



Nest Box Cleaning Report

September 2017

Friends of City Gardens

Introduction

Nest boxes in City of London gardens are cleaned every year by a team of City gardeners and volunteers. Data on occupancy has been recorded for every nesting season since 2011. Annual nest box cleaning is important not only for maintaining the health of birds but also, together with the annual RSPB Big Garden Birdwatch in spring and the summer Breeding Bird Survey, it provides evidence to evaluate the success of the City's biodiversity strategy and action plan. Cleaning is also essential to maintain the number of potential nest sites as birds are less likely to nest again in a box with old nest material.

1. Results

- In 2017 all the nest boxes in City gardens were cleaned between 14 - 19 September.
- 53 nest boxes were checked and cleaned in 22 gardens; two boxes were replaced and 19 additional boxes were installed including in two new locations, giving a total of 72 boxes installed and ready for the 2018 nesting season.
- 23 of the boxes had completed nests (43%), in comparison to 51% in the 2016 nesting season, which was an unusually successful year.
- There were in addition five partial nests that had not been completed.
- The majority of nests were those of Blue tits (74%) with the remainder Great tits.
- No nests had been built in open-type 'robin' boxes.
- In 2017 there were 11 nests (48%) with either unhatched eggs or dead chicks, compared with 82% in 2016. This improvement is probably the result of warmer, drier summer weather compared with the cold wet spring and early summer in 2016 (see Chart 1). On average the mean daily temperature in the City over the key months of March to May was over 2°C warmer in 2017 than 2016¹
- Cleaning took 46 man-hours of City gardener time spread over 3½ days plus 40 hours of volunteer time to take notes and photographs. Cleaning the boxes earlier in the year (September rather than November) was not only more pleasant for the team but provided more timely data for the City of London Breeding Birds Survey.

2. Recommendations

2.1 Improving breeding success - food availability during the breeding season

We can do little to mitigate the effect of the weather, other than ensuring that nest boxes are sited correctly (North or East facing, out of direct sunlight and prevailing winds and

rain); and using deep, woodcrete boxes that provide better insulation (all our boxes are now of this type). However, we can improve food availability and quality, which should improve breeding success.



Tits and other birds that are primarily seed eaters, feed their young on caterpillars and other insects. Seeds will be used as a last resort but there is evidence to suggest that the dry diet may cause dehydration of young and contribute to increased mortality rates. Six gardens have well maintained feeding stations and consideration should be given to feeding mealworms during the breeding season. This is already done in Fann Street and Bunhill Fields. Although dried mealworms may contribute to dehydration of chicks, feeding live mealworms would be difficult in most City gardens.

It is possible, however, to improve the natural diet of breeding birds by increasing the numbers of live caterpillars on their natural forage plants or increasing insect populations by installing more log piles. Both Great tits and Blue tits feed on caterpillars of the Winter Moth. These insects require broad leaf trees, such as oak, birch and hawthorn. Planting

more of these native species in City gardens would substantially enhance biodiversity, and should be a priority in Sites of Importance for Nature Conservation (SINCs). It is good to note that oak trees have been recently been planted in Postman's Park and Bunhill Fields.

2.2 Improving food availability year round

Log piles would improve insect populations throughout the year. Log piles in Postman's Park were removed as part of the replanting and should be restored, particularly as a considerable amount of the old shrub layer has been removed. There were no nests in the Postman's Park boxes this year, which may be because of the disturbance but lack of forage and cover may also be a factor.

Multi-layered shrub cover using berry bearing species provides a safe habitat for newly fledged birds when they leave the nest and also forage for autumn and winter.

Feeding stations should be added in all SINCs. SINCs under the management of the City without feeding stations include:
Postman's Park
Portsoken
Seething Lane/St Olave's

Cleary Garden
St Botolph's Bishopsgate
Aldermanbury Gardens
Finsbury Circus

Where there is a risk of increased rodent populations a bird feeding cage can be used to prevent spillage on the ground and feed can be kept in secure metal containers.



Bird feeding cage in Bunhill Fields

Table I: Number of nest boxes and number of nests for 2017 season

	2017		2016		2015	
	No. boxes	No. nests	No. boxes	No. nests	No. boxes	No. nests
Barbican - Fann Street	3	2	3	2	2	1
Barbican - Speed	2	1	1	1	1	1
Barbican - St Giles	2	1	2	2	2	2
Barbican - Thomas More	7	4	7	3	7	1
Barbican - Upper Podium	NA	NA	Removed prior to nesting season			0
Bernard Morgan/Golden Lane	NA	NA	Removed Nov 2015		1	0
Bunhill Fields	8	2	7	2	6	2
Christchurch Greyfriars	NA	NA	Removed 2015		NA	NA
Cleary Garden	2	2	2	1	2	1
Finsbury Circus	2	2	2	2	2	1
Petticoat Square	2	1	NA	NA	NA	NA
Portsoken	1	0	1	0	NA	NA
Postman's Park	4	0	3	1	3	1
St Andrew Holborn	1	0	NA	NA	NA	NA
St Anne and St Agnes	1	0	1	1		NA
St Botolph without Bishopsgate	1	1	1	0	1	Not checked
St Dunstan in the East	5	2	5	2	6	0
St Olave Hart Street	1	0	NA	NA	NA	NA
St Olave Silver Street	1	1	1	1	NA	NA
St Mary Aldermanbury	2	1	2	2	1	1
St Mary Staining	1	1	1	1	NA	NA
St Michael Cornhill	1	0	1	0	NA	NA
St Paul's Cathedral	4	1	4	2	4	1
St Peter Cornhill	1	0	1	0	NA	NA
Smithfield Rotunda	1	1	NA	NA	NA	NA
Total	53	23	45	23	41	12
Occupancy of checked boxes (excl. Christchurch Greyfriars)	43%		51%		30%	

Table 2: Species using boxes 2017

	Total Nests No.	Great tit No.	Blue tit No.
Barbican - Fann Street*	2	1	1
Barbican - St Giles terrace	1		1
Barbican - Thomas More*	4	3	1
Barbican - Speed House	1		1
Bunhill Fields*	2		2
Cleary Garden	2	1	1
Finsbury Circus	2		2
St Botolph without Bishopsgate	1		1
St Dunstan's in the East*	2		2
St Mary Aldermanbury	1		1
St Mary Staining	1		1
St Olave's Silver St	1		1
St Paul's Cathedral*	1	1	
Petticoat Square garden	1		1
Smithfield Rotunda*	1		1
Total	23	6	17
% of completed nests		26%	74%

* gardens with feeders maintained throughout the summer

3. Observations

3.1 Breeding success

Occupancy² was marginally lower in 2017 - 43% of nest boxes compared with 51% in 2016. It is always difficult to speculate on differences in breeding success based on levels of occupancy without additional observations of the birds using the boxes. No nest boxes were opened to check on occupancy during the breeding season so these results are based on counting the number of nests (completed and partial) in nest boxes during the annual cleaning at the end of the seas



Blue tit nest with two unhatched eggs from box on Barbican - St. Giles Terrace

Fewer nests compared with 2016 do not necessarily mean it was a less successful breeding season. The lower levels of abandoned or unfertile eggs and dead chicks in 2017 (48% of nests), compared with very high level in 2016 (82%) may suggest better overall breeding success.

Blue tits lay up to 10 eggs and the female body mass is only 80% of maximum clutch size, compared to Great tits which lay fewer eggs and the females are larger and can brood all the eggs in a nest³. This may result in unhatched Blue tit eggs. However, a higher proportion of the Great tit nests had unhatched eggs - of the four nests with unhatched eggs, two

were Great tit (33% of Great tit nests) and two Blue tit (12% of Blue tit nests).

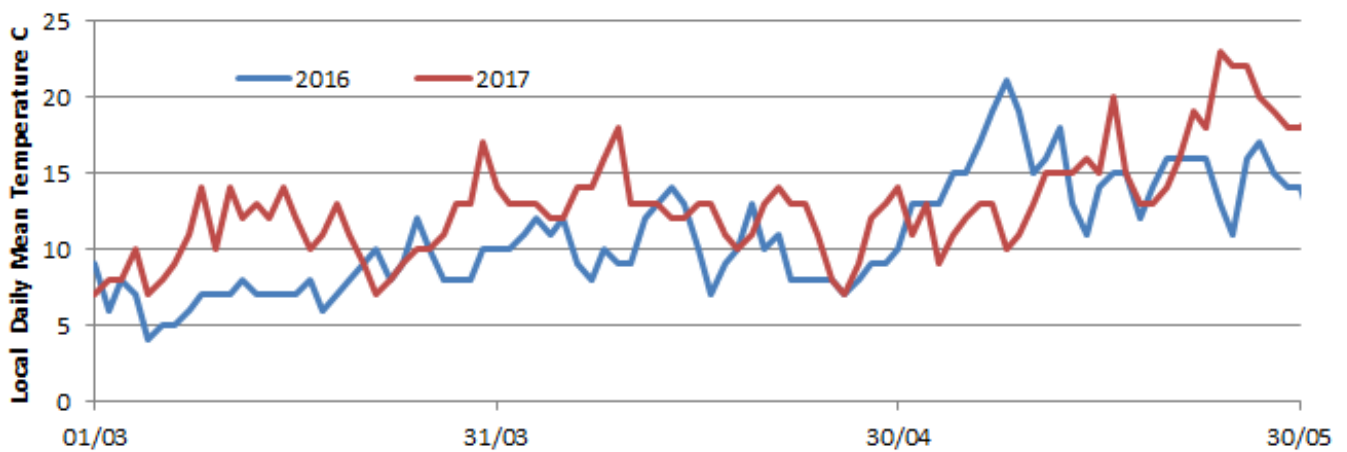
Of the eight nests with dead chicks, one was Great tit (12.5% of Great tit nests) and seven Blue tit (41% of Blue tit nests). Reasons for dead chicks can be disease or parasites, temperature (too cold or too hot), or most likely lack of suitable food. Tits feed their young on caterpillars and insects. Poor weather, such as heavy rain washes insects off plants and protracted rainy periods in the breeding season - at its peak in April and May in the City - may reduce available food. Adults feeding young may turn to seed feeders to supplement insects, although seeds may cause dehydration and contribute to chick mortality. Colder temperatures may also delay or reduce insect availability. Mean daily spring temperatures in 2017 were on average 2°C higher than in 2016 and this may have contributed to the reduction in chick mortality this year.

Mortality of a substantial number of Blue tit chicks is normal. Dead chicks are generally not removed from nest boxes by the adult birds, so where three or four dead chicks are found, the rest of the brood might be expected to have fledged. Studies in Finland⁴ suggest an average of 5.07 Great tit and 7.05 Blue Tit chicks are reared per successful nesting in urban areas of Helsinki.



Great tit nest lined with cigarette filter material

Chart I: Mean daily temperatures | March to 31 May 2016 and 2017⁵



3.2 Other species using nest boxes

As in previous years, a number of False Widow spiders, probably *Steatoda nobilis*, were observed in nest boxes. Specimens were found in Bunhill Fields, Thomas More Garden and St Mary Aldermanbury.



False widow spider found in a nest in Bunhill Fields

A dead adult female Gypsy Moth, *Lymantria dispar* was found in a nest box in St Dunstan in the East. These moths were introduced to the UK in imported trees and are potentially very destructive to deciduous trees.

Another nest box in St Dunstan's contained nest of a solitary bee or wasp and a large, dense cocoon of the wax moth with caterpillars was attached to the ceiling of the box. These moths predate on bees and wasps by eating the wax combs and then the immature bees and wasps.



Solitary bee or wasp nest found in a tit box in St Dunstan in the East



Wax moth cocoon with caterpillars in St Dunstan in the East

4 New sites for nest boxes

Recommended sites for new boxes 2018

Gardens where new nest boxes could be installed are:

- Finsbury Circus - as part of the refurbishment - 20 boxes on trees and sparrow boxes as an integral part of the new restaurant building
- St Mary at Hill - 1 box
- Whittington Garden - 2 boxes
- St Botolph's Bishopsgate - potential for sparrow terrace recycled from Christchurch Greyfriars and 2 additional tit boxes

There are six sparrow terraces that were removed from Christchurch Greyfriars and have not been relocated. These require fixing with a bolt to masonry or soffit boards. The issue of listed building or English Heritage consent for fixing to walls needs to be resolved as they would be ideal for the Barbican. Potentially one or two could be fixed to the Guildhall School of Music and Drama or in Finsbury Circus as part of the rebuilding of the restaurant.

Table 3: Sites where new boxes were installed in 2017, including replacements

Location	No. boxes	Type
Barbican - Fann Street	1	Woodcrete starling box
	1	Homemade wooden tit box
Bunhill Fields	3	Schwegler 26 mm tit box
	2	Schwegler 32 mm tit box
Church Entry	1	Schwegler 32 mm tit box
Petticoat Square	1	Schwegler 26 mm tit box
	1	Schwegler 32 mm tit box
Portsoken	1	Schwegler 32 mm tit box
St Andrew Holborn	1	Schwegler 26 mm tit box
St Paul's Cathedral	4	Schwegler 45 mm starling box
Seething Lane	1	Schwegler 26 mm tit box
	2	Schwegler 32 mm tit box
Smithfield Rotunda	1	Schwegler 32mm tit box
	1	Schwegler 26 mm tit box
Total	21	

5. Type of box and installation

Front opening woodcrete boxes are the easiest and quickest to clean. They are robust against predators and provide better insulation than wooden boxes. Research has shown that breeding is more successful in these types of boxes.⁶

It is suggested that boxes with a variety of entry hole sizes continue to be installed to attract different species:

- 32mm entrance hole will attract Great, Blue and Coal Tit, Tree and House Sparrow and bats.
- 26mm entrance hole suits Blue, Marsh and Coal Tit and possibly Wren. All other species are prevented from using the nest box due to the smaller entrance hole.
- 45 mm for Starlings.

Tit and Tree Sparrow boxes should be installed approximately 3 metres above the ground on trees with a clear flight path to the nest box. House sparrow and Starling boxes should be higher and positioned under eaves if possible. Potential sites would

need to be individually identified. Four starling boxes were installed in St Paul's Cathedral garden this year as an experiment. Starlings are known to flock in this garden and a group of more than 20 were observed during the nest box cleaning.

6. Volunteer involvement

National Nest Box Week (14 - 21 February 2018) although a little late for early nesting birds in the City, could be used as a focus for activities such as engaging City businesses in funding new boxes.

7. Interpretation boards

Consideration should be given to placing interpretation boards in some City gardens showing the type of birds that nest and feed. In Bunhill a whiteboard could be placed in the window of the hut and daily sightings written up. The existing species sheets in notice boards for birds such as the Peregrine falcon should be updated.

References

¹Data from London Air Quality Network monitoring station at Old Street

²Defined as a completed nest

³D. Charles Deeming & Christopher. R. Du Feu (2011) Long-term patterns in egg mortality during incubation and chick mortality during rearing in three species of tits in an English woodland, *Bird Study*, 58:3, 278-290.

⁴Proportion of juveniles as a measure of adult mortality in a breeding population of Great Tits *Parus major* and Blue Tits *P. caeruleus*, Olavi Hilden, 1978

⁵Temperature data from London Air Quality network monitor in Old Street

⁶Effect of nestbox construction and colour on the occupancy and breeding success of nesting tits *Parus* spp., Stephen J Browne 2006