Tower Hamlets Cemetery Park
Diptera Survey Report 2007
OS Grid Ref TQ367824.

This report covers the species of Diptera seen at Tower Hamlets Cemetery Park on three survey visits during 2007. These visits were conducted on 19 May, 14 July and 29 September, and were deliberately timed to take advantage of known peak flight periods for many Diptera. The surveys build directly on surveys conducted in 2006 by the author, and in 2001 by Colin Plant.

Diptera specimens were individually targeted using hand net and pooter, as in 2006. The original intention of the 2007 had been to focus on the ponds around the Soanes Centre and on areas of *Anthriscus sylvestris* Cow Parsley at the edge of woodland glades within the park. In the event, though, much of the Cow Parsley was removed during the year due to habitat enhancement and management work undertaken. The decision to concentrate on the marginal vegetation around the ponds was taken partly out of necessity, but also because it was observed that the vegetation there was likely to be at the peak of its biodiversity cycle, being well established, but not too thick and dense, and therefore ideal for many species of diptera.

Diptera are excellent indicators of the 'health' of a habitat, because they are a large and diverse group. The species accounts below are intended in part to provide information that may be fed into the Park's management plan. It should be noted however that the species list remains inevitably skewed because of the impractability of employing a variety of surveying methods. Sadly, the Park is not suitable for setting up any sort of invertebrate traps because of the risk of vandalism.

The weather conditions on the three survey dates were as follows:
19 May – a mixture of warm sunny intervals with overcast cool spells, fairly windy.
14 July – heavy cloud cover but fairly bright, humid, starting out relatively cool, but becoming hot, with a strong breeze.
29 September – overcast, cool, the vegetation very wet from heavy rain during the night, very light breeze.

Species Accounts

Lonchopteridae - Spear-winged Flies
Lonchoptera bifurcata
Plant calls this species *L furcata,* but it is now known as *L bifurcata.* Collected specimen is female, 3mm, from 29 September. The larvae develop in rotting vegetable matter, and the species particularly likes gardens, woodlands, meadows and damp grassland. The adults are usually encountered in wet places on flowers, feeding on nectar. It is rather common and the most frequently encountered Lonchopteridae in man made environments, virtually cosmopolitan ie occuring world wide, and is parthenogenic ie females can reproduce without impregnation, like aphids. Males are almost never found, although they are more common in the UK than anywhere else. The species is extremely variable in colour, with summer specimens tan and winter ones black.
Link to image: Adult Female (Jorge Mota Almeida, Diptera.info Gallery)
References: Oosterbroek, John Klymko quoted on Diptera.info

Stratiomyidae – Soldierflies

***Odontomyia tigrina* Black Colonel**

This male 8mm shiny black fly was collected from *Alliaria petiolata* Garlic Mustard growing on the edge of the pond at the front of the Soanes Centre. There are only 60 known sites in the UK that this species occurs, so this is a distinctly local and largely southern species, peaking in late May (specimen taken 19 May). The Thames Estuary is a stronghold. It is usually found on the margins of ponds and ditches with rich emergent and floating vegetation. It needs a pond with a high, stable water level and does not favour ponds and ditches that are either choked or have been cleared the previous year, therefore it is necessary to rotate pond management to ensure there is always one suitable pond for this species. The larvae are aquatic. Adults are most often found feeding on flowers or sitting on leaves at their breeding site.

References: Stubbs & Drake

***Pachygaster atra* Dark-winged Black**

This female 4mm black fly with rather globular abdomen is a saproxylic species (ie associated with rotting vegetation) and the larvae are terrestrial. It is common along the Thames Estuary. Large *Populus tremulus* Aspen and *Populus spp* Poplar have been regarded as the best for the larvae of this species, but it will also use *Fagus sylvatica* Beech and *Ulmus spp* Elm. More recently, most records have been from compost heaps and decaying vegetation on soil. The adult flight period peaks in July, and this specimen was taken 14 July. Adults are often reported from tree foliage on woodland edges and hedgerows.

Link to Image: Adult Female (Ben Hamers, Diptera.info Gallery)

References: Stubbs & Drake

Syrphidae – Hoverflies

Melanostoma mellinum

The specimen collected on 29 September is female. For all this is one of the most common species of hoverfly in Britain, the larval stages of this species are not well known, but they may be general scavengers in leaf litter. This species is often abundant in grasslands and the flight period peaks May-August. The species can be distinguished from *M scalare* by its shiny face, and females are very often melanic ie entirely black.

References: Stubbs & Falk

Melanostoma scalare

A 6mm female was collected 19 July, and another female, 7mm, collected 29 September. This species is very similar to the previous, but can be distinguished by its much more extensively dusted face and more hollowed out orange spots . Females frequently have striking arsenic green halteres. The species is widespread and often common (and appears to be significantly more common than *M mellinum* in the park). It prefers lushly vegetated woodland edges and the flight period peaks May/June and August.

References: Stubbs & Falk

Dasysyrphus albostriatus
The male specimen from 14 July is 8mm, the female 13mm (which is unusually large). This is a widespread woodland edge species, which peaks in early summer and early autumn, often arriving to coincide with hot weather. It is easy to recognise because of its oblique yellow abdominal bars, long dark stigma and the pair of grey stripes on the thorax. The superbly camoflaged larvae predate various aboreal aphids, and can sometimes be found resting on twigs and branches.
Link to Image: Adult Female (Maja Beutler-Vatter, Diptera.info Gallery)
References: Stubbs & Falk

***Episyrphus balteatus* – Marmalade Hoverfly *or* Winter Hoverfly**
This species is common (possibly the most common hoverfly in the world), ubiquitous, virtually cosmopolitan and can be seen in any month. I have seen them in the park on a cold winter day, determinedly crawling out onto a log to sit in what sun there is. In this situation they are very vulnerable, as they are clearly too cold to avoid being picked up by passing entomologists, much less to avoid being eaten by predators. Males can commonly be seen hovering in shafts of sunlight within woodland. It is unusual to visit the park and not see at least one (as happened on my 29 September survey visit – possibly the very wet summer had an effect on their numbers). Their numbers in the British Isles are boosted most years by migrants from across the Channel, and they peak in July/August. I noted that this year the July specimens varied considerably in colour from quite dark to rather dusted. For all this is often a variable species, it is easily recognised in the field, and with very little experience, no specimen need be taken as a voucher. The larvae are aphidophagous and will also predate the larvae of sawflies. There has recently been a very interesting discussion on Diptera.info regarding whether the species hibernates as an adult and the balance of the overwintering sexes (see here).
References: Stubbs & Falk; Haupt et Haupt; Diptera.info

Eupeodes luniger
The male specimen taken 19 May was 7mm. I noted that the species was much in evidence flying that day, with some large individuals with orange lunules (marks on the abdomen, so called because of their comma or new moon shape), and other smaller individuals with cream lunules. The species peaks in July-September and can appear in large numbers if there is a migrational influx or mass emergence, to be one of the most common hoverflies from very early in the season. It is a very widespread species, very variable in size and colour. Except in years of bad weather, this species will be abundant in gardens and urban waste ground. The larvae predate ground layer aphids. On 29 September, this species was noted visiting the *Erysimum* Wallflowers in the planters at the park entrance. Note that there is an extremely similar species (*E corollae*) which has been recorded in the park by Plant, although, curiously, never by me, but it is likely that it does occur regularly in the park.
Link to Image: Adult Female (Gerard Pennards, Diptera.info Gallery)
References: Stubbs & Falk

Meliscaeva auricollis
The male specimen from 14 July is 9mm and is the brighter summer colour variant. This is a reasonably common species in the south, peaking in July and found near trees. The larvae are known to be associated with aphids on shrubs such as barberries and broom, on umbellifers and on alder.
Link to Image: Adult Male (Carnota, Diptera.info Gallery)
References: Stubbs & Falk

Sphaerophoria scripta
This species is the only *Sphaerophoria* that can be recognised in the field, without taking a specimen, because the male abdomen is so obviously longer than the wings. It is common in the park, and often concetrated around the pond at the entrance to the Soanes Centre. Last year I discovered a larva overwintering in a sedge here. The larvae are predators of ground layer aphids. Curiously the area around the other pond, behind the Soanes Centre, is less attractive to this species – perhaps it does not get as much sun? There is at least one other, smaller, *Sphaerophoria* flying in the park,and also favouring the pond at the entrance, but I have been unable to catch a male specimen, which is the only way of determining the species. It is common for more than one species of this genus to fly together. *S scripta* is one of the most common open grassland hoverflies, and is often abundant on flowery waste ground in urban areas. It is most common in the south and probably has its numbers boosted by migration from across the channel. The flight period peaks in July/August.
Link to Image: See here for discussion and images of the larva and adult male on Diptera.info.
References: Stubbs & Falk

Syrphus ribesii
This is the 'classic' hoverfly, almost cosmopolitan in its distribution, relatively large, black with yellow 'moustache' shaped abdominal bands. The species is often abundant in gardens, hedgerows and waste ground, where there are flowers, and has multiple generations over a long season. In quiet places it is possible to hear the hum of males vibrating their wings whilst at rest on tree leaves. It is common in the park, and the female specimen from 14 July is 9mm. The larvae are predators of a wide variety of aphids, and can be found overwintering in leaf litter under aphid infested sycamores. The flight period peaks May-September.
Link to Image: Adult Female (Gerard Pennards, Diptera.info Gallery) Female ovipositing (Pierre Duhem, Diptera.info Gallery) Larva (C-G Magnusson, Diptera.info Gallery) – note that this Swedish individual is darker than British specimens tend to be, according to Graham Rotheray,

author of the Colour Guide to Hoverfly Larvae (Diptera, Syrphidae) and Curator of Insects, National Museum of Scotland. See also this thread on Diptera.info.
References: Stubbs & Falk; Haupt et Haupt

Syrphus vitripennis
This species is very similar to *S ribesii* above, and just as common and widespread, utilising a wide variety of habitats, and commonly migrating. It cannot be safely distinguished in the field without considerable experience, but is usually slightly smaller than *S ribesii*. The flight period peaks in July/August.
Link to Image: Adult Female (C-G Magnusson, Diptera.info Gallery)
References: Stubbs & Falk

Xanthogramma pedissequum
A striking species, large and relatively uncommon, although not rare. As Jere Kahanpää commented on Diptera.info: 'Rare enough to be noteworthy, but common enough to be seen every year. Perfect! ' Two were seen in the park on 14 July and a male specimen of 8mm taken. I have, for convenience, referred to this species as *X pedissequum*, but research is currently being conducted in Europe which indicates that this is a complex of 3 species. This work has not been published, so it is not clear yet what will distinguish the species. It is widespread in grassland and woodland rides, especially in areas of short grass with some bare ground eg paths. They are often seen flying very low, only a few centimetres off the ground, and they visit vegetation close to the ground. There is apparently an association with the ants *Lasius niger* and *L flavus* as larvae are regularly found in these ant species' nests, presumably feeding on ant-attended root aphids. The species seems to also like somewhat damp grassland, and is a distinctly southern species. The flight period peaks in June/July.
References: Stubbs & Falk; Gerard Pennards and Dieter Doczal on Diptera.info

Cheilosia griseiventris
Cheilosia in general are very difficult to identify. The specimen collected 19 May is female and 7mm. *C griseiventris* is only recognised as a separate species in the British Isles, and is very closely related to *C latifrons* – so closely, in fact, that there is disagreement about whether they are separate species. It should be noted that there are many records from London and the Thames Marshes for *C latifrons*, whilst *C griseiventris* tends to have a more westerly distribution. However, the size, head shape and proportions, pattern of dusting and the yellow base to the hind femur all point to this specimen being *C griseiventris*, so an interesting record, and I would like to see further specimens before treating this as a definite record. The species peaks in May. *C griseiventris* seems to favour fens, calcareous or neutral grasslands, coastal dunes and broad woodland rides (avoiding acidic soils, unlike *C latifrons*). The larvae are unknown, but may be associated with yellow composites such as hawkbits, hawk's-beards and cat's-ears.
References: Stubbs & Falk

Cheilosia vulpina
Cheilosia is the largest single genus of hoverfly in Britain, and inevitably, many of the species are very similar. A number of species of Cheilosia have been recorded in the park, all virtually impossible to tell apart in the field, being small and fairly uniformly black to the naked eye, sometimes with clearly tawny haired thoraxes like *C vulpina,* looking like small bees, curling their abdomens under as they feed on flowers such as *Galium aparine* Cleavers. *Cheilosia* larvae feed on plants. It is thought that the presence or absence of suitable plants is key to the presence of the various species, but surprisingly little is known about the specific associations. It is important to record any association between adult *Cheilosia* and plant species, as the flowers frequented by adults have in some cases proved to be the larval food plant. Umbellifer flowers are very attractive to many species of *Cheilosia,* as are sallow and blackthorn. *C vulpina* has known associations with Greater and Lesser Burdock, Marsh, Spear and probably Creeping Thistle and Globe Artichoke. Other *Cheilosia* recorded in the park are known to use Angelica, Cow Parsley, Hogweed, Yarrow, Scented Mayweed, Smooth Sow Thistle and Goatsbeard.
References: Stubbs & Falk

Eristalis arbustorum
On 19 May this species was observed visiting the *Cistus* near the Soanes Centre, along with two other species of *Eristalis (pertinax* and *tenax).* It is smaller than the other two species, with a bigger orange patch on the abdomen, and an entirely pale dusted face. This species often has white margins on the tergites. On 14 July a male specimen, 10 mm, was taken feeding on *Senecio jacobaea* Common Ragwort. The species is common, and can be seen in gardens and urban waste ground, visiting a wide variety of flowers, but especially umbellifers. The larvae require drains and ponds polluted with decaying matter. The flight period peaks in July/August.
Link to Image: Adult Female (Gerard Pennards, Diptera.info Gallery)
References: Stubbs & Falk; Haupt et Haupt

Eristalis pertinax
This species was observed on 19 May and 14 July, and was particularly common in July, feeding on *Heracleum spondylium* Hogweed. It takes a little experience to distinguish *E pertinax* and *E tenax* in the field, and indeed, all *Eristalis spp* are very similar and need to be observed carefully to be sure of the identification. The spring brood has less conspicuous orange markings and has longer paler body hair than the summer generation. It is thought that this dimorphism, similar to that seen in *Meliscaeva auricollis,* is related to the rate of development (and therefore, by inference, to temperature). The species is common and widespread, and can be one of the most abundant hoverflies if there are suitable flowers available. Larvae require organically rich drains or similar. Males can be seen hovering in woodland glades at a height of 1-5m, vigorously defending a territory of a few square metres. The flight period peaks in May and August.
Link to Image: Adult Male (Maja Beutler-Vatter, Diptera.info Gallery)
References: Stubbs & Falk

Eristalis tenax **Dronefly**
A large dark *Eristalis*, a superb honeybee mimic, and always the earliest of the genus to emerge. Individuals can vary between being very glossy, with the appearance of polished mahogany, and very densely furry. On 19 May this species was observed at flowering plants and resting on tree leaves. A number were observed patrolling by a self seeded tree hard up against the Soanes Centre, and visiting the buddleia on 29 September. Males are known for their habit of holding territory at about 2m off the ground over paths and sunny glades. They respond to visual stimuli and will investigate anything new that enters their territory, rather in the manner of the Hawker Dragonflies. It is not uncommon to have a 'nose to nose' encounter with this species. Widespread and abundant, females hibernate in crevices, emerging on sunny days throughout the year. Curiously, there is often a lull in their numbers in midsummer. The larvae live in organically rich and polluted ditches and drains. The flight period peaks in August/September.
References: Stubbs & Falk

Myathropea florea

This is a large, broad, yellow and black hoverfly, easy to recognise, and apparently becoming more common, now being seen throughout the summer in the park in increasing numbers. More than 10 were seen on 19 May, at the *Cistus* by the Soanes Centre, and on tree leaves, and on 14 July it was also common. An indiviual landed on my arm on 29 September, and I have observed similar behaviour from this species a number of times in the past. The larvae utilise wet rot-holes in tree trunks. Pupae are found in association with decaying wood. It is a widespread species favouring wooded hills and adults are seen on flowers, particularly umbellifers. The flight period peaks in July/August.

References: Stubbs & Falk; Haupt et Haupt

***Merodon equestris* Large Bulb Fly**
This species is a robust hoverfly, extremely variable, mimicking a number of bumblebee species, with both colour patterns and 'body language' and there are a number of named varieties. The larvae burrow into bulbs, often bluebells in woodland settings, but they can be a nuisance to commercial growers. The larvae pupate in the soil after about 300 days. The adult flies emerge in the morning and live for about 10-15 days. Adults can be common in late spring in favoured spots eg warm sunny sheltered areas with flowers such as dandelions. The species peaks in late May, and a male specimen of *M equestris* var *equestris*, 13mm, was taken on 19 May. More than 6 individuals of this variety were seen on this day, and one individual of *M e* var *narcissi*, which is a mimic of *Bombus pascuorum* Common Carder Bumblebee and covered in dense foxy coloured hair. *M e* var *equestris* is a duller tawny colour on the abdomen, but with black on the thorax.
References: Stubbs & Falk

Volucella inanis
A large and robust hoverfly, rare (RDB3) but with a stronghold in London and the adjacent countryside. This can be a relatively frequent species some years, although always local, and can be seen on umbellifers and in gardens, peaking in August. 4 individuals and both sexes were seen on 14 July, and a male specimen, 15mm, (unusually large) taken. The larvae are predatory on social wasp larvae, particularly *Vespula vulgaris* Common Wasp, *Vespula germanica* German Wasp and *Vespa crabro* Hornet. Larvae can be obtained from wasps nests in late autumn, after the wasps have abandoned them. The species is said to be most abundant in years following an abundance of wasps.
Link to Image: Adult Male (Dr Tony Irwin, Curator of Natural History, Norwich Castle Museum & Art Gallery/Diptera.info Gallery) Larvae (Guenter, Diptera.info Gallery)
References: Stubbs & Falk; Haupt et Haupt

Volucella zonaria
Very similar to *V inanis,* but at 20mm, the largest and most spectacular hoverfly (indeed, the largest fly!) you will see in the park (probably often mistaken for a hornet). The specimen collected on 14 July is female, and can be distinuished from *V inanis* by its more extensive chestnut brown colouring on the base of the abdomen, where *V inanis* is black. An uncommon species (Notable). This is a species that appears to be becoming more common and like *V inanis*, has a stronghold in London. It has a tendency to come indoors. Larvae have been found in the nests of *Vespula vulgaris* and *V germanica,* where they are inquilines, not predators, but can be collected in the same way as *V inanis*. The flight period peaks in August.
References: Stubbs & Falk

Syritta pipiens
The larvae breed in horse and cattle dung, compost, silage and other rotting organic matter and can sometimes be found in large numbers. Adults, also often present in large numbers, visit flowers. With a little experience this is an easy species to recognise, and has been recorded on every survey visit to the park this year. It is widely distributed and frequently abundant in urban areas, rough meadows, along hedgerows and in marshy situations. A common, cosmopolitan species nowadays.
Link to Image: Adult Female (Gerard Pennards, Diptera.info Gallery)
References: Stubbs & Falk; Haupt et Haupt; Martin Hauser, University of South Carolina on Diptera.info

Helophilus spp
Curiously, no *Helophilus spp* were recorded in the park in 2007, although it appears to have been a good year for them elsewhere, and I would have expected to see them.

Conopidae

Sicus ferrugineus

An uncommon and local species, a parasitoid of bumblebees, with the female depositing a single egg in the host's abdomen in flight, manipulating the host using specially adapted structures on the Conopid female's abdomen. The larvae develop inside the host, causing the host to die, at which point the larva pupates. Larvae has been found in the nests of *Bombus terrestris*, *B hortorum,* and *B lapidarius*. Adults prefer warm, dry areas rich in a variety of flowers. Females can be observed flying slowly through the vegetation searching for a host. Two individuals were seen on 14 July and a specimen taken, 11mm. A very distinctive, peculiar looking fly.

References: Oosterbroek; Haupt et Haupt

Ephydridae

Notiphila sp

Notiphila is an easy genus to identify, but very difficult to get to species level, according to Tony Irwin, Curator of Natural History at Norwich Castle Museum, who is an expert in this family. They are amongst myriad of small grey flies that occur in a number of families, so are not easy to identify in the field, but under magnification, their distinctive asymmetrically plumed arista (a part of the antennae) is clearly visible. Adults are usually found on or near the soil in damp habitats. The collected specimen is 3mm, from 14 July.

References: Oosterbroek

Opomyzidae – Grass Flies

Opomyza florum

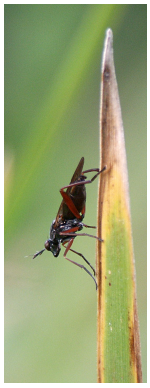
A 4mm male was collected from the buddleia near the Soanes Centre on 29 September, and a 6mm female from the grass nearby. These little flies are a pest of winter crops, especially wheat. The fly does not pierce the plants to lay its eggs like Tephritidae do, rather it lays an egg close to a new shoot. The larvae then enter the plant tissue. This is why as a family they are exclusively associated with grasses (Poaceae) and cannot use the range of plants that Tephritidae do. Generally the most common species in the genus. It is clear from the Essex Field Club records that the species is common around the Thames and Lea valleys throughout the summer and autumn, and it was certainly common in the park on 29 September. This species has a grey abdomen and a plain orange thorax, with darkened wing edges and cross veins.

References: Oosterbroek

Opomyza germinationis
A 4mm female was collected on 29 September. This species is very similar to *O florum* above, but distinguished most easily by the presence of a pair of dark stripes that run the length of the thoracic dorsum, from behind the head and converging at the tip of the scutellum. *O florum* has a plain thorax and does not exhibit these stripes. This is a common fly, recorded many times in the park and Thames and Lea valleys.
Link to Image: Adult Female (Gerard Pennards, Diptera.info Gallery)
References: Oosterbroek

Geomyza tripunctata
This is an attractive glossy near-black little fly. The specimen collected on 29 September is a 3mm female. In the field they are easily mistaken for Sepsidae, as they have the same habit of parading up and down on a leaf, waving their wings, and being black and glossy, with darkened cross veins on the wings, can look very like Sepsidae. This species is very variable in both colour and size. It tends to be darker in colder climates and more orange in warmer weather. The female deposits a single egg in the soil at the base of a stem. The larvae then penetrate and reach the centre causing damage known as 'dead heart'. The external leaves stay green, but the central leaves turn yellow and die. The larval stage lasts 28-40 days, pupal stage 20-30 and adults live for 3-6 months. They prefer short or trampled green grass. August-September seems to be when they are most obvious, but they can actually be found all year. Nikita Vikhrev (a Russian dipterist with whom I am collaborating on a separate project) tells me that they are very definitely a late season species.
Link to Image: Adult Female (Jorge Mota Almeida, Diptera.info Gallery)
References: Oosterbroek; Vikhrev/Jan Willem van Zuijlen on Diptera.info

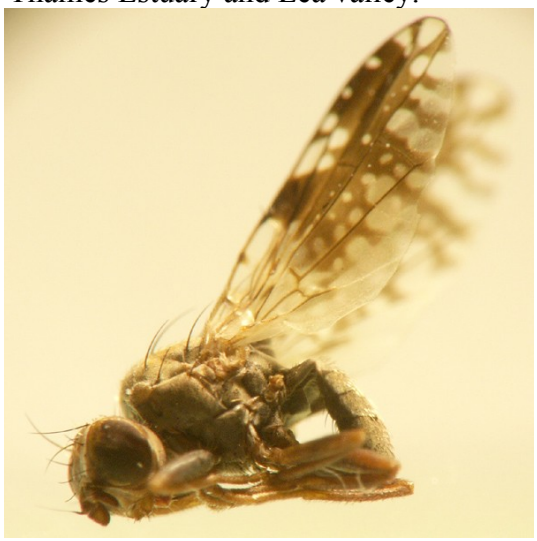
Sciomyzidae – Snail-killing Flies
Sepedon sphegea
A beautiful, elegant and relatively large fly associated with damp places, requiring little experience to recognise in the field in the British Isles (although may initially be mistaken for a parasitic wasp). It seems to have been a particularly good year for this species, and there are many records from the British Isles and Western Europe in general this year. In my experience both in the British Isles and in central France, this species has a particular preference for *Iris pseudacorus* Yellow Iris, and can typically be observed positioned head down on the blades of this plant on the edges of ponds or rivers. When disturbed it will first sidle discreetly around to the other side of the leaf, rather in the manner of a damselfly attempting to hide from view, and only choose to fly as a last resort. The larvae are aquatic. This species was seen on the *I pseudacorus* on the margins of the pond at the entrance of the Soanes Centre, and was observed there a number of times on 29 September, despite being disturbed more than once by my (futile) attempts to capture it. The species is relatively sensitive to dry conditions. Eggs are laid in rows.
References: Haupt et Haupt



Sepsidae – Ensign Flies
***Nemopoda nitidula* Black Scavenger Fly**
This species is common in the park, and there are many records of it in the Thames and Lea valleys. It is quite visible, because of its habit of parading up and down on vegetation, waving its wings in the manner typical of its family, very often in some numbers. These are glossy black flies with bodies very reminiscent of ants, albeit with wings. The species peaks in May, July and August. Unlike *Sepsis* sp, this species does not have a wing spot, but the tip of the wing is slightly darkened. The specimens collected on 29 September are both 4mm males. The species seems to have a preference for the vegetation around the pond at the rear of the Soanes Centre.
Link to Image: Adult Female (Pierre Duhem, Diptera.info Gallery)
References: Oosterbroek

Tephritidae – Picture-winged Flies
***Anomoia purmunda* Gall Fly**
An attractive little fly, easily identifiable by the brightly coloured banded eyes and distinctive dark pattern on its wings, which in typical Tephritidae fashion it displays by waving its wings whilst sitting on vegetation (usually, but not always its host plant). The wing waving is believed to be part of the mating ritual, and also used to ward off predators, but is often observed when there is neither predator nor opposite sex present. There were a number displaying on *Cirsium arvense* Creeping Thistle at the rear of the Soanes Centre on 14 July, but the host plant is actually *Crataegus* Hawthorn (there is a hawthorn nearby). According to Tony Irwin it is also attracted to *Lonicera* Honeysuckle and fresh gloss paint! He assumes it is attracted to the white spirit, which he surmises must be similar to volatile chemicals present in *Lonicera* berries. It has also been recorded on cotoneaster berries. The female uses her telescopic ovipositor to inject her eggs into the host berries. Tephritidae in general are surprisingly good flyers. This is an uncommon fly, with a local distribution, which has not been recorded for several years in the park or nearby. It peaks in late summer. The specimen collected is 4mm.
Link to Image: Adult (Ben Hamers, Diptera.info Gallery)
References: John Smit/Dr Tony Irwin, Curator of Natural History, Norwich Castle Museum & Art Gallery/Jere Kahanpää on Diptera.info

Tephritis neesii
The collected specimen is 3mm and was found on *Iris pseudacorus* Yellow Iris, but the species appears to be more often associated with *Leucanthemum vulgare* Oxeye Daisy. There are numerous records for this species in the Thames Estuary and Lea valley.



Anthomyiidae
Anthomyiidae spp
I have collected a number of Anthomyiidae from the park. They are all small and grey and extraordinarily difficult to identify to species level, therefore, I will limit my discussion below to a couple of the more distinctive species.
References: Acland

***Anthomyia pluvialis* Rain Fly**
The collected specimen, from 19 May, is female and 4mm. Two individuals were observed, one on pond marginal vegetation, one on holly. This is a synanthropic species (ie strongly associated with human habitation), which peaks in late summer. The larvae develop in dung, mushrooms and birds' nests. Adults will be seen on flowers and dung.
References: Haupt et Haupt; Acland

***Leucophora sp* Satellite Fly**
This 8mm female was observed 'tailgating' a large *Andrena* sp Mining Bee on 19 May near the path through the grass by the Soanes Centre. *Leucophora* are inquilines in the nests of *Andrena* and, for a small grey non-descript fly, can be surprisingly visible because of their habit of closely following their hosts in flight, a tactic presumably designed to reveal the location of the nest burrow.

Calliphoridae – Blowflies
***Calliphora vicina* Bluebottle**
By far the most common species of Bluebottle, particularly during the warmer months and in warmer, lowland climates, this is a species that is frequently misidentified by amateurs as its close relative *C vomitoria.* This is understandable due to the fact that the most popular general entomological field guides feature *C vomitoria* and do not give enough detail for the amateur to arrive at the correct identification. *C vicina* is much more synanthropic than other *Calliphora spp* and normally outnumbers *C vomitoria* in urban areas. The larvae are necrophagous and coprophagous, feeding on the carcasses of mammals and dung that is exposed or covered by no more than 2.5cm of soil, and can be important in forensic entomology. They are one of the first insects to arrive on a carcass and *C vicina* is not as restricted to larger carcasses as *C vomitoria* seems to be. Their larvae develop more quickly than other *Calliphora spp,* and with luck will develop before the carcass is discovered by necrophagous beetles (Silphidae) which will cause the destruction of any other larvae and eggs on the carcass prior to their own burial and egg laying activities. Ants may also remove Calliporidae eggs and young larvae, and the predaceous larvae of species like *Muscina prolapsa* will reduce *C vicina* numbers on a carcass dramatically. Adults are often found on flowers and dung, and indoors on meat, fish or dairy products (where they will oviposit). In warm conditions (27ºC), this species spends 1 day as an egg, 9 days as a larva and 11 days as a pupa. At 15ºC development is extended to about 33 days. The adults vary greatly in size, due to the availability of food when larvae. Females will oviposit on a carcass for a number of days, resulting in the earliest hatched larvae being able to eat their fill, but the later larvae potentially going short of food and possibly even starving because the earlier larvae have exhausted the supply of food. This species can be seen in any month in the park and is common. It has been reported as overwintering as both adult and larvae in Britain. It would be unusual not to see this species on a visit to the park (as happened on 14 July, but according to Davies, blowflies do not like inclement or windy weather, and this summer was unusually wet). Two 10mm females were

collected on 29 September.
Link to Image: Adult - lateral view (Pierre Duhem, Diptera.info Gallery) – note diagnostic characters visible (reddish cheeks, black beard, yellow anterior spiracle, brown basicosta, darkened lower calypter with broad white border – these characters are all different in *C vomitoria,* but all difficult to see in the field*)*
References: Oosterbroek; Rognes; Davies

***Lucilia sericata* Greenbottle**
This is clearly the most common and most strongly synanthropic of the greenbottles in the London area (possibly to the point of being dependent on man). It is common in the park and has been seen on each of my visits there. In a similar situation to *Calliphora vicina*, this is a species that is commonly misidentified because, although it is the most common species, it is not the one that features in the general entomological field guides. (The species in the field guides is *L caesar,* which tends to be a woodland species, and less synanthropic ie less closely associated with human habitation. This species has also been recorded in the park, as well as a third species, also very similar, so extreme care needs to be taken with *Lucilia* records). The species is a facultative agent of myaisis in sheep ie the larvae will colonise wounds, although they cannot themselves cause the initial break through the skin. Sterile larvae have been used to clean wounds. However, the species principally breeds in garbage of vegetable origin. Adults are often found on flowers and dung. The collected specimens are an 8mm male from 19 May, a 9mm female from 14 July, and an 8mm male from the grass amongst the gravestones near the Soanes Centre and an 8mm female from the *Buddleia* nearby on 29 September.
References: Oosterbroek; Rognes; Davies

***Pollenia rudis* Cluster Fly**
This species was common on 19 May, with many individuals observed on the western walk, sitting on leaves just above ground level, all facing north. Adults are attracted to both human and cow dung, but the larvae are presumed to parasitise worms. Adults sometimes occur in large numbers indoors, looking for a site to overwinter. An 8mm male specimen was collected.
References: Oosterbroek; Rognes

Muscidae – House Flies
Coenosia testacea
A tiny but elegant long legged fly in cream and grey. Specimens were collected 14 July and 29 September, 3mm, from the stumps by the path to the entrance of the Soanes Centre and from plantain in the grass nearby. There are a number of records from South Essex and I get the impression that this species is not uncommon. Both larvae and adults are predatory carnivores. It peaks in May.
References: Oosterbroek, Gregor

Coenosia tigrina
This is by far the most commonly encountered *Coenosia*, and far larger than most of the other species – two 6mm specimens were collected on 29 September. The larvae are carnivorous and the adults ferocious hunters of smaller diptera, with rather a distinctive pose, holding the front legs folded in front and sitting rather upright. I have often encountered it in the park sitting face down on the tip of an *Iris pseudacorus* Yellow Iris blade on the margin of the pond at the front of the Soanes Centre, or on plantain leaves in the grassy area nearby.
References: Oosterbroek, Gregor

Phaonia spp
A number of *Phaonia spp* have been collected in the park. I feel more work really needs to be done to separate them accurately to species level. They are common and can be seen most months. The larvae are carnivorous.
References: Oosterbroek

Sarcophagidae – Flesh Flies
A number of species have been collected in the park. There are clearly quite a number of species, all very similar in appearance and requiring expert determination to identify to species level. I have been helped in this regard by Del Smith (the Essex Diptera Recorder) last year, and Chris Raper (who runs the Tachinidae Recording Scheme, but is now also developing his expertise with Sarcophagidae) this year. Sarcophagidae are usually grey and black, with a checkerboard pattern on the abdomen, and strongly striped thorax. They usually have 'traffic light' red eyes. Males can often be seen visiting flowers. Sub-family Sarcophaginae are associated with carcasses or worms, but sub-family Miltogramminae, eg *Amobia*, are parasites of certain large hymenoptera and can occasionally be observed 'tailgating' their hosts in the same way as the much smaller Anthomyiidae *Leucophora.*
References: Oosterbroek

Scathophagidae – Dung Flies
Scathophaga stercoraria has been recorded in the park, and indeed is probably ubiquitous in the British Isles, but the closely related species *S furcata* is also reasonably common. The two species are most easily distinguished by the colour of their antennae – surprisingly easy to see in the field. *S stercoraria* has black antennae, whereas *S furcata* has orange. Both are dung breeding species and commonly occur together. They require fresh dung, and are thus early colonisers of dung, and their actions combined with the dung drying out somewhat makes the dung accessible to subsequent members of the dung community. *S furcata* has been recorded from sheep, dog and human dung, and *S stercoraria* from cow, horse, dog and human.
References: Oosterbroek; Ball

Tachinidae – Parasitoid Flies
This is a large, varied and difficult family, which parasitises mainly lepidoptera. Details of the various hosts were given in my 2006 report, and as I collected very few Tachinidae in 2007, it is difficult to provide any further detail on the family here.

Results

Table 1
Diptera species recorded in Tower Hamlets Cemetery Park

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
NEMATOCERA PRIMITIVE FLIES					
Anisopodidae Window Midges					
Sylvicola punctatus	●				
Bibonidae Fever Flies					
Dilophus febrilis	●				
Bibio johannis	●				
Bibio marci	●	●			
Cecidomyiidae Gall Midges					
Contarinia tiliarum	●				
Dasineura crataegi	●				
D fraxini	●				
D glechomae	●				
D loti	●				
D marginemtorquens	●				
D urticae	●				
Macrodiplosis dryobia	●				
M volvens	●				
Putoniella marsupialis	●				
Rabdophaga rosaria	●				
Rondaniola bursaria	●				
Culcidae Mosquitoes					
Culex pipiens	●				
Limoniidae Craneflies					
Cheilotrichia cinerascens	●				
Erioptera stricta	●				
Limonia duplicata	●				

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
L nubeculosa	●				
L tripunctata	●				
Scatopsidae Midges					
Scatopse notata	●				
Sciaridae Dark-winged Fungus Gnats					
Sciaridae sp		●			
Schwenckfeldina carbonaria	●				
Tipulidae Craneflies					
Tipula marmorata	●				
T oleracea	●	●			
T paludosa	●				●
Trichoceridae Winter Gnats					
Trichocera annulata	●				
T saltator	●				
BRACHYCERA Group 1 (includes Soldierflies and their alliesand Hoverflies)					
Asilidae Robber flies					
Dioctria baumhaueri	●				
D rufipes	●				
Dolichopidae Big-headed Flies					
Dolichopus griseipennis		●			●
Medetera truncorum	●				
Empididae Assassin Flies					
Empis aestiva	●				
E caudatula	●				
E praevia	●				
Empis tessellata Dance Fly	●	●			
Kritempis livida	●				

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
Pachymeria femorata	●				
Phamphomyia erythrophthalma	●				
R gibba	●				
R tarsata	●				
Xanthempis trigramma	●				
Hybotidae					
Bicellaria nigra	●				
Hybos culiciformis	●				
H femoratus	●				
Ocydromia glabricula	●				
Platypalpus annulipes	●				
P minutus	●				
P pallidiventris	●				
Tachypeza nubila	●				
Lonchopteridae **Spear-winged Flies**					
Lonchoptera bifurcata	●				●
L lutea	●				
Pipunculidae					
Pipunculus campestris	●				
Verrallia aucta	●				
Rhagionidae **Snipe Flies**					
Rhagio scolopaceus	●				
R tringarius	●				
Stratiomyidae **Soldierflies**					
Beris chalybata Murky-legged Black Legionnaire	●				
B vallata Common Orange Legionnaire	●				
Chloromyia formosa Broad Centurion	●				
Chorisops tibialis Dull Four-spined Legionnaire	●				
C nagatomii	●				

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
Bright Four-spined Legionnaire					
Microchrysa flavicornis Green Gem	●				
M polita Black-horned Gem	●				
Odontomyia tigrina Black Colonel			●		
Pachygaster atra Dark-winged Black	●			●	
P leachii Yellow-legged Black	●				
Sargus bipunctatus Twin-spot Centurion	●				
Syrphidae Hoverflies					
Baccha elongata	●	●			
Melanostoma mellinum	●				●
M scalare	●	●		●	●
Platycheirus albimanus	●	●			
P ambiguus		●			
P clypeatus	●				
P manicatus	●				
P scutatus s l	●	●			
Paragus haemorrhous	●				
Chrysotoxum bicinctum	●				
C festivum	●				
Dasysyrphus albostriatus	●			●	
Epistrophe eligans	●	●			
E grossulariae	●	●			
Episyrphus balteatus Marmalade Hoverfly	●	●	●	●	
Eupeodes corollae	●				
E luniger	●	●	●		●
Eupeodes Species C					
Leucozona lucorum	●				
Melangyna compositarum	●				

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
M labiatarum	●				
Melanogaster hirtella		●			
Meliscaeva auricollis	●	●		●	
M auricollis var *maculicornis*		●			
Scaeva pyrastri	●				
Sphaerophoria scripta	●			●	
Sphaerophoria sp				●	
Syrphus ribesii	●	●	●	●	
S vitripennis	●	●		●	●
Xanthogramma pedisequum	●			●	
Cheilosia griseiventris			●		
C pagana	●				
C proxima	●				
C vulpina	●	●		●	
C vernalis		●			
Ferdinandea cuprea	●				
Neoascia podagrica	●				
Neocnemodon brevidens	●				
Eristalis arbustorum	●	●	●	●	
E pertinax	●	●	●	●	
E tenax Dronefly	●	●	●		●
Helophilus pendulus	●				
Myathropa florea	●	●	●	●	●
Eumerus tuberculatus Lesser Bulb Fly	●				
Merodon equestris Large Bulb Fly	●	●	●		
Pipizella varipes	●				
P virens	●				
Volucella bombylans var *lucorum*	●	●			
V bombylans var *lapidarius*	●	●			
V inanis	●			●	
V pellucens	●				
V zonaria	●	●		●	

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
Syritta pipiens	●	●	●	●	●
Xylota segnis	●				
X sylvarum	●				
Therevidae **Stiletto Flies**					
Therea nobilitata Stiletto Fly	●				
BRACHYCERA Group 2 **(Acalyptrates)**					
Agromyzidae **Leaf-mining Flies**					
Agromyza alnibetulae	●				
A reptans	●				
A pseudoreptans	●				
Liriomyza amoena	●	●			
Phytomyza conyzae	●				
P heracliana	●				
P ilicis	●				
Chloropidae					
Dicraeus vagans	●				
Elachiptera cornuta	●				
Conopidae					
Conops ceriaeformis	●				
C quadrifasciata	●	●			
Physocephala rufipes	●				
Sicus ferrugineus	●	●		●	
Thecophora atra	●				
Ephydridae					
Notiphila sp				●	
Heleomyzidae					
Suillia variegata	●				
Tephrochlamys rufiventris	●				
Lauxaniidae					
Calliopum aeneum	●				
Lonchaeidae					

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
Lonchaea fumosa	●				
Opomyzidae **Grass Flies**					
Opomyza florum	●				●
O germinationis	●				●
Geomyza balachowskyi	●				
G tripunctata					●
Pallopteridae					
Palloptera qunquemaculata	●				
P umbellatarum	●				
P ustulata	●				
Platystomatidae					
Platystoma seminationis	●				
Psilidae					
Psila merdaria	●				
P rosae	●				
Sciomyzidae **Snail-killing flies**					
Sepedon sphegea					●
Tetanocera elata	●	●			
Sepsidae **Ensign Flies**					
Nemopoda nitidula	●				●
Themira annulipes	●				
Sepsis cynipsea	●				
S fulgens	●	●		●	
S punctum	●			●	
Tephritidae **Picture-winged flies**					
Anomoia purmunda	●			●	
Euleia cognata	●				
E heraclei	●				
Paroxyna misell	●				
Tephritis bardanae	●				
T cometa	●				

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
T neesii			●		
T hyoscyami	●				
Terellia ruficauda	●				
T (Cerajocera) tussilaginis		●			
Trypeta zoë	●				
Urophora cardui	●				
U stylata	●				
Xyphosia militaria	●				
Ulidiidae					
Ceroxys urticae	●				
BRACHYCERA Group 3 (Calyptrates)					
Anthomyiidae					
Anthomyiidae *sp*		●	●		●
Anthomyia pluvialis Rain Fly			●	●	
Delia sp A Cabbage Root Fly		●			
Botanophila varicolor		●	●		
Botanophila cf striolata				●	
Leucophora sp Satellite Fly			●		
Calliphoridae Blow flies					
Calliphora vicina A Bluebottle	●	●	●		●
C vomitoria A Bluebottle	●				
Lucilia caesar A Greenbottle	●				
L richardsi A Greenbottle	●				
L sericata A Greenbottle	●	●	●	●	●
Pollenia rudis Cluster Fly	●	●	●		
Protocalliphora azurea	●				

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
Muscidae **House Flies**					
Coenosia testacea				●	●
C tigrina					●
Musca autumnalis Face Fly		●			
Muscina levida		●			
Helina duplicata		●			
Phaonia subventa		●			●
P signata		●			
Polietes lardarius Larder Fly		●			
Sarcophagidae **Flesh Flies**					
Amobia signata		●			
Sarcophaga carnaria A Flesh Fly	●	●	●		
S variablis				●	
S nigriventris A Coffin Fly	●				
S (Heteronychia) filia				●	
S (Heteronychia) dissimilis		●			
Scathophagidae **Dung Flies**					
Scathophaga furcata A Dung Fly	●	●		●	
S stercoraria Common Yellow Dung Fly	●	●			
Tachinidae **Parasitoid Flies**					
Eriothrix rufomaculata	●	●			
Gymnochaeta viridis		●			
Macquartia grisea		●			
Pales pavida		●			
Phania funesta		●	●	●	
Solieria pacifica		●			
Siphona geniculata		●			

SPECIES NAME	2001	2006	19 May 2007	14 July 2007	29 Sept 2007
Tachina fera			●		

Summary

The 2007 survey has identified 11 new species and one new family, bringing the total number of diptera species recorded in the park to 211, and the number of families to 40. It is clear that species that depend on damp places rich in organic matter for both their adult and larval stages thrive in the park. Therefore, the introduction of new ponds this year will be beneficial, both by providing more suitable habitat and also because the ongoing management of the ponds can be done in sequence, so that there are ponds at various stages of their 'life cycle', allowing populations of diptera to move from one to another if necessary. Likewise, the fairly dense woodland that covers much of the park also provides suitable habitat for many of the species recorded. There is clearly also a smaller, but significant number of species dependent on open areas of grass. The flowering plants in open sunny positions such as the front of the Soanes Centre are an important nectar source for many adult flies.

Susan Walter
January 2008

References

Ackland, D M, British Anthomyiidae: Keys & Genitalia Figures & lots more! 2005

Ball, S, Key to the British Scathophagidae (Diptera), 2007

Ball, S and Morris, R, Provisional Atlas of British Hoverflies (Diptera, Syrphidae), 2000

Chinery, M, Insects of Britain & Western Europe, Domino Guides, 2007

Davies, L, Species Composition and Larval Habitats of Blowfly (Calliphoridae) Populations in Upland Areas in England and Wales, Medical and Veterinary Entomology, Vol 4 61-68, 1990

Disney, R H L, et al, Collecting Methods and the Adequacy of Attempted Fauna Surveys, with Reference to the Diptera, Field Studies 5 (1982), 607-621

Falk, S J, Test Key to British Calliphoridae

Gregor, F, et al, The Muscidae (Diptera) of Central Europe, Masaryk University, 2002

Haupt, J & H, Guide des Mouches et de Moustiques, Delachaux et Niestlé, 2000

Kirby, P, Habitat Management for Invertebrates: a practical handbook, RSPB, 2001

Lee, P, A Report on a Survey of the Invertebrates of A Wood, Suffolk, 2005-2006

Oosterbroek, P, The European Families of the Diptera: Identification, diagnosis, biology, KNNV Publishing, 2006

Plant, C, Tower Hamlets Cemetery Invertebrate Inventory 2001

Rognes, K, Blowflies (Diptera, Calliphoridae) of Fennoscandia and Denmark, Fauna Entomologica Scandinavica Vol 24, 1991

Rose, F, (Revised by O'Reilly, C), The Wild Flower Key, Frederick Warne, 2006

Stubbs, A & Drake, M, British Soldierflies and Their Allies, British Entomological and Natural History Society, 2001

Stubbs, A and Falk, S, British Hoverflies, British Entomological and Natural History Society, 2002

Tschorsnig, H-P and Herting, B (translated by Raper, C and Rayner, R), The Tachinids (Diptera: Tachinidae) of Central Europe: Identification Keys for the Species and Data on Distribution and Ecology, 2001

Unwin, D M, A Key to the Families of British Diptera, Field Studies Centre AIDGAP

Walter, S, True Flies (Diptera) Records for Tower Hamlets Cemetery Park: Report of Monthly Surveys Undertaken Throughout 2006

Web References

www.bioimages.org.uk

www.diptera.info

www.dipteristsforum.org.uk

www.essexfieldclub.org.uk

www.tachinidae.org.uk

Acknowledgements

The author would like to thank Chris Raper, who runs the Tachinid Recording Scheme, and has recently been working on Sarcophagidae, for determining two difficult Sarcophagidae.

Thanks also to Paul Beuk, who administers the online dipterists' forum Diptera.info. Particular thanks go to expert forum members who have helped with the identification of specimens and those members who have given permission for links to their images in the Diptera.info gallery to be included in this report.

Finally, thanks go to Ken Greenway and Terry Lyle, the staff at Tower Hamlets Cemetery Park, and the Friends of Tower Hamlets Cemetery Park for generously providing the funding to allow this survey to take place.