



FRIENDS OF CITY GARDENS

Nest box cleaning report: 2021 breeding season

1. Results

FoCG volunteers and City gardeners clean all the nest boxes in City of London gardens every year. Occupancy data has been recorded for every nesting season since 2011. In the 2021 nesting season there were 78 nest boxes available for occupation, spread across 27 locations. Nests were built in 53% of the boxes, split evenly between Great tits and Blue tits. There were 28 nests (36%) with either unhatched eggs or dead chicks, compared with 57% in 2020.



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 BTO Birdtrack data from Bunhill Fields, 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.

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 omnivorous feed their young exclusively 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. Ten City gardens now have well maintained feeding stations. Feeding mealworms during the breeding season might improve adult fitness. This is already done in the Barbican Wildlife Garden and Bunhill Fields. Although dried mealworms may contribute to dehydration of chicks, feeding live mealworms would be difficult in most City gardens.

It is also 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, *Operophtera brumata*. These insects

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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).

Fig 1: Nest boxes and number of nests for 2019 to 2021

	2021		2020		2019	
	No. boxes	No. nests	No. boxes	No. nests	No. boxes	No. nests
All Hallows by the Tower	1	1	1	1	1	1
Barbican - Wildlife*	7	3	7	4	8	4
Barbican - Speed	2	2	2	1	2	1
Barbican - St Giles	3	2	3	2	4	2
Barbican - Thomas More *	7	4	7	4	7	3
Barbican – Ironmonger’s	1	0	1	1	1	1
Bunhill Fields*	12	7	11	6	10	5
Church Entry*	1	0	1	1	1	0
Cleary Garden*	2	2	2	2	2	0
Finsbury Circus	3	1	3	3	2	1
Petticoat Square	3	1	NA	NA	3	1
Portsoken*	2	1	2	0	2	0
Postman's Park*	3	2	3	2	3	2
St Andrew Holborn	2	2	2	2	2	1
St Anne and St Agnes	1	1	1	1	1	0
St Bartholomew*	1	0	0	0	0	0
St Botolph Bishopsgate*	2	2	2	1	1	1
St Dunstan in the East*	5	2	5	1	5	1
St Olave Silver Street	1	1	1	0	1	0
St Mary Aldermanbury	2	1	2	2	2	1
St Mary Staining	1	1	1	1	1	1
St Michael Cornhill	NA	NA	NA	NA	1	0
St Paul's Cathedral*	8	2	7	4	8	2
St Peter Cornhill	1	0	1	1	1	1
Seething Lane	3	0	3	0	3	1
Senator House	2	2	2	1	2	1
Smithfield Rotunda*	2	1	2	1	3	1
Total	78	41	72	42	77	32
Occupancy of checked boxes	53%		58%		42%	

* Gardens with regular feeding taking place throughout the year

2.2 Improving food availability year round – log piles and feeding stations

Log piles improve insect populations throughout the year and in winter are bird larders! There are log piles in Bunhill Fields and St Bartholomew the Great churchyard. The log piles in Postman's Park were removed as part of the replanting and will be restored in 2022. Other gardens that would benefit from log piles and are large enough to accommodate them are Portsoken, Smithfield Rotunda, Cleary, St Mary Staining, Barbican Ironmonger’s and Barbican Thomas More and St Paul’s Cathedral churchyard. Log piles should also be included in the Finsbury Circus restoration.

Feeding stations should be added in all SINCs. In 2021 FoCG installed two additional feeding cages in the following gardens:

- St Dunstan’s in the East
- Guildhall North side – later removed and replaced in St Paul’s churchyard.

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In total ten gardens now have regular feeding throughout the year.

The following SINCs under the management of the City without feeding stations include:

- Seething Lane/St Olave's Hart Street
- Aldermanbury Gardens
- Finsbury Circus
- Portsoken*

*Temporarily removed because of damage

It is recommended that additional feeding cages are installed in the three new gardens listed above during 2023. Feeding cages reduce the likelihood of rodent populations taking advantage of spilled food or pigeon trampling under the feeder; feed is kept in secure metal containers.

3. Observations

3.1 Breeding success – number of nests and mortality rates

It is always difficult to speculate on differences in breeding success each year 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 season. Occupancy was lower in 2021 at 53% of boxes containing a nest compared with 58% in 2020.

3.2 Species

Nest boxes can accommodate a number of different species (see Section 5) and it is difficult to be certain which species has used a box, unless there are observations during the nesting season. However, it is likely that the City's nest boxes are used exclusively by Blue tits and Great tits. Distinguishing the nests can also be difficult, unless there is a dead chick or an abandoned egg. Both types of tit tend to build nests with a base of grasses, substantial amounts of moss, lined with felted hair (or very often teased out cigarette filters) and fabric threads. Blue tits often line the nest with feathers and so all nests with feather linings have been categorised as Blue tit nests and those without as Great tit nests. This analysis has been corroborated by observations of birds using the nests during the breeding season.

In 2021 the number of Great tit nests was 51% of the total with the remaining 49% attributed to Blue tits. In 2020 there were slightly more Blue tit nests (52% compared with 45% Great tits – and one nest that was probably that of a Starling.

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Fig 2: Species building nests 2021

	Total Nests	Great tit	Blue Tit
All Hallows by the Tower	1		1
Barbican – Wildlife Garden	3	1	2
Barbican - Speed House	2		2
Barbican - St Giles terrace	2		2
Barbican - Thomas More	4	2	2
Bunhill Fields	7	6	1
Cleary	2	2	
Finsbury Circus	1		1
Petticoat Square	1		1
Portsoken	1		1
Postman's Park	2	1	1
Senator House	2		2
Smithfield Rotunda	1		1
St Andrew Holborn	2	2	
Sr Ann and St Agnes	1	1	
St Botolph without Bishopsgate	2	2	
St Dunstan in the East	2	2	
St Mary Aldermanbury	1		1
St Mary Staining	1		1
St Olave's Silver Street	1	1	
St Paul's Cathedral	2	1	1
Total Number	41	21	20
%		51%	49%

In 2021, 28 out of the 41 nests (68%) had dead young or unhatched eggs (24 in 2020, 57%). Mortality rates were higher for Blue tits with 11 nests containing dead chicks with an average mortality of 2.36 chicks per nest. Eleven Great tit nests also contained dead chicks but with an average mortality of 1.45 chicks. Eight Blue tit nests contained unhatched eggs (average number 2.5 per nest) whereas only four Great tit nests had unhatched eggs (average per nest one egg).



Blue tit nest from St Mary Staining with 4 unhatched eggs

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 nest (Deeming & Du Feu 2011). This may

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result in more unhatched Blue tit eggs. Mortality of a substantial number of tit chicks is normal. Studies in Finland (Hilden, 1978) suggest an average of 5.07 Great tit and 7.05 Blue tit chicks are reared per successful nesting in urban areas of Helsinki.

The stop/start weather in spring 2021 may have contributed to poor breeding outcomes with higher than usual chick mortality. Cold, wet weather following a warm period in March may have caused birds to start breeding and then have insufficient insects to feed their young.

4. Potential sites for new boxes

New boxes could be added to street trees and placed in additional gardens, although this adds to the time required for maintenance. It is recommended that the current maintenance regime is continued with all boxes being cleaned each year. As gardens are enhanced for biodiversity, nest boxes should be installed as part of the upgrade. For example, there are plans to upgrade Finsbury Circus garden, St Mary Staining and St Olave's Silver Street and to plant more street trees. It is essential that contractors do not install boxes too high for volunteer box cleaners to reach them safely.

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 (Browne 2006) than in traditional wooden boxes.

It is suggested that boxes with a variety of entry hole sizes continue to be used 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 – although there is no evidence that starlings have used the boxes installed in St Paul's Cathedral garden.

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.

6. Volunteer involvement

Nest box cleaning takes a minimum of 4 person days. This is generally split between City Gardens staff and volunteers. We would like to thank Gary, Lisa, Kevin, Ted, Paul and Nic for their time.

7. Notice boards

FoCG will provide details of nest box cleaning and bird counts for display on notice boards in relevant gardens.