2020 Bat Monitoring Summary
at the Beaverhill Bird Observatory

By: Shane Abernethy and Sara Pearce Meijerink

Beaverhill Bird Observatory staff continued our bat-monitoring program throughout the 2020 field season. 35 bat boxes were maintained and monitored throughout the natural area. 29 of these were single-chamber boxes, and 6 were multi-chambered boxes, which allowed roosting bats to move freely between the chambers. These boxes were checked for occupancy every week from May 8th to September 24th. Single chamber boxes came in small, medium and large sizes, and were painted red, green and brown respectively.

One of the single-chamber boxes was inaccessible to observers until mid-September due to this year's high water levels. Another had been knocked down during the winter and wasn't able to be put back up until mid-June. A third single-chamber box and one of the multi-chamber boxes were taken down in September to avoid the risk of damage by the autumn construction activities.

23 of the 29 single-chamber boxes and all of the multi-chamber boxes were occupied by Little Brown Bats (*Myotis lucifugus*) at some point during the season (83% overall occupancy); this was the only bat species that was documented occupying the BBO bat boxes in 2020. Of the boxes that saw occupancy, all but 4 were occupied on more than one date. The highest single day count of bats was 116 on July 21. At least 653 daily-observations were recorded in the BBO bat boxes over the course of the year. The actual number is likely higher, as on several occasions, especially in the multi-chambered houses, the boxes were too crowded to get an accurate count.

In general, average occupancy in the multi-chambered boxes was considerably higher than the single-chambered boxes (Table 1), exceeding ten times the average occupancy of single-chambered boxes during the summer. Of the single-chambered boxes, the large bat houses saw the highest and most consistent occupancy, while the small boxes were the least occupied. Box 14 in particular, which is a large box, had the highest occupation of any of the single chamber boxes by a margin of over 50. This suggests a preference, even in single-chamber boxes, for larger bat houses.

Total occupancy of multi-chamber boxes peaked in mid-to-late July, while occupancy of single-chamber boxes peaked in early August (Figure 1). This year also saw the utilization of one of the multi-chamber boxes as a maternity roost, which was an exciting development. We are speculating that the second peak in the single-chamber boxes does not actually represent another migratory movement through the area, but may in fact be pups from the maternity roost striking out on their own and roosting wherever was available. The time scale and consequent reduction in multi-chamber occupancy would serve to support this, but with no reliable way to visually age bats by cursory inspection, it remains only speculation.

In conclusion, multi-chamber boxes continue to appear far more attractive to roosting bats than their single-chamber counterparts. It may be prudent to begin converting bat boxes accordingly, starting with those single-chamber boxes with highest occupancy. Additionally, larger boxes appear preferable to smaller ones, and appear to be a sensible upgrade path.

Table 1: Average and total weekly occupancy across all single-chamber (n = 29) and all multi-chamber (n = 6) bat boxes

	Single Avg	Multi Avg	Single Total	Multi Total
8-May	0.185	0.167	5	1
14-May	0.37	0	10	0
23-May	0.963	1	26	6
30-May	0.185	1.667	5	10
5-Jun	0.519	6.167	14	37
11-Jun	0.259	6.167	7	37
21-Jun	0.25	7.333	7	44
30 - June	0.357	7.833	10	47
06-Jul	0.357	8.333	10	50
21-Jul	0.821	15.5	23	93
27-Jul	0.929	12.167	26	73
4-Aug	0.964	2.5	27	15
12- Aug	1.786	0.333	50	2
19-Aug	0.179	0.833	5	5
4-Sep	0.296	0	8	0
12-Sep	0	0	0	0
24-Sep	0	0	0	0

Figure 1 – Total weekly occupancy of BBO bat boxes by *M. lucifugus* in 2020