

## STAG BEETLE PREDATION BY MAGPIES IN A COLCHESTER GARDEN

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George and Jane Davidson have been living in Lexden, a stag beetle *Lucanus cervus* hotspot, for over 15 years (OS grid ref TL973245). Soon after they moved in, when an old sickly crab apple tree (*Malus* sp.) had to be cut, George left a very high stump (Figure 1) and also set up various log piles, all in their back garden.

Then the stag beetles moved in and the magpies *Pica pica* took notice of that. For example, when Maria first visited the garden, there were several corpses at the very beginning of the 2006 flight season, all showing a characteristic magpie predation (Figure 2).

Magpies eat preferentially the abdomen; it has nice fat reserves accumulated during the larval stage which will last them for the season. Stag beetles do not need to feed in the adult stage (Fremlin & Hendriks, 2011).

This magpie predation of stag beetles in Lexden has been reported during the 1996 stag beetle survey in this area of Colchester which was “the single most important area for *L. cervus*” (Bowdrey, 1997). This predation of stag beetles by not just magpies, but all the members of the Corvidae family as well, is in a way an indicator of a very good population (Campanaro *et al.* 2011).

However, magpies in this area sometimes lie in wait by stag beetle nests, ready for them to emerge (Moir Six-Smith, pers. comm.), and this is of great concern because the beetles would not have a chance to reproduce.



**Figure 1 – June 21, 2006, crab apple tree stump.**  
Photo: Maria Fremlin



**Figure 2: May 31, 2006, stag beetle corpses collected soon after emergence: 9 males and 3 females. Photo: Maria Fremlin**

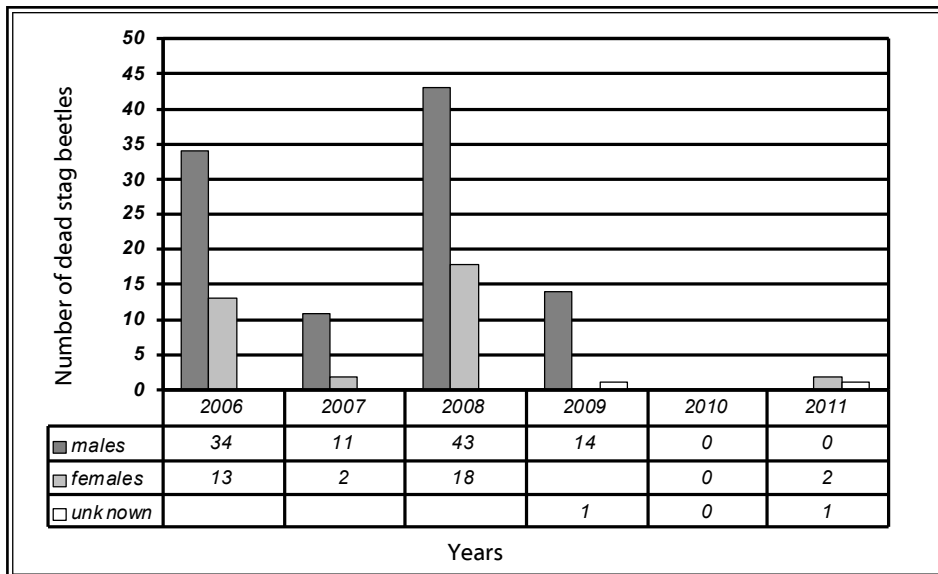
Therefore the corpses found on the Davidson's garden so early in the season posed a question: For how long would this go on in a particular garden?

In order to find out, Jane very generously agreed to pick up the corpses in their back garden.

The results of 6 years monitoring of corpses till the end of June (Table 1) indicate that in each year there were far more males than females. This confirms other results: in general, during June the males always predominate over the females (Bowdrey, 1997, Percy *et al.*, 2000, Smith, 2003, Fremlin & Fremlin, 2010).

The results varied a great deal during the first 4 years and this was expected because their numbers fluctuate from season to season: there are "good" and "bad" stag beetle years (Percy *et al.*, 2000, Smith, 2003). There was a mortality peak in 2008, 61 stag beetles and 1 lesser stag beetle (*Dorcus parallelipedus*), and after 2009 there were practically none. The 2011 remains were found when Maria visited the garden on June 12. Then we also found a live male lesser stag beetle in one of the log piles where some larvae also have been found on other occasions.

**Table 1: Stag beetle corpses found in the back garden during 2006-2011.**



This sharp decline possibly reflects the disturbance of the habitat on July 15, 2007 when the stump broke at the base. Then it had a number of thriving *L. cervus* larvae feeding in its base and up the trunk, sharing it with *D. parallelipedus*; the latter prefers to feed in the wood above the ground.

The habitat was quickly repaired by covering it up with a section of the stump; the remaining section was put in a shady place somewhere else in the garden.

In May 2008 there were still some larvae underneath the shortened stump and the next year there were 4 emergence holes nearby (Figure 3). However in June 2011 there were no more larvae, only 3 emergence holes.

The fact that three years after the stump disruption there was a sharp decline in the number of corpses ties in with the duration of their life cycle, which seems to be three years in this area (see footnote, p80). Thus the loss of the upper part of the stump had a dramatic effect on this habitat if we suppose that the females found the area much less attractive. The 2008 cohort was unaffected because the larvae had already left the wood to pupate in the soil (Fremlin, 2011) and the beetles present in the larval stage at the time of the disruption emerged in 2009.

Perhaps its life-span could have been extended if the area had been heavily mulched with hard wood chips on a regular basis; a lot of work. In any case, no stag beetle habitat lasts forever; they are there precisely to decompose the wood.



**Figure 3: August, 2009, shortened stump two years after it was repaired showing many larval channels, possibly lesser stag beetle. Note three stag beetle emergence holes between the stump and the 15 cm ruler, plus another one at the back.**

**Photo: Maria Fremlin**

The main conclusions from this study are: stag beetles responded well to conservation measures and the number of predated corpses was a good indicator of their population.

This garden keeps being actively managed by George with the stag beetles in mind; for example, there is now a new stump from another old tree and the log piles are being topped up yearly. No doubt in the near future their numbers will rebound and the magpies will take advantage of that.

## References

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May 7, 2011, male stag beetle taking-off from a false-acacia stump, see page 78.  
Photo: Maria Fremlin