

RUBY-TAILED WASPS Chrysididae. Metallic-coloured insects, often called jewel-wasps because of their bright colours. Also called cuckoo wasps because they lay their eggs in the nests of other insects – mainly solitary wasps and bees. The ruby-tail grubs eat the wasp or bee larvae and then feed on the stored food. A very hard cuticle protects adults from the stings of the host species, and most ruby-tails can also roll themselves up for extra protection – thanks to the flat or concave underside of the abdomen. Only three abdominal segments are usually visible from above. Female has ovipositor in a retractable tube. A sting is present, but not usually functional: most species lack venom.

Stilbum cyanurum. Tip of abdomen distinctly tapered, with 4 pointed teeth. Generally clear green with golden reflections, but head and thorax may be dull green or blue and abdomen reddish with a blue tip. Parasitises mason wasps and bees. 6-9. S & C (southern).

▲ ***Chrysis ignita.*** Commonest of several very similar species. Head and thorax green or blue, sometimes with golden sheen. 4 teeth at tip of abdomen sharply pointed and almost equidistant. Parasitises mason bees mainly, often seen running over walls and tree trunks in search of their nests. 4-9.

△s ***C. fulgida*** is readily distinguished from *ignita* by blue area at front of gaster. Parasitises digger and mason wasps. 5-9, in woods.

Parnopes grandior. Male has 4 abdominal segments visible from above: female has only 3, of which 3rd is much larger than the others. A thin, leaf-like projection from rear end of thorax. Abdomen not toothed at tip, but with several very tiny points. Tongue very long. Parasitises *Bembix* digger wasps. 6-8. S & C (southern).

▲ ***Cleptes nitidulus.*** Pronotum strongly narrowed at front and leading to a distinct neck. Thorax green or blue in male; black, red, and blue in female, usually tinged with green. Male has 5 abdominal segments visible from above: female only 4. Functional sting present. A parasite of sawfly larvae and pupae. 5-8. S & C. Sometimes placed in a separate family – the Cleptidae.

△s ***Methocha ichneumonides*** Tiphidae. Male with 2 sub-marginals and a long, pointed marginal cell. Female wingless. Body very shiny in both sexes, but males very rare and reproduction is probably largely parthenogenetic. Female paralyzes tiger beetle larvae with her sting and lays an egg on each one. 5-9 on heathland. S & C.

△s ***Tiphia femorata.*** 2 sub-marginals: marginal cell open in female but closed in male. Middle and hind legs red in female; black in male. Pronotum rather square in front. 7-8. Parasitises larvae of various chafer and dung beetles. S & C.

▲ **Velvet Ant *Mutilla europaea*** Mutillidae. Male fully-winged: female wingless and ant-like, with a powerful sting. Both sexes with patches of silvery hair. 7-9 and again in spring after hibernation. A parasite of various bumble bees, feeding on the larvae in the nest. Most of Europe, but local. There are several similar species on the continent.

Myrmilla capitata. Wingless in both sexes. Head relatively large and square. Thorax parallel-sided. A parasite of various solitary bees. 4-8. S. There are several similar species, some with winged males.

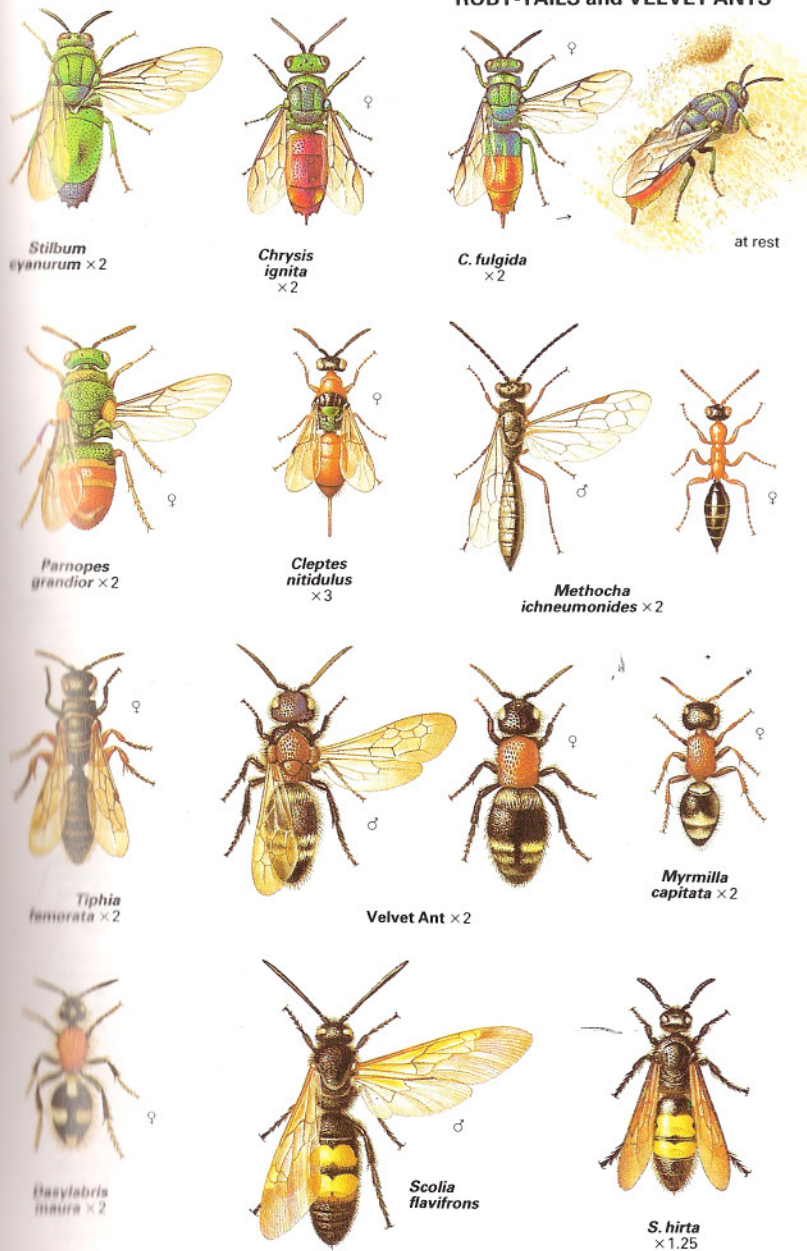
Dasylabris maura. Male fully-winged, with dark wing-tips and 2 grey bands across abdomen. Female wingless, with strongly pear-shaped thorax. A parasite of *Ammophila* and other sand wasps. S & C (southern).

Scolia flavifrons Scoliidae. One of Europe's largest hymenopterans, with female up to 40mm long. Her head, larger than that of male, is chestnut-brown. Each yellow abdominal band may be split into 2 spots. Thorax and tip of abdomen may have reddish hairs in some areas. 6-8 in hot sunny places, visiting a wide range of flowers for nectar. Harmless to man despite its size. A parasite of the Rhinoceros Beetle (p. 264). S.

S. hirta is distinguished from several similar species by the 2 yellow bands and the strong violet tinge on wings. 7-10. A parasite of chafer grubs. S & C (southern).

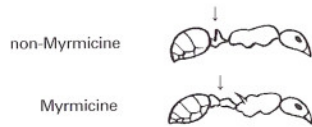
△s ***Sapyga quinquepunctatum*** Sapygidae. 3 sub-marginals. Antennae distinctly thickened towards tip. Pronotum square in front. Male lacks red on abdomen but has yellow spots on 3rd and 4th segments. 5-8. A parasite of *Osmia* and other mason bees.

RUBY-TAILS and VELVET ANTS



ANTS Formicidae. A family of some 15,000 known species, all social. Workers are always wingless: sexual forms winged, but queens break off wings soon after mating. Antennae usually clearly elbowed. The narrow 'waist', known as the pedicel, has one or two segments. Sting not present in all species (usually absent in species with 1-segmented pedicel). There are carnivorous, herbivorous, and omnivorous species, with aphid honeydew prominent in many diets. European ants nest mainly in the ground. Some species have more than one queen in each colony. The dense swarms of flying ants that appear in summer and autumn are mating swarms. Unless otherwise stated, all ants illustrated here are workers.

Ants of the sub-family Myrmicinae have a 2-segmented pedicel. Other European ants have just one segment, usually scale-like.



▲ **Myrmica rubra.** Pedicel of 2 segments. Male blackish brown: queen and worker chestnut. Propodeum with 2 spines. Worker with sting. Omnivorous. Abundant in garden soils. Mating flights 7-10. One of several very similar species.

M. ruginodis is almost identical but the pedicel differs slightly in shape.

Pheidole megacephala. A very small ant with 2-segmented pedicel. Two kinds of worker, one with a very large head and jaws for cracking seeds, which are a major component of the omnivorous diet. Nests under stones in soil, often close to houses. S & C (southern): sometimes in buildings further north.

△ **Argentine Ant *Iridomyrmex humilis*.** A small and very slender ant with a 1-segmented pedicel bearing a well-developed scale. Head and thorax commonly dark brown like abdomen. Omnivorous. A native of S. America, now well established in and hard to eradicate from European buildings. Colonies increase and spread by fragmentation, without mating flights. Widespread in S & C: sporadic in B (heated buildings only).

▲ **Pharaoh's Ant *Monomorium pharaonis*.** A very small ant with 2-segmented pedicel. Tip of abdomen usually darker than shown. Antennae 12-segmented, the last 3 broader than the others and forming a faint club. Omnivorous. A native of Africa, now a troublesome pest in heated buildings. Nests in tiny crevices. No mating swarms.

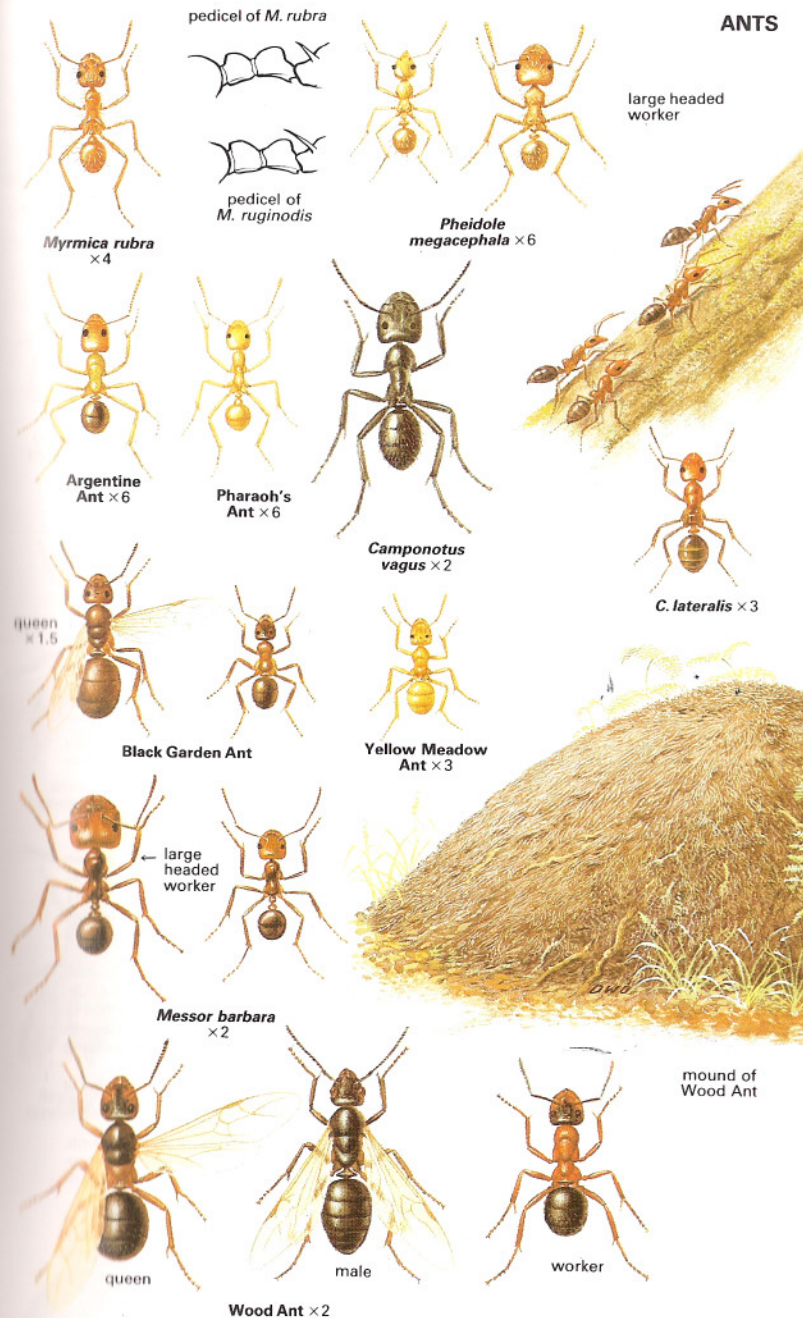
Camponotus vagus. One of the largest European ants, although size varies. Pedicel 1-segmented and much of body dotted with long pale hairs. Omnivorous, with a special liking for honeydew. Southern Europe, nesting in dead tree trunks and often causing losses to forestry by excavating galleries in felled trunks before they go to the sawmill. Several similar species live on continent, but none in B.

C. lateralis of southern Europe nests under stones and logs. Queen has brown head only: male is all black. Omnivorous. Workers forage on ground and tree trunks, often forming long columns and frequently associating with the superficially similar *Crematogaster scutellaris*, although latter is distinguished by 2-segmented pedicel and habit of carrying abdomen almost vertically when alarmed.

▲ **Black Garden Ant *Lasius niger*.** Pedicel 1-segmented. Dark brown to black. Omnivorous but regularly milking aphids for honeydew. Abundant everywhere, often under pavements and garden paths and sometimes nesting in or under house walls. ▲ **Yellow Meadow Ant *L. flavus*** is yellowish brown, but otherwise very like *niger*. Inhabits rough grassland, making the familiar ant-hills. Both species produce huge mating swarms, usually 7-8.

Messor barbara. Pedicel with 2 relatively long segments. Head red or black according to race: rest of body brown to shiny black. Two kinds of worker, one with much larger head than the other. Males have very small heads. Nests underground and feeds almost entirely on seeds, which are cracked open by the large-headed workers. Workers can be seen dragging seeds back to the nest from considerable distances. S.

△ **Wood Ant *Formica rufa*.** Pedicel of one flattened, leaf-like segment. No sting, although the ant can fire formic acid from rear end when disturbed. Mostly in woods, making large mound nests with leaves and other debris. Several or many queens in each nest. Omnivorous, with a bias towards animal food. Protected by law in some countries because of its great value in destroying forest pests. Most of Europe, but mainly upland in S. Mating flight 5-6. There are several similar species.

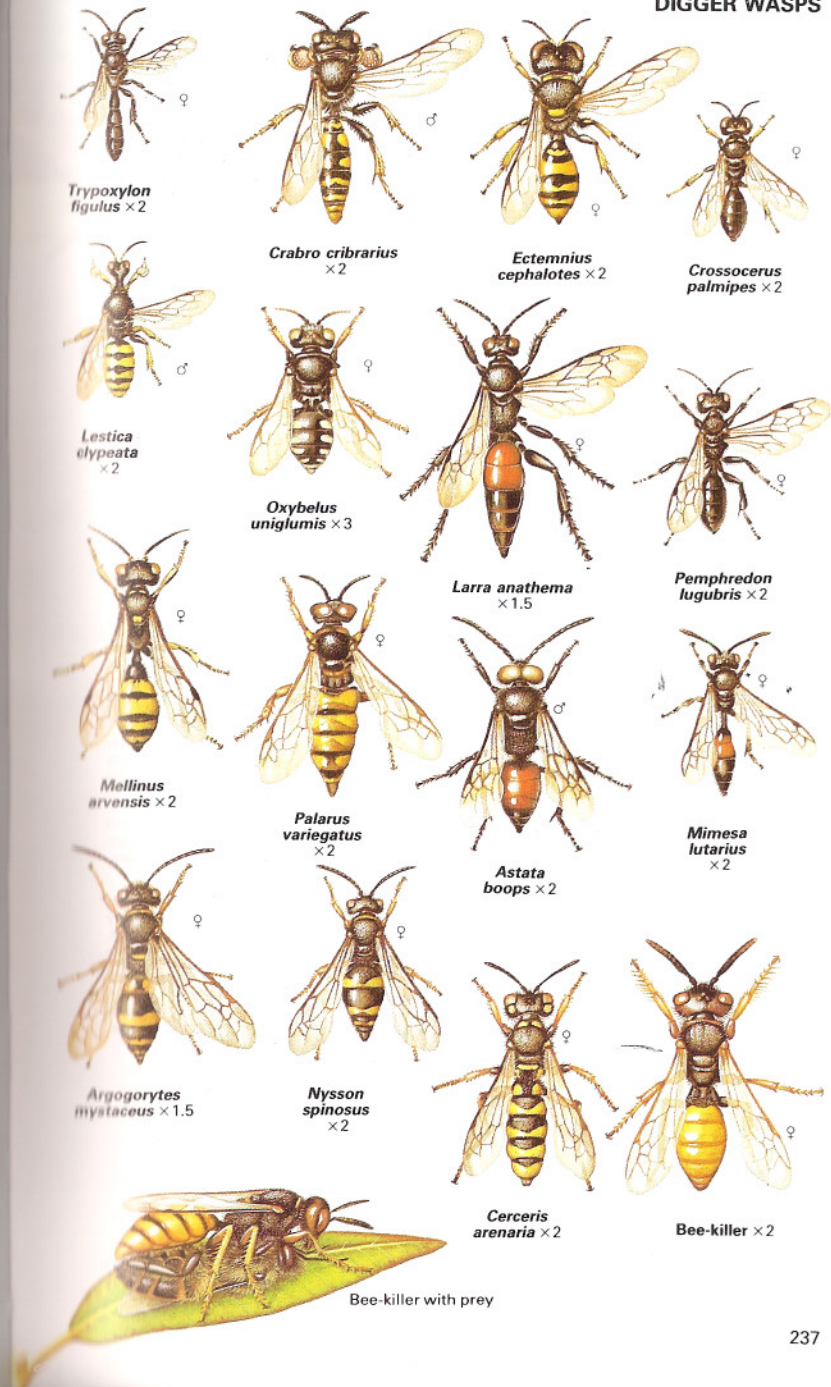


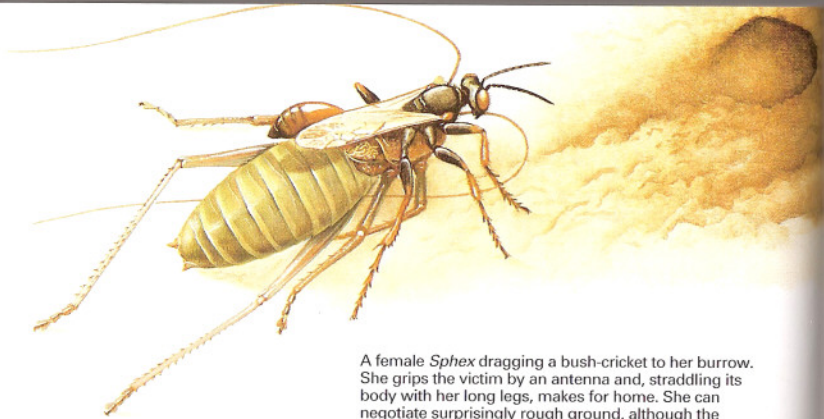
ANTS

DIGGER WASPS Sphecidae. Solitary wasps with a relatively broad head. Pronotum forms only a small collar, not reaching back to tegulae. Wings held flat over body at rest. Most species nest in ground: females often have a spiny comb on front leg for digging. Some species nest in decaying wood or hollow stems, and a few are masons and build with mud. The nests are stocked with various insects, paralysed by the female's sting. Several insects are usually put into each nest burrow, often in several separate chambers. Eggs are laid and the wasp grubs rely on the stored food until they pupate. There are some 9,000 known digger wasp species. The family is more closely related to the bees than to the other wasps.

- ▲ *Trypoxylon figulus*. One of several similar species with a slender, tapering abdomen. 1 sub-marginal cell. Inner margin of eye deeply notched. Nests in woodworm holes, hollow stems, and similar cavities: builds mud cells therein and stocks them with small spiders. 5-9.
- ▲ *Crabro cribrarius*. 1 sub-marginal. Male front tibia broad and plate-like. Male antennae appear deformed. Central yellow bands of abdomen divided. Continental specimens often with yellow on thorax. 5-9. Nests mainly in sandy soil: stocked with flies. There are many similar species.
- ▲ *Ectemnius cephalotes*. 1 sub-marginal. One of several similar species, distinguished from *Crabro* by normal front tibia in male and by grooved prolongation of abdomen in female. 6-9. Nests in rotten wood: stocked with flies.
- △ *Crossocerus palmipes*. 1 sub-marginal. Face largely yellow. Front tibia and 1st tarsal segment of male expanded. 5-9 in sandy places: nest stocked with flies. One of several similar species.
- ▲ *Lestica clypeata*. 1 sub-marginal. Body coarsely punctured. Male instantly recognisable by shape of head and front legs: female more normal, with yellow on thorax and a narrow grooved spike at tip of abdomen. 5-9. Nests in dead wood: stocked with small moths.
- ▲ *Oxybelus uniglumis*. Venation much reduced. Rear of thorax with 2 transparent flaps: propodeum with a small spine. Female with comb. 5-9. Nests in sand: stocked with flies carried back impaled on sting. There are several similar species.
- ▲ *Larra anathema*. 3 sub-marginals. Abdomen sometimes entirely black: always shining. 6-9. Makes no nest. Follows mole crickets along their burrows and temporarily paralyses them with the sting. An egg is laid in each cricket, which soon wakes up and continues activity with the wasp larva inside it. S.
- ▲ *Pemphredon lugubris*. 2 sub-marginals, the first much larger than second. Abdomen distinctly stalked. Head and thorax hairy. 5-9. Nests in rotten wood: stocked with aphids. One of many similar species, most of which nest in bramble stems.
- ▲ *Mellinus arvensis*. 3 sub-marginals. Scutellum with large yellow spot. Abdomen with short petiole. 5-9. Nests in sand: stocked with large flies, especially hover-flies. △s *M. crabroneus* has paler markings and reddish antennae.
- ▲ *Palarus variegatus*. 3 sub-marginals. Abdomen with distinct grooves between segments as in *Cerceris*, but more triangular and much yellower. 5-7. Nests in ground: stocked with assorted hymenopterans, including other digger wasps. S.
- ▲ *Astata boops*. 3 sub-marginals. Male eyes meet on top of head. Female antennae much shorter. Female with comb. 5-8. Nests in sandy soil: stocked with shield bug nymphs.
- ▲ *Mimesa lutarius*. 3 sub-marginals. Petiole shorter than 1st abdominal segment: keeled on top and straight when seen from side. Male usually has less red on abdomen. 5-8. Nests in sand: stocked with leafhoppers. There are several similar species.
- ▲ *Argogorytes mystaceus*. 3 sub-marginals. Male antennae extra long. Female with short comb. 1st abdominal tergite almost semi-circular. Yellow spot may be missing from 4th gastral segment. 5-9. Nests in soil: stocked with frog hopper nymphs.
- ▲ *Nysson spinosus*. 3 sub-marginals, the 2nd being small and stalked in front. Rear edge of propodeum spiny. Front of abdomen often reddish. Cuticle very hard. 5-8. A cuckoo species, laying eggs in nests of *Argogorytes*. There are many similar species.
- ▲ *Cerceris arenaria*. 3 sub-marginals, the 2nd being stalked at front. Female with comb. 1st abdominal segment rounded, with 2 large yellow spots. Abdominal segments separated by distinct grooves. 5-9. Nests deep in sand: stocked with weevils. S & C. One of several similar species.
- △s *Bee-killer Philanthus triangulum*. 3 sub-marginals. Head more rounded in front than in most digger wasps. Female with strong comb. Abdomen largely yellow, with or without black triangles. 7-9. Nests in sand: stocked with honey bees which are carried slung upside-down under body. Much of Europe except far north.

DIGGER WASPS





A female *Spheg* dragging a bush-cricket to her burrow. She grips the victim by an antenna and, straddling its body with her long legs, makes for home. She can negotiate surprisingly rough ground, although the journey might take several hours.

Spheg rufocinctus. 3 sub-marginals. Wing tinted yellow in female. Face clothed with silvery hair. Female with comb. Size very variable. 6-9. Nests in sandy soil: stocked with crickets and grasshoppers. S & C (southern): most common around Mediterranean. Commonest of several similar species.

Sceliphron destillatorium. 3 sub-marginals. Wings yellowish at base. Petiole yellow and almost as long as rest of abdomen. 5-8. Makes a nest of mud, attached to walls, rocks, tree trunks, etc: sometimes in buildings. Nests stocked with spiders. S & C (southern). *S. spirifex* is very similar but has no yellow on thorax: tegulae are black.

Liris praetermissa. 3 sub-marginals. Propodeum sub-rectangular and strongly grooved. 4-8. Nests in ground, often in pre-existing holes: stocked with crickets. S.

Dolichurus corniculus. 3 sub-marginals. Long pronotum with distinct neck. Almost square propodeum, strongly sculptured and keeled on top. Abdomen very shiny. Nests in hollow stems of bramble and other shrubs: stocked with cockroaches of genus *Ectobius*. 6-9. S & C (southern).

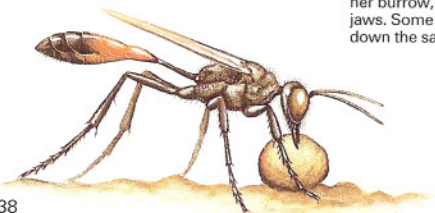
▲ ***Ammophila sabulosa***. 3 sub-marginals. Petiole 2-segmented, very long and slender and not sharply separated from rest of abdomen. Female with strong comb. 5-9. Nests in sandy places: stocked with non-hairy caterpillars. One of several similar species known as sand wasps, but distinguished from most others by entirely black legs.

▲ ***Podalonia hirsuta***. 3 sub-marginals. Thorax with bristly hairs, whitish in male and black in female. Petiole shorter than in *Ammophila* and more sharply separated from gaster. 3-8. Nests in sandy places: stocked with hairless or sparsely hairy caterpillars. Unlike most digger wasps, it catches prey before excavating nest.

Bembix rostrata. 3 sub-marginals. Resembles social wasps, but wings are held flat at rest. Mouth-parts with a beak-like extension. Comb on front leg in both sexes, but very large in female. Yellow abdominal bands sinuous and often broken in middle. 5-8. Nests in sandy places, often densely clustered: stocked with flies. Female brings more flies later to top up the larder, adjusting size of her captures to the increasing size of her larvae. There are several similar species.

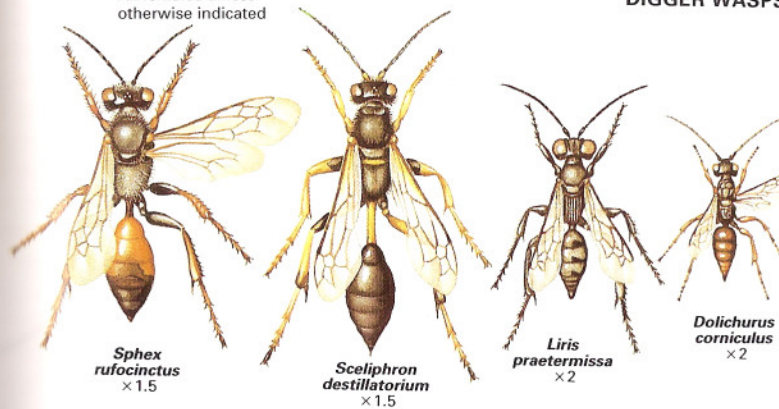
Stizus fasciatus. 3 sub-marginals. Female has red or orange antennae. 5-8. Nests in sandy soil: stocked with crickets and grasshoppers. S. There are several similar species.

Ammophila tapping down the sand to close her burrow, using a small stone held in her jaws. Some species use their heads to tap down the sand.



All females unless otherwise indicated

DIGGER WASPS

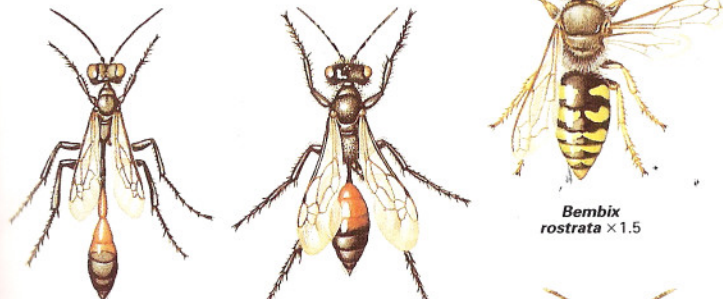


Spheg rufocinctus ×1.5

Sceliphron destillatorium ×1.5

Liris praetermissa ×2

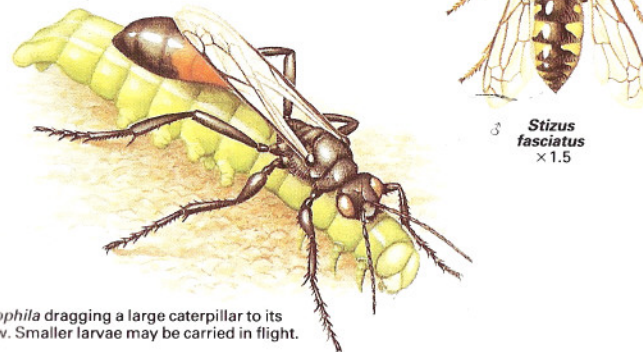
Dolichurus corniculus ×2



Ammophila sabulosa ×1.5

Podalonia hirsuta ×1.5

Bembix rostrata ×1.5



♂ *Stizus fasciatus* ×1.5

Ammophila dragging a large caterpillar to its burrow. Smaller larvae may be carried in flight.

SPIDER-HUNTERS, POTTERS and MASON WASPS

SPIDER-HUNTING WASPS Pompilidae. Solitary wasps using spiders as food for their young. Distinguished from digger wasps (p. 236) by pronotum extending back to tegulae at base of wings. Latter laid flat at rest: almost all with 3 sub-marginals. Males often much smaller than females: female antennae generally coil up after death. Legs long and slender: hind femur especially long. Generally nest in sandy ground, many females having strong combs on front legs for sweeping away the sand. Female makes several burrows, each one usually receiving a single spider and a single egg. Burrow is closed by tapping down sand with end of abdomen. Unlike most digger wasps, these insects catch prey before digging the burrow. A few species make mud nests.

Cryptocheilus comparatus. One of the largest European pompilids. Collects wolf spiders, including the infamous tarantula, by following them into their tunnels or chasing them on the surface. Male often paler. 6-7. S.

▲ ***Caliadurgus fasciatellus.*** Pronotum rather square in front. Male lacks red on abdomen and has no brown patch on wings. 6-9. Nest is a short vertical burrow in hard clay. Orb-web spiders are collected and stored vertically in the burrows.

▲ ***Ceropales maculata.*** Female with visible sting sheath: male genitalia exposed. Female antennae do not coil after death. Legs not spiny. A cuckoo species, watching other pompilids excavating their burrows and then nipping in to lay an egg on the paralysed spider as it is being dragged into the nest. The *Ceropales* egg hatches quickly and its grub devours the rightful pompilid larvae as well as the spider. Adults often on umbellifer flowers 5-9.

Eoferreola rhombica. Thorax (with propodeum) distinctly rectangular. Wings almost clear in male, which also has only 2nd abdominal tergite orange. Follows an eresid spider into its silken tunnel, paralyses it temporarily with the sting, and lays an egg on it. The spider recovers and the wasp grubs feed on it externally. 6-7. S & C (southern).

▲ ***Anoplus viaticus.*** Outer sub-marginal almost triangular. Tip of abdomen clothed with numerous stiff black hairs in female: broad and flat in male. 4-10, especially common on umbellifer flowers in spring. Chases wolf spiders. One of the commonest pompilids. S & C. Several similar species, but abdominal patterns differ.

▲ ***Episyron rufipes.*** Claws on all feet distinctly bifid. Female with strong comb. Thorax and propodeum with silvery scales (may be missing in worn specimens). White abdominal markings variable. Plucks orb-web spiders from webs. 6-9. *E. tripunctatus* of S & C is similar but has entirely black legs.

▲ ***Pompilus cinereus.*** Hairy bands on abdomen are blue-grey. Tip of female abdomen with scattered fine hairs. Female with strong comb. 5-9. Collects wolf spiders mainly, burying them temporarily while digging the main burrow. There are many similar species, often with orange bands on abdomen.

Celonites abbreviatus Masaridae. 2 sub-marginals. Wings folded longitudinally at rest. Pronotum reaches back to tegulae. Abdomen very square in front. A solitary wasp making a small nest of clay cells on a stone. Unlike most wasps, it stocks its nest with pollen and nectar. 5-8. S & C (southern), especially near Mediterranean.

Ceramius lusitanicus. 2 sub-marginals. Antennae spirally twisted at tip in male: normal in female. Abdomen rounded in front. Digs nest burrow in clay, forming several cells and stocking them with pollen and nectar. 5-7. SW.

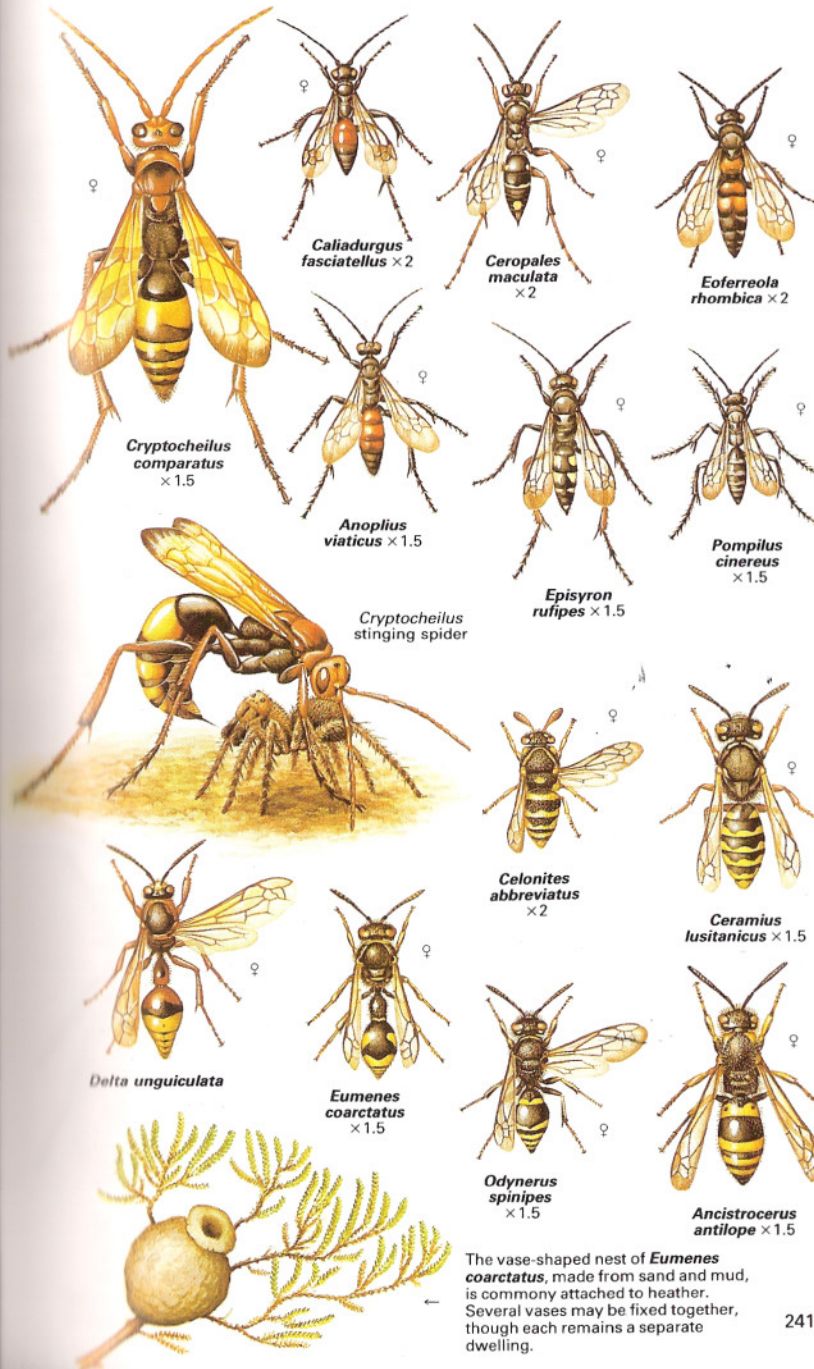
POTTER and MASON WASPS Eumenidae. Solitary wasps, but closely related to social Vespidae (p. 242) and resembling them in folding wings longitudinally at rest. 3 sub-marginals. Pronotum reaches back to tegulae. Middle tibia with 1 spur. Almost all species black and yellow. Small nests built of clay or mud.

Delta unguiculata. 1st abdominal segment bell-shaped and clearly separated from the rest. Nest is an irregular cluster of several cells, fixed to rocks or walls like a lump of hardened mortar: stocked with caterpillars. 6-8. S & C (southern).

▲ ***Eumenes coarctatus*** is the common potter wasp of heathland. One of several similar species making vase-shaped nests on rocks and plants. Each vase is stocked with small hairless caterpillars and contains a single wasp grub. 6-9.

▲ ***Odynerus spinipes.*** Male antennae spirally rolled at tip, the rolled section entirely black. Male has paler hairs and 3 teeth on underside of mid femur. 5-9. One of several similar species nesting in sandy ground, especially on slopes: burrow entrance often with a curved chimney. Nest stocked with weevil larvae.

▲ ***Ancistrocerus antilope.*** Male antennae not coiled: last segment bent back like a hook. Tegulae pointed at rear. 5-9. Nests in a wide range of cavities, divided by mud partitions and stocked with small caterpillars. Largest of several similar and very common species, not easily distinguished from each other.



The vase-shaped nest of *Eumenes coarctatus*, made from sand and mud, is commonly attached to heather. Several vases may be fixed together, though each remains a separate dwelling.