The Bees and Wasps of Ayrshire

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Introduction

These annotated lists detail the 81 species of bee and 67 species of wasp known from Ayrshire (VC75). They are based principally on fieldwork undertaken in the county by a small number of recorders with a strong bias towards the coast. However, using data from the rest of Scotland as well as from our own records, an attempt has been made to infer the likely Ayrshire status of species.

In addition to the species lists, an account of the threats facing Ayrshire's bee and wasp fauna is presented. Also provided is a brief guide to finding bees and wasps and accounts of some of the best sites in Ayrshire at which to observe them.

This document was created to encourage an interest in this charismatic but understudied group of insects and perhaps even encourage local naturalists to contribute to their conservation by recording bees and wasps themselves.

Studying bees and wasps tends to require the use of Latin names. Some species have common names but, because this usage is relatively rare, we have decided to use Latin throughout this document. However, to spare readers from Latin overload, we refer to plants only by their common names, as the ones mentioned are unlikely to be confused with other species.

The State of Ayrshire's Bees and Wasps

In Ayrshire, the most diverse assemblage of bees and wasps occurs in dune habitats near the coast, where the sandy ground provides suitable nesting sites, wildflower-rich grassland and the warm microclimate many species require to thrive. Unfortunately, the vast majority of Ayrshire's dune habitats have been destroyed by industrial, residential and leisure developments. Destruction of the county's dune habitats continues. Widespread sand quarrying, infilling of dune slack and capping of dune grassland on the Ardeer Peninsula has resulted in the loss of dozens of hectares of dune habitat since 2013. Furthermore, the county’s two largest expanses of undeveloped dune habitat, the Ardeer Peninsula and Western Gailes, continue to be the subject of development proposals.

Natural succession has also caused declines in bee and wasp populations in many parts of coastal Ayrshire. For example, the large, wind-blown sand deposit at Irvine Moor was once an aculeate hotspot supporting many rare species, but the encroachment of Gorse scrub has robbed the site of all but a few of its bees and wasps. Invasive shrubs such as Japanese Rose and Sea Buckthorn are also a conservation issue. For example, the dunes at Doonfoot currently risk losing nearly all of their bee assemblage due to the unchecked spread of Japanese Rose. Most other local dune systems are also slowly losing habitat to this plant.

Inland, the redevelopment of brownfield land poses a significant risk to the county’s bees and wasps. Wild, long-abandoned brownfield sites are often refuges for bees and wasps in the wider countryside. Several such sites with noteworthy assemblages have been

redeveloped, including Dubbs Quarry in Stevenston and two large, abandoned sand quarries near Darvel. Other biodiverse brownfield sites in the county, such as Barony Bing near Auchinleck, are regularly the subject of development proposals.

The historical destruction of Ayrshire's native woodland and long-established plantations has also had a detrimental effect on our wasp fauna. Solitary wasps often nest in rotten wood and forage for prey among the tree foliage or wildflowers in sunlit glades. Lowland Ayrshire is now sparsely wooded and large standing and fallen deadwood is not a common habitat feature. Bees too find nest sites and flowers in structurally diverse woodlands; however, such woodlands are rare, as most woodlands lack varied structure, adequate light and good quality edge habitat – areas where woods gradually blend into open fields and support a rich diversity of ground cover and flowering plants.

Although bee species richness generally declines with altitude, upland Ayrshire still supports a variety of bee species. Some species can even be abundant where flowering dwarf shrubs like heathers and Blaeberry are present, and suitable nesting sites exist. However, decades of afforestation, overgrazing, and drainage have significantly reduced both the density and diversity of bee populations in these upland areas.

Despite extensive habitat loss, there is reason to assume that the county's bee and wasp diversity might actually be increasing. Climate change appears to be increasing the range of several species northwards. For example, the wasps *Ectemnius ruficornis*, *Crossocerus podagicrus* and *Dipogon variegatus,* and the bee *Andrena fulva,* appear to have extended their ranges northwards into Ayrshire since the turn of the century.

Also on a positive note, several areas of high-quality habitat rich in bees and wasps are encompassed by official nature reserves. Stevenston Beach Local Nature Reserve (LNR) was declared in 1998, and work is ongoing to protect and expand its dune habitats by removing Japanese Rose, repairing unsustainably eroding dunes and creating foraging habitat adjacent to the reserve. Gailes Marsh and Shewalton Sandpits in Irvine are both Scottish Wildlife Trust reserves with important invertebrate assemblages and are managed for their wildlife interest, including bees and wasps. At the time of writing, a community-led attempt is underway to buy the extensive, Council-owned dune habitats at Western Gailes and seek Local Nature Reserve status for them.

Several other nature reserves have specific projects designed to increase the numbers of solitary bees and wasps present. Sandy bee banks have been created at Ardeer Quarry LNR and Oldhall Ponds. Wildflower areas have been sown at Shewalton Wood and Ardeer Quarry LNR, while grassy areas of Oldhall Ponds are being managed to increase their floral resource for pollinators. On several of the reserves, log piles have been created in full sun to provide nesting opportunities for solitary wasps.

Nature reserves are only part of the answer to the crisis affecting our insect fauna. These have to be connected by suitable habitat across the landscape to allow everything to thrive. We need corridors and islands in the desert of farmland, commercial forestry and urbanisation to allow populations to grow, mix and disperse. That is the focus of the Irvine to Girvan Nectar Network set up in 2015. The project supports communities, landowners and Local Authorities with pollinator site establishment, provided they are committed to managing it into the future. By summer 2023, there were 37 partners signed up, and 81 sites covering 46 hectares being managed for pollinators between the coastal towns of Stevenston and Girvan (a name change is in the offing as the project area expands).

Finding Bees and Wasps

Finding Bees

Gardens with large amounts of flowers are often productive places to find solitary bees. They often support widespread species, such as *Osmia bicornis*, *Andrena scotica*, *Andrena haemorrhoa*, *Andrena bicolor*, *Megachile willughbiella*, *Megachile centuncularis*, *Lasioglossum cupromicans*, *Lasioglossum albipes*, *Lasioglossum calceatum*, and *Halictus rubicundis*. Wild, inland countryside rich in wildflowers can support many of the above species plus, commonly, *Colletes daviesanus*, *Andrena fucata*, *Andrena subopaca*, *Nomada ruficornis*, *Nomada marshamella*, and *Anthophora furcata*. Flower-rich brownfield sites are also worth checking out and can support a similar, often more diverse, urban bee assemblage.

The upland moorland bee assemblage is characterised by *Colletes succinctus*, *Andrena fuscipes*, and *Andrena tarsata*. Some common and widespread species, such as *Halictus rubicundis*, are also commonly encountered in the uplands. Blaeberry-rich areas on moorland and raised bogs often support the small, black *Lasioglossum fratellum* and the much larger *Andrena lapponica*. The latter two species can be particularly common in degraded areas of raised bogs. These bogs provide both Blaeberry, an important foraging resource, and dry peat, which is often used as a nesting substrate.

An important technique for finding bees inland is to locate potential nesting sites. Exposures of sandy ground or other dry, friable soils often support nesting aggregations. Such bare ground often comes in the form of cattle rubs, sandy riverbanks, exposed tree root plates, eroded path edges, the compacted surface of earth paths, and, on brownfield land, piles of dumped soil. Places where the vegetation is sparse can also be fruitful, for example where soil fertility is low, or the substrate is gravelly.

The most diverse bee assemblage is found in sandy habitats on the coast. Mobile dunes tend not to be favoured by bees; most species prefer the wildflower-rich fixed dunes further inland, especially areas that contain patches of open sand for nesting. Such habitat supports most of Ayrshire's known bee species. As well as searching for nesting sites in sloping or vertical sandy ground in fixed dunes, one should search flowerheads for foraging bees. Yellow dandelion-like flowers (compositae) such as Autumn Hawkbit and Mouse-ear Hawkweed are worth searching for Lasioglossum bees such as *Lasioglossum villosulum* and *Lasioglossum punctatissimum*. Umbellifers (plants of the carrot family) such as Wild Angelica, Common Hogweed and Hemlock Water Dropwort often attract the rare *Colletes floralis*. Carpets of Bird's-foot Trefoil are frequented by leafcutter bees such as *Megachile circumcincta* and *Megachile willughbiella*. The latter species can be common at Harebells later in the season. Sea Mayweed and various yellow composites just above the strandline are good places to look for the small, yellow-faced bees *Hylaeus hyalinatus* and *Hylaeus confusus*.

Finding Wasps

Solitary wasps are relatively scarce insects that are encountered less often than solitary bees. However, if one knows where to look, they are reasonably easy to find. Many species nest in deadwood, often in the holes left by beetles. Seeking out sunny, bark-free, large-diameter deadwood, such as fallen tree trunks and tree stumps, is, therefore, a productive way to find solitary wasps, especially if the wood is heavily pocked with beetle exit holes or heavily damaged and chipped. Dead pine wood is popular with *Mimumesa dahlbomi*, *Crossocerus megacephalus*, *Crossocerus leucostomus*, and *Ectemnius ruficornis*. Males of these species can often be found patrolling along fallen pine trunks, especially ones that have lost their bark.

Dead broadleaved trees support a greater diversity of wasps than pinewood. A sun-drenched standing or fallen tree trunk full of beetle holes has a good chance of supporting a variety of solitary wasp species. The assemblage is usually dominated by *Crossocerus annulipes*, *Crossocerus podagicrus*, *Pemphredon lugubris*, and *Ectemnius cavifrons.* Often present, but in smaller numbers, are *Crossocerus megacephalus*, *Crossocerus elongatulus*, *Symmorphus bifasciatus*, *Ectemnius cephalotes*, *Ectemnius ruficornis*. Large diameter driftwood located above the strandline sometimes provides nesting habitat for *Ectemnius continuus*.

Sand dunes support a very different assemblage of wasps. Searching umbellifer flowerheads, such as those of Hemlock Water Dropwort, Hogweed and Giant Hogweed (be careful as the plant can cause severe skin burns), in mid-summer often produces *Crabro cribrarius*, *Oxybelus uniglumis*, and *Mimesa equestris*, and, more occasionally, *Tachysphex pompiliformis* and some spider-hunting wasps. Finding lone, small trees or shrubs (e.g. Sycamore and Japanese Rose) in the dunes can be a productive way to find the uncommon *Crabro peltarius* and smaller sand-nesting wasps such as *Crossocerus tarsatus* and *Crossocerus varus*, which regularly fly around and land on the leaves. Small patches of bare sand in fixed dunes are often busy with hyperactive *Tachysphex pompiliformis*, *Hedychridium ardens*, and *Pompilus cinereus*.

Old stone walls, whether in urban areas or in the countryside, often support the small, black wasp *Crossocerus elongatulus*. Staking-out such walls sometimes results in brief sightings of colourful Chrysid wasps, such as *Chrysis impressa*, searching for mason wasp nests.

Site Guide

This short site guide provides details of some sites at which solitary bees and wasps can reliably be found on sunny summer days.

Bogside Racecourse, Irvine

At the eastern edge of the racecourse, at NS 3062 4007, is a collection of small sand quarries created by the neighbouring golf course. The combination of open sand, wildflower-rich surroundings and the shelter provided by adjacent scrub has resulted in a great density and diversity of bee and wasp species: over 40 species have been recorded here.

A small sand quarry at Bogside Racecourse.

From April, the sand quarries contain large numbers of solitary bees. Particularly conspicuous in spring are male *Andrena barbilabris* flying over the loose sand, and female *Sphecodes pellucidus* and *Nomada leucophthalma* searching for *Andrena* nest burrows. *Sphecodes pellucidus* remains common at the site throughout most of spring and summer. Solitary wasps are abundant too, especially the tiny *Oxybelus uniglumis*. Several species of *Lasioglossum* nest in and above the sand quarry walls. The heathland surrounding the quarries supports the heather-foraging species, *Andrena fuscipes* and *Colletes succinctus*, as well as *Nomada rufipes*, the uncommon cuckoo of *A. fuscipes*. Checking Tormentil flowers often produces nectaring *Andrena tarsata*.

Access

Access on foot is via Sandy Road/Irvine Bogside Golf Course. To reach the quarries, one must walk along the road that crosses the golf course. Care should be taken to avoid flying golf balls.

The nearest bus stop is beside Irvine Royal Academy, which is served by buses from Kilmarnock, Ayr and Glasgow.

Gailes Marsh Scottish Wildlife Trust Reserve, Irvine

Gailes Marsh is 18ha of dry grassland, heathland, marshland and ponds sheltered by mixed woodland. The sizeable areas of grassland are kept flower-rich by winter grazing with horses. The Trust manually re-creates areas of bare sand and creates sunny log piles from trees felled to stop grassland being lost to woodland.

Tall grassland at Gailes Marsh SWT reserve.

Many species of *Lasioglossum* bee have been found foraging in the botanically diverse grassland habitat, including the uncommon *Lasioglossum fulvicorne*. The local, Tormentil-feeding *Andrena tarsata* is present on the reserve, as is its exceptionally rare cuckoo bee *Nomada roberjeotiana*. Other rare species recorded at the site include the bees *Megachile circumcincta*, *Andrena nigriceps*, *Coelioxys elongata*, and the wasps *Dryudella pinguis* and *Oxybelus uniglumis*.

Deadwood in full sun at the site supports a variety of wood-nesting solitary wasps, including *Mimumesa dahlbomi,* the Nationally Scarce *Crossocerus leucostomus,* and several species of *Ectemnius* wasp.

Oak leaves in the young, open woodland at the northwest of the reserve are worth checking for patrolling solitary wasps associated with sand, such as *Crabro peltarius*, *Crossocerus tarsatus* and *Crossocerus varus*.

Access

A dedicated car park is located at NS 32315 35977. A bus stop is located a few hundred metres away near the entrance to Dundonald Links Golf Club. The main bus route and train station are located in the town centre two kilometres away.

Western Gailes, Irvine

Western Gailes, the Council-owned land north of Western Gailes golf course, is the second largest area of wild dune habitats in Ayrshire, after the Ardeer Peninsula. It contains large areas of dune heath and wildflower-rich fixed dunes that in places stretch several hundred metres inland.

Fixed dunes at Western Gailes.

The most productive part of the site for bees is the inland dunes around NS 31493 36719. *Megachile circumcincta* and its cuckoo *Coelioxys elongata* can be seen in June and July flying along the eroded sand cliffs in the dunes. *Sphecodes pellucidus* and *Andrena*

barbilabris are usually obvious as the fly low over and alight on the tracks of loose sand that criss-cross the site. In the firmer ground at the edge of some of the tracks, particularly at the north of these dunes, large nesting aggregations of *Mimesa equestris* can be found. *Colletes floralis* can often be found on the umbellifers (especially Hogweed, Angelica, Giant Hogweed and Hemlock Water Dropwort). Its cuckoo, *Epeolus cruciger*, can sometimes be encountered as it hovers in front of sand cliffs searching for *C. floralis* nests. *Colletes succinctus* can easily be found on heather in July and early August. The rare yellow-faced bee *Hylaeus brevicornis* is relatively common at the site and can be found on Bramble and Wild Carrot. Several solitary wasp species can be found patrolling around and alighting on the Japanese Rose scrub in the dunes, including *Crabro peltarius*, *Crossocerus podagicrus*, *Crossocerus varus* and *Crossocerus tarsatus*.

Access

A dedicated car park is located at NS 31157 37338. The main bus route and train station are located in the town centre a kilometre and half away.

Blair Estate, Dalry

Blair Estate is an ancient country estate with several overmature and dead trees, especially around NS 30514 47441 and NS 30607 48399. Dead trees such as the one pictured here support several species of wood-nesting wasp. Most abundant are *Crossocerus annulipes*, *Crossocerus podagicrus*, *Ectemnius cavifrons* and *Pemphredon lugubris*. Less abundant species include *Ectemnius cephalotes*, *Pemphredon inornata* and *Psenulus pallipes*.

Standing deadwood on the Blair Estate.

Access

A small car park is located at NS 30585 47204. The north entrance to Blair Estate is a few hundred metres from Dalry train station.

Stevenston Beach Local Nature Reserve, Stevenston

Compared to most other dune systems in Ayrshire, the dunes within this LNR are still quite dynamic. The resultant abundance of open sand and wildflowers helps support an important collection of sand dune species. *Colletes floralis* is abundant at the site: it can commonly be found on the site's umbellifers throughout July and early August. Its rare cuckoo bee, *Epeolus cruciger*, is regularly encountered. The abundance of both *Megachile circumcincta* and *Megachile willughbiella* means that the rare cuckoo bee, *Coelioxys elongata*, can often be seen at the site.

Fixed dunes at Stevenston Beach LNR.

The reserve is one of only three known Scottish locations for *Colletes fodiens*, a species which is regularly encountered on the reserve's Ragwort in July.

In late summer, the Brambles, Knapweed and Thistles at the landward edge of the reserve support unusually large numbers of the rare mining bee *Andrena coitana*. At this time of year, the large quantities of Harebells at the south of the reserve are busy with lots of large leafcutter bees (*Megachile willughbiella*).

Sea Mayweed and tall yellow composites at the back of the beach are worth searching for small, black *Hylaeus* bees.

Access

A dedicated car park is located at NS 26678 40895. The main bus route runs through Stevenston town centre, 1 kilometre away. The town's train station, which sits on the Largs to Glasgow line, is close to the reserve.

The Bees of Ayrshire:

an Annotated List

ANDRENA

This is the largest genus of bee in Ayrshire, with nineteen species having been recorded. All species are ground-nesting, 'mining' bees. They are among the earliest solitary bees to appear, with Andrena bicolor and Andrena clarkella appearing in March.

Andrena barbilabris

Largely confined to areas of loose, open sand, this Andrena is frequently encountered in sandy habitats along the Ayrshire coast, both in sand dunes and in nearby sand quarries such as those on the Ardeer Peninsula in Stevenston and at Bogside Racecourse in Irvine. It is probably very local away from the coast. It is best found by seeking out areas of loose (rather than compacted) sand. In late April and May, the small, silver-haired males are very conspicuous as they fly low over loose sand. Females are often encountered on dandelions and, to a lesser extent, willows, including Creeping Willow.

Andrena bicolor

A common species that can be found in most open habitats, including gardens. Most abundant in spring, this bee can often be seen feeding on dandelions, one of the few plants in flower at that time of year. The second, summer generation is smaller in number. On the coast, females from this generation are often encountered collecting pollen from Harebells.

Andrena bicolor in a Stevenston garden.

Andrena chrysosceles

This appears to be at best a very local bee in Ayrshire. The few Ayrshire sites include Thirdpart by Beith and Barcraigs Reservoir by Beith.

Andrena clarkella

This large, hairy species is one of the first solitary bees to appear, being on the wing from March. Consequently, it is often encountered on Sallow blossom. It is probably locally common throughout much of Ayrshire.

Andrena clarkella on the Ardeer Peninsula.

Andrena coitana

A rare species in a British context, thinly distributed across the island. It appears to be more frequent in Scotland than in the south. Because it doesn't show a distinct preference for sandy habitats, it is probably locally distributed throughout much of Ayrshire, including on higher ground where suitable habitat exists. It appears to have a distinct association with mosaics of scrub and tall grassland, where it can be found on thistles, Knapweed, Bramble, Ragwort and Angelica. It

is abundant at the scrubby, landward edge of Stevenston Beach LNR and is regularly encountered at Ardeer Quarry LNR. The latter site contains a nesting aggregation of over a dozen nests. Elsewhere, it is usually encountered infrequently and in very small numbers.

Andrena coitana at Ardeer Quarry LNR.

Andrena denticulata

This is a frequently encountered late summer species on the sandy Ayrshire coast, where it is locally common. It has been recorded from urban areas in Seamill. It is best looked for by searching Ragwort flowerheads in sandy areas in July. It is very locally distributed away from the coast.

Andrena denticulata on the Ardeer Peninsula.

Andrena fucata

This large species has been found in a variety of habitats in Ayrshire, from moorland at Fairlie to sand dunes on the Ardeer Peninsula to an overgrown colliery bing near Auchinleck. Not restricted to sandy soils, it should be found throughout much of Ayrshire, but occurring in small numbers. Many of the individuals encountered are females foraging on Bramble or umbellifers in hedgerows or pathside verges.

Andrena fulva

The only Ayrshire record is of a female found in a flight interceptor trap in a garden in Ochiltree in 2023. This species is expanding its range northwards and so is potentially present but unrecorded across much of the south of the county.

Andrena fuscipes

This is a very local, heather-feeding species. It appears to be present at low densities in dune heath in Stevenston and Irvine. Beyond this, it should occur on some of the other coastal heathlands and on some of the heather-rich, upland sites. It often flies with *Colletes succinctus* and can be difficult to recognise in the field with the naked eye, because it closely resembles a *Colletes* and is almost always far outnumbered by (i.e. lost amongst) the *Colletes* that forage alongside it.

Andrena haemorrhoa

A common and widespread bee, including in gardens.

Andrena haemorrhoa in the Black Powder Forest on the Ardeer Peninsula.

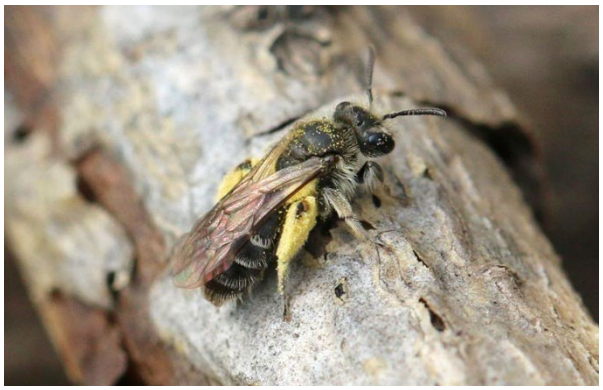
Andrena lapponica

A locally common upland bee that likely occurs on many areas of moorland where its main pollen source, Bilberry, occurs. It has been recorded from Fairlie Moor, West Kilbride allotments, woodland at Ayr Gorge and the Ardeer Peninsula, and Bilberry-rich degraded raised bog habitat at Barkip Moss in Beith and Moss Mulloch in Kilwinning.

Andrena lapponica at Moss Mulloch.

Andrena minutula

A nesting aggregation was reported from the new orchard in Kay Park, Kilmarnock in April 2019. This is the first and only Ayrshire record of a species that is common in England but apparently rare this far north.



Andrena minutula at Kay Park, Kimarnock.

Andrena nigriceps

The only Ayrshire records of this very rare species come from Irvine. Indeed, all modern Scottish records come from Irvine. One was caught at Irvine Beach Park in 2007, one was caught nearby at Gailes Marsh SWT reserve in 2015, one was caught at Western Gailes in 2021, and a small nesting aggregation was found on the sandy footpath from Irvine Beach Park to Western Gailes in 2022. It has since been found several more times at Irvine Beach Park/Western Gailes.

Andrena nigriceps at Western Gailes.

Andrena ruficrus

This was long regarded as a rare species of early spring bee. However, recent recording in Scotland suggests that it is more abundant than once thought. It has been found throughout much of the county, including the Ardeer Peninsula, Ardeer Quarry LNR, Shewalton Sandpits and Oldhall Ponds SWT reserves in Irvine, Knockshinnoch Lagoons SWT reserve in New Cumnock, Trearne Quarry by Beith, a disused sand quarry by Darvel, and the former Volvo factory site in Irvine. It is perhaps best found by looking out for the small, pale-haired males flying low over the ground in Willow-rich areas in March. There is a good chance that any small male Andrenas in such habitat in late March and early April are *Andrena ruficrus*.

Andrena ruficrus on the Ardeer Peninsula.

Andrena scotica

This large species, which resembles a dark honeybee, is widespread and common, being very catholic in its habitat choice. In Stevenston alone it has been found in gardens, a disused rock quarry, sand dunes, a graveyard and farmland.

Andrena scotica in Stevenston.

Andrena semilaevis

A rarity in Scotland, it is similarly rare in Ayrshire, known in the county from only four specimens: singles caught at Knockshinnoch Lagoons reserve, one caught at Garnock Floods SWT reserve, and one caught foraging on Hemlock Water Dropwort at the edge of Stevenston Burn in Holm Green.

Andrena subopaca

A small, black bee that is common and widespread in Ayrshire. It has a particular association with Hawthorn-Bramble scrub/grassland mosaics and open woodland.

Andrena tarsata

A species that collects pollen exclusively from Tormentil, it has so far been recorded from Gailes Marsh SWT reserve, Bogside Racecourse, Fairlie Moor, Loch Braden, the Ardeer Peninsula and Stevenston Beach LNR. It is probably found in many of Ayrshire's upland and lowland acid grasslands and heathlands where Tormentil is abundant.

Andrena tarsata at Stevenston Beach LNR.

Andrena wilkella

This medium-sized, stripy bee is local in Ayrshire and present in small numbers wherever found. It is probably uncommon but found in a variety of open habitats in the county.

ANTHOPHORA

Anthophora bees, or 'flower bees', are known for their darting, hovering flight patterns. This small family contains only two Scottish species, including a recent colonist, Anthophora plumipes, that may become a common garden species in the future.

Anthophora furcata

This robust, hairy species could easily be mistaken for a small, brown bumblebee as it flies around plants such as Wood Sage and Hedge Woundwort and feeds on their long, tubular flowers. Staking-out patches of Hedge Woundwort in wild areas is an effective way of discovering the species and suggests that it may be reasonably widespread in lowland Ayrshire's wild countryside.

Anthophora furcata at Ardeer Quarry LNR.

Anthophora plumipes

This large, distinctive solitary bee has only recently started to colonise Scotland. The only Ayrshire record is of one caught foraging on Bird's-foot Trefoil on the Ardeer Peninsula.

APIS

There is only one Scottish species of honeybee, which is one of the country's most common and widespread bees.

Apis mellifera

The Honeybee. This species is common and widespread across most of Ayrshire, being found foraging from beaches all the way up to the county's high moors. This is a domesticated insect, and the vast majority of nests are in artificial hives. However, occasionally wild colonies are established. For example, an active nest was present under the roof of an abandoned building on the Ardeer Peninsula for several years.

Apis mellifera at Ardeer Quarry LNR.

BOMBUS

Fourteen species of bumblebee have been recorded in Ayrshire, seven of which are very common garden visitors. They have a long life cycle: they are the earliest bee to appear in late winter and the latest to be seen in autumn. Very rare and declining species such as Bombus distinguendus and Bombus ruderarius appear to be extinct in and/or absent from the county.

Bombus bohemicus

This cuckoo bumblebee appears to be widespread but uncommon in Ayrshire.

Bombus bohemicus at Moss Mulloch.

Bombus campestris

A southern cuckoo bee, this species is generally uncommon in Scotland. Reflecting this, there are only a small number of records from Ayrshire.

Bombus hortorum

A very common and widespread species.

Bombus hypnorum

Although a recent colonist, this species is now very common and widespread in the county.

Bombus hypnorum on the Ardeer Peninusla.

Bombus jonellus

A heathland specialist, this species is locally common in heather-rich moorland areas and local in the county's coastal sand dunes.

Bombus lapidarius

A very common and widespread species – the familiar 'Red-tailed Bumblebee'.

Bombus lucorum
A very common and widespread species.

Bombus magnus
This species is probably widespread in Ayrshire, but identification difficulties - it is difficult to tell apart from *Bombus lucorum* - mean that it has only been confirmed from a few sites.

Bombus monticola
This uncommon, upland species has currently only been recorded from moorland areas in Galloway Forest Park.

Bombus muscorum
There are several records from upland areas just over the border in Dumfries and Galloway, so it is likely that it is also present in the upland areas of South Ayrshire. Indeed, it is possibly widespread but rare in Ayrshire's uplands. It may also be present on parts of the coast, but searches in high-quality coastal habitat have failed to find it.

Bombus pascuorum
A very common and widespread species of 'brown' bumblebee.

Bombus pascuorum at Ardeer Quarry LNR.

Bombus pratorum
A very common and widespread species.

Bombus sylvestris
The commonest of Ayrshire's cuckoo bumblebees, it is most likely widespread throughout Ayrshire.

Bombus terrestris
A very common and widespread species. Usually the first bumblebee to be seen in spring.

COELIOXYS
Coelioxys are cuckoos of leafcutter (Megachile) bees. There is only one species thought to be present in Scotland, C. elongata. However, an old journal article on Ayrshire's bees mentions C. inermis as having been caught at Culzean. There is a chance that southern species of Coelioxys bee, such as C. inermis, might be present in the county, or might colonise in the future. Climate appears to be the main limiting factor, because popular host species, such as Megachile centuncularis, are not uncommon in southwest Scotland.

Coelioxys elongata
This species is locally distributed along the sandy North Ayrshire coast, where there is an abundance of leafcutter bees. It has been found at Dundonald Links in Irvine, Gailes Marsh SWT reserve, Western Gailes, the Ardeer Peninsula, and Stevenston Beach LNR. It is probably highly dependent on the thriving population of the rare *Megachile circumcincta* on the North Ayrshire coast; however, it has also been reared from the nests of *Megachile versicolor* at Ardeer, and *Megachile willughbiella* is probably a host in Ayrshire too. Away from the sandy coastline, it is probably at best very rare. It is most commonly observed flying low over the ground and around sand cliffs in search of its hosts' nests. It is rarely seen on flowers, but it has been observed nectaring on Bird's-foot Trefoil.

Coelioxys elongata at Western Gailes.

COLLETES

All Colletes bees are ground nesting and are very similar in appearance: they have hairy, foxy-coloured thoraxes and black and white, stripy abdomens. Reliable separation requires a hand lens or microscope. However, strong clues to identification come from where they are found foraging. C. floralis has a strong preference for umbellifers in sand dune habitats; female C. fodiens forage almost exclusively on Ragwort in sand dunes; female C. succinctus forage almost exclusively on heather; and female C. daviesanus have a strong preference for Ox-eye Daisy, Sea Mayweed and Tansy.

Colletes daviesanus

A common species in England, this bee is reported to be locally distributed in Scotland. In Ayrshire, it appears to be very widespread and locally common. It has been found in many places, including gardens in Seamill and Stevenston, on former industrial sites at Garnock East and the former Volvo plant in Irvine, a roadside verge in countryside at Kerelaw in Stevenston, and in sand dunes at Stevenston Beach LNR, Ardrossan North Beach, the Ardeer Peninsula and Doonfoot. It is best looked for by searching the flowerheads of Tansy, Ox-eye Daisy or, on the coast, Sea Mayweed.

Colletes daviesanus.

Colletes floralis

This rare bee is confined in Ayrshire to sandy coastal habitats. As a result of targeted recording effort on the Ayrshire coast, it has been found in almost all stretches of sand dunes between Stevenston Beach LNR and Doonfoot, where it can frequently be found foraging on Hogweed, Giant Hogweed and Hemlock Water Dropwort (and to a lesser extent Sheep's-bit and Wild Thyme) between June and August. Indeed, it is one of the most abundant bees in Ayrshire's sand dunes in mid-summer. A female was caught nectaring on Hemlock Water Dropwort at Ardeer Quarry LNR, over a kilometre from the coast and any known populations. At Bogside Racecourse, they have been found in golf course sand quarries just under two kilometres from the sea, and during Victorian times they were recorded a few hundred metres further inland, at Irvine Moor.

Colletes floralis at Western Gailes.

Colletes fodiens

Ardeer marks the northern limit of this species' UK range. Ayrshire records are regular, but it has yet to be found beyond Stevenston, where it has been recorded from Stevenston Beach LNR and two sites on the Ardeer Peninsula. Targeted searches of Ragwort-rich sand dune habitat elsewhere on the Ayrshire coast (Prestwick Dunes and Western Gailes) have failed to find additional populations. It is best found by searching Ragwort flowerheads in July and early August.

Colletes fodiens on the Ardeer Peninsula.

Colletes succinctus

A heather-feeding species that is probably locally common in Ayrshire, being found where heather grows and where there are exposures of light soil for it to nest. Most populations are in dune heath- including on golf courses- along the coast, and in areas of heather-rich moorland. It is rarely found away from such habitats; however, a female was recorded foraging, apparently far away from heather, on a farmland road verge at Kerelaw in Stevenston.

EPEOLUS

Epeolus bees are very attractive, red, white and black cuckoos of Colletes bees. There may only be one species in Ayrshire, E. cruciger. However, it is possible that E. variegatus might also occur in the county.

Epeolus cruciger

In southern England, this species attacks the nests of *Colletes marginatus;* elsewhere in the UK, it attacks the nests of *Colletes succinctus*. However, on the Ayrshire coast it attacks the nests of *Colletes floralis*, a rare sand dune species. It has been recorded from Stevenston Beach LNR, the Ardeer Peninsula, Bogside Racecourse, Western Gailes and Prestwick Dunes. The only inland record is from Knockshinnoch Lagoons SWT reserve. It is best found in the county's dune habitats by searching Ragwort flowerheads and small, sheltered sand cliffs, where it hovers in search of *C. floralis* nest burrows. A DNA barcoding study that compared the genetics of Stevenston-caught, *floralis*-attacking specimens to *succinctus*-attacking specimens caught elsewhere in Britain provisionally concluded that both forms belong to the same species.

Epeolus cruciger at Stevenston Beach LNR.

HALICTUS

Two species of Halictus bee have been recorded from Ayrshire: the large, hairy Halictus rubicundus, and the small, metallic Halictus tumulorum. It is very unlikely that any further species of Halictus are present in Scotland.

Halictus rubicundus

One of the most common and widespread species of solitary bee in Ayrshire. A regular visitor to gardens. Indeed, a large nesting aggregation has been observed in flowerbeds at Fairlie Train Station.

Halictus rubicundus.

Halictus tumulorum

This species been caught several times in species-rich coastal grassland at Lendalfoot. It has also been recorded from the Ardeer Peninsula and Gailes Marsh SWT reserve. It is possible that it is locally common in southern Ayrshire, but is apparently much rarer further north.

HYLAEUS

Hylaeus, or yellow-faced bees, are tiny black bees, which, as their name suggests, have extensive yellow (or white) markings on their faces. In Scotland, they have a very strong southern bias to their range, with Ayrshire being one of their strongholds. Some are ground nesters, others nest in cavities in old walls, others nest in the dead stems of woody plants such as Bramble.

Hylaeus brevicornis

This tiny, black bee is rare in Scotland, where its distribution is largely confined to the southwest. Apart from two records from Dumfries and Galloway, it is known in Scotland only from a small number of individuals collected from the Ardeer Peninsula, Irvine Beach Park, Bogside Racecourse, and Western Gailes in Irvine. It is almost certainly rare in Ayrshire and probably largely confined to the coast. Although it is a stem-nesting species strongly associated with hollow bramble stems, it is often found utilising the foraging resources of open dune habitats.

Hylaeus confusus

A rare species in Scotland, known only from a handful of widely scattered sites across the country. In Ayrshire, it is currently known only from coastal locations in Stevenston and Seamill. It probably occurs locally elsewhere on the Ayrshire coast and very locally inland.

Hylaeus hyalinatus

An apparently rare bee in Scotland, confined to the south, it is, however, common on the Ardeer Peninsula and has been recorded at Ardeer Quarry LNR in Stevenston, Garnock East, the former Volvo factory site in Irvine, and coastal grassland at Seamill. It is most likely largely restricted to the coastal lowlands.

Hylaeus hyalinatus on the Ardeer Peninsula.

LASIOGLOSSUM

Lasioglossums are small black bees, most often encountered curled-up, 'comma-like', as they forage on the flower-heads of yellow composites. They are almost impossible to identify in the field – a microscope or strong hand lens is essential for accurate identification. Four of the Ayrshire species have a very strong metallic blue-green sheen to their head and thorax.

Lasioglossum albipes

A common and widespread species.

Lasioglossum calceatum

A common and widespread species.

Lasioglossum cupromicans

A common and widespread species. Probably the most common metallic *Lasioglossum* in Ayrshire. It can be particularly common in gardens and on brownfield sites., where it nests both in the ground and in old walls.

Lasioglossum cupromicans in a Stevenston Garden.

Lasioglossum fratellum

Primarily an upland species, it has been recorded in recent years from Knockshinnoch Lagoons SWT reserve, Gailes Marsh SWT reserve, Moss Mulloch, the Ardeer Peninsula, Garnock East and Barony Bing near Auchinleck. It is most likely widespread and locally common, particularly on higher ground in Ayrshire and on raised bogs.

Lasioglossum fulvicorne

Scottish records are very thinly scattered. In Ayrshire, it is probably limited to areas of flower-rich grassland. Ayrshire sites for the species include wildflower-rich habitats at Western Gailes, Gailes Marsh SWT reserve, Knockshinnoch Lagoons SWT reserve, the Ardeer Peninsula, and the former Volvo plant in Irvine.

Lasioglossum fulvicorne at Western Gailes.

Lasioglossum leucopus

A common and widespread species of metallic *Lasioglossum*.

Lasioglossum morio

This metallic species appears to be local and rare in Ayrshire, where it is near the northern limit of its range.

Lasioglossum punctatissimum

The Scottish distribution of this species is restricted to the southwest. It appears to be largely restricted to – but locally common in – sandy areas along the Ayrshire coast.

Lasioglossum punctatissimum on the Ardeer Peninsula.

Lasioglossum rufitarse

This species is probably locally distributed throughout Ayrshire, including in upland habitats. It has been recorded on the coast as well as from several inland sites, such as Shewalton Wood SWT reserve and Dunstonhill in East Ayrshire.

Lasioglossum smeathmanellum

This metallic species is rare this far north. It is only known in Ayrshire from a single specimen caught at Shewalton Sandpits SWT reserve in Irvine.

Lasioglossum villosulum

Locally common in Ayrshire's coastal lowlands. It is probably much rarer and more localised inland.

Lasioglossum villosulum on the Ardeer Peninsula.

MEGACHILE

Five species of 'leafcutter bee' are found in Ayrshire. As the common family name suggests, all species make their nest cells from patches of leaf, which they cut themselves using their large mandibles. Some Scottish species construct their nests in cavities in wood, concrete and stone, which allows them to thrive in urban areas. Megachile circumcincta and Megachile maritima, however, are generally ground nesters restricted to coastal dunes.

Megachile centuncularis

This hole-nesting species appears to be widespread and common in Ayrshire. It is a species likely to be encountered in urban areas and has been found in several gardens in the county.

Megachile circumcincta

A rare, coastal species that has declined significantly in southern Britain. It is common along the Ardeer and Irvine coast, wherever there is open sand and significant areas of Bird's-foot Trefoil. It is very unlikely that any Ayrshire populations exist away from sand dunes; however, the species has been found up to a mile inland on exposures of windblown sand deposits, such as those at Bogside Racecourse and on the Ardeer Peninsula. It is best looked for by searching large patches of Bird's-foot Trefoil.

Megachile circumcincta at Western Gailes.

Megachile maritima

This rare coastal leafcutter bee is known in Scotland only from two males caught on the Ardeer Peninsula.

Megachile versicolor

This hole-nesting species is probably local in Ayrshire and associated largely with coastal areas. It has taken readily to artificial bee nest boxes along the Ardeer coast and has been found using similar boxes at Shewalton Wood SWT reserve in Irvine.

Megachile versicolor on the Ardeer Peninsula.

Megachile willughbiella

The most common and widespread leafcutter bee in Ayrshire, it is often found in gardens. In the wider countryside, it is often encountered at Harebells in late summer, especially in sand dunes.

Megachile willughbiella in a Stevenston Garden.

NOMADA

Nomadas are very attractive, red, yellow and black wasp mimics. They attack the nests of Andrena bees. The combination of bright colouration and endless nest hunting behaviour make them relatively easy bees to spot. Like their hosts, most species are active early in the year.

Nomada fabriciana

This cuckoo bee appears to be a widespread and locally common species in Ayrshire, kelptoparasitising the common *Andrena bicolor*. It has been caught at Bogside Racecourse, Garnock East, Fairlie Moor, the Ardeer Peninsula and in the grounds of the GSK factory in Irvine, and has been observed in a garden in Stevenston.

Nomada fabriciana on the Ardeer Peninsula.

Nomada flava

Common in England, this species appears to have only recently started to colonise Scotland. The first Ayrshire record was from the Black Powder Forest on the Ardeer Peninsula in 2021. The same year, many were present on trackside vegetation in Diddup Glen north of Stevenston. Since then, the species has apparently become more widespread, being recorded at Kerelaw, Auchenharvie Wood and Ardeer Quarry LNR in Stevenston. Its Ayrshire status is unclear, but it may have rapidly colonised and already become widespread in the county.

Nomada flava in Diddup Glen, Saltcoats.

Nomada flavoguttata

This small cuckoo is common and widespread in the UK. However, because of its size it is easy to overlook. It has been recorded widely in Ayrshire, including from Auchalton Meadow SWT reserve, Tarbert Hill in West Kilbride, Gailes Marsh SWT reserve, Bogside Racecourse, the Ardeer Peninsula, Fairlie Moor, a sand quarry near Darvel, and a garden in Stevenston.

Nomada leucophthalma

This cuckoo is apparently more locally distributed than its host, *Andrena clarkella*, and is apparently absent from many sites at which *A. clarkella* is present. Where *A. clarkella* nests in numbers, such as at Bogside Racecourse and the scrubby, inland parts of the Ardeer Peninsula, *Nomada leucophthalma* can be common.

Nomada leucophthalma at Bogside Racecourse, Irvine.

Nomada marshamella

Apparently a widespread and relatively common species, reflecting the ubiquitous nature of its host, *Andrena scotica*. The superficially similar species, *Nomada goodeniana*, which is common in southeast Scotland, may occur in Ayrshire too, but has not yet been recorded.

Nomada marshamella at Garnock East.

Nomada obtusifrons

A rare species, with only a few modern Scottish records. Most records come from Ardeer Quarry LNR, where it is commonly encountered at the site's *Andrena coitana* nesting aggregation. A male was also caught nectaring on Marsh Ragwort nearby. A female was caught on the Ardeer Peninsula in 2021, near habitat where *Andrena coitana* has been encountered several times. It has also been found at the UPM papermill boundary in Irvine, where *Andrena tarsata* was the most likely host species.

Nomada obtusifrons at Ardeer Quarry LNR.

Nomada panzeri

This species is local in Ayrshire, where it attacks the nests of *Andrena fucata*. It has been found on the Ardeer Peninsula, at Auchenharvie Wood in Stevenston and at Garnock East in Irvine.

Nomada roberjeotiana

A very rare species, which attacks the nests of the local mining bee, *Andrena tarsata*. The only recent Scottish records are from Irvine: two females were caught at Gailes Marsh SWT reserve and another female was caught at Dundonald Links. A large population of *Andrena tarsata* is present in this area of Irvine, which most likely explains the relative abundance of *Nomada roberjeotiana*.

Nomada ruficornis

A cuckoo of the common *Andrena haemorrhoa*, *Nomada ruficornis* should be locally common and widespread in Ayrshire. Reflecting the catholic habitat choice of its host, it has been recorded in a wide variety of habitats, including a garden in Stevenston, Gailes Marsh SWT reserve, a sandy woodland track at Garnock East in Irvine, the community orchard blossom at Ardeer Quarry LNR, the GSK factory in Irvine, and brownfield land at the former Volvo plant in Irvine.

Nomada ruficornis in a Stevenston Garden.

Nomada rufipes

This species is probably very local in Ayrshire, being most abundant along the coast and in upland areas. On the coast, it attacks the nests of *Andrena denticulata* and *Andrena nigriceps*; in the uplands, it attacks the nests of *Andrena fuscipes*. It has been caught in several of the sandy coastal sites in Stevenston and Irvine, as well as on Fairlie Moor.

Nomada rufipes on the Ardeer Peninsula.

Nomada striata

A very local species nationally, it has been recorded in Ayrshire only from the Ardeer Peninsula. It is most likely very local in the rest of Ayrshire.

OSMIA

Osmia, or 'mason', bees get their name from their habit of building their nest cells using mud. They are generally hairy, medium-sized bees; however the female of O. caerulescens is largely hairless, with a very attractive metallic blue sheen. The two Ayrshire species were until recently uncommon in Scotland, but are becoming more widespread and abundant.

Osmia caerulescens

A rare bee in Scotland, it appears to be only just colonising the country. Most Ayrshire records come from the Ardeer Peninsula, where it is commonly found nesting in the holes left in dead pine trees by longhorn beetles.

Osmia caerulescens in the Black Powder Forest on the Ardeer Peninsula.

Osmia bicornis

An increasingly abundant species, this bee now seems to be well established in urban areas in the central belt. With an affinity for built-up areas, it is apparently widespread and common in Ayrshire, being particularly common in urban locations.

Osmia bicornis on the Ardeer Peninsula.

SPHECODES

Sphecodes, or 'blood bees', are all very similar in appearance: they have largely black bodies with an extensive area of deep red on their abdomens. They are cuckoos of Andrena and Lasioglossum bees and can be easily caught as they crawl over open ground investigating nest burrows.

Sphecodes geoffrellus

This tiny cuckoo bee is the commonest and most widespread *Sphecodes* in Ayrshire. There is a chance of encountering it wherever its hosts (common, small *Lasioglossums*) are present, especially in sandy, coastal areas. It is most often encountered crawling and flying low over patches of bare ground where *Lasioglossums* nest.

Sphecodes geoffrellus on the Ardeer Peninsula.

Sphecodes gibbus

This cuckoo bee has been found at the Ardeer Peninsula, Bogside Racecourse, Gailes Marsh SWT reserve, Dundonald Links Golf Course and Fairlie Moor. It is common in England, but appears to be very local in Ayrshire, despite the status of its common and widespread host, *Halictus rubicundus*.

Sphecodes gibbus on the Ardeer Peninsula.

Sphecodes hyalinatus

Generally a species of high ground, it attacks the nests of *Lasioglossum fratellum*. It is locally distributed in the county and has been recorded in Ayrshire from Barony Bing near Auchinleck, Nettlehirst roadside at Barmill, Moss Mulloch in Kilwinning, and the Ardeer Peninsula.

Sphecodes monilicornis

This species appears to be uncommon in Ayrshire, but presumably widespread, reflecting the status of its host species, *Halictus rubicundus* and various *Lasioglossum* species. It is only known in the county from the Ardeer Peninsula, Ardeer Quarry LNR, and a large nesting aggregation of *Halictus rubicundus* and *Lasioglossum* bees at the edge of Montgomery Street in Irvine. It is perhaps best looked for amongst large nesting aggregations of *Halictus rubicundus*.

Sphecodes monilicornis beside Irvine Train Station.

Sphecodes pellucidus

Despite being known from only a very small number of sites in Scotland, this species is very common on the Ardeer Peninsula, where it is one of the most frequently encountered bees in spring and early summer. It has also been recorded at Bogside Racecourse, Garnock East, Shewalton Sandpits SWT reserve, Gailes Marsh SWT reserve, Stevenston Beach LNR, the former Volvo factory site in Irvine, and Western Gailes. Because of its host's (*Andrena barbilabris*) habit of nesting in sandy soils, *S. pellucidus* is probably widespread along – but largely confined to – the sandy Ayrshire coast. It is best looked for in sheltered areas of loose sand in the landward parts of Ayrshire's larger dune systems.

Sphecodes pellucidus at Western Gailes.

The Wasps of Ayrshire:

an Annotated List

ANCISTROCERUS

Some species in the genus, such as A. gazella and A. parietinus, are relatively widespread cavity nesters that are found in urban areas. Other species, such as A. oviventris and A. scotica, are now largely restricted to coastal habitats. All species are similar in appearance.

Ancistrocerus gazella

Locally common along the coast. It is often found inland too, including in gardens, albeit less commonly.

Ancistrocerus oviventris

Showing a distinct preference for coastal habitats, this species is locally common in Ayrshire's dunes and probably very local inland. It can be particularly common right at the coastline, where the numerous rocks provide ideal surfaces for nest-building.

Ancistrocerus oviventris on the Ardeer Peninsula.

Ancistrocerus parietum

This appears to be an uncommon species in Ayrshire, mirroring its status elsewhere in Scotland. It is known in the county from only a small number of records.

Ancistrocerus parietinus

Perhaps the most common and widespread of Ayrshire's mason wasps. Being a versatile cavity-nester, it is frequently encountered in urban areas. For example, it has been found in a greenhouse in Stevenston and the Visitor Centre courtyard in Eglinton Park.

Ancistrocerus scoticus

Almost exclusively a coastal species, it is locally common along the Ayrshire coast. It is most often encountered nectaring on Hogweed, thistles or Bramble. Like *A. oviventris*, it is particularly fond of the seaward extremity, often being found just behind beaches, presumably because of the nesting opportunities provided by crumbling sea walls, rock armour and slag. Both yellow-banded and ivory-banded forms are found in Ayrshire.

ANOPLIUS

This genus contains just two Ayrshire species of black spider-hunting wasp. A third, black and red, species, A. infuscatus, has been recorded not far from the Scottish border and could be present in the south of the country.

Anoplius concinnus

A very local species owing to its unusual habitat preference: the sandy edges of waterbodies. It has been found at the edge of several small, man-made pools on the Ardeer Peninsula. Away from pools and river edges in sand dunes, it might occur inland in flooded sand and gravel pits or on river shingle.

Anoplius nigerrimus

Locally common in sand dunes, it has also been found at many inland sites in Ayrshire and is probably widespread and not uncommon throughout most of the county.

Anoplius nigerrimus.

ARACHNOSPILA

This genus contains two very similar species of black and red spider hunter. The additional species – A. trivialis and A. wesmaeli – have been recorded in dunes in northwest England and could potentially be present in southern Scotland.

Arachnospila anceps

Locally common and probably widespread in Ayrshire.

Arachnospila anceps on the Ardeer Peninsula.

Arachnospila spissa

Apparently much less common than Ayrshire's only other *Arachnospila*. It is known only from the Ardeer Peninsula and a couple of brownfield sites: the former Volvo plant in Irvine and the former Kerelaw School grounds in Stevenston. It is likely uncommon but widely distributed throughout Ayrshire.

ARGOGORYTES

The Ayrshire fauna consists of one species. The other British species, A. fargeii, appears to be increasing its range and is worth looking out for in Scotland.

Argogorytes mystaceus

Probably widespread throughout much of Ayrshire, this large ground-nesting wasp has been found both inland and on the coast, where it inhabits scrub/tall grassland mosaics and open areas in and around woodland.

Argogorytes mystaceus on the Ardeer Peninsula.

CEROPALES

The single Scottish species is a rare, colourful cuckoo of other spider-hunters.

Ceropales maculata

Recorded mainly from Stevenston and Irvine's dunes, this cuckoo is probably very uncommon away from high-quality dune habitats (e.g. Dundonald Links, Western Gailes and the Ardeer Peninsula), owing to the lack of a critical mass of spider hunter hosts. Inland, it has only been found at the former Volvo factory site in Irvine, a site with several other species of spider-hunting wasp.

Ceropales maculata on the Ardeer Peninsula.

CHRYSIS

These cuckoo wasps are generally uncommon, and when encountered are difficult to catch, often appearing for a just few seconds on a tree trunk or wall, before flying off.

Chrysis angustula

The few records that exist for this species in Ayrshire come from very different habitats: the Ardeer Peninsula, a half-dead Rowan tree in a garden in Stevenston, and a pinewood at Moss Mulloch in Kilwinning. Reflecting the status of its main host, *Symmorphus bifasciatus*, it is probably uncommon but widely distributed in the county.

Chrysis ignita

This species has been recorded once in Ayrshire, from the Ardeer Peninsula. It is common and widespread in England, with a wide scattering of records in Scotland.

Chrysis impressa

Unlike some cuckoo wasps, this species shows no pronounced affinity for the coast. It is probably as widespread as its main host species in Scotland, the common mason wasp, *Ancistrocerus parietinus*. It has been recorded from Fairlie Moor, the Black Powder Forest on the Ardeer Peninsula, Ardeer Quarry LNR, from gardens in Stevenston, and from a bee hotel located behind the visitor centre in Eglinton Park, where its host was *Ancistrocerus parietinus*. It is apparently the most common cuckoo wasp inland.

Chrysis impressa on the Ardeer Peninsula.

Chrysis ruddii

All records come from the Ardeer Peninsula. It is most likely largely restricted to coastal habitats where its host species, *Ancistrocerus oviventris*, thrives.

Chrysis vanlithi

All records come from the Ardeer Peninsula, where there is a relative abundance of its host species, *Ancistrocerus oviventris* and *Ancistrocerus scoticus*. It is probably largely restricted to the Ayrshire coast. Until recently, this species was commonly referred to as *C. rutiliventris*.

CRABRO

The two Ayrshire species are large, black and yellow wasps that have a strong association with sandy coastal habitats. Males have characteristic shield-like extensions on their forelegs.

Crabro cribrarius

Ayrshire's largest solitary wasp. It is common in sandy habitats near the coast, where it is strongly attracted to Hogweed and Giant Hogweed. Females are often seen nectaring on these plants, and males can frequently be observed flying past the flowerheads. It is also found inland, but much less commonly.

Crabro cribrarius on the Ardeer Peninsula.

Crabro peltarius

A species which is almost entirely restricted to coastal areas in Scotland. It is perhaps best found by looking for males congregating around solitary shrubs and small trees located in sheltered, sandy coastal habitats. It appears to be locally common in sandy habitats on the Ayrshire coast.

Crabro peltarius.

CROSSOCERUS

Crossocerus are generally small, black wasps. Even relative to most solitary wasps, they are probably very under-recorded in Ayrshire: species such as C. capitosus and C. walkeri are most likely present in the county but have yet to be discovered.

Crossocerus binotatus

This Nationally Scarce, black and yellow wood nester has only been recorded from Westen Gailes in Irvine. It is most likely rare in Ayrshire.

Crossocerus dimidiatus

This large, black and yellow *Crossocerus* is uncommon but probably widespread in Ayrshire. It is often found alighting on sunny leaves beside still water (Ardeer Peninsula, Garnock East in Irvine) or burns (Kerelaw Glen in Stevenston, Elm Park in Ardrossan). It is not restricted to wetland sites, and has been recorded several times in a garden beside Ardeer Quarry LNR in Stevenston.

Crossocerus dimidiatus in a Stevenston garden.

Crossocerus elongatulus

A relatively common species that is catholic in its habitat choice, nesting in the ground as well as in deadwood and old walls. Several were observed nesting in the holes in porous rocks just above the beach on the Ardeer Peninsula. It is locally common along the sandy Ayrshire coast and is undoubtedly widespread inland, having been caught at several inland sites, including gardens.

Crossocerus elongatulus in a Stevenston garden.

Crossocerus leucostomus

This Nationally Scarce species appears to have its stronghold in northern Scotland's old pine woods. Most Ayrshire records pertain to wasps nesting in or patrolling along dead fallen or standing pine trunks. Males have been caught patrolling fallen pine trunks at the top of Fairlie Glen, on the Ardeer Peninsula, and at the edge of an overmature Scots Pine plantation at Moss Mulloch in Kilwinning, and a male was caught patrolling a pile of pine logs at Gailes Marsh SWT reserve in Irvine. Nest sites have been found in dead pine trunks at Moss Mulloch and in the Black Powder Forest on the Ardeer Peninsula, and a female was apparently nesting in a fallen hardwood tree trunk beside ancient woodland at Kerelaw in Stevenston. At a nesting site in the Black Powder Forest, three females were found to be provisioning their nests with tiny Empid flies. It has also been collected from Shewalton Wood in Irvine. This species is probably largely restricted in Ayrshire to old, unmanaged pinewoods and found in small numbers where it occurs.

Crossocerus leucostomus in the Black Powder Forest on the Ardeer Peninsula.

Crossocerus megacephalus

This relatively large *Crossocerus* is a widespread deadwood nester associated with both pine and broadleaved woodland. It usually occurs in small numbers where found.

Crossocerus ovalis

This local, ground-nesting wasp has been recorded from various coastal sites, including Culzean Country Park, Gailes Marsh SWT reserve, and the Ardeer Peninsula. It is not restricted to the coast though and has been recorded nesting at the side of a ditch at Ardeer Quarry LNR in Stevenston.

Crossocerus podagricrus

The first records of this species came in 2021, when some were found nesting in a fallen tree trunk at the edge of ancient woodland at Kerelaw Glen, Stevenston, and several were found lekking around Hemlock Water Dropwort in dunes at Western Gailes. In 2022, a large nesting aggregation was found in a long-dead tree at Blair Estate in Dalry, two were collected from Ardeer Quarry LNR, and two were collected from the former Volvo factory site in Irvine. In 2023, it was found at Garnock East in Irvine and on the Ardeer Peninsula, and in 2025 several were found at Auchenharvie Wood in Stevenston. It is possible that the species has recently – and rapidly – colonised much of Ayrshire.

Crossocerus quadrimaculatus

This ground nester is known in Ayrshire only from a single, late 20th-century record from East Ayrshire – it appears to be rare in the county.

Crossocerus tarsatus

Locally common and widespread in sandy coastal areas. It is much more local inland.

Crossocerus varus

This is one of two similar species which nest in sandy soils. Like *C. tarsatus*, it can often be caught by sweeping over large, sheltered patches of compacted sand, both vertical and horizontal. And like *C. tarsatus*, it is locally common in open, sandy habitats on the coast, but more local inland.

DIPOGON

Only one species of Dipogon has been recorded in Ayrshire. However, an additional species, D. subintermedius, could be present in the county.

Dipogon variegatus

Uncommon, but probably becoming increasingly abundant in Ayrshire as it spreads northwards. Because it is a cavity nester with a particular fondness for rubble piles and old walls, it is probably widely distributed in the county, showing no pronounced preference for the coast or sandy habitats. It has been found at Stevenston Beach LNR on a derelict wall, at the former Volvo plant in Irvine on a large rubble pile, and on the Ardeer Peninsula around old buildings and on the industrial slag/rock armour at the top of the beach.

DOLICHOVESPULA

Like Vespula, Dolichovespula is a genus of large, black and red social wasps. They build their paper nests in aerial locations.

Dolichovespula media

A rare wasp in the county, where it is near the north of its range.

Dolichovespula norwegica

This species is locally distributed in Ayrshire and is perhaps most commonly encountered on moorland, including raised bogs.

Dolichovespula norwegica in the Black Powder Forest on the Ardeer Peninsula.

Dolichovespula saxonica

A widespread but uncommon species in Ayrshire.

Dolichovespula sylvestris

The most common and widespread *Dolichovespula* in Ayrshire.

DRYUDELLA

The only Scottish species is an uncommon sand dune dweller, which closely resembles the larger and more abundant Tachysphex pompiliformis.

Dryudella pinguis

Diminutive, restricted to coastal dunes, and only ever present in small numbers, this species is rarely encountered. There are only a small number of Ayrshire records, which come from the Ardeer Peninsula and Gailes Marsh SWT reserve. It is unlikely to be found away from dune habitats.

ECTEMNIUS

These large, black and yellow solitary wasps generally nest in deadwood and can often be found nectaring on umbellifers. Although large and boldly marked, most species are very similar in appearance and so difficult to tell apart without close microscopic examination.

Ectemnius cavifrons

This deadwood nester is widely distributed in Ayrshire. It is by far the most abundant *Ectemnius* found at deadwood.

Ectemnius cavifrons in the Black Powder Forest on the Ardeer Peninsula.

Ectemnius cephalotes

This wood-nesting wasp appears to be distributed throughout much of Ayrshire. Like other *Ectemnius* species, it is strongly associated with areas of old trees/deadwood. It closely resembles *Ectemnius cavifrons*, but is much less common.

Ectemnius continuus

This is by far the most abundant *Ectemnius* on the Ayrshire coast. It has often been found on Hogweed and Giant Hogweed in many of Ayrshire's dune systems and has been found nesting in deadwood washed-up on beaches. It is apparently much more local away from the coast.

Ectemnius continuus on the Ardeer Peninsula.

Ectemnius lapidarius

In Ayrshire, it has been recorded from a log pile at Ardeer Quarry LNR in Stevenston and from Feoch Meadows reserve by Barrhill. This deadwood nester is probably locally distributed in Ayrshire.

Ectemnius ruficornis

This Nationally Scarce species has only recently colonised southern Scotland. It is known from the Black Powder Forest on the Ardeer Peninsula, ancient woodland at Kerelaw in Stevenston, a log pile of Birch and Alder at Ardeer Quarry LNR, and a half-dead Rowan tree in a garden neighbouring the reserve. It is most likely widely distributed but uncommon in the county.

Ectemnius ruficornis at Ardeer Quarry LNR.

Ectemnius sexinctus

The only Ayrshire record of this Nationally Scarce species is from Dundonald Links in Irvine. It is apparently rare in Ayrshire.

EVAGETES

Only one species of Evagetes occurs in Scotland. It is a cuckoo of other spider hunters.

Evagetes crassicornis

This species is apparently locally common in Ayrshire. Although it is most abundant on the coast, it is also found inland, including in upland areas.

HARPACTUS

The British fauna consists of only one species, an attractive black, red and cream sand-loving wasp.

Harpactus tumidus

An uncommon species of sandy habitats, most likely restricted to Ayrshire's dunes, where it is very local. There are only two Ayrshire records, both from the Ardeer Peninsula.

HEDYCHRIDIUM

These relatively small cuckoo wasps are easy to overlook. The two Ayrshire species are confined to coastal sand dunes, where they lay their eggs in the nests of ground-nesting digger wasps.

Hedychridium ardens

Like its host, *Tachysphex pompiliformis*, this species is locally common in sand dunes along the Ayrshire coast. However, despite its abundance and hyperactive nest-searching behaviour (crawling and flying over the ground, like a spider-hunting wasp), it is inconspicuous owing to its small size.

Hedychridium ardens at Western Gailes.

Hedychridium cupreum

This Nationally Scarce wasp is rare in Ayrshire, reflecting the status of its host, *Dryudella pinguis*. It has only been recorded once from the county, in sand dunes in Irvine. It is likely confined to Ayrshire's larger dune systems.

MELLINUS

Scotland's single species is relatively large with black and yellow spots and bands, so at first glance can easily be mistaken for an Ectemnius and Crabro species. Like Ayrshire's two Crabro species, it constructs its nests in sandy soils.

Mellinus arvensis

A common and widespread ground-nesting species. It is one of the latest species on the wing and is often seen in September, both at nesting sites and nectaring on umbellifers. The males are particularly conspicuous when they fly around eroded sand banks waiting for females to emerge.

MIMESA

The genus is represented by only one species in Ayrshire: a distinctive, long-petioled, black and red ground nester.

Mimesa equestris

This sand-nesting species is locally abundant along the Ayrshire coast. Indeed, it can be one of the commonest solitary wasps present at a site. It is frequently found at both umbellifers and patches of bare, compacted sand, where it often nests in large aggregations. It is rare away from sandy, coastal habitats.

MIMUMESA

The single Ayrshire species is all black with a long petiole, so at first glance could easily be mistaken for a species of Pemphredon, a genus with which it sometimes shares nesting sites.

Mimumesa dahlbomi

Apparently rare further north in Scotland, this species is seemingly more common in Ayrshire. It appears to be locally common in the county. It is most often found flying along the sunny trunks of fallen pine trees.

NYSSON

There is only one Ayrshire species of this cleptoparasitic wasp. However, the range of N. dimidiatus falls just short of the Scottish border, so it is possible that this species is present but rare in the county's sand dunes, where its host, Harpactus tumidus is found.

Nysson spinosus

A local cuckoo of *Argogorytes mystaceus*, it is encountered much less frequently than its host. It is best looked for in woodland edge and scrub habitats with tall grassland. It has been found in open Hawthorn scrub on the Ardeer Peninsula, in woodland edge scrub at the former Volvo factory site in Irvine, in the neighbouring Meadow Plantation, and at an abandoned sand quarry near Darvel.

ODYNERUS

These potter wasps dig their nest burrows in sandy ground, and a characteristic earth chimney is constructed at the entrance. Only one species from this genus is present in Scotland, where it is a rarity.

Odynerus spinipes

The only Ayrshire record is of a male caught on a track in the Black Powder Forest on the Ardeer Peninsula. It is undoubtedly very rare in Ayrshire.

OXYBELUS

Two of the three UK species of this tiny, black and white ground nester are found in Ayrshire, where they are restricted to sand dunes. The third species, O. argentatus, has been recorded as far north as coastal dunes in Cumbria, so may be present in Scotland too.

Oxybelus mandibularis

A very rare, coastal species, which is known in Scotland only from a small number of records pertaining to sandy habitats in Stevenston (Ardeer Peninsula and Stevenston Beach LNR) and Irvine (Dundonald Links, Western Gailes, and, in Victorian times, Irvine Moor).

Oxybelus uniglumis

This sand nester is locally common in dunes along the Ayrshire coast. Indeed, it is very abundant on the Ardeer Peninsula and at Bogside Racecourse. It has been recorded from Stevenston Beach LNR in the north to Prestwick Dunes in the south. It is a bold species, often sitting out in the open, usually on or close to open sand. However, unless seen close-up, it can easily be overlooked as a small, black fly. It is unlikely to be found away from the coast.

Oxybelus uniglumis on the Ardeer Peninsula.

PEMPHREDON

A genus of black wasps with long petioles that nest in stems and deadwood. Three species have been recorded in Ayrshire. It is possible that the two other Scottish species also occur: Pemphredon morio has been recorded in the Lothians, and Pemphredon rugifer has been recorded several times in the Highlands.

Pemphredon inornata

An uncommon, wood and stem-nesting species, it is probably locally distributed in Ayrshire. It is currently known in Ayrshire from the Ardeer Peninsula, Blair Estate in Dalry, and Kerelaw Glen in Stevenston.

Pemphredon inornata in the Black Powder Forest on the Ardeer Peninsula.

Pemphredon lethifer

This species has been observed flying around sunny bramble leaves at the former Volvo plant in Irvine and at the site of the former ironworks beside Ardeer Quarry LNR. One was found in a pan trap at Kerelaw in Stevenston. The results of rearing larvae found in bramble stems suggest that this species is widespread and common in Ayrshire.

Pemphredon lethifer at Kerelaw in Stevenston.

Pemphredon lugubris

The most commonly encountered of Ayrshire's *Pemphredons*, it is also the largest. It is widespread throughout Ayrshire at sunny deadwood.

Pemphredon lugubris at Ardeer Quarry LNR.

PSENULUS

Only one of Britian's three species has been found in Scotland, where it is apparently very rare. Indeed, it is largely unknown north of Yorkshire. All three British species are wood and stem nesters. The Ayrshire records all pertain to wasps nesting in high quality, large diameter deadwood.

Psenulus pallipes

The only Ayrshire records are of one nesting in a fallen tree trunk beside ancient woodland at Kerelaw in Stevenston in 2021, and two found nesting in a half-dead Beech tree at Blair Estate in Dalry in 2022. It is not clear whether this species is a recent colonist or has simply been overlooked.

PSEUDOMALUS

The single species of Pseudomalus found in the county is a widespread cuckoo of stem-nesting wasps.

Pseudomalus auratus

It is known in Ayrshire from the Ardeer Peninsula, Ardeer Quarry LNR, the former Volvo plant in Irvine, and an individual reared from a bramble stem collected at Stevenston Beach LNR. Its habit of attacking the nests of the widespread *Pemphredon lethifer* suggests that it is probably found throughout much of Ayrshire, but, like many stem-nesting species, it is difficult to detect.

POLPILUS

The only British species of Pompilus is apparently at the northern limit of its range in the sand dunes of Ayrshire and East Lothian.

Pompilus cinereus

Restricted to areas of loose, open sand in dunes, but it can be abundant where it occurs.

Pompilus cinereus on the Ardeer Peninsula.

PRIOCNEMIS

Although only three species have been recorded in Ayrshire, it is possible that other species from this genus of black and red spider-hunting wasps are present in the county, including the other Scottish species, P. exaltata.

Priocnemis parvula

This is a common species in sand dunes on the Ayrshire coast. It has also been found on Fairlie Moor and the former Volvo factory site in Irvine. It is probably very local inland.

Priocnemis perturbator

This species is known in Ayrshire from a specimen caught at Mochrum Hill beside Maybole and an old record (1966) from Ayr Gorge reserve. Unlike most of Ayrshire's spider-hunters, it has a preference for open woodland sites. It is most likely significantly under-recorded in Ayrshire, even relative to other wasps.

Priocnemis schioedeti

A Nationally Scarce species, it is known in Ayrshire only from one female collected from the Black Powder Forest on the Ardeer Peninsula.

RHOPALUM

One species has been recorded in Ayrshire. However, it is very likely that a second species, Rhopalum clavipes, is present in Ayrshire too.

Rhopalum coarctatum

This very local stem nester has been recorded from the former Volvo factory site in Irvine, Ardeer Quarry LNR, a garden in Stevenston, and Alder carr at Garnock East in Irvine.

SYMMORPHUS

Species in this genus are cavity-nesters that use hollow stems, disused galls, and holes in deadwood. Only one species occurs in Scotland.

Symmorphus bifasciatus

An uncommon but probably widely distributed species in Ayrshire, it is known only from a couple of specimens taken from scrubby woodland edge on the Ardeer Peninsula, an individual nesting in a tree stump at Kerelaw in Stevenston, and an individual nesting in a log pile at Ardeer Quarry LNR.

Symmorphus bifasciatus at Ardeer Quarry LNR.

TACHYSPHEX

Only one species has been recorded in the county: Tachysphex pompiliformis, a locally common species of sand dunes. The related genus, Trypoxylon, hole-nesting spider-hunters, are probably present in Ayrshire, but have yet to be recorded in the county.

Tachysphex pompiliformis

This grasshopper hunter appears to be very coastal in Scotland and is relatively common in dune habitats along much of the Ayrshire coast, where it sometimes nests in small aggregations. Although sometimes found nectaring on Bramble or umbellifers such as Hogweed or Wild Carrot, it is most often encountered scuttling over open sand at nest sites. Because of the lack of open sand inland, it is undoubtedly a very rare insect away from Ayrshire's dune habitats.

Tachysphex pompiliformis on the Ardeer Peninsula.

TIPHIA

Only one species has been recorded in the county, Tiphia minuta, a small, black species rarely recorded in Scotland.

Tiphia minuta

The only Ayrshire record is of one at Gailes Marsh SWT reserve. It is likely rare in the county.

VESPULA

All British species of Vespula are found in the county. All are large, black and red social wasps that build their large paper nests either aerially or underground, apart from V. austriaca, which is a cuckoo.

Vespula austriaca

This cuckoo of *V. rufa* is uncommon but widespread in Ayrshire.

Vespula germanica

Much less common than the very similar *V. vulgaris*, but widespread.

Vespula rufa

Locally common throughout Ayrshire, especially in upland areas and around raised bogs.

Vespula rufa at Moss Mulloch.

Vespula vulgaris

The commonest wasp in Ayrshire, almost ubiquitous throughout the county.

Checklist of Ayrshire's Bees and Wasps

The Bees of Ayrshire

ANDRENA
Andrena barbilabris
Andrena bicolor
Andrena chrysosceles
Andrena clarkella
Andrena coitana
Andrena denticulata
Andrena fucata
Andrena fulva
Andrena fuscipes
Andrena haemorrhoa
Andrena lapponica
Andrena minutula
Andrena nigriceps
Andrena ruficrus
Andrena scotica
Andrena semilaevis
Andrena subopaca
Andrena tarsata
Andrena wilkella

ANTHOPHORA
Anthophora furcata
Anthophora plumipes

APIS
Apis mellifera

BOMBUS
Bombus bohemicus
Bombus campestris
Bombus hortorum
Bombus hypnorum
Bombus jonellus
Bombus lapidarius
Bombus lucorum
Bombus magnus
Bombus monticola
Bombus muscorum
Bombus pascuorum
Bombus pratorum
Bombus sylvestris
Bombus terrestris

COELIOXYS
Coelioxys elongata

COLLETES
Colletes daviesanus
Colletes floralis
Colletes fodiens
Colletes succinctus

EPEOLUS
Epeolus cruciger

HALICTUS
Halictus rubicundus
Halictus tumulorum

HYLAEUS
Hylaeus brevicornis
Hylaeus confusus
Hylaeus hyalinatus

LASIOGLOSSUM
Lasioglossum albipes
Lasioglossum calceatum
Lasioglossum cupromicans
Lasioglossum fratellum
Lasioglossum fulvicorne
Lasioglossum leucopus
Lasioglossum morio
Lasioglossum punctatissimum
Lasioglossum rufitarse
Lasioglossum smeathmanellum
Lasioglossum villosulum

MEGACHILE
Megachile centuncularis
Megachile circumcincta
Megachile maritima
Megachile versicolor
Megachile willughbiella

NOMADA
Nomada fabriciana
Nomada flava
Nomada flavoguttata
Nomada leucophthalma
Nomada marshamella
Nomada obtusifrons

Nomada panzeri
Nomada roberjeotiana
Nomada ruficornis
Nomada rufipes
Nomada striata

OSMIA
Osmia caerulescens
Osmia bicornis

SPHECODES
Sphecodes geoffrellus
Sphecodes gibbus
Sphecodes hyalinatus
Sphecodes monilicornis
Sphecodes pellucidus

The Wasps of Ayrshire

ASTATINAE
Dryudella pinguis

CEROPALINAE
Ceropales maculata

CHRYSIDINAE
Chrysis angustula
Chrysis ignita
Chrysis impressa
Chrysis ruddii
Chrysis vanlithi

ELAMPINAE
Hedychridium ardens
Hedychridium cupreum
Pseudomalus auratus

CRABRONIDAE
Crabro cribrarius
Crabro peltarius
Crossocerus annulipes
Crossocerus binotatus
Crossocerus dimidiatus
Crossocerus elongatulus
Crossocerus leucostomus
Crossocerus megacephalus
Crossocerus ovalis
Crossocerus podagicrus
Crossocerus quadrimaculatus
Crossocerus tarsatus
Crossocerus varus
Ectemnius cavifrons
Ectemnius cephalotes
Ectemnius continuus
Ectemnius lapidarius
Ectemnius ruficornis
Ectemnius sexinctus
Oxybelus mandibularis
Oxybelus uniglumis

EUMENINAE
Ancistrocerus gazella
Ancistrocerus oviventris
Ancistrocerus parietum
Ancistrocerus parietinus
Ancistrocerus scoticus
Odynerus spinipes
Symmorphus bifasciatus

LARRINAE
Tachysphex pompiliformis

MELLININAE
Mellinus arvensis

NYSSONINAE
Argogorytes mystaceus
Harpactus tumidus
Nysson spinosus

PEMPHREDONINAE
Mimesa equestris
Mimumesa dahlbomi
Pemphredon inornata
Pemphredon lethifer
Pemphredon lugubris
Psenulus pallipes

PEPSINAE
Dipogon variegatus
Priocnemis parvula
Priocnemis perturbator
Priocnemis schioedeti

POMPILIDAE
Anoplius concinnus
Anoplius nigerrimus

Arachnospila anceps
Arachnospila spissa
Evagetes crassicornis
Pompilus cinereus

TIPHIINAE
Tiphia minuta

VESPINAE
Dolichovespula media
Dolichovespula norwegica
Dolichovespula saxonica
Dolichovespula sylvestris
Vespula austriaca
Vespula germanica
Vespula rufa
Vespula vulgaris