

THE MAMMAL FAUNA OF THE TOLKA VALLEY PARK

AN INITIAL ASSESSMENT OF THE RESIDENT FAUNA

For Fingal County Council, Parks Department



Daubenton's bat in bridge over the River Tolka. (c) Brian Keeley 2003

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INTRODUCTION

It is acknowledged by all environmentalists and ecologists that in order to ensure that native fauna may flourish, it is essential that there is a mechanism for continuity provided for interchange between naturally accessible parts of the species' range. For many mammals, this means of continuity is provided in two main ways: vegetation corridors (hedgerow, trees, scrub) and waterways.

Tolka Valley Park provides a link between suburban and rural areas of Fingal. The river itself creates a natural channel for the movement of aquatic or semi-aquatic mammals. The riverside vegetation and the remnant greenery that has survived on the flood plain of the river serves as the vegetation corridor, dwelling and resting place for mammals necessary to sustain and allow the movement of these survivors of increasing urbanisation.

To appreciate what the resident fauna of this relatively new park is, it is necessary to examine the site in a number of ways. Different mammals are located by the use of different techniques.

This current assessment looked at the bat fauna and the non-volant fauna by different means. Bats were sought during the summer period by means of a bat detector survey.

Non-volant mammals were investigated by a walk-through of the Park to identify their tracks etc. rather than any visual determinations. This is difficult for most mammals as they are nocturnal.

MEANS OF ASSESSING BAT FAUNA

This involves the use of ultrasonic receivers that allow an experienced observer to identify to species level a flying bat. This is an extremely beneficial innovation for the natural historian as it allows an inventory of bat fauna without the requirement to capture and handle bats.

It also creates the potential for identifying the bat fauna over a large area as there is no need to erect nets in definite locations.

Bat detectors are broadly divided into two major categories in the European context: heterodyne and time-expansion systems.

Heterodyne bat detectors convert bat ultrasonic emissions to audible signals that may be read from the dial on the detector. The signal retains the pattern and frequencies of the original signal although in a converted format. The resultant signal cannot be analysed for differential signal strengths, duration of individual calls or any short-scale differences between the signals of different species.

Time expansion detectors, on the other hand, retain the original features of the bat signal by recording the signal and converting it to a slower version of the incoming signal. This signal retains all of the original nuances of a bat's echolocation or social signal and can be analysed on a sound analysis program of a computer. Thus, minute differences in the signals of bats, discernible to the species concerned may be detected. Species that may not be easily separated by heterodyne signal assessment may therefore be discovered by further examination on a time-expansion recording.

The bat fauna was investigated along the Tolka Valley Park in July 2003 on the nights of the 4th, 5th and 6th up to sunrise of 7th. This required three nights of examination along the route, concentrating emergence studies (sunset onwards) at sites with good potential for bats identified during the walk-through examination of the Park (see non-volant mammals). This included the Blanchardstown Hospital stretch of the Park, the National Food Centre boundary (Ashtown) and the bridge at the Industrial estate east of Clonee.

Bat activity was examined for a further two and one half hours. The assessment re-commenced one and a half hours prior to sunrise and examined bat activity and likely roost sites at this time.

MEANS OF ASSESSING THE NON-VOLANT MAMMAL FAUNA

The Park was investigated in March and April 2003 (commencing on March 16th) for any signs of mammals. Subsequent information on mammal presence was also included from the July bat assessment. This was principally done by examining river banks, bridges, hedgerow, woodland, soil banks for any of the typical signs of these mammals. These included the abodes of the various mammals (setts, earths, warrens and holts) and their faeces (droppings, dung, scats, spraints of the respective mammals), footprints, digging, carcasses.

Vegetation was less dense than would be the case during the summer months and hence signs were easier to locate. Bramble was penetrated as much as possible and all woodland was checked for badger setts and any other potential mammals.

This assessment also allowed an examination of trees and bridges for their potential as bat roosts as such work at night can only provide information on the current presence of bats (as it is difficult to negotiate terrain as well as see crevices or signs to any distance).

Another facet of this assessment was enquiries from local residents, fishermen or people working along the route of Tolka Valley Park. This provides some valuable information on observations over a period of years rather than days. All observations must be considered in the light of the accuracy of identification skills of the observer and wherever there is a question of misidentification, it is appropriate to treat such records with caution.

BAT FAUNA OF TOLKA VALLEY PARK

The most abundant species of bat along the River Tolka is not surprisingly the **soprano pipistrelle**. This bat is particularly common close to water bodies and watercourses. Large roosts of this bat are often found in buildings close to a river or lake that has waterside hedgerow or woodland (Oakeley and Jones, 1998; Keeley, Bats in Houses, Heritage Council 1999 and personal observations). In some situations, buildings may support roosts in excess of one thousand (and even 1500) individuals. Small eutrophic rivers may support more bats than oligotrophic rivers of the same dimensions (Racey *et al.*). That bats are present provides an indicator that the water of this river is capable of supporting good insect and invertebrate fauna. That soprano pipistrelles are abundant in sections of the river is ecologically a very positive sign.

The most important section of the Tolka River for soprano pipistrelles is the woodland to the east of the entrance to James Connolly Memorial Hospital. The greatest abundance of bats of any section of the Park studied was to the east of the old bridge that was formerly within the Fisheries Research Laboratories at Abbotstown. This stretch of river provided evidence of five species of bat (soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat and brown long-eared bat).

From this bridge, a total of twelve bats were noted within a stretch of river twenty five metres in length and to a width of approximately ten metres *at the same time*. Ten of these bats were soprano pipistrelles. The remaining two bats were common pipistrelles. All of these bats were present here approximately one hour prior to return time before sunrise in midsummer.

James Connolly Memorial Hospital is a known bat roost for soprano pipistrelles. At least two separate roost sites are used here by several hundred bats; within the nurses' home and in at least one unit (section). Numerous incidents of incursions into the wards have been reported to the Bat Conservation Group.

A second highly fruitful location for observing bats and evidently as a feeding site for soprano pipistrelles was to the east of the M50 along the river where there is good bank-side vegetation cover. Activity was intense here especially during observations prior to sunrise. The level of activity was less than at Abbotstown but was the second best site for bats.

The **common pipistrelle** is marginally larger than the soprano pipistrelle and is less strongly associated with water bodies. It is considered to be more of a generalist in its feeding habits (Russ and Montgomery, 2002). In one study, this species was shown to select unimproved grassland and areas around water (Glendell and Vaughan, 2002). Like all bat species, it will feed over rivers and wet areas because these are often extremely important sites for insect populations. Many invertebrates undergo an aquatic phase and thus many flies will hatch from water courses and lakes.

The common pipistrelle is probably the most widespread and successful of European bat species. In many parts of Europe, it significantly exceeds the soprano pipistrelle in its distribution and abundance.

Common pipistrelles are one of the most frequently encountered bat species in houses throughout Europe. Their numbers rarely reach those noted for soprano pipistrelles but may be in excess of 100. Their presence in houses is probably far more common than reports would indicate as many roosts of twenty bats or less are undetected by unwitting owners.

Common pipistrelles were noted throughout the Park from close to Clonee (adjacent to the Kepak factory) to the Finglas boundary. In most cases, only one bat would be present at any one time. In some circumstances, this would expand to two individuals.

The old bridge at the entrance to James Connolly Memorial Hospital was also a good site for bat activity. Strangely, there was a segregation of feeding to either side of the bridge. Soprano pipistrelles were highly active on the eastern side of the bridge (four to five bats). Common pipistrelles fed to the west of the bridge (one to two bats). This was noted twice in the same night with an interval of one hour between observations.

Leisler's bats were noted from Mulhuddart to the Finglas boundary. One roost of this species appears to be within the building complex of the National Food Centre, Ashtown. Bats were followed back to the edge of this property at sunrise. This is the latest bat to return to the roost and the first to emerge. This species had also been heard early on the previous night within two hundred metres of the National Food Centre.

Leisler's bat is our largest species of bat with a wingspan of 30 centimetres. This species has been noted to travel up to 13.4 kilometres from its roost to feed, flying at a speed up to and exceeding 40 kilometres per hour (Shiel *et al.*, 1999). The main prey item in Ireland is the yellow dung fly (*Scatophaga stercoraria*) and insects with aquatic larvae (Shiel *et al.* 1998).

Leisler's bats were also heard over the trees at Blanchardstown Hospital. This bat will roost in buildings and trees, regularly changing roost throughout the year. Leisler's bats have been noted to hibernate in trees in Coolmine Wood south of the Tolka and southwest of the hospital.

Leisler's bats in Mulhuddart fed over grassland (to the north of the river) upon emergence and over a very wide area. One hour after their emergence, Leisler's bats concentrated their activities upon the security lighting within the car park of a public house in Mulhuddart. Pasture and drainage canals have been noted as important feeding areas for this species (Shiel *et al.*, 1999). Parkland, amenity grassland, woodland edge and rivers and canals are all selected as feeding areas by these bats. Improved grassland and hedgerow are avoided (Russ and Montgomery, 2002).

Leisler's bats were active over grassland and the river on the eastern edge of the Park at Finglas (south of Scribblestown House). These are most likely the bats that returned to the National Food Centre.

A Leisler's mating roost was noted in a mature tree at Ashtown Bridge as far back in time as 1989. No calling was heard here during this assessment (male bats establish a territory for mating purposes and will emit social calls ("sing") to attract females and to deter rival males).

In monitoring the activity of this bat, the emergence period following sunset is the main feeding time. A second flight is not undertaken by all bats within a roost, possibly only by a minority (Shiel and Fairley, 2000).

Daubenton's bats also bear the title “water bat” in some parts of England. This is an apt term given that this species is most often encountered feeding over water. Rivers and lakes are ideal feeding areas for this bat. Given the fact that they also fly in a very definite manner close to the water surface, they are an easy bat to monitor and observe. Daubenton's bats emerge later than any of the species discussed to date and very often commute along waterways. They may also fly through woodland or along hedgerow to feeding sites.

Daubenton's bats will gaff (scoop with their two large hind feet) prey from the water. This may comprise emerging flies or drowning invertebrates. They have also been noted to eat small fish on rare occasions. Slow-moving watercourses are ideal sites to observe this species. This species has been shown to select stretches of river where the water surface is smooth and where there are trees on both banks (Warren *et al.*, 2000). Insect abundance has been shown to be greater in such areas. The importance of the smoothness of the water surface is that rougher water creates ultrasound that interferes with a bat's ability to echolocate (Rydell *et al.*, 1999). Thus, even though insects may be more abundant over small ripples (of under 3 centimetres in height), they are less available to foraging bats.

Daubenton's bats were evident along the entire stretch of the Tolka. One bat was actually discovered day-roosting in a modern culvert over the Tolka adjacent to Kepak, Clonee. This culvert was not especially dark and was atypical of the bridge sites that bats such as this species (and particularly this species) avail of for roosting.

Daubenton's bats were even noted feeding under the M50 bridge over the Tolka. This small section of the river is relatively bright and the bat was very visible. Common and soprano pipistrelle bats were also noted here (individuals only).

The old bridge to the east of the Fingal section of the Park (Cardiff's Bridge) has been noted by the Bat Conservation Group as a good location to observe Daubenton's bats. Three bats have been seen here at any one time on some occasions.

Daubenton's bats are the most commonly encountered bat in bridges. Trees are a good roost site for this species also as are mills, abbeys and barns close to water. Oak trees are preferred as roost trees to beech trees but availability of good roosting features are the main criteria (Boonman, 2000).

Brown long-eared bats are difficult to observe in the wild as they emit a particularly quiet signal, produced in the nose rather than in the larynx as in most bat species. The individual bat must be very close before the bat is detectable.

It is likely that this bat is found throughout most of the suburbs and rural areas traversed by the Park. Examination of buildings in the area by the author in 1989 showed evidence of brown long-eared bats in the shed of a house along the Tolka Valley at Abbotstown. One brown long-eared bat was noted during this assessment of the Tolka Valley Park returning at sunrise to an oak tree hollow in the woodland between the sports and keep-fit centre at the M50 roundabout and Blanchardstown Hospital. This plantation is predominantly coniferous with occasional broadleaves. The tree is towards the woodland edge. It is possible that this is a roost to more than one bat and that this was simply the last bat to return in the morning and was thus the most easily observed.

Brown long-eared bats often roost in houses with large attics or in churches or barns. Several such buildings are evident along the Tolka (e.g. Scribblestown House, Ashtown Lodge, and Ashleigh Stud).

Long-eared bats (and the bats of the genus *Myotis*) have been noted to select areas near to water and plantation woodland (Glendell and Vaughan, 2002).

To summarise, these are the species of bat noted along the Tolka in order of the most abundant to the least abundant (based on observations and open to re-structuring where it can be shown that brown long-eared bats are under-represented).

Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>
Common pipistrelle	<i>Pipistrellus pipistrellus</i>
Leisler's bat	<i>Nyctalus leisleri</i>
Daubenton's bat	<i>Myotis daubentoni</i>
Brown long-eared bat	<i>Plecotus auritus</i>

Other species of bat recorded close to the Tolka Valley Park (Within 2 kilometres)

Whiskered bat	<i>Myotis mystacinus</i>
Natterer's bat	<i>Myotis nattereri</i>

Whiskered bats are certainly uncommon in the vicinity of Dublin city and its suburb (based on the observations of the author and the Bat Conservation Group). Whiskered bats are rarely found in areas that are artificially illuminated. Only one whiskered bat has been encountered in this area.

This individual was a bat that had absorbed oil in a factory in the area north of the Tolka between the Snugborough Road and Blanchardstown Road North and was collected and identified by Donna Mullen of the Bat Conservation Group circa 1999.

Whiskered bats have also been identified on bat detectors within the Phoenix Park to the south of the Tolka at the US Ambassador's Residence (1996). Signals of this species were also heard in Chapelizod adjacent to the Phoenix Park *

Natterer's bats are even less recorded than whiskered bats. One dead individual was collected by Dr. Alan McElligott formerly of UCD Mammal Research Group in the Oldtown Wood of the Phoenix Park Dublin.

Clearly, the habitat features of the Phoenix Park provide adequate conditions for this greater species diversity. The Phoenix Park provides considerable availability of mature trees, woodland, lakes and ponds, dark areas as well as grassland.

It is possible that further studies in future summers will uncover the presence of these species feeding or roosting within the Tolka Valley Park.

* Whiskered bats are indistinguishable from Brandt's bats on bat detectors of all types (both heterodyne and time-expansion). It had been accepted by bat specialists and other naturalists until this year that there were no Brandt's bats in Ireland. This has been contradicted by the discovery of a Brandt's bat in Glendalough, county Wicklow and in Kilmainhamwood, county Meath. It is now difficult to assert without capturing individual bats, whether a passing bat is a Brandt's bat or a whiskered bat. Equally, historical evidence, based on bat detector signals cannot now be assumed to be whiskered bats without subsequent capture.

AREAS BEST FOR BATS ALONG THE TOLKA

The list below ranks the sites along the Tolka Valley Park in order of the bat activity noted in each section:

Abbotstown/ Blanchardstown (JCM Hospital)
South of Elm Green Golf Course/ Ashtown Bridge
Mulhuddart Bridge
Scribblestown/ Finglas
Ashtown Bridge/ Scribblestown
Corduff Bridge/ JCM Hospital
Blanchardstown Road North / Snugborough Road
Ashleigh Stud/ Kepak
North of Parslickstown

Bats were noted to be most abundant in sites where there was good vegetation cover on both sides of the river. This is very evident at Abbotstown and to the east of this site. As discussed earlier, vegetation along both banks of a river and areas of slow flow with little disruption to the water surface provide extremely good feeding areas for bats.

Such areas throughout the Park should be maintained thus and greater vegetation cover should be established along stretches where bat activity was less (e.g. in the vicinity of Mulhuddart, vegetation that would support bat activity may be required).

Bat activity was also centred on bridges and bats were observed at all bridges to repeatedly circle at bridges during feeding. Bridges provide shelter along rivers at which insects may cluster without disturbance by wind. Bridges also provide good roosting potential for bats. Most Irish species have been recorded in cavities in bridges.

The bridge under which the Daubenton's bat was recorded would not be typical of roost types. These would be more commonly a bridge in excess of 60 years that has developed a series of crevices or faults. Bridges with considerable potential for bats occur throughout the route, two of which are at the JCM Hospital stretch. Other bridges such as Ashtown Bridge are also clearly available for roosting bats.

Any repair work on these bridges should be done with due care for the likelihood of its effect on bats.

Mature trees with cavities are another feature of benefit to bats along the route. The trees of the former Abbotstown estate again would be a suitable site for tree roosts (and indeed this is where a brown long-eared bat roost was discovered). Trees with cavities along the edge of the Park south of the National Food Centre also offer good bat roost potential. These are predominantly beech trees with limb damage and rot. The difficulty that is faced with trees of this nature in public parks is that they may pose a safety risk in some circumstances.

Tree surgery on such trees should be undertaken with caution given the possibility that bats are in residence. Bat boxes may provide a greater availability of roost site especially for bats such as the Daubenton's bat (or whiskered or Natterer's bat if they are present). This also increases the likelihood of finding rarer bat species more dependent upon trees.

Buildings along the route may also be used by bats occasionally. Reference has already been made to the use made by bats of the JCM Hospital and the National Food Centre. One small building close to the Ashtown Bridge could be of benefit to bats with relatively minor adaptations to its structure.

Additionally, there is a cluster of small tunnels at the perimeter of JCM Hospital that were associated with a pumping mechanism but that are now obsolete. **These tunnels have a potential as a hibernation site for bats if they were buffered against temperature change and protected from human disturbance.**

Monitoring of bats along the Tolka Valley Park

The following methodology if undertaken in the summer of each year following a designated interval (e.g. annually, every two years etc.) would provide a good indicator of the population of bats along the Tolka and any changes to them if carried out over a long sequence of years (over ten to fifteen years or assessments).

1. Examine the bat activity along the route of the Park in a chosen month. July or August are ideal months to examine activity levels and species composition as it is a time when feeding activity is high and the bats are breeding. Young bats will enter the feeding ranks as the month of August approaches. It is important that once a month is chosen, all subsequent studies should be carried out in this month.
2. Concentrate on bridges for monitoring of activity. This allows easy access to the Park at night time or in the early morning as well as being a site where bats tend to congregate to feed.
3. Assess bridges at Abbotstown prior to sunrise (to avoid safety problems for the observer). This is counter to the best time for observing some bat species but necessary in relation to security.

NON-VOLANT MAMMALS OF TOLKA VALLEY

Recorded Species

Badger	<i>Meles meles</i>
Otter	<i>Lutra lutra</i>
American mink	<i>Mustela vison</i>
Fox	<i>Vulpes vulpes</i>
Rabbit	<i>Oryctolagus cuniculus</i>
Irish hare	<i>Lepus timidus hibernicus</i>
Brown rat	<i>Rattus norvegicus</i>
House mouse	<i>Mus musculus</i>
Field mouse	<i>Apodemus sylvaticus</i> (wood mouse)
Grey squirrel	<i>Sciurus carolinensis</i>

Badgers

The Tolka Valley Park is a good area to encounter badgers in a suburban setting. Most setts in Ireland are found in farmland. This removes the badger from contact with urban and suburban dwellers. Tolka Valley Park is in many respects the equivalent of a substantial riverside hedgerow or field ditch. This natural slope is used by badgers in much the same way as field ditches, to establish well-drained setts with good vegetation cover.

Badger setts within the Park are concentrated in the area east of JCM Hospital (the former entrance to the Fisheries Centre) on to the rear of Elm Green Golf Course. Badger activity was most apparent in the fields surrounding this stretch. Tracks connecting badger sett entrances and connecting the setts with the feeding grounds were evident in the examination during March and April.

Badgers in this area have been the subject of studies in former years in association with the construction of the M50 motorway through the former Fisheries Research Centre at Abbotstown. The main sett for these badgers was excavated following their exclusion from the sett. The excavation provided an extremely valuable insight into the architecture of badger setts that assists in the efforts at creating artificial setts for badgers.

Badgers are still active in this area and one badger was encountered running along a badger track close to sunrise behind Elm Green Golf Course (and almost running into the author!).

This badger was most probably returning to the sett farthest to the east within the Tolka Valley Park. This badger sett to the south of the Elm Green Golf Course (with around 45 entrances, not all of which are active) is considerable. This sett and those closer to Blanchardstown Hospital are likely to be used by the same badger social group. These setts may all be larger than historically was the case due to the loss of the main sett here during the construction of the road.

Numbers with a sett vary bit on average, setts in Ireland are estimated to support around six badgers. In total, on the island it is estimated that there are as many as 250,000 individuals.

Badger tracks were leading in through a stone drainage channel towards the hospital and adjoining property. They were clearly passing along the Tolka at Blanchardstown and through the associated vegetation. At a number of points, it was clear that badgers were passing through the three-pronged security fencing unto the planted embankment of the M50 motorway. The author has seen a dead adult badger on the slip-road of the northbound M50 at Blanchardstown within the past year.

Badger digging was evident along the perimeter of the Elm Green golf course and some digging was noted around the edge of the golf course *within* the grounds also.

Badger tracks were also noted around the grounds of Scribblestown House at the eastern edge of the Park. Most tracks here were of fox however.

Badgers were less in evidence on the western end of the Park. Security staff within the industrial estate here had seen badgers on one occasion crossing the road. Badger tracks were noted to the north of the Park and west of the factories here. No setts were found close to the Park.

A report by one of the security staff that there was a badger sett to the west of Mulhuddart along the northern edge of the Park could not be confirmed. Only large rabbit burrows were found during this study. However, surveying is difficult in this vicinity due to the Park's proximity to housing but yet isolated nature. The riverbank serves as a gathering point for young adults and teenagers.

Otters

There was evidence of otter activity along the entire stretch of the River Tolka. Otter spraints were noted at Kepak, Clonee, the following bridge, Blanchardstown Hospital, Ashtown Bridge and at the bridge leading to the National Food Centre, Ashtown. Fresh and old otter spraints indicate that there is continuous activity along this river.

One fisherman had seen two otters on a number of occasions at the bridge to the west of Blanchardstown Hospital and one on several more occasions.

While some of the riverside is difficult to access (e.g. west of Mulhuddart), most of it was surveyed for otter holts. Holts are typically established under the roots of trees growing on the water's edge that have been exposed by the erosion of the soil of the riverbank.

Holts are difficult to locate in a brief assessment such as this. Areas where the river is particularly suitable for holts would be along the Blanchardstown area and along the river south of the Elm Green golf course. One such suitable hole under tree roots is shown in the accompanying photographs.

American mink

Mink are an introduced species that are associated with waterways but are more likely to roam from it than are otters. (Otters will however cross fields and unfortunately will even suffer from road kill).

Evidence of mink was clear at the Blanchardstown Hospital bridge. This species entered into Ireland as a result of fur trade farming and escaped or were released. Their spread has been rapid but there is now evidence that they are no longer in a phase of expansion. Their prey consists of any bird or mammal that they can negotiate and they have been blamed for losses in riverine birds along the water bodies that they colonise.

Fox

Foxes have undergone an expansion in populations in line with increasing urbanisation. Few other mammals have benefited from this process as have foxes. Urban populations of the fox often greatly exceed the equivalent carrying capacity for a rural area of equal area.

Foxes have learned to make use of human waste and litter to glean cast-off food scraps in a fashion probably only outstripped by rodents such as the brown rat or house mouse.

Fox tracks and scats were widespread in the Park and foxes were seen during this study and previously in all sections. Fox earths are often developed by the expansion of rabbit burrows or the commandeering of a badger sett entrance. Earths are less evident than badger setts but are always more malodorous. Earths typically have one entrance and a simple construction.

Rabbits

Rabbit numbers were greatest at Blanchardstown Hospital and immediately east and west of Mulhuddart. Rabbits were found throughout the Park especially where there is open grassland and where soil banks have been created by the spoil of building sites.

Hares

Hares have for a long time been a feature of Blanchardstown Hospital and the adjoining farmland and grassland. Large numbers of hares have been seen on the open spaces of the hospital (*pers. Comm.* Donna Mullen, Bat Conservation Group). Recent sustained building may have greatly reduced the availability of feeding here and it is possible that hares will become increasingly more active in the green area provided by the Tolka Valley Park.

Hares rely on areas with long grass for their breeding and reproduction and the disappearance of such sites in this area must be taking some toll on the resident populations.

No hares were noted during this assessment but as hares are generally difficult to see in cluttered habitats and are normally single, it is often difficult to note them during a short-term study.

Rodents

Not surprisingly rats were ubiquitous in this assessment. Rats were seen on many occasions and droppings, tracks and dwellings were all noted around the river.

Field mice are found throughout the Park especially in areas of woodland.

Grey squirrels were most abundant in the Blanchardstown Hospital stretch particularly in the woodland closest to the Keep Fit centre.

A grey squirrel was also reported to enter regularly into the attic by the owner of the Scribblestown House gate lodge.

Other species potentially present within the Tolka Valley Park

Red squirrel (*Sciurus vulgaris*)

No red squirrels were noted along the route. However, it would require greater levels of examination to confirm this. Red squirrels are a species that are most common in coniferous plantations or native stands of Scot's Pine.

Pine marten (*Martes martes*)

While pine martens are not officially recorded from this region of Dublin, their recorded distribution is probably incomplete. There is also an apparent increase island-wide in the numbers of this mammal.

An unexpected recovery of a pine marten carcass was made at Abbotstown, county Dublin in the immediate vicinity of the Park in 1989. This individual was taken to the Zoology Department of TCD Dublin. The author was shown this particular road casualty at this time by Dr. Russell Poole, a Ph.D. student at that time.

As pine martens have since been recorded in Glendalough, Wicklow, and Moyvally, county Kildare, it is clear that there are likely to be further discoveries of this mammal throughout the island.

Pine martens are commonly found in woodland with rocky outcrops although they are capable of adapting to a wide range of habitats in Ireland. In western counties, they will den in the attics of houses. Hollow trees and rock cavities are typical denning sites in the wild.

Other species likely to be present

Hedgehog (*Erinaceus europaeus*)

Hedgehogs are very often under-represented because they are not territorial and therefore leave less clearly-defined signs than most mammals. Their faeces are characteristic but difficult to locate in a short-term examination. It is very probable that they are present here and often the easiest means to determine their presence is to check traversing public roads over a number of weeks. This will provide evidence through road-kill.

Stoat (*Mustela erminea hibernica*)

Stoats are very difficult to locate in any short-term study. They will typically den in walls or even rabbit warrens that they have taken over having killed the occupants. They are a very widespread mammal and it is almost certain that they occur along the course of the River Tolka.

BEST AREA OF THE TOLKA VALLEY PARK FOR NON-VOLANT MAMMALS

Clearly the greatest mammal activity in general along the route of the Park occurs in the area between the Blanchardstown Hospital Bridge and eastwards to the National Food Centre. Badgers are present here, otters are regular visitors or are resident and all of the recorded mammals are noted here.

Otters avail of all areas of the river and are an indication that water quality has not reached the levels at which this mammal is excluded. Much of the decline of this mammal throughout Europe has been linked to the pollution of waterways with pesticides and heavy metals (dieldrin, PCBs and mercury). Organic pollution may also lead to fish kills and hence food shortages (McDonald and Mason, 1994).

Water quality is clearly a vital issue for otters and other aquatic fauna and should be monitored and maintained at a high level. Emissions from factories into the Tolka along the stretch of the Park within Fingal should be randomly tested to provide information on potential pollutants and their levels.

The roots of trees along the riverbank are all of potential use as holts.

Trees should be pollarded where they are posing a safety risk rather than felled to allow their roots to provide a shelter for otters and also to prevent the accidental destruction of existing holts.

Badgers are most evident along the Tolka to either side of the M50 motorway. Unfortunately, within this study, it became clear that the badgers are at risk of being struck upon the motorway as they have access through the three-pronged fencing.

This fencing should be further re-enforced by the erection of badger-proof fencing along its base in the vicinity of the two setts to either side of the motorway but most especially on the western edge.

Hares are present at Blanchardstown. As this species will nip at young trees, **all young trees should have protection against hare damage.**

Monitoring of mammals along the Tolka Valley Park

The protection of the resident mammals along the Tolka can be ensured by the periodic examination of setts, the monitoring of water quality and continued examination of the riverbank for evidence of otter holts.

There is no alternative method for assessing the mammal fauna of the Park to a ground-based examination.

Badger setts need to be examined to prevent repeated disturbance from badger baiting.

While some work in Britain indicates that well-known and visible badger setts are given protection by their visibility, it is difficult to see how such exposure would not lead to increased interference with the sett. The setts that were prone to destruction or poaching were in wooded areas (Jenkinson and Wheatear, 1998). The areas within which these setts were located were not public parks but private land and it is possible that the volume of people may not be comparable.

In coniferous tree stands, red squirrel nest boxes should be erected.

Nest boxes within coniferous plantations or stands close to the Park on Fingal County Council lands would provide an opportunity for red squirrels to re-establish in sites more suited to this species than to grey squirrels.

Other Fauna noted during and prior to the survey

A barn owl (*Tyto alba*) was seen flying along the banks of the River Tolka in the area south of Elm Green golf course at 4.00 am on July 5th 2003. This bird flew eastwards and was seen for approximately ten seconds. The author has observed a barn owl hunting from the old bridge to the east of the Park, Cardiffsbridge on the old Finglas Road. Barn owls were reported to roost formerly in a dead tree on a pitch and putt course close to Scribblestown House. This tree has been felled.

The residents of Scribblestown House related that an “owl” was regularly seen roosting in a tree along the driveway of the house in the evening. This may also be the barn owls referred to above.

The owner of the Scribblestown House gate lodge also noted sightings of an owl. Additionally, he reported that he had seen on a number of occasions over the past year a “huge bird like an eagle”. This may be a hunting buzzard (*Buteo buteo*), a species that is on the increase in Fingal and is nesting in at least two sites in Fingal at present.



Figure 1: Bridge at the N3 Clonee Bypass (“Kepak”) where a Daubenton’s bat was noted to roost in April 2003. The insert shows the bat at rest within the left hand arch of the bridge.



Figure 2: Older bridges along the Tolka Valley Park with bat roosting potential.

- (a) Bridge on the road leading to National Food Centre, Ashtown
- (b) Bridge east of Kepak, Clonee
- (c) Ashtown Bridge
- (d) Bridge at Blanchardstown Hospital with suitable crevices (e) to (h)

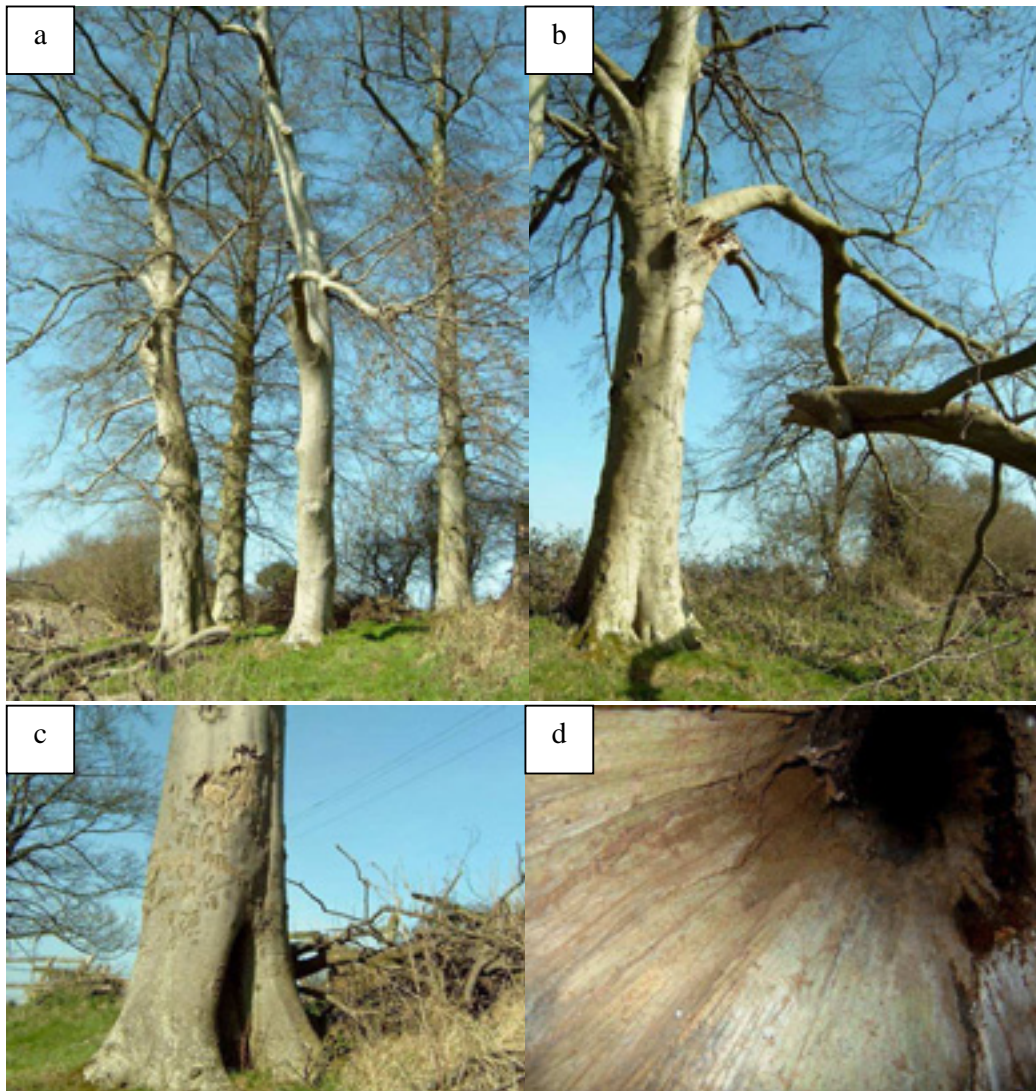


Figure 3: Trees on the boundary of the National Food Centre with good roosting opportunities for bats. Trees that develop cavities in branches or in the bough are ideal sites for transitional roosts for bats and bats such as Leisler's bats have been found hibernating in such trees in Fingal , e.g. Coolmine wood south of Blanchardstown. These beech trees exhibit large cavities. Brown long-eared bats were noted in an oak tree (*Quercus petraea*) near the M50 roundabout in Blanchardstown.

- (a) and (b) Limb crevices and cracks**
- (c) and (d) Cavity within beech tree boughs at this location.**

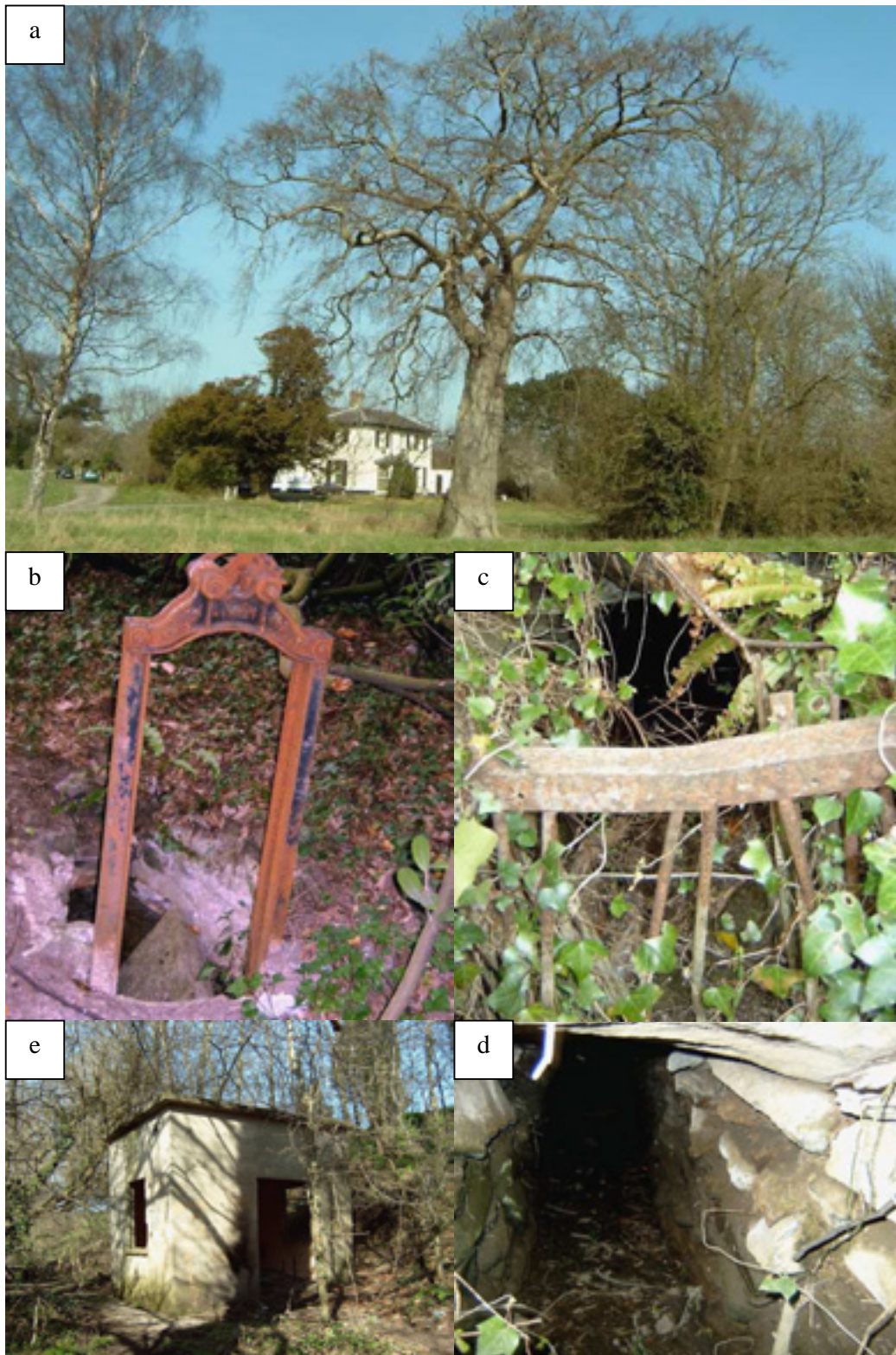


Figure 4: Sites with potential for bats along the River Tolka
 (a) Scribblestown House and outbuildings with mature trees around the house.
 (b) to (d) clockwise, disused pump mechanism and from riverbank at Blanchardstown Hospital
 (e) Disused building with potential south of Elm Green golf course.



Figure 5: Badger sett entrances in dense scrub south of Elm Green golf course. The typical elongated oval entrance and the piles of stones are clear evidence that badgers are resident here.

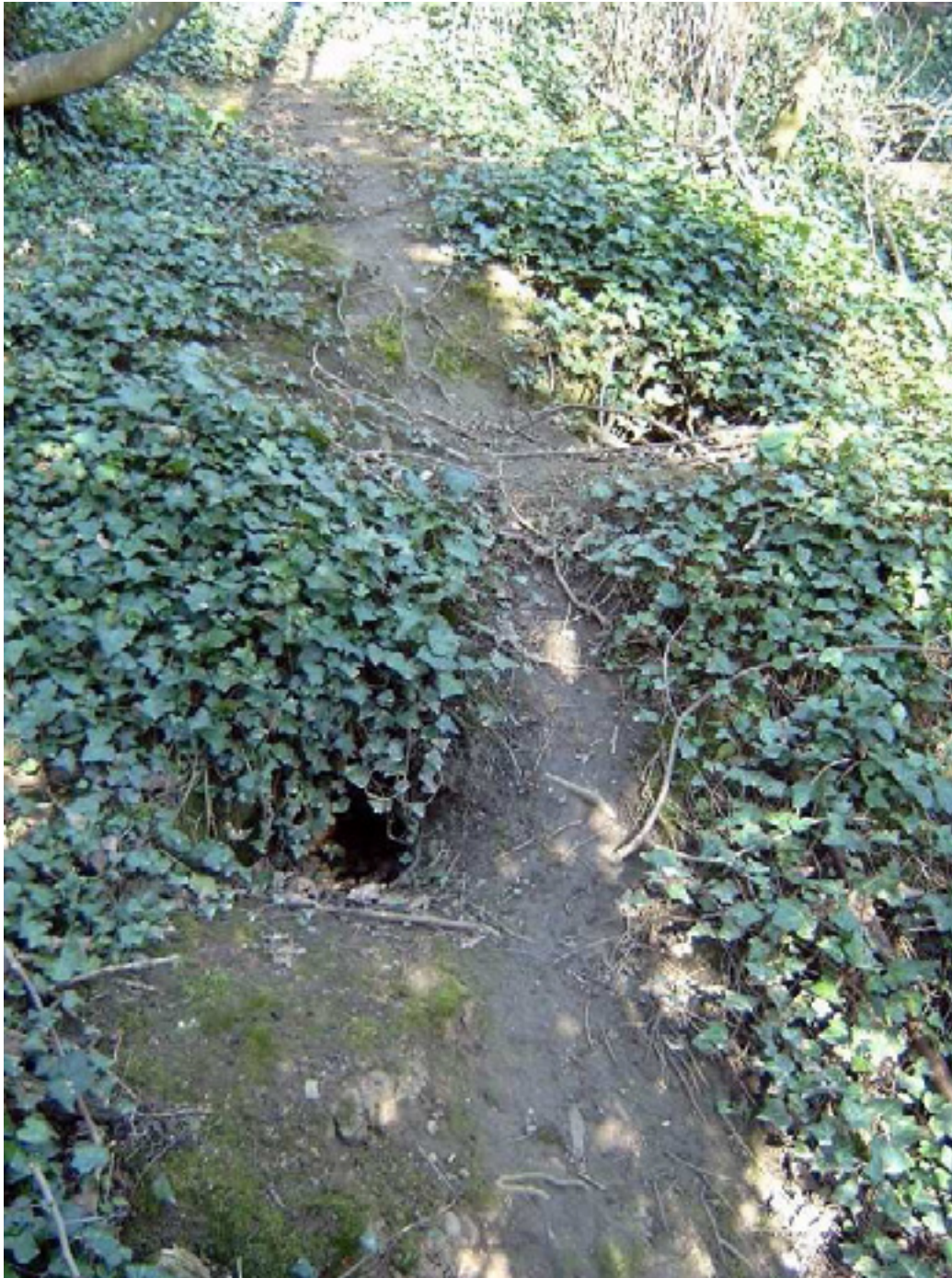


Figure 6: A badger track through the scrub south of Elm Green golf course. The sett entrances are linked by this track which leads to the east and west of the sett, linking this sett with the setts at Abbotstown and Blanchardstown Hospital. A badger was encountered on the edge of this scrub on one morning of observation.

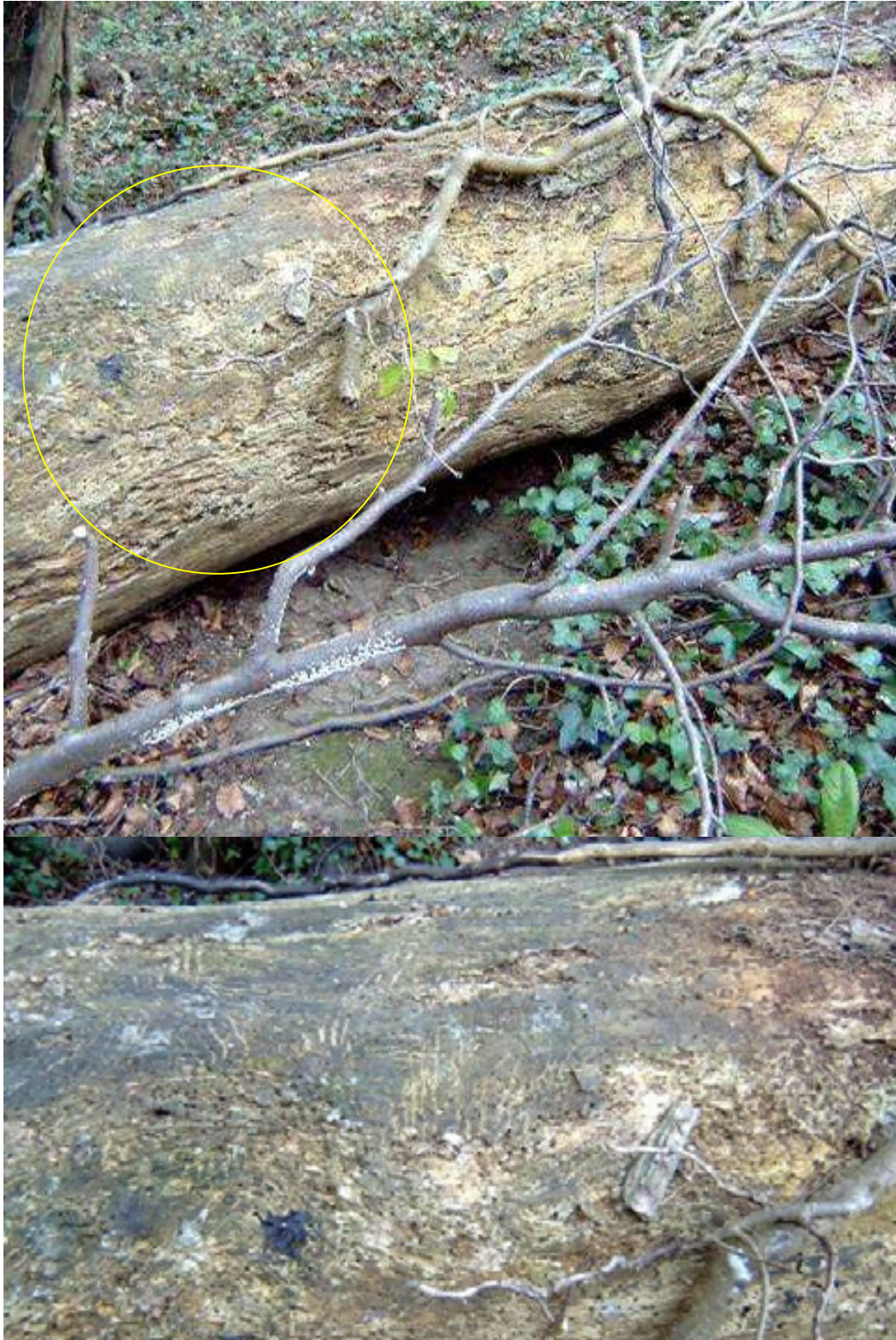


Figure 7: Badger path intersected by fallen tree. The badgers climb over this tree as evidenced by the claw marks on the bough and bark in the bottom close-up photograph.



Figure 8: (a) Badger path through drain leading into the Abbotstown Veterinary Research Laboratory. (b) Badger latrine near to drain and fallen tree in Figure 7. (c) Badger sett entrances at the edge of the M50 motorway. (d) Evidence that badgers enter the vegetation flanking the M50 motorway through the security fencing at more than one location.

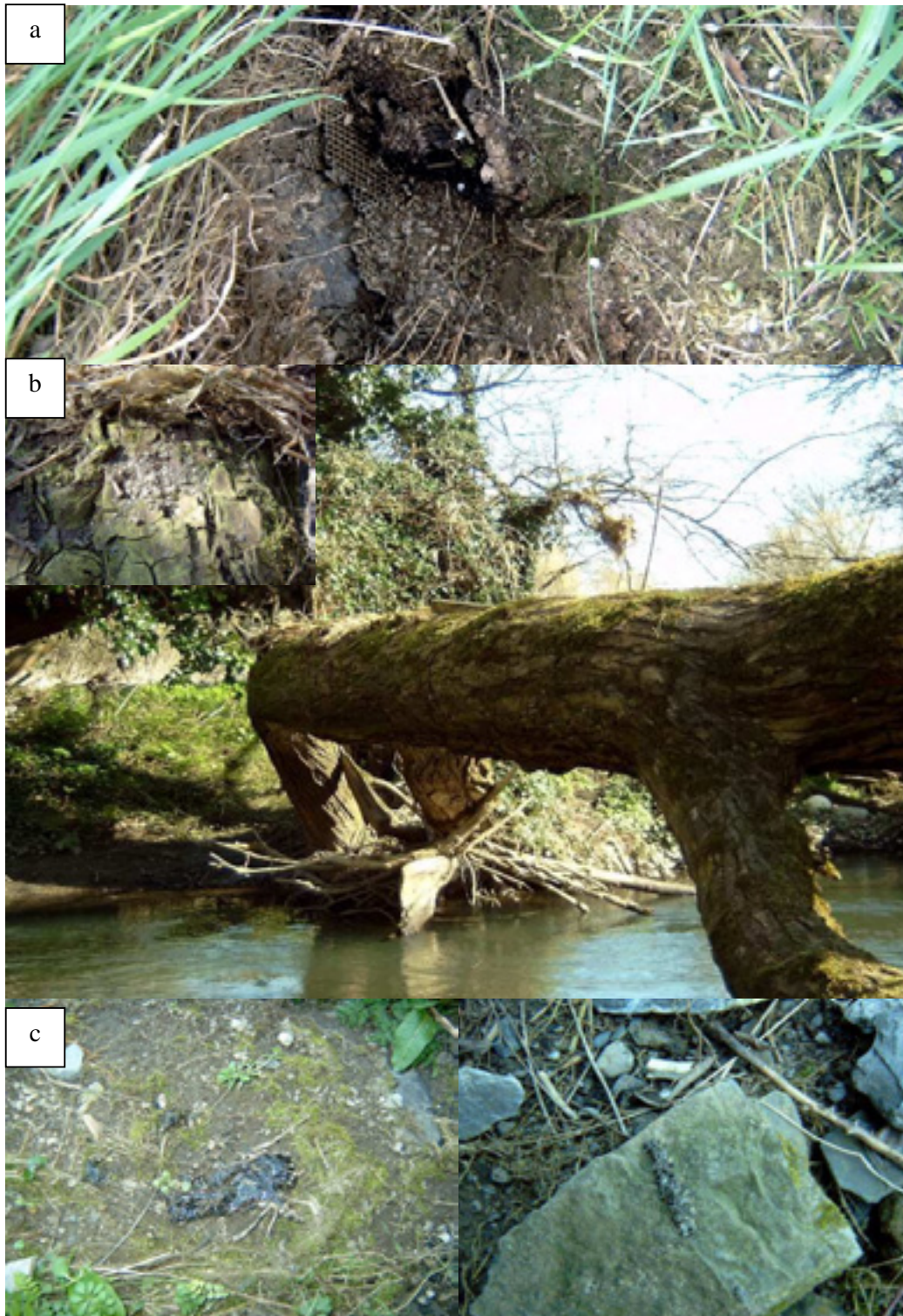


Figure 9: (a) A dug-up wasp's nest. Typical behaviour of badgers. (b) A fallen tree across the river provides a bridge for wildlife as well as a marking site for territorial announcement to rival individuals. Fish scales on this tree (see insert) indicate that otter or mink are availing of this tree. (c) Otter spraints noted at bridges throughout the Park. Mink spraints were also noted at Blanchardstown and eastwards to Ashtown.



Figure 10: Otter spraints are very typically deposited under a bridge either on a raised point or at least on a point that is not routinely submerged (see oval). Two spraints can be seen in this illustration of a bridge east of Kepak.



Figure 11: Riverside vegetation including mature trees is important to provide suitable habitat for otters to establish holts. Exposed tree roots are a typical site for holts. The bridge in the above picture is one of the best sites to observe bats along the entire Tolka Valley Park.

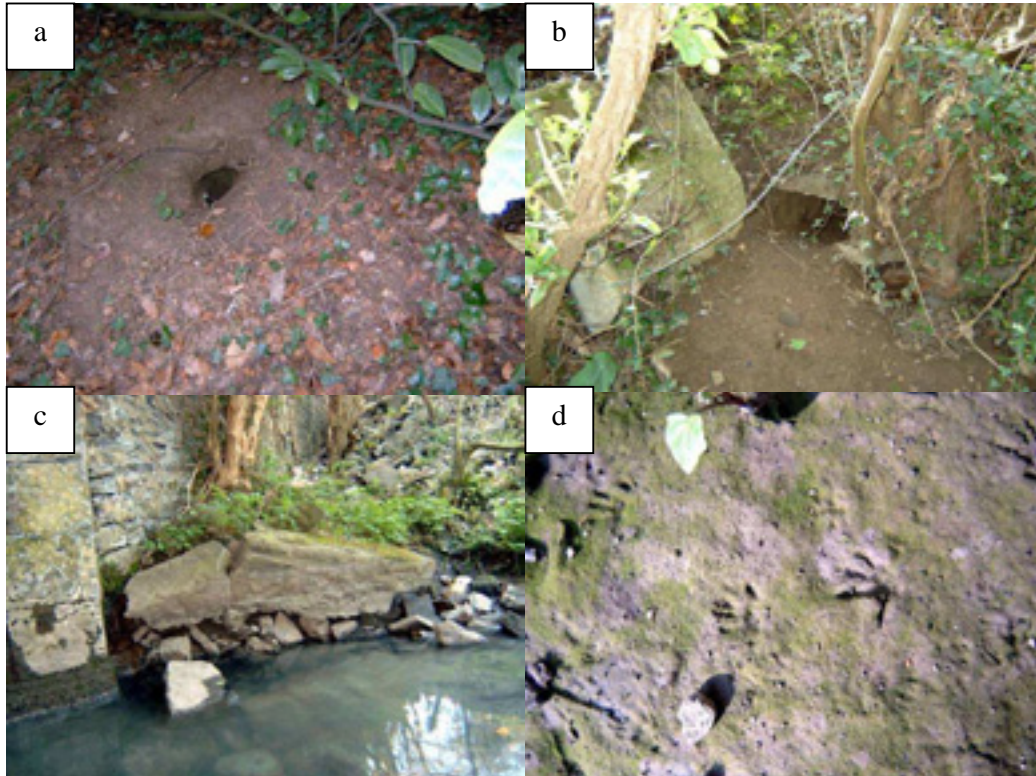


Figure 12: (a) and (b) Rabbits are abundant in some locations along the route, notably east of Mulhuddart, at Blanchardstown Hospital and can be found in woodland (photo (a) at the Blanchardstown Hospital) or hedgerow (photo (b) at Scribblestown).

(c) and (d) Rats are common along the entire Park. The pictures show rat holes (c) and paw prints (d) at the Blanchardstown Hospital Bridge

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