

Quaker's Coppice – Analysis of Nest Data.

Nest Box Breeding Results – Summary for 2011

Over the 27 years that the monitoring has taken place the following boxes have been erected: -

small hole (Tit boxes)	19	(16 supplied in '85 by CWT)
large hole (Stock Dove boxes)	15	(the bulk erected in '91)
chimney style (Owl boxes)	2	
wedge style (Tree creeper)	3	

The tables below are a summary of the data compiled. In keeping with tradition we offer the five years data for comparison ...

Blue Tit

Year	Nests	Eggs	Hatched	Fledges	Productivity (i.e. fledges ÷ nests)
2011	15	131	110	73	4.9
2010	15	149	135	83	5.5
2009	10	111	94	59	5.9
2008	10	90	76	8	0.8
2007	12	108	86	55	4.6

average (since '85) 6.7

Great Tit

Year	Nests	Eggs	Hatched	Fledges	Productivity (i.e. fledges ÷ nests)
2011	5	40	35	21	4.2
2010	4	27	25	14	3.5
2009	7	50	45	38	5.4
2008	7	45	32	12	1.7
2007	6	36	33	21	3.5

average (since '85) 5.2

Stock Dove

Year	Nests	Eggs	Hatched	Fledges	Productivity (i.e. fledges ÷ nests)
2011	7	16	14	8	1.1
2010	9	19	10	7	0.8

The Stock Doves breeding season extends beyond our recording period, so their data is incomplete

You may recall that the weather this year was similar to that at the same time last year. The data for the three species monitored reveals similar results to last year.

Comparison of 'date first egg laid' shows that 2011 has the earliest date since 2001 for Great Tits and the earliest for two years for Blue Tits (2011 was the second earliest since 2001).

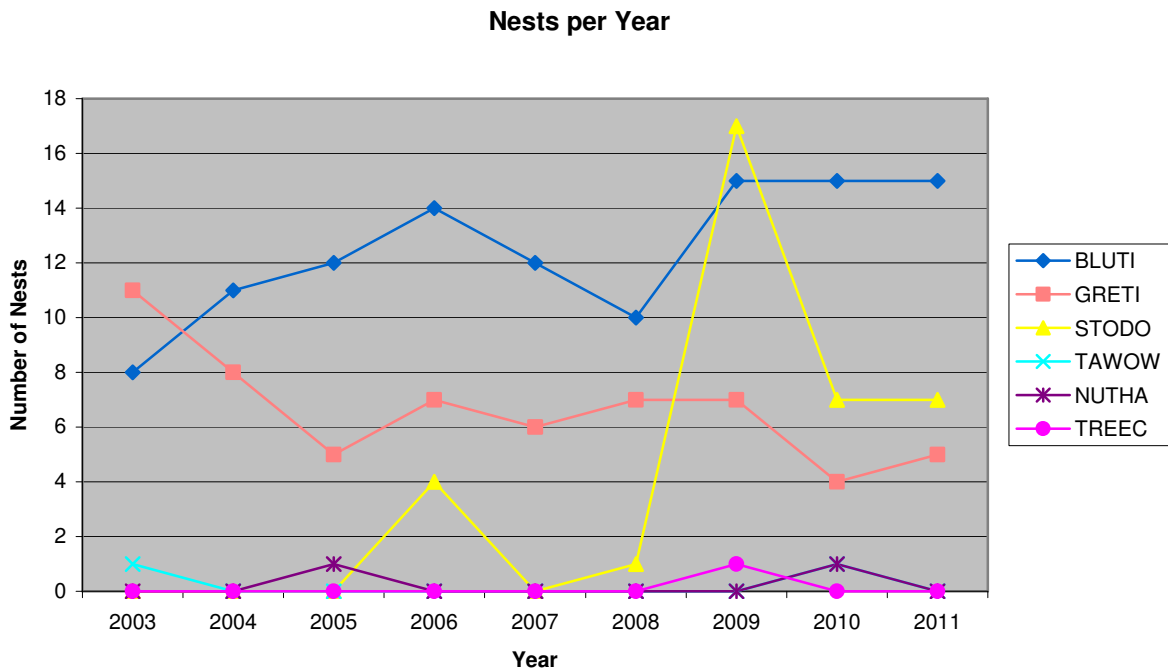
Further Analysis

We have nest and nest box data available in a spreadsheet for 2003 to 2011; we have done some analysis of this data as shown below, to see what might emerge. There is a slight difference in the number of boxes now identified in our spreadsheet, and the number previously noted in handwritten records. The difference does not significantly affect the data analysis. We will use the updated numbers going forward.

There are 41 boxes listed, but 3 of them (numbers 20, 24, 39) have not been in place for many years. Of the 38 boxes in place, 20 are “small hole” tit boxes (A1), 3 are “tree creeper” boxes (A2), and 15 are “large hole” or “chimney” type boxes (A3 & A6).

Colin Lythgoe has provided us with a considerable amount of nest box data for earlier years, particularly relating to Stock Dove nests. We haven't yet had time to incorporate this with the more recent records, so for this report we include the recent Stock Dove information, but we do not comment on it or draw any conclusions; we plan to have the more complete Stock Dove data available for next year's report and we hope then to analyse it to see what may emerge.

Nests per Year



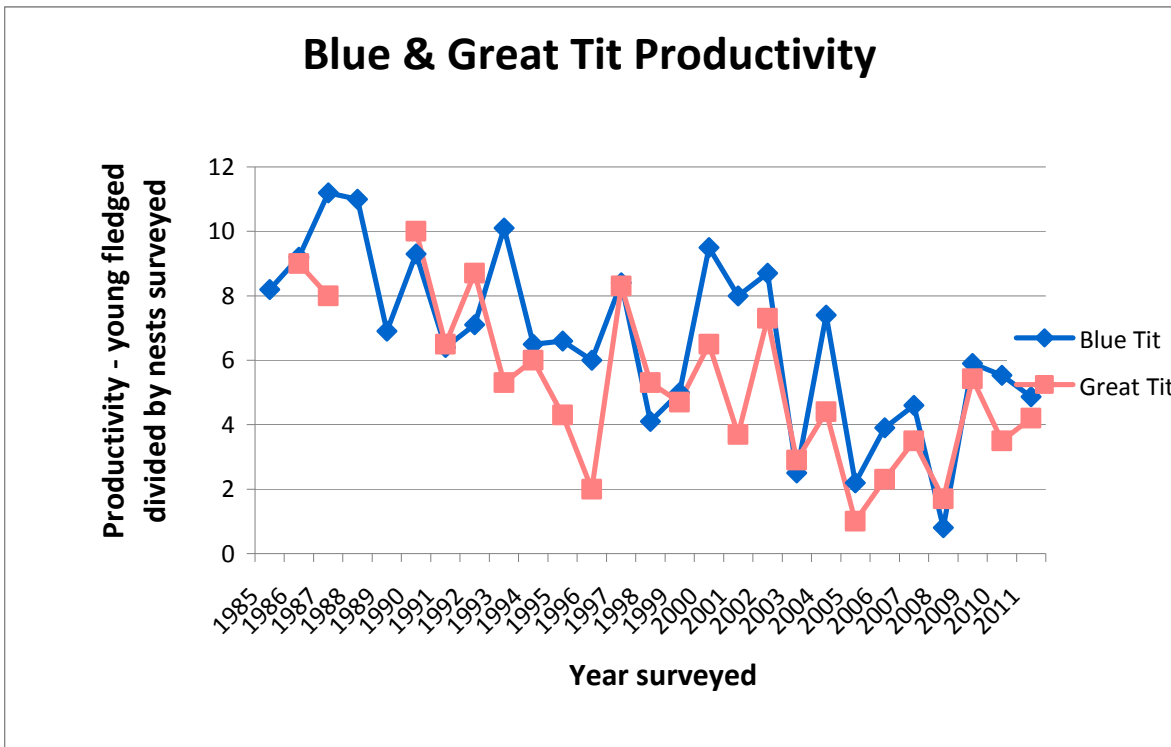
This chart summarises the number of nests observed each year.

Stock Doves nest from April to Sept, but we only Stock Dove nests during Tit nesting, which usually finishes in June. More on Stock Doves in next year's report.

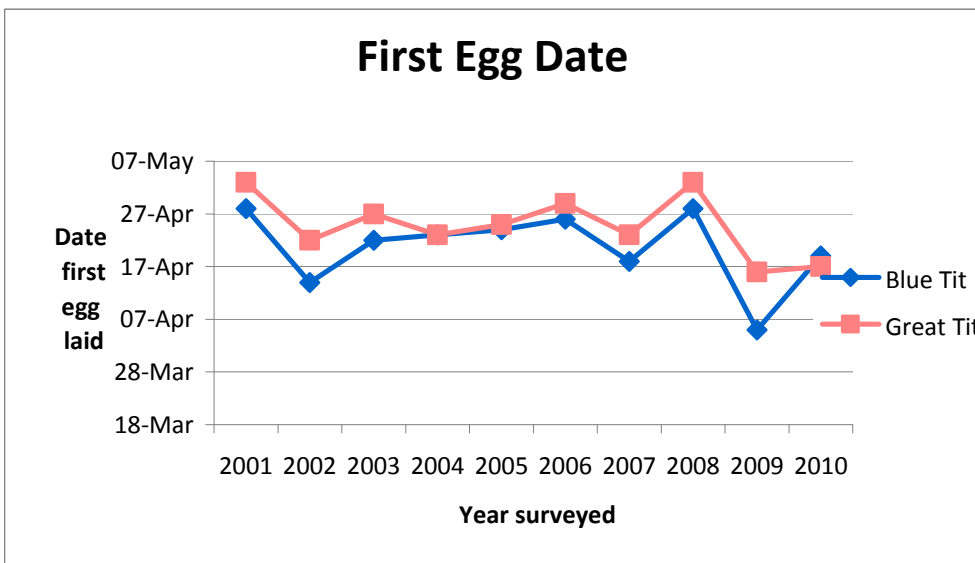
The graph above indicates that the number of Blue Tit nests per year has increased slightly from 2003 to 2011, whereas the number of Great Tit nests has declined slightly.

It is interesting to see the Great & Blue Tit Productivity (number fledged / nest) graph for 1985 to 2011 (see graph below). Overall the graph shows a steady reduction in productivity for both species

between 1985 and 2011. So both species are suffering a reduction in productivity, but Great Tits are also suffering a slight reduction in nest numbers.

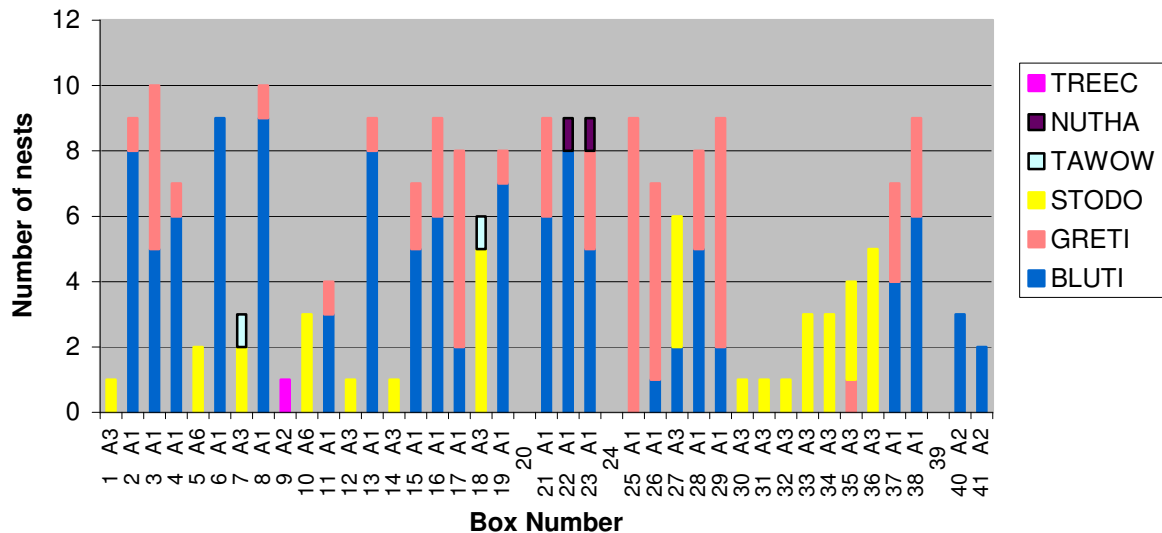


Looking at the “Average First Egg Date” graph shown below, it seems that Blue Tit dates are generally a few days earlier than Great Tits. Does this tend to mean that a Blue Tit gets to a nest box first, before a Great Tit, and so has an advantage, or is a Great Tit aggressive enough to oust an occupying Blue Tit?



Number of times the boxes are used.

Number of times box used over 2003 to 2011



This graph shows the usage of the boxes. As mentioned previously, there are no boxes 20, 24 and 39.

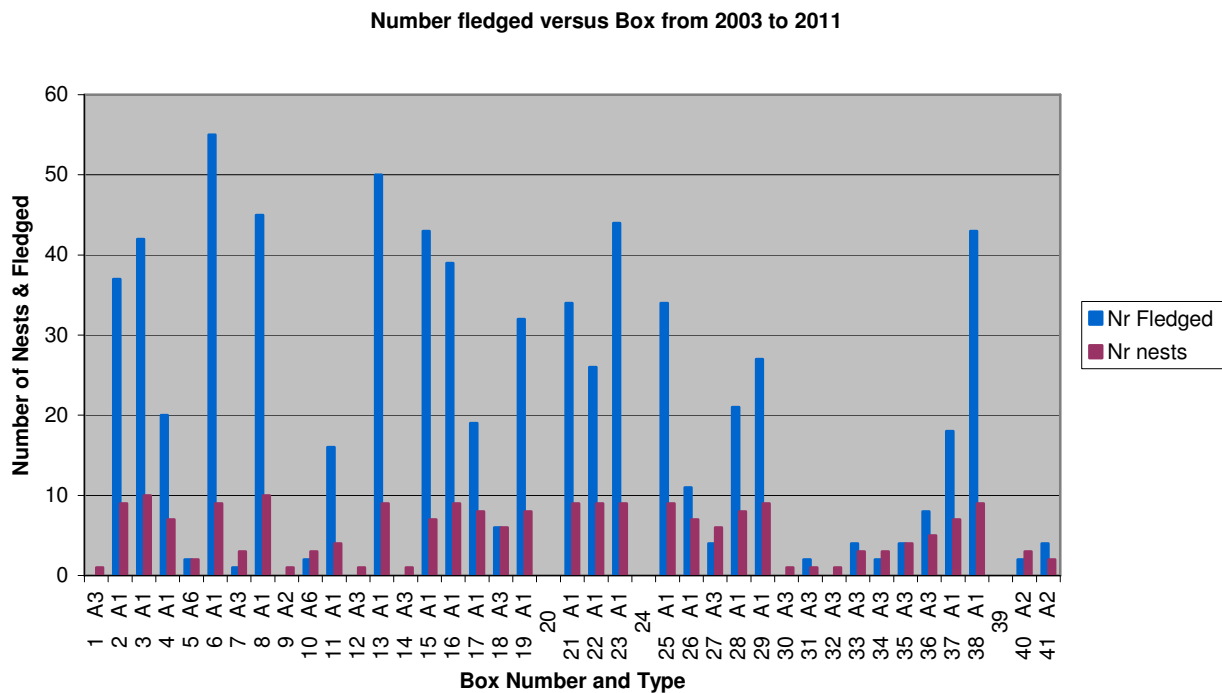
The graph indicates that several of the “large hole / chimney” boxes have only been used once by Stock Doves. This is probably due to a lack of Stock Dove nest data. As above, more on Stock Doves in next year’s report.

A Tawny Owl nest was found in box 7 in 2003 and in box 18 in 2010. A tree creeper nested in 2009 in box 9, a tree creeper box. This box has not otherwise been used. Nuthatches have nested twice, in 2005 and 2010, in boxes 22 and 23. Despite being numbered consecutively, these two boxes are at opposite ends of the coppice.

Boxes 27 and 35 are “large hole” (A3) boxes, but there are 2 records of a Blue Tit nest in 27, and 1 of a Great Tit nest in 35.

Of the 20 small hole (A1, tit) boxes, Box 11 has only been used in 3 years. Of the others, 4 have been used in at least 7 years and 12 have been used every year. This would seem to give a fairly high average usage of the boxes, so perhaps the boxes are providing significantly more nest sites than are available naturally in the area.

Number of Nests and Fledged per box



The above graph shows the number of nests (ie: the number of times the box has been used) and the number of young successfully fledged from each box.

The number fledged (mostly Stock Doves) from the A3 and A6 boxes is relatively low – probably due to the lack of records for the earlier years.

Of the small hole (A1, tit) boxes some, such as 6, 8, 13, 15, 16, 23, 38, appear to have relatively high success rates; over the years these seven boxes have held 48 Blue Tit nests and 13 Great Tit nests. Others such as 17, 26, 37, have relatively low success rates; over the years these three boxes have held 5 Blue Tit nests and 15 Great Tit nests.

Perhaps the difference in success rate between these groups of boxes is due to the different ratios of Blue and Great tit nests (as above, 48 blue: 13 great, against 5 blue:15 great), and to the Great Tit's clutch size generally being smaller than that of the Blue Tit. Could there also be other reasons?

A review of the locations of the more, and less, successful nest boxes shows that they are all spread throughout the reserve; so we can rule out geographic or specific locations as a reason for the outcome.

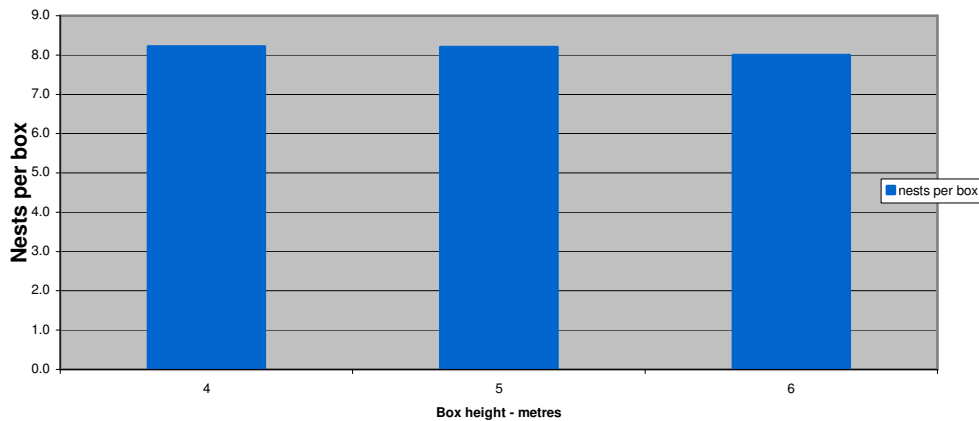
Siting of nest boxes.

For each box, we have a record of the height at which it is mounted, the species of tree it is mounted on, and the aspect (direction) it faces (N, S, etc).

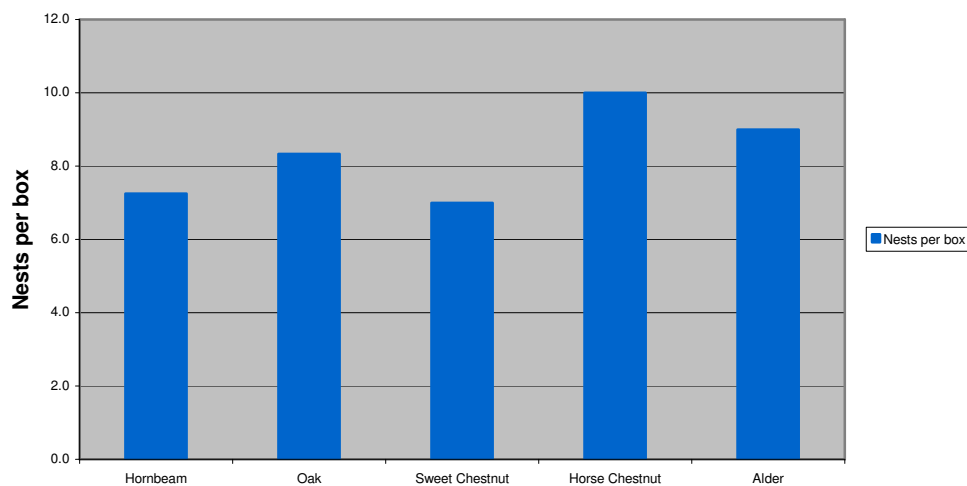
Usually boxes in public areas such as Quakers Coppice are mounted higher and out of easy reach to avoid human interference, whereas in private woodland lower mounting is usually safe from interference and can make for easier inspection.

Looking at this data for the Small Hole (A1) boxes, it does not appear to that any particular height or tree type or aspect, has any significant impact on the usage of individual nest boxes, as shown in the two graphs below.

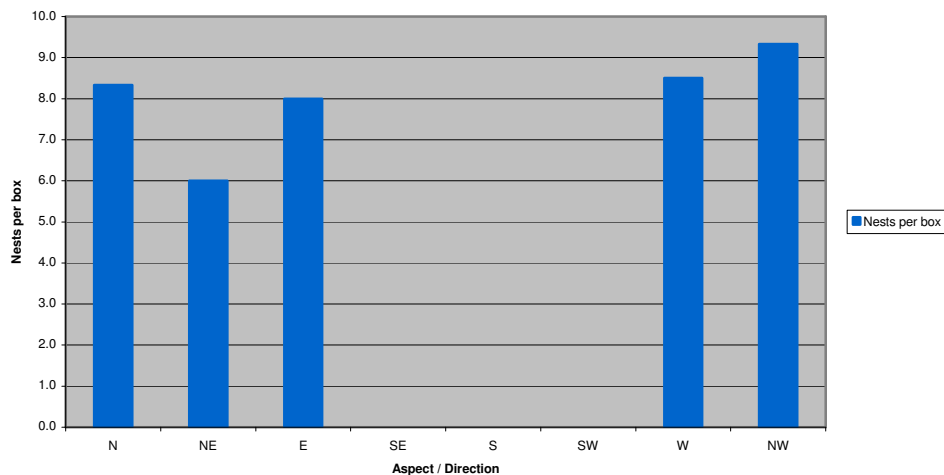
Nests per A1 (Small Hole) box versus the **HEIGHT** the box is mounted



Nests per A1 (Small Hole) box versus **TREE SPECIES**



Nests per A1 (Small Hole) box versus ASPECT (N, E, S, W, etc)



Looking at the “Aspect” graph above, for the lowest (NE) and highest (NW) "nest per box” figures, there are 2 NE facing boxes (11, 22), which have 6 nests per box; there are 3 NW facing boxes (2, 3, 6), which have 9.3 nests per box. All 5 of these boxes have mostly been used by Blue Tits. There are no small hole boxes facing SE, S, or SW in the coppice; it is generally accepted that boxes should not face a southerly direction to avoid them becoming too warm.

Conclusion.

The data above indicates that for the Blue and Great Tits:

- between 2003 and 2011 the number of Blue Tit nests recorded has increased whereas the number of Great Tit nests has decreased;
- between 1985 and 2011 Blue and Great Tit productivity (number fledged/nest) has declined;
- over the period from 2001 to 2011 the first egg dates are becoming earlier;

The nest box “aspect” data suggests that the siting of the small hole boxes (height, tree species and aspect), does not significantly influence their usage. Also, the whereabouts of a box within the reserve does not appear to have an effect.

Given the quite high usage of many of the nest boxes, they certainly seem to serve a need in Quakers Coppice. Without the boxes, the number of Blue, Great Tits and Stock Doves fledged in the area would probably be considerably reduced.

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