Australian and parts of the South American continent, may be used as example to explaine the sex specific differences described above.

The pattern of sensilla of the male shows on each segment of the antennal flagella about 50 - 70 olfactory Sensilla trichoidea T1, concentrated in one elliptic patch. They are surrounded by numerous Sensilla placodea T1 with long pore plates and many mechanosensitive tactile hairs between them (Fig. 1).

On the lateral parts of the antennal flagella of the female, we find numerous olfactory sensilla placodea T2 with round or elliptic pore plates (Fig. 2). A great number of the olfactory Sensilla basiconica T1 are distributed in the dorsal region, whereas the mechanosensitive tactile hairs are to be seen on the whole surface of the flagella between the other sensilla. Some Sensilla placodea T3 with a smaller elliptic pore plate are only located between the Sensilla placodea T2 and the Sensilla basiconica T1.

It seems to be obvious that these differences between the pattern of sensilla of female and male, each of which must be regarded as a sub-character, always require the investigation of both sexes.

The different morphological structures of the cuticular apparatuses (hair, pegs, plates), which can be investigated by SEM, may also be used as sub-characters, comparing for example the pore plates of the sensilla placodea of *Anoplius viaticus* Linnaeus (Pompilidae), *Monodontomerus obsoletus* Fabricius (Chalcididae), *Ophion luteus* (Linnaeus) (Ichneumonidae), and *Scolia flavifrons* Fabricius (Scoliidae), we can observe the great variation ot these structures. The same variation can be found between the pegs of the different olfactory Sensilla basiconica of *Pseudogonales hahni* (Spinola) (Trigonalidae), *Bembex rostrata* Linnaeus (Sphecidae), *Formica rufa Linnaeus* (Formicidae), and *Anoplius viaticus* L.

The SEM method can be very useful for morphological studies of the outer surface of such cuticula structures as these hairs, pegs and plates. However, the results of these investigations alone does not permit a functional interpretation of these structures. Additional investigations by TEM are necessary to explain the function of these structures of the sense organs. Only such a functional morphological interpretation of these results of the study of such sense organs justifies the important significance which we attribute to the sense organs as characters in phylogenetic reconstructions.

The TEM studies supply additionally numerous new characters from the fine structure. We can use the pore structures of the chemical sense organs, which show a great variation, as the studies of MEINECKE (1975) have demonstrated, as one subcharacter. The varying innervations of the different types of sensilla which we have found in different taxa of the Hymenoptera (WALTHER, in prep.) are also sub-characters of the pattern of sensilla, which can be used only after TEM studies. Investigations of other Arthropod taxa in the future will show whether this complex character can be also helpful in phylogenetic studies of these groups.

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