Camera-trapping in my local woods for MammalWeb

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30 January 2018

Introduction

Back in autumn 2015, thanks to a neighbour who knew of my interest in natural history and who suggested I get in touch with the MammalWeb project team at the University, and after several false starts, I met Pen who loaned a camera to me and explained how to use it. I put it up in a likely location in a willow tree overlooking a pond where there were lots of fresh deer tracks. After 3 weeks I had nothing except selfies from walk-tests in front of the camera. I was tempted to hand the camera back and give up. The camera was several metres up the tree and about 15m from the far edge of the pond where the deer tracks were. Fortunately (or maybe otherwise) I tried moving the camera down to shoulder level and pointing it where it might capture a deer walking by the tree. It did. As soon as I saw the first pictures of a doe and a buck in their new winter coats I was hooked. This article describes some of the camera-trapping in my local woods, and the results, over the last couple of years up to 31 December 2017.

Figure 1 - Doe in Deerness Woods Sept 2015

Deerness Woods

Deerness Woods lie between the former pit villages of New Brancepeth, Ushaw Moor and Esh Winning. Much of the site was occupied by the New Brancepeth and Ushaw Moor Collieries, together with a brick works, coking plant, pumping station, a rail yard, a large spoil tip, and miners' terraces. It's about 72 ha and includes a mixture of semi-ancient and other mature woodland along the River Deerness, plus planted conifers, regenerating woodland, some grass parks, and a meadow. The Deerness Railway Walk goes through the middle. Some time after closure of the colliery in 1953, the site was landscaped, adopted by Durham County Council, and conifers and some broadleaf trees were planted in several phases: 1964, 1983-84, 2005, and some small in-fill patches in 2014. Not much grew under the densely planted Lodgepole and Scots Pines when I first saw them in about 2001, but a series of events has transformed the planted woodland.

Figure 2 - Windthrown Lodgepole Pines on former New Brancepeth Colliery in January 2002

Although soil was imported to landscape the spoil tips, much of the former colliery and works appear to have been left as flattened rubble, leaving a very thin and poor topsoil. In such conditions coniferous trees are both shallow-rooted and their roots were constrained by their neighbours. Storms in the winter of 2001-2002 flattened many trees, mainly Lodgepole Pines (see Figure 2) and this began the woodland transformation by opening gaps in the canopy to admit light and other plant species. Windthrow continues to knock down some trees each year, but not in such numbers as 2001-2002. Many small fires have been started deliberately or accidentally over the years, but around 2006 there were 2 or 3 large fires that destroyed or killed several hectares of pines. In these fire-sites, birch, willow, and pine are regenerating so thickly they are difficult to walk through (see Figure 3). The young trees are now up to 5m. Besides the regeneration of trees, removal of the canopy allowed grasses, rushes, ferns, mosses and a range of herbaceous and woody species to colonise. Although many of the dead trees were cut down, a number of dead pines were left standing, leaving habitat for wood-boring insects, woodpeckers, and so on.

A series of thinning programmes have further reduced both the total coverage of conifers and the proportion of Lodgepole in favour of Scots Pine. The grass parks were planted with broadleaves in 2005, and 2 artificial ponds have been dug in the meadow. The result of this transformation is a mixed woodland that is a local reservoir of wildlife (see Figure 4). I wanted to find out what mammals were there.

Figure 3 - Birch & willow regeneration in a fire-site in 2011

Figure 4 - Deerness Woods in May 2016
(Photo courtesy Ed. Garrett)

Not knowing anything about camera-trapping and only a little about our wild mammals when I started, it has been a very hit-and-miss effort with an undulating learning curve. Two years and three

months and a lot of camera-trapping later I have a mass of pictures and am trying to make sense of the results. While the MammalWeb project is great at getting people involved and getting some useful results, it doesn't let me do all I want with the data, at least not yet. Having worked in IT I decided to put some of that knowledge to use and built my own database and an application a bit like MammalWeb to record animals and birds that turn up on the images. Being able to record Stoats and Wood Mice to species saves some frustration too!

I defined an image sequence as having consecutive images less than 60 seconds apart, and an observation is an animal appearing once or more in an image sequence. If, for example a Roe buck and doe appear in a sequence, that would be 2 observations. If there were a second doe in the same sequence, it would still be 2 observations.

MammalWeb trappers will not be surprised that the most frequently occurring species has been Roe Deer with over 1200 observations up to the end of 2017. While I see deer in the woods from time to time, and their tracks are common, until I started camera-trapping I had no idea how many there were. I still don't know, but I do know that they turned up at 45 different locations all across the woods, in other words they occur more-or-less throughout.

To look at where the Roe Deer were spending most of their time, I classified these 45 locations into 5 habitats:

> Clearings and open areas near trees
>
> Edge habitat usually between wood or undergrowth and open
>
> Fire-sites
>
> Woodland
>
> Riparian

I then calculated the frequency of occurrence per day at each location as the number of observations divided by the number of days the camera was deployed there, for each deployment. I should point out that I've made no attempt to correct for any of the many variables that can affect the likelihood of detection, for example camera type, it's height, season of the year and hence amount of foliage, and so on. At least with Roe Deer, species identity is usually straightforward, whereas with, say rabbits and hares, it can be very difficult.

Then I calculated the mean frequency for each habitat, and…
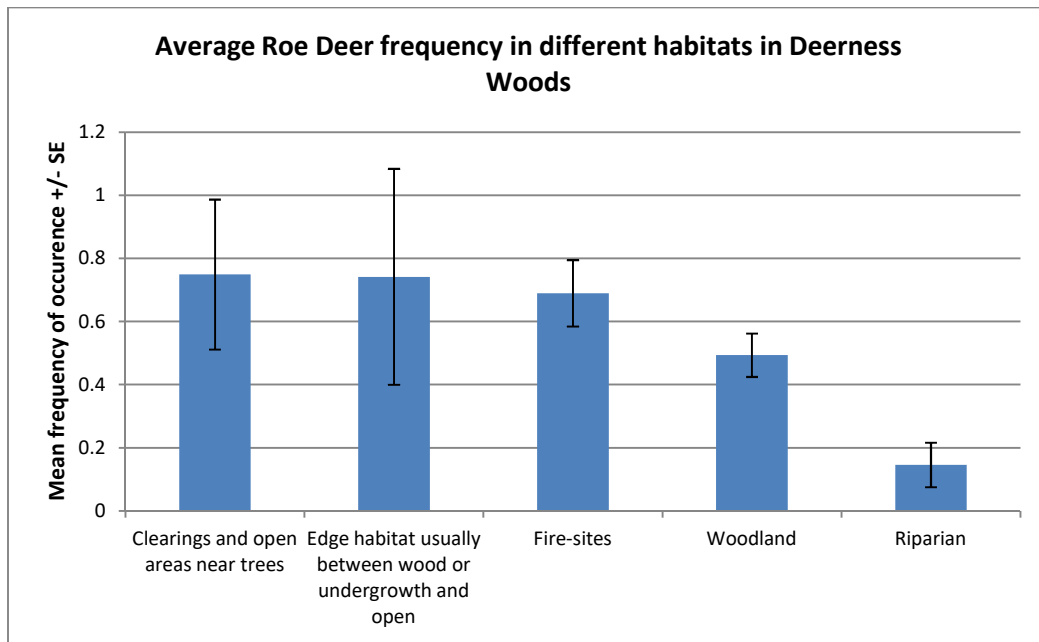
Figure 5- Average frequency (observations / trapping-day) of Roe Deer in five habitats in Deerness Woods. (Error bars are +/- 1 SE)

One might expect a primarily woodland species such as Roe Deer to spend most of their time in woodland, however the three habitats where they appear to spend most of their time, i.e. (1) Clearings and open areas near trees, (2) Edge habitats, (3) Fire-sites, seem to me to offer cover *and* food in close proximity. I should say that the trees and other woody plants in the fire-sites are now much taller than in the photo in Figure 3. Dog-walkers are among the most frequent visitors to the woods, and some local folk like to shoot, so I think the deer have good reason to need cover. One of the nicest finds was the discovery of a doe with two small fawns last year. How many does give birth each year I'm not sure, but I think it must be several because of the disparate locations in which they turn up at about the same time.

Figure 6 - Doe & fawn in Deerness Woods in May 2016

John Bragg in particular for help and advice, notice of felling programmes being just one example. My thanks to Anne Kelly, Peter Clark and Dr. Philip Stephens who commented on earlier drafts of this article.