Following on from my comments in our Spring 2001 newsletter, it is worth noting the general dearth of extracted literature records in our ant records. So, if you are able, please trawl through any relevant papers, reports, lists etc. you may have, for records of target species (and any others you come across).

When submitting literature records it would be a great help if you are able to assign them to (or at least suggest) appropriate vice-counties and hectads (10km squares). I also need full details of the reference source, and your name as compiler. It's best if these records go onto GEN 13 record cards, with one species per card, but send paper lists if you prefer.

Previous target species
Please continue to send me records of target species we have already mapped, so that I can keep the known distributions of these species up to date.

And finally…….
Don't feel you have to send records on a particular date, or at a particular time. As long as deadlines are met, I'm happy to receive any records, any time!!

As always, my thanks for your help and support.

The *Chrysis ignita* group considered in a British context. Part 2.

Michael Archer.

David Baldock has asked me to comment on the translation of Linsenmaier key and text on the *Chrysis ignita* group from his book on the chrysids of Switzerland. However, first we must thank Margarete Earle for carrying out the translation which was difficult, and Robin Williams for typing out the translation.

I have now visited the Natural History Museum in London and the Oxford University Museum to study specimens of the *Chrysis ignita* group that have been identified by D. Morgan and M. Spooner. Before Morgan wrote his handbook in 1984 he visited Spooner to discuss the characters that he was going to use in his keys. At the time Spooner probably had a greater knowledge of the *Chrysis ignita* group than anybody else in the UK.

My preliminary conclusions about Morgan's key to the *Chrysis ignita* group is that it does work, although it can be difficult at times and not all specimens can be placed. Thus 72 specimens from Oxford University Museum were all identified, but with 61 specimens from David Baldock four could not be identified and with 22 specimens from the Royal Scottish Museum two could not be identified. Morgan's key can be made more friendly and, of course, the names Morgan uses cannot as yet be assumed to all have species status.

The translation of the key.

Chrysis angustula - 'Small and very slim' is a good description and enables potential specimens of this species to be recognised with the naked eye. The 'narrower head' is a new character to me so I will not comment on it yet. The 'less sharp teeth' on the rim of tergum 3 means blunt teeth or apically rounded teeth. The fine punctuation on tergum 2 is characteristic but is not included in Morgan's key, but is shown in his figure 93. In addition Morgan adds characters based on the propodeal teeth and the brow crescent. I have found both these characters useful although sometimes visual inspection of the propodeal teeth does not match up with the measurements.

Couplet 43 - I have found the 'pronotum' character usually works for *C. ruddii* but not for *C. rutiliventris*. This is very puzzling, but this character is not used by Morgan. The 'hair' character I have not found useful. Colouration of the third antennal segment is used by Morgan for *C. rutiliventris*, although Morgan's Figure 1 is in error. The directing lines for the flagellar segments include the pedicel and the flagellar segments. The third antennal segment is the first flagellar segment. The fine punctuation on tergum 2 is a good characteristic for *C. ruddii*, although this fine nature is not mentioned by Morgan. According to Morgan the presence of fine punctuation at the base of tergum 2 does not always apply to specimens from Scotland and Ireland. The couplet separating *C. ruddii* and *C. rutiliventris* I have found useful.

Couplet 44 - This couplet leads to the separation of *C. longula* and *C. pseudobrevitarsis*. I need to check the mentioned characters further but on the specimens I have examined I have found these characters useful. The fine punctuation at the side of the terga probably refers to the micro-punctures which are also present in *C.*

pseudobrevitarsis but not so extensive. However, I prefer to distinguish between these species separately as per Morgan.

Couplet 47 - This couplet is equivalent to Morgan's couplet 9, although Morgan still has to deal with *C. rutiliventris*.

Couplet 49 - The female ovipositor character is very distinctive for *C. mediata*. *C. schencki* would not key out here according to Morgan!

The translation of the text. I have yet to study this translation in detail so at this stage it is difficult to make any further comments.

References

Linsenmaier, W 1997. Die Goldwespen der Schweiz. Veröffentlichungen aus dem Natur-Museum Luzem., 9: 1-140.
Morgan, D. 1984. Cuckoo Wasps (Hymenoptera, Chrysididae). Handbooks for the Identification of British Insects, 6, Part 1. London: Royal Entomological Society.

Translation from: Die Goldwespen der Schweiz – by Walter Linsenmaier
(From page 38, couplet 42): (footnotes refer to page numbers in original book)

translated by Margarete Earle, typed and laid out by Robin & Romey Williams

42. Small and very slim species with somewhat narrower head (in relation to its length), anal rim with short, less sharp teeth; second abdominal segment with very fine punctuation which is more widely spaced towards the apex.

C. angustula (p.123)

- Not especially slender species.....43

TABLE
Fig.12 *Chrysis ignita* – group

1. *C. ruddii*, robust species with short pronotum. 2. *C. angustula*, slim species with uneven punctuation of the second abdominal segment, to the right male

43. Pronotum especially short in relation to its width (compare fig. 12, 1, p.38), with dense and long hairs; the third segment of the antenna not metallic; fine punctuation on the second abdominal tergites:

- o Thoracic tergites in the female more or less decorated with golden-green to copper coloured inserts, dark blue in the male; underside of the coxae, legs and abdomen of an intense golden colour, more rarely only green-golden in the male; punctuation of the second abdominal segment fine and, especially in the female, dense.

  C. ruddii (p. 108)

- o Smaller than *C. ruddii*; thoracic tergites only golden green at the front edge, or not at all; underside of legs green, at the most somewhat golden-green; punctuation of the second abdominal segment fine and often reducing towards the apex. *C. rutiliventris* (p. 109)

- Pronotum usually not very short 44

44. Punctuation on the front of the second abdominal segment strikingly longer and dense, but towards the apex quickly dispersed and finer (compare fig 12, 4, p.38)
.....45

- Punctuation of the second abdominal segment not differing so strikingly uneven, but gradually finer towards the apex.....47

45. Large and long, with parallel sides; in the female the sides of the abdomen have dense and fine punctuation, like leather.

C. longula (p.120)

- Bulbous species (at least the females)

C. pseudobrevitarsis (p.114)

47. ● Punctuation on the second abdominal segment finer at the base than on the first segment…….49 .

Punctuation on the second abdominal segment not finer at the base than on the first segment

C. ignita (p.115)

49. Ovipositor of the female broader; at least the female is bulbous.

C. mediata (p.110)

- Ovipositor slim; shape normal.

C. ignita schencki (p.117)

IGNITA GROUP (from p.107)

From above, the head is rather short in relation to its width; the vertex distinct; antennae usually long. The short pronotum of those species with light red and dark blue markings, usually has dark bands across the middle; the scutellum has dark bands along the middle; the mesonotum has no teeth; the final abdominal segment has a prominent row of indentations and four usually equal, broadly cut teeth, which are often thorn-shaped and generally more variable in the males; most species have a golden abdomen. The numerous species all embrace the normal, four-toothed jewel wasp shape. They are spread nearly all over the world, except for Australia and the surrounding islands, but more so in the temperate and northern zones; in the Palaearctic zone, they usually have a golden abdomen.

Some species often fly to freestanding wooden poles or dead trees, where they run up quickly and then fly away from the top. Apparently, they use regular routes in larger areas, and we can assume that they leave scent marks to attract the opposite sex. Representatives of this group can only rarely be seen on flowers (there are, however, exceptions), but they often frequent aphids and leaf nectaries.

The differentiation of species is not easy and remains doubtful in some cases. One should start with the study of the more representative females, and delay the study of the males till specimens and data of several species and subspecies are available. It is helpful, but time-consuming, to compare the variously-shaped final segments of the abdomen (in the male as a mantle for the genitalia, in the female as part of the ovipositor); the male genitalia are mostly difficult to distinguish.

There are varying opinions as to whether to consider species specialised on different hosts, which are therefore ecological forms taxonomically, as separate species or subspecies. There have been many publications about races and variability under the species *Chrysis ignita* and names have been published in record numbers. More than any other author (taking up 7 pages), Frey-Gessner tried to sort out the problem; the species *C. longula*, *C. angustula* and *C. rutiliventris* were named *C. ignita* varieties (some with their actual names). He divides them into three sections according to the punctuation of the second abdominal segment:

- dense,
- dispersed and coarse,
- fine and more or less dense,

but does not really reach conclusive results, because of variations in other characteristics.

A problem in Chrysididae systematics arises from the fixation on particular facts, and the overall picture becomes lost. We do not endeavour to recognise a human face by its details alone, but take in the whole impression, this is the main key to getting nearer to knowing this (and not only this) group of 'ruby-tails'.

The family relationships within the group result in some features which, in some specimens that deviate more from the norm, become blurred at the limits of variability. The groupings are those of *Chrysis ruddii, C. mediata* and *C. ignita*.

RUDDII – Special features of the group

Quite robust species with broad face and short, broad pronotum (fig 12, p.38); more or less dense, fine punctuation of the second abdominal segment; and with especially long and dense hairs; the third segment of the antennae is not metallic, even in the females.

Chrysis (Chrysis) ruddii Shuckard 1837 - in Chevrier 1862 as *C. auripes* Wesmael) (colour picture p.111).

Thorax dark blue in the female, with green areas, parts of which are interwoven with a golden or copper colour; the male thorax is from less marked to nearly all dark blue; abdomen golden red. 7 – 10mm. The coxa and the legs are completely or partly of a fiery golden colour beneath, like the sternites; abdomen with fine and dense punctuation (somewhat less in the male), a central keel along its entire length and, in the female, with the end segment concave-shaped. Differentiated from *C. rutiliventris*, by legs which are golden on the underside.

Distribution: in the whole of Switzerland up to the snowline, but widely dispersed in the hill zone; Europe far into the North, Asia Minor, one subspecies in Sicily.

Biology: May to September, on stones, vertical banks of clay and debris, rarely on euphorbias and umbillifers. Hosts are mason bees (*Osmia*), mason and potter wasps (*Odynerus* and *Eumenes* relatives). Males and females, with completely blue thoraxes and green to golden-green abdomens, have been reared from nests of *Osmia anthocopoides*.

Chrysis (Chrysis) rutiliventris Abneille 1879.
Thorax green to dark blue (mostly dark), with green highlights, predominant in this group; front edge of pronotum, and often the scutellum, sometimes with golden or copper-coloured decorations (less in the males); the abdomen golden to red, even beneath. 5-8mm. Similar to *C. ruddi*, but, on the average, smaller; the thorax, even in females, with fewer highlights and never as richly copper-coloured as many *C. ruddii*; coxa and legs, at the most, somewhat golden-green beneath; the two black patches of the second abdominal tergite larger and less far apart.

Distribution: Mountainous areas of Europe (not in the north), Lower Austria, Asia minor, Korea.

Biology: June to September on the ground, on stones, on vertical banks of debris, on stonecrop and thyme. Hosts unknown, apparently of very variable size, as *C. rutiliventris* appears both in a large as well as substantially smaller form.

Chrysis (Chrysis) rutiliventris vanlithi Linsenmaier.
Thorax hardly ever has golden marks; abdominal sternites green to partially green-golden. 7-10mm, smaller specimens are very rare and are individual variants. Anal rim short and broad; punctuation of the second abdominal segment not so fine in front, often only a little finer than on the first segment, and often looser towards the apex. Differentiated from *C. mediata* and *C. ignita*, apart from the other characteristics of the *ruddii* relatives, by the third segment of the antenna, which is not metallic even in the female. It may be a separate species.

Distribution: Dispersed in the whole of Switzerland and up to the tree-line, nowhere frequent. Europe (from North to South), Asia minor. Some further subspecies, or very closely related species, in Southern Europe, North Africa, Central Asia and China.

Biology: June to September, on stones and on vertical banks. Hosts unknown.

MEDIATA – Special features of the group
Females bulbous, with broad ovipositors and metallic third segment of the antenna.

Chrysis (Chrysis) mediata. Linsenmaier 1951.
Thorax green to dark blue, with the green or blue-green highlights of the tribe, at least in the females; abdomen golden to dark red. 6-10mm. Punctuation of the second abdominal segment fine, finer at the base than on the first segment (in some males less distinct), and dispersed at the apex; differentiated from *C. ignita schencki* by usually finer punctuation of the second abdominal segment and, as from *C. angustula*, by its more bulbous shape and a broader ovipositor.

Distribution: in the whole of Switzerland below and above the tree line, locally frequent. Palaearctic (without Japan).

Biology: May to August on the ground, on walls and on wood, a parasite of mason wasps (*Odynerus)*

Chrysis (Chrysis) pseudobrevitarsis Linsenmaier 1951.
5.5—10mm. Males cannot always be differentiated from *C. ignita* by their appearance but, as a rule, have more uneven punctuation on the second abdominal segment (fig. 12, 4 p.38) and somewhat plumper teeth on the anal rim, whilst the females are characterised by short hind tarsi and simple mandibles.

Distribution: in the whole of Switzerland up to the snow line, not rare. Europe, from the north (rare) to the south; Mongolia.

Biology: May to August on wood, vertical banks and walls. Recent research showed mason wasps (*Odynerus*) as hosts.

IGNITA – Special features of the group.
Shape more parallel-sided, without bulbous females; pronotum not particularly short in relation to its width (fig.12,2 and 12,3. p.38) and the ovipositor not so broad.

Chrysis (Chrysis) ignita Linne 1761 (in my publications as form B)>
As it was not possible for me to see Linné's historical collection, since 1959 I have named two forms (or species) with the same distribution and frequency (and often flying together) under *Chrysis ignita*

- *C. ignita* form A
- *C. ignita* form B.

This is a provisional situation, the resolution of which will not be easy, as too many synonyms have been published, with inadequate descriptions, and many relevant specimens (types) no longer exist. Form B is to be regarded as the named form, while the name of form A has still to be decided.

Thorax blue green to dark blue, generally with clear patchy highlights or markings, especially in the females; sometimes with golden face and tegulae; abdomen golden to dark red, the underside mostly green, more rarely somewhat green golden; the third antennal segment of females metallic. 4-10mm (the smallest specimens are dwarf or hung forms). Thorax with partly shining intervals between the punctuations; punctuation of the second abdominal segment variable, medium-coarse to coarse and dense, but gradually somewhat smaller and less dense towards the apex; abdomen generally with a sharp keel; third abdominal segment of the females inset in a saddle; anal rim of the males with teeth varying from triangular to thorn-shaped.

Distribution: in the whole of Switzerland up to the snow line, our most frequent Chrysidid – Western Palaearctic Region to central Asia, more frequent in the temperate and northern zones, also in the Azores.

Biology: April to October on wood and vertical banks, near aphids and leaf nectaries, very rarely on umbellifers. There are many hosts: mason wasps (*Odynerus*) nesting in wood and stems of plants; mason bees (*Osmia*) are also reported, but this may refer to other species or subspecies of the *C. ignita* complex.

Chrysis (Chrysis) ignita Linne 1761 Form A.
Differentiated from Form B by generally more parallel, cylindrical, shape, with a thorax which is a little longer, more parallel sided and regularly densely punctuated without shining intervals; especially by the uniformly green to dark blue, often beautifully blue, thorax without clear highlights; abdomen frequently somewhat more brilliant towards the end; often with more thorn-shaped teeth on the anal rim of the males.

Distribution: Like Form B and just as frequent.

Biology: very similar to Form B, but with a different cycle during the year.

TABLE
Survey of dates when specimens were caught (months), during several years and from various European countries, 565 specimens of *C. ignita* Form B and 448 *C. ignita* Form A.

Differences between the females:
C. ignita (Form B): it is an exception if it flies in April; from May onwards larger numbers occur, reaching their maximum in June to August, decreasing considerably in September and finishing in October.

C. ignita (Form A) appears as early as April in large numbers, reaches its maximum in May, decreases up to and including July; it then increases in August to the same numbers as in June, and then peters out in September and October.

Differences between the males:
C. ignita (Form B) - corresponds to a large degree to the females up to July, but in August the number of males decreases by more than half, and there are no data on the series from September and October.

C. ignita (Form A) - A few insects appear in May, large numbers from June up to and including August; they quickly decrease in September and disappear in October.

Interpretations:

C. ignita (Form B) - shows the normal picture of an annual cycle for Chrysididae; overwintering as larvae, with a very long flying period, either indicating two overlapping generations or an origin from hosts flying at different periods.

C. ignita (Form A) - Some females have been caught in January and March on warmed-up house walls, while a small number of males have been found from the end of May, proving that fertilised females over-winter; the decrease in numbers in June, July, their increase in August and the long flying period, indicate two generations.

Chrysis (Chrysis) ignita schencki Linsenmaier 1968 *(C. ignita schenckiana* Linsenmaier 1959)
As *C. ignita* form B or form A, but with finer punctuation of the 2nd abdominal segment, which is never rough but very dispersed towards the end; the third abdominal segment of the females, in a slight saddle, is shaped like a shovel and either not keeled or very indistinctly keeled; a mostly short, broad anal rim whose middle indentation is often broader; the general shape is often somewhat slimmer and longer; males are mostly smaller and slimmer than those of *C. ignita* form B; punctuation on abdomen rather fine and dispersed, denser at the basis of the second segment; largely golden beneath.

Distribution: As form B in the whole country, but not so frequent – Europe to Central Asia, Siberia, Japan.

Biology: May to September, together with form B. It still needs to be established whether it occurs in the same or other hosts, by collecting nests or by rearing.

Chrysis (Chrysis) ignita impressa Schenck 1856.

On the average somewhat larger than *C. ignita* form B, up to 11mm; punctuation of the second abdominal segment more dispersed towards its apex; more shiny.; females can usually be recognised by the more olive-coloured highlights, especially on the sides of the mesonotum, which are never as intensively blue or green as in many of the females of *C. ignita* form B (but this nuance often gets lost in specimens in collections); underside usually golden. Large females are differentiated from *C. longula* by the punctuation at the base of the second abdominal tergite not being so coarse and dense and by sharp punctuation of the third abdominal segment, also by the shape not being so long and parallel-sided. Males, with nearly always predominantly or completely dark blue thorax, cannot always be separated with certainty from males of *C. ignita* form B, but most of the time by the second abdominal segment being very brilliant towards its end and by the more or less broader abdomen which is golden beneath.

Distribution: Frequent in the whole of Switzerland, together with *C. ignita* form B. Europe to Central Asia, rarer in the South, three further geographical subspecies in Southern Europe, North Africa, Sardinia, Cyprus and the Canaries.

Biology: May to September on wood and vertical bands. Hosts are mason wasps (*Odynerus* and relatives).

Chrysis (Chrysis) longula Abeille, 1879.
Thorax with large green to gold-green highlights; females not so blue, the males bluer; abdomen red gold, mostly golden beneath. 10-13mm. Large, long and strikingly parallel-sided; the males especially with broad anal rim; coarse punctuation of the second abdominal segment at the base or in the front half coarse, wrinkly and dense, matt; at the back almost abruptly changes to fine and, at least in the females, sparse; third segment with very fine and unsharp punctuation, in the females set in a saddle and without a keel.

Distribution: in the whole of Switzerland up to the tree line, but nowhere frequent. North and middle Europe, to the east as far as Poland; in southern Europe, I have only known it from Italy and Northern Spain.

Biology: May to October on wood, parasite of Mason Wasps (*Symmorphus murarius* and *Odynerus* species).

Chrysis fulgida Linné, 1761 (colour picture p.121)

The colouration of the sexes is different: second abdominal segment in the female completely red-golden, in the male with dark blue to violet-red patch and a green margin of variable size; thorax usually with striking highlights; first abdominal segment often has golden patches on the sides, very variable in both sexes, from predominantly green via blue to violet black, especially in the males. 7-12 mm. Smaller than *C. longula* but with similar physical appearance, the males especially parallel sided and slimmer. Distribution: In the whole of Switzerland, but only locally in any numbers and hardly above 1200m. Europe to Central Asia, with one sub-species in Siberia and Manchuria.

Biology: May to September on wood. Hosts mason wasps (*Symmorphus, Odynerus*).

Chrysis (Chrysis) angustula Schenck, 1856.
Thorax dark blue with the more or less (often completely in females) extensive green to golden-green markings of its relatives; abdomen golden-red, underneath mostly golden. 6-9mm. Shape especially slim and mostly small, with a

cylindrical abdomen and short, broad teeth of the anal rim; the top of the head proportionally longer or narrower than *C. ignita* and relatives, especially in the female. (fig 12,2 & 12,3, p.38). Abdomen very shiny, with dispersed and fine punctuation on the second segment. Males can be differentiated from especially slim specimens of *C. ignita schencki*, apart from the somewhat narrower head, by fine punctuation of the second abdominal segment and by the short and less pointed teeth of the anal rim.

Distribution: In the whole of Switzerland up to the tree line, except southern Switzerland. *C. angustula* is however very scarce; middle, north, eastern Europe; Asia Minor.

Biology: May to September on wood. Hosts are small mason and digger wasps (*Odynerus* & *Trypoxylon*).

Chrysis (Chrysis) angustula gracilis Schenk, 1856.
Punctuation of the second abdominal segment much finer at the base than on the first segment (in *C. angustula* coarse, or a little finer).

Distribution: Like *C. angustula*, but much more frequent – Europe (rare in the south) China, Manchuria, Siberia.

Biology: as for *C. angustula*.

Status and Quality Coding of aculeate Hymenoptera - Part 8: Wasps and Bees of Part 3 of the Provisional Atlas.

Michael Archer

In this paper I will review the 53 species of solitary and social wasps and bees from the Part 3 of the Provisional Atlas (Edwards, 2001). Archer (1999) defined the six statuses that are used in this paper. Restricted, Widespread and Universal species are found in more than 70 10km squares, 1970 onwards.

Very rare species: 8 species.
One species, *Arachnospila rufa*, has not been recorded since 1970. The remaining seven species have been found in 1-15 10km squares, 1970 onwards: *Euodynerus quadrifasciatus*, *Pseudepipona herrichii*, *Ancistrocerus antilope*, *Crossocerus vagabundus*, *Nysson interruptus*, *Sphecodes spinulosus*, *Nomada armata*. Comparison of the pre-1970 with the 1970 onwards data indicates that the ranges of *A. antilope*, *C. vagabundus*, *S. spinulosus* and *N. armata* have decreased.

Rare species: 4 species.
Of these species (*Hedychridium coriaceum*, *Argogorytes fargei*, *Gorytes laticinctus*, *Nomada argentata*) found in 16-30 10km squares, 1970 onwards, *A. fargei* shows a decline in southern England from 1970 onwards.

Scarce species: 19 species.
Found in 31-70 10km squares, 1970 onwards: *Hedychridium cupreum*, *Tiphia femorata*, *Caliadurgus fasciatellus*, *Anoplius viaticus*, *Eumenes coarctatus*, *Gymnomerus laevipes*, *Microdynerus exilis*, *Crossocerus binotatus*, *Nysson dimidiatus*, *Lestiphorus bicinctus*, *Didineis lunicornis*, *Hylaeus cornutus*, *Andrena florea*, *A. hattorfiana*, *A. marginata*, *Lasioglossum xanthopus*, *Coelioxys concoidea*, *Bombus distinguendus*, *B. sylvarum*. From 1970 onwards *G. laevipes* and *B. sylvarum* have declined, *B. distinguendus* has declined in England and Wales, and *Nysson dimidiatus*, *A. marginata* and *L. xanthopus* may be showing a decline so need special monitoring.

Widespread species: 13 species.
Sapyga quinquepunctata, *Tiphia minuta*, *Agenioideus cinctellus*, *Anoplius infuscatus*, *Ancistrocerus nigricornis*, *Crossocerus quadrimaculatus*, *Entomognathus brevis*, *Nysson trimaculatus*, *Gorytes quadrifasciatus*, *Hylaeus brevicornis*, *Megachile maritima*, *Bombus ruderarius*, *B. rupestris*. *B. rupestris*, particularly in central England, and *A. nigricornis* have declined from 1970 onwards. However, despite this decline of *B. rupestris* elsewhere, particularly in southern England, its range has increased so that its status has been downgraded from scarce species (Archer, 1998) to the present widespread species.

Universal species: 9 species.
Pompilus cinereus, *Crossocerus dimidiatus*, *Nysson spinosus*, *Harpactus tumidus*, *Argogorytes mystaceus*, *Colletes succinctus*, *Andrena clarkella*, *Nomada leucophthalma*, *Vespula rufa*. *H. tumidus* and *N. leucophthalma* each have only a single Scottish record, 1970 onwards, without which they would considered widespread species.

References.