

INTRODUCTION to ANDRENA, **HYLAEUS** AND NOMADA TEST KEYS by the author Alan Stubbs:

These keys are born out of frustration with the difficulty of identifying bees after some 50 years since I started to be interested in them. Hence I have largely gone back to first principles to devise keys for my own benefit. As a result of requests to see the outcome of my struggles, I am making them available as test keys, meaning I know they are not perfect but they are a football for others to kick about.

Note:

- As test keys, be cautious over making definitive identifications from this source alone.
- Keys to some genera are more polished than others.
- Material for some very rare or extinct species has not been seen so I have extrapolated characters from other works or omitted such species. Channel Islands species are omitted.
- Some species vary between broods and geographically so may differ from the examples examined in preparation of the keys.
- Some large genera are broken down into groups to make them easier to handle. There is nothing more off-putting than a long key where one has lost one's way or confidence. Much now depends on whether these groupings are certain enough as a working tool (independent of taxonomic affinities).
- The format structure allows space for illustrations that can allow better appreciation of the characters referred to. Any offers?
- I have used jargon words that seem well established in aculeate circles, but that will not be of comfort for those less familiar with such terms. A glossary may be needed as a supplement. One of my own quirks is to use the neat term jaw rather than the ugly word mandible.

The old hands will not need these test keys, though hopefully there are some ideas useful to them. The exercise is to offer something for the non-expert which may be user friendly and which helps clarify the separation of both common and scarce species.

If some of the keys are rubbish and unworkable, please call a spade a spade. If parts have some merit and require tweaking or restructuring, then I shall be pleased to have problems pointed-out, and the more so if ideas for improvement are offered.

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# HYLAEUS

## Key to Hylaeus males

- |   |                  |
|---|------------------|
| 1. Face entirely black.   | <b>cornutus</b>  |
| - Face extensively pale.  | 2                |
| 2. Scape huge and flattened rhomboid: black above, mainly whitish yellow.   | 3                |
| - Scape not rhomboid, even if inflated: entirely black or only narrowly yellow beneath.   | 4                |
| 3. Mandibles white.   | <b>annularis</b> |
| - Mandibles black.  | <b>spilotus</b>  |
| 4. Face with yellow departing from sides to curl round sides of antennal sockets: yellow often disrupted by thick black margins to facial plates. | <b>communis</b>  |
| - Face without yellow hooking round sides of antennal sockets: facial plates at most finely outlined in black.                                    | 5                |
| 5. Hind tibia extensively yellow, especially underneath.  | <b>pictipes</b>  |
| - Hind tibia completely black in at least apical half.  | 6                |
| 6. Mandibles partly whitish-yellow.   | 7                |
| - Mandibles entirely black.   | 8                |
| 7. Labrum yellow. Frons with large pit-free patches behind antennae. [very rare]  | <b>gibbus</b>    |
| - Labrum black. Frons pitted up to antennal base.   | <b>confusus</b>  |
| 8. Hind metatarsus deep black on at least apical half. [microtrichia largely absent in basal half of wing]  | <b>signatus</b>  |
| - Hind metatarsus clear yellowish (at most narrowly dark at apex). [wing microtrichia dense throughout]   | 9                |

9. Malar space (= jowls) broad, as wide as width of antennal segment 4. Face covered in long hairs (many as long as width of flagellum: can wear off). **hyalinatus**
- Malar space very narrow (as normal). Face with at most very short hairs. 10
10. Scape short conical, very wide at apex, so rest of antenna seems a misfit. Propodeum dorsally reticulate rugose. Sternites 2-4 with only scattered weak hairs. Jaw tridentate. Small species. **brevicornis**
- Scape flattened cylindrical, not very exaggerated in width. Propodeum dorsally dominated by transverse ridges. Sternites with hind patches of dense whitish hairs. Jaw bidentate. Largish species. **pectoralis**

### Key to Hylaeus females

Seemingly only the last 4 species have the antennae entirely black, even beneath. This may be a short cut if it proves reliable (only *gibbus* has not been checked for this character).

1. Face entirely black and with a pair of large lateral prominences. **cornutus**
- Face normally with yellow markings: never with prominences. 2
2. Malar space (= jowls) as wide as antennal segment 4 (unique). **hyalinatus**
- Malar space very much narrower. 3
3. Postnotum with very widely spaced pits. [very rare species] 4
- Postnotum with dense pits (at most separated by own width, usually closely packed). 5
4. Fovea strongly curved inwards towards front ocellus. Yellow face markings variable/ unusual. Tiny size. **pictipes**
- Fovea almost straight. Yellow face markings narrow triangular. Moderate size for genus. **gibbus**
5. Face with a pair of small round yellow spots remote from the sides. Jaw tridentate (as also *brevicornis*) 6

- Face with a yellow strip at the sides hugging eye margin. Jaws bidentate, except *brevicornis*. 7
  
- 6. Tergite 1 very distinctly punctured even dorsally (in median hind zone, punctures strong and almost as close together as their own width). **spilotus**
- Tergite 1 punctures weak and far apart, sometimes almost impunctate above (in median hind zone). **annularis**
  
- 7. Flagellum pale beneath (as in all above species). Head very round (view face-on): yellow face markings narrow linear. Jaws tridentate. **brevicornis**
- Flagellum black even below. Head mildly to markedly elongate. Jaws bidentate.<sup>87</sup>
  
- 8. Large for genus, extra robust build. Hind tibia black with at most a narrow basal yellow ring. Wing basal cells without microtrichia. **signatus**
- Hind tibia with prominent yellow ring occupying the basal quarter to a half. Wings almost entirely covered in microtrichia (tiny hairs) 9
  
- 9. Prothorax with prominent front corners, strongly angled. **communis**
- Prothorax with front corners very obtusely rounded-off. 10
  
- 10. Pronotal collar black. Tergite 1 with apical lateral small strip of white pubescence. Hind tibia yellow in basal half. Mesopleuron with extra large pits, often plus extra tiny ones. **pectoralis**
- Pronotal collar normally partly yellow. Tergite 1 without apical lateral small strip of white pubescence. Hind tibia yellow in basal quarter. **confusus**