, which was then cleaned and disinfected.



Figure 9. North roof treated with empty PET dishes as a "control".

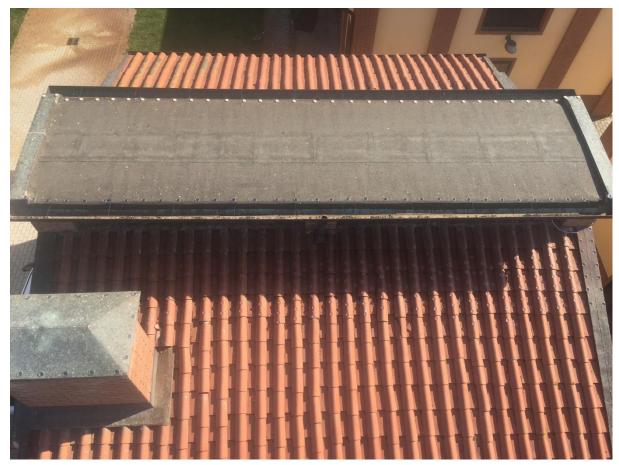


Figure 10. The area of the north roof treated with empty dishes was approximately 9m x 1.8m.

Data analysis

We considered Day 0 the day of the installation (either with the *Bird Free* or empty dishes). We counted the number of pigeons visible in the photograms recorded by the video-cameras at sunrise, 12.00, 14.30 and sunset for each experimental Days (Day -3, Day -2, Day -1, Day 1, Day 2, Day 3, Day 7, Day 14, Day 30, Day 60, Day 90, 1 year and 2 years). For each experimental day we considered the highest number of birds observed. The median number of birds counted before the treatment was considered as baseline to compute the difference in the highest number of birds present in the experimental days after the treatment.

Results and Conclusion

After the installation of *Bird Free* not one single bird was observed roosting at night on the south roof, while many birds regularly continued to roost on the north roof of the building where empty dishes had been installed. The number of pigeons observed on the north and south rooves on the experimental days at the established times are shown in Table 1 below.

Table 1. Number of pigeons recorded on each experimental day at sunrise, noon, 14.30 and sunset.

pty Dishes	CAM04 North Roo	CAM01 South Roof BIRD FREE			
	Date	Number of Birds	Date	Time	DAY
50		29		sunrise	
0		44		12:00	
0		0		14:30	
52	27/03/2017	48	26/03/2017	sunset	-3
34		30		sunrise	
0		0		12:00	
0		0		14:30	
51	28/03/2017	39	27/03/2017	sunset	-2
27		22		sunrise	
0		0		12:00	
0		0		14:30	
29	29/03/2017	37	28/03/2017	sunset	-1
29		0		sunrise	
0		0		12:00	
0		0		14:30	
35	31/03/2017	0	30/03/2017	sunset	1
32		0		sunrise	
0		0		12:00	
0		0		14:30	
25	01/04/2017	0	31/03/2017	sunset	2
30		0		sunrise	
0		0		12:00	
0		0		14:30	
36	02/04/2017	0	01/04/2017	sunset	3
13		0		sunrise	
0		0		12:00	
0		0		14:30	
41	06/04/2017	0	05/04/2017	sunset	7
21		0		sunrise	
0		0		12:00	
1		0		14:30	
48	13/04/2017	0	12/04/2017	sunset	14

12:00 14:30 30 sunset 28/04/2017 0 29/04/2017 35 sunrise 0 0 19 14:30 0 0 29/05/2017 14:30 60 sunset 28/05/2017 0 29/05/2017 41 sunrise 0 0 29/05/2017 41 37 38 30 sunset 28/05/2017 0 29/05/2017 41 41 41 47 47 47 47 47 47 47 47 47 47 47 47 47						
30 sunset 28/04/2017 0 29/04/2017 35 sunrise 0 0 19 12:00 0 29/05/2017 1 19 14:30 0 29/05/2017 41 sunrise 0 29/05/2017 41 sunrise 0 29/05/2017 41 21:00 0 29/05/2017 41 22 27/06/2017 0 28/06/2017 37 sunrise 0 28/06/2017 37 sunrise 0 0 18 12:00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		sunrise		0		24
30 sunset 28/04/2017 0 29/04/2017 35		12:00		0		0
Sunrise		14:30		0		0
12:00 14:30 30 30 30 30 30 30 30 30 30 30 30 30 3	30	sunset	28/04/2017	0	29/04/2017	35
14:30 28/05/2017 0 29/05/2017 41		sunrise		0		19
60 sunset 28/05/2017 0 29/05/2017 41 Sunrise		12:00		0		1
sunrise 0 47 12:00 0 2 14:30 0 28/06/2017 37 sunrise 0 18 12:00 0 0 0 1 year 14:30 0 0 0 1 year 0 0 0 0 0 0 1 year 0		14:30		0		0
12:00 14:30 90 sunset 27/06/2017 0 28/06/2017 37 sunrise 0 12:00 14:30 0 0 14:30	60	sunset	28/05/2017	0	29/05/2017	41
90 sunset 27/06/2017 0 28/06/2017 37 sunrise 0 0 18 12:00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		sunrise		0		47
90 sunset 27/06/2017 0 28/06/2017 37 sunrise 0 0 18 12:00 0 0 00 14:30 0 0 07/04/2018 29 sunrise 0 0 07/04/2018 29 sunrise 0 0 07/04/2018 29 2 years sunset 29/03/2019 0 29/03/2019 23 sunrise 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		12:00		0		2
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1 year sunset 07/04/2018 0 07/04/2018 29 sunrise 0 9 12:00 0 0 14:30 0 29/03/2019 0 2 years sunrise 0 29/03/2019 23 sunrise 0 4 0 0 12:00 0 0 0 0 14:30 0 0 0 0		12:00		0		0
sunrise 0 9 12:00 0 0 14:30 0 29/03/2019 0 sunrise 0 29/03/2019 23 sunrise 0 4 12:00 0 0 14:30 0 0		14:30		0		0
12:00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 year	sunset	07/04/2018	0	07/04/2018	29
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2 years sunset 29/03/2019 0 29/03/2019 23 sunrise 0 4 12:00 0 0 14:30 0 0		12:00		0		0
sunrise 0 4 12:00 0 0 14:30 0 0		14:30		0		0
12:00 0 0 14:30 0 0	2 years	sunset	29/03/2019	0	29/03/2019	23
14:30 0		sunrise		0		4
		12:00		0		0
4 years sunset 13/05/2021 0 13/05/2021 22		14:30		0		0
	4 years	sunset	13/05/2021	0	13/05/2021	22

On the basis of the reported results above, we confirm that *Bird Free* has been 100% effective in dissuading feral pigeons from roosting at night for at least four years after installation.