

**The monitoring and control of squirrels on Howth  
peninsula 2013**  
**A report to Fingal County Council.**



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# 1 Introduction

Two species of squirrel are found in Ireland, the European red squirrel (*Sciurus vulgaris*) and the Eastern grey squirrel (*Sciurus carolinensis*). The introduced grey squirrel is now found in 26 of the 32 counties and their continued expansion has coincided with a decline in red squirrel numbers and a contraction of their range within Ireland. The Irish Squirrel Survey 2007 showed that although red squirrels are abundant in Ireland they have largely disappeared from a four counties in the Leinster region - Meath, Westmeath, Carlow, Kilkenny (Carey *et al.* 2007). Given these findings, there is a clear threat to the continued existence of red squirrels in the Leinster region and any remaining strongholds should be identified and protected from invasion by grey squirrels. The aim of this report is the monitoring and control of squirrels in Howth and try find any reported grey squirrels that may have moved onto the Howth peninsula.

Grey squirrels were first observed on the outskirts of Dublin in the 1970's. Prior to this, the city supported a large red squirrel population. Their expansion through the city was slow and staggered with the first grey squirrels reaching the city centre (St. Stephens Green) in 2002, Killiney Hill Park in 2005 and Howth Head in 2007. The spread of grey squirrels throughout the city resulted in a dramatic loss of red squirrels (Madigan 2007). In the Phoenix Park, the first grey squirrel was sighted in 1978 and red squirrels were last seen in 1987. Other city parks have shown similar declines. In the Botanic Gardens, grey squirrels were first seen 33 years ago and it has been 13 years since a red squirrel has been observed there. The first grey squirrels were seen in Marley Park 36 years ago and the last red squirrels were seen 33 years ago. In Bushy Park the disappearance of red squirrels occurred synonymously with the arrival of grey squirrels 13 years ago. The last remaining red squirrels are in the Killiney Hill Park area and on Howth Head (Carr and Hayden, unpublished data). The status of these remaining populations is under threat with the first grey squirrels having reached both areas.

Red squirrel populations seem particularly susceptible to disease and have historically suffered numerous declines as a result (Edwards 1962; Vizoso 1968; Scott, Keymer and Labram 1981; Keymer 1983). Of particular concern in Britain currently is infection with squirrel poxvirus (SQPV). This disease has been shown to be a significant factor in red squirrel population declines (Tompkins *et al.* 2002; Tompkins, White and Boots 2003). Grey squirrels act as hosts without developing the disease (Sainsbury *et al.* 2000) and as they colonise a new area they spread the disease into previously unexposed red populations. Squirrel poxvirus has been confirmed in Wicklow in 2011 but there is currently no evidence of its presence in north Dublin.

The Irish Squirrel Survey 2007 showed that although red squirrels are still abundant in Ireland they have largely disappeared from a number of counties in the Leinster region Meath, Westmeath, Carlow, Kilkenny and are under threat elsewhere because of the presence of the grey squirrel. The speed of this replacement is of grave concern. Reds have been almost completely replaced by greys in Carlow and Kilkenny in the space of only 10 years (Carey *et al.* 2007). Since the previous survey (1997), grey squirrels had increased significantly along the eastern seaboard, from where they had been predominantly absent. With the estimated rate of range expansion of 5 km/yr, it is predicted that in Wexford a convergence of two grey squirrel populations, spreading south from Wicklow and east from Kilkenny, will soon occur. Given these findings, there is a clear threat to the continued existence of red squirrels in the Leinster region and any remaining strongholds should be identified and protected from invasion by grey squirrels.

## **2      *Methods:***

### **2.1      *Distribution of squirrels***

The distribution of squirrels the Howth peninsula was determined by walking along trails in Deer park and Red Rock woods in Sutton on the 15<sup>th</sup> July 2013. The location of fresh feeding signs was recorded. Freshly eaten cones were distinguished by their bright colour, green remaining scales and lack of desiccation (see figure 1).



**Figure 1:** Example of a freshly eaten Maritime pine cone (*Pinus pinaster*). An older cone is on the left of the picture.

### **2.2      *Howth Questioners survey***

In May 2013 questionnaire were distributed by a new e-mail address. This was to determine the location of both red and grey squirrels. Local residents interested in been involved in the red squirrel conservation gave their e-mail address at a presentation on the 20<sup>th</sup> May. The results can be seen in table 3 and a copy of the questioners can be found in Appendix 1

### **2.3      *Trapping and handling procedures***

The initial trapping in Howth during 2011 started in the first week of June with the trap placement and after three weeks of pre-baiting the traps were set to catch,

Squirrels were trapped using standard wire mesh cage traps with baseboard and nest box attached (see figure 4). The door mechanism is triggered by a pedal mechanism towards the rear of the trap. The nest box provides the squirrel with a place to hide out of view and out of any adverse weather conditions. Traps were attached securely to selected trees at approximately 3 meters above ground level. The nest boxes were filled with hay and the traps baited with a combination of acorns and peanuts. Once set, traps were checked at regular intervals throughout the day (dawn to dusk) and any trapped squirrels processed immediately upon discovery.



**Figure 4:** Red squirrel trap.

Squirrels were removed from the traps into a modified Koprowski cloth handling cone (see figure 5; Koprowski 2002). Handling time was kept to a minimum. Squirrels were typically only handled for between 10 and 15 minutes, the minimum time taken to take body measurements and attach/implant tags (ear-tags and PIT tags). The handling cone is specially designed to allow access to various body parts while keeping the squirrel securely restrained. Measurements taken included body weight (measured to nearest 5g using a Pesola spring balance) and hind foot/leg length. The reproductive status was also assessed using standard criteria (Wauters and Dhondt 1989; Wauters *et al.* 2000).



**Figure 5:** Red squirrel in the Koprowski cloth handling cone

## 2.4 Educational

There was one educational day included for the general public to promote the awareness of the conservation of red squirrels and the importance of the population on the Howth Peninsula. Educational event can be seen in table 1 below

**Table 1:** The educational event that was part of 2013 survey.

| Location                     | Description                                     | Date       |
|------------------------------|-------------------------------------------------|------------|
| Marine Hotel (Rathlin Suite) | Presentation (Squirrels of the Howth Peninsula) | 20/05/2013 |

### 3. Results:

#### 3.1 Distribution of squirrels from feeding signs:

After walking the woodland in Deer park and red rock areas, looking for signs of current feeding. These were then mapped (see Appendices 2). Figure 2 gives the coordinates for the location of squirrel feeding signs in both areas. Appendices 2 shows the locations on the map.

**Table 2:** The location of feeding signs found on the 15<sup>th</sup> of July 2013

| Survey type   | Date sighted | Location | Area                              | X          | Y          |
|---------------|--------------|----------|-----------------------------------|------------|------------|
| Feeding signs | 15/07/2013   | Howth    | Deerpark, ring of pines top       | 327833.084 | 238034.027 |
| Feeding signs | 15/07/2013   | Howth    | Deerpark, ring of pines middle    | 327815.968 | 238023.167 |
| Feeding signs | 15/07/2013   | Howth    | Deerpark, beside green            | 328247.275 | 238034.803 |
| Feeding signs | 15/07/2013   | Howth    | Deerpark, Cilff half way up Trail | 327810.358 | 238255.887 |
| Feeding signs | 15/07/2013   | Howth    | Deerpark,Cliff face lower trap    | 327834.585 | 238280.710 |
| Feeding signs | 15/07/2013   | Howth    | Deerpark, Ring of pines 3rd trap  | 327817.519 | 238142.242 |
| Feeding signs | 15/07/2013   | Howth    | Deerpark,ring of pines first      | 327833.084 | 238034.027 |
| Feeding signs | 15/07/2013   | Howth    | Deerpark, beside green,           | 328247.275 | 238034.803 |
| Feeding signs | 15/07/2013   | Howth    | Deerpark, Cilff face upper trap   | 327810.358 | 238255.887 |
| Feeding signs | 15/07/2013   | Howth    | Deerpark near bog of frogs        | 328068.000 | 238080.000 |
| Feeding signs | 15/07/2013   | Howth    | Woods east of bog of frogs        | 328229.000 | 238010.000 |
| Feeding signs | 15/07/2013   | Howth    | wood behind GAA                   | 328613.000 | 238081.000 |
| Feeding signs | 15/07/2013   | Sutton   | Sutton Castle wood's              | 326996.000 | 237283.000 |
| Feeding signs | 15/07/2013   | Sutton   | Sutton Castle wood's              | 326962.000 | 237183.000 |
| Feeding signs | 15/07/2013   | Sutton   | Sutton Castle wood's              | 326934.769 | 237282.777 |

#### 3.2 Howth questioner's returns

Questioners distributes throughout e-mail were set up for this purpose during 2013( see Appendices 1), the response was very poor with only one returned. Other e-mails received can be seen in table 3 below. The two red squirrels on Thormanby were reports of dead red squirrels. Balkill rd. was a report of a grey squirrel.

**Table 3:** results of the questioners distributed in the Howth and Sutton areas.

| Survey type | Date sighted | Location        | Area   | X      | Y      |
|-------------|--------------|-----------------|--------|--------|--------|
| e-mail      | 26/08/2013   | Bilkill rd      | Howth  | 328850 | 238105 |
| e-mail      | 25/09/2013   | Thormanby rd    | Howth  | 329130 | 237075 |
| e-mail      | 05/10/2013   | Thormanby lawns | Howth  | 329066 | 238376 |
| e-mail      | 08/10/2013   | Cliff walk      | Howth  | 327903 | 236320 |
| e-mail      | 14/11/2013   | Offington       | Sutton | 326777 | 239182 |

### 3.3 *Trapping results*

There were garden trapping sessions during October and November 2013. Trapping was confined to a garden in Offington in Sutton and on the Balkill road. Two grey squirrels (adult male and female) were removed from the Balkill rd and one red squirrel was tag (adult male). One grey squirrel was removed from Offington by a resident and the sex was not recorded. These were the only reported grey squirrels during the year.

**Table 4:** Locations of trapped squirrels in 2013.

| Survey type | Date sighted | Species | Location   | Area   | X      | Y      |
|-------------|--------------|---------|------------|--------|--------|--------|
| Trapping    | 16/10/2013   | Grey    | Balkill rd | Howth  | 328850 | 238105 |
| Trapping    | 27/10/2013   | Red     | Balkill rd | Howth  | 328861 | 238135 |
| Trapping    | 08/11/2013   | Grey    | Balkill rd | Howth  | 328850 | 238105 |
| Trapping    | 14/11/2013   | Grey    | Offington  | Sutton | 326777 | 239182 |

### 3.4 *Education*

There was a small turn out for the presentation in the Marine Hotel at Sutton junction on the 10/05/2013 but those that were there had a positive response and all volunteered to get involved in the project. Deborah set up an e-mail address in response to the residence. During the year a group of volunteers have used this e-mail ([howthpeninsulasquirrels@gmail.com](mailto:howthpeninsulasquirrels@gmail.com)) to keep in touch and report sightings.

## **Discussion:**

Grey squirrels were first introduced in County Longford in 1911 and first reached the outskirts of Dublin in the 1970s. The expansion of the grey squirrel across the country has coincided with the decline of the red squirrel numbers. The latest squirrel survey of 2007 revealed that red squirrels have become increasingly marginalised. In Dublin red squirrels are now only found in isolated pockets in Howth and Killiney. The current work was to try protect the remaining populations. Red squirrels are found on the Howth peninsula. The population on Howth head was assessed in 2009 and is estimated to be approximately twenty individuals. The results above show that the grey squirrels are back on the Howth peninsula after been removed in 2008 and action is now needed to save the red squirrels. Red and grey squirrels are both small arboreal mammals that use similar food resources, they are also capable of producing similar amounts of young at the same time of the year. They fit into the same ecological niche, this means that both animals will live similar lives on different continents. Therefore when they are put on the same continent or in the same country there will be a competition between both for resources in similar habitats. The grey squirrel is described as non-native alien invasive species. This description alone shows it as a competitor with our native species. It is this competitive exclusion by the grey squirrels that poses the greatest threat to our red squirrels (Kenward and holm 1989). In deciduous woodlands the grey squirrels can live in higher densities than the red squirrel. Another factor in this competition is that reds only increase the bodyweight in the late autumn by 10% while the greys will increase theirs body by around 20%, this makes the Reds much more vulnerable to food shortage during winter periods when the two species share the same woodlots, competition for food resources will favour the grey squirrel (Grunell and Pepper 1993). Another impacted that the grey squirrels will have red squirrels is a juvenile recruitment (Waulters and Grunell 1999). Young Reds find it difficult to establish territories when young greys are also present in the area. It has also been suggested that the grey squirrel presents will affect the number of red squirrel females that may breed. It is breeding success rather than adult survival that gives the greys a greater competitive advantage over our native red squirrel (Skelcher 1997).

One of the targets of The National All Ireland species action plan for red squirrels (NPWS and EHS 2008) was to restrict the contraction in range of the red squirrel to a minimum. In order to achieve this aim it is necessary to both monitor red squirrels populations and where necessary, to intervene to save a threatened population. To date, such intervention has mainly consisted of grey squirrel control (examples include: St. Anne's Park (Dublin City Council), Killiney Hill (Dún Laoghaire Rathdown County Council), John Kennedy Park, Wexford (OPW), The Howth Peninsula, (Fingal County Council) etc. However, grey squirrel control alone may not be sufficient to allow a population to recover, particularly, as in the case of St. Anne's Park, when the population had been reduced to low

numbers. In such cases controlling grey numbers may allow the reds to recover in the absence of grey squirrel competition.

The Dublin red squirrels are living on the edge. They have been pushed to the brink of extinction by the invasion of grey squirrels. The last remaining population on Howth head is at risk from both invading grey squirrels and small population effects due to isolation. Grey squirrel control is recommended for Howth head. However, the remaining Howth red squirrels need to be monitored and accessed. The grey squirrels have now reached the east side of the peninsula and more work is needed to access their numbers.

A capture mark release and recapture is highly recommended in 2014 to access the current status of the red squirrel on the Howth peninsula. While this is being completed the remaining grey squirrels (if any) should be removed. It is not known if recruitment of new individuals would be enough to offset mortality within the population. But the red squirrels that captured or retrieved this year had not been captured before and would be considered new recruits into the population. Death related road crossings have been observed again this year. Of the 4 red squirrels reported in 2013 two were dead. The loss of even a few extra individuals could mean the difference between survival and extinction of a remaining north Dublin population.

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## Appendices 1



# Fingal County Council School/ Garden Squirrel Survey 2013

## 1 Introduction

As part of the Howth Red Squirrel Conservation Project, which involved the assessment of red and grey squirrel populations on the Howth peninsula during 2011, the Council with the assistance of the residents and schools wish to monitor squirrels in the areas around Sutton and Howth

The School/Garden Squirrel Survey has been designed to assist with the monitoring. Local residents and schools can contribute by monitoring squirrels in their schools grounds and gardens. (see map showing core area of interest for garden/ school surveys). This data will supplement survey work undertaken for the council by local residents since 2011.

## 2 Instructions for surveying in your school/ garden

Firstly, thank you for participating in the survey scheme. Before going further, familiarise yourself with the differences between red and grey squirrels (see below). Red squirrels have ear tufts in autumn and winter and are about half the size of an adult grey squirrel. Records of sightings of both species in private gardens and school grounds are vital to on-going monitoring work in the Sutton and Howth area.



Grey Squirrel

Red Squirrel

| Characteristic            | Red squirrel | Grey squirrel |
|---------------------------|--------------|---------------|
| Head and body length (mm) | 180 - 200    | 240 - 290     |
| Tail length (mm)          | 140 - 200    | 190 - 240     |
| Hind foot length (mm)     | 55           | >60           |
| Body weight (g)           | 280 - 350    | 450 - 650     |

To participate, all you need to do is spend some time in your garden/school grounds each week and record if you see either squirrel species on the form provided. Please indicate the maximum number seen at any one time if this is more than one. Data is particularly required at three times of the year: January/February, May/June and October/November. Please also tick the box on the survey form to indicate if you feed birds in your garden/school. If you know, could you also note in the comments what species of mature trees are present in your garden.

*Other information that would help the survey:*

If there are any pine trees, could you take a brief walk under them each week and note if there are any eaten cones and if you think they were recently eaten. Fresh cones may still have green bracts at the uneaten tips, will be clean and will not be dried out.



Older cone



Fresh cone

Sighting of squirrels elsewhere (other than your garden /school grounds) are also of use. These may be submitted with the survey form or on the online survey site (Insect e-mail or survey site here) You will need to note the date, location and number of animals seen.

The location of possible squirrel dreys (Squirrel nest sites) is also vital to the survey monitoring scheme. Dreys look like nests and usually have leaves/needles attached to the twigs as squirrels chew off branches rather than pick them off the ground like birds. They are generally close to the main trunk of a tree. If in doubt, take a note of the location as this can always be verified at a later date.



Squirrel drey

## School/ Garden Squirrel Recording Form

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Email: \_\_\_\_\_

### 2013 table for recording squirrels

| Squirrel species | 6 <sup>th</sup> May | 13 <sup>th</sup> May | 20 <sup>th</sup> May | 27 <sup>th</sup> May | 3 <sup>rd</sup> June | 10 <sup>th</sup> June | 17 <sup>th</sup> June | 24 <sup>th</sup> June |
|------------------|---------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Red              | -                   | -                    | -                    |                      |                      |                       |                       |                       |
| Grey             | -                   | -                    | -                    |                      |                      |                       |                       |                       |

| Squirrel species | 7 <sup>th</sup> Oct | 14 <sup>th</sup> Oct | 21 <sup>st</sup> Oct | 28 <sup>th</sup> Oct | 4 <sup>th</sup> Nov | 11 <sup>th</sup> Nov | 18 <sup>th</sup> Nov | 25 <sup>th</sup> Nov |
|------------------|---------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|
| Red              |                     |                      |                      |                      |                     |                      |                      |                      |
| Grey             |                     |                      |                      |                      |                     |                      |                      |                      |

I did not see squirrels on the dates above but I did see the red squirrel on other days in between

Comments \_\_\_\_\_

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\_\_\_\_\_

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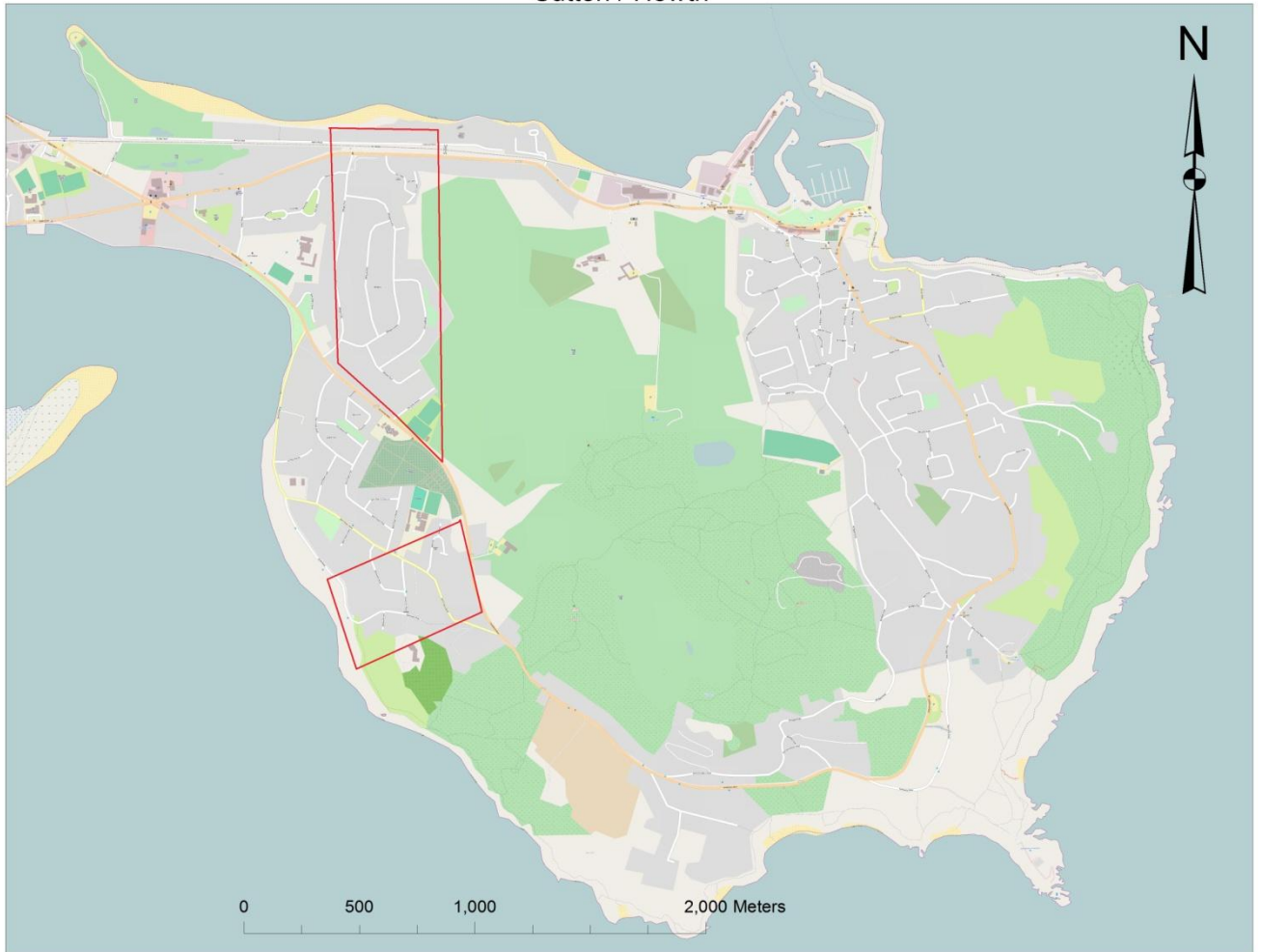
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Do you feed birds in your school/ garden? Yes ☐x No ☐

Please return 1 copy of the completed form following each peak period to:

C/O, Deborah Tiernan, Biodiversity Officer, Fingal County Council, County Hall, Main St, Swords, Fingal, Co. Dublin. or email a copy to (insert email here)

Sutton / Howth



## Appendices 2

