

Table 5. Host ant genera parasitized by one type of social parasites exclusively<sup>1</sup>  
 In several genera, e. g. *Pheidole* and *Myrmica*, inquilinism has evolved several times independently (see text)

Only inquilines		Only temporary parasites	
1. <i>Myrmecia</i>	9. <i>Pogonomyrmex</i>	1. <i>Tetraoponera</i>	4. <i>Conomyrma</i> <sup>3</sup>
2. <i>Pseudomyrmex</i>	10. <i>Acromyrmex</i>	2. <i>Aphaenogaster</i>	5. <i>Lasius</i>
3. <i>Creumatogaster</i>	11. <i>Serrastruma</i>	3. <i>Tapinoma</i>	
4. <i>Strumigenys</i>	12. <i>Solenopsis</i>		
5. <i>Manica</i>	13. <i>Anoplolepis</i>		
6. <i>Monomorium</i> <sup>2</sup>	14. <i>Camponotus</i>		
7. <i>Myrmica</i>	15. <i>Plagiolepis</i>		
8. <i>Pheidole</i>			

<sup>1</sup> After HÖLLDOBLER and WILSON (1990). – <sup>2</sup> One questionable instance of a xenobiotic *Monomorium noualhierii* living with *M. subnitidum*, is recorded (only one worker of the "guest-ant" has been found, WHEELER 1910). – <sup>3</sup> TRAGER (1988) reports on a kind of temporary slave-making in *Conomyrma medeis* which invades nests of and forms mixed colonies with *C. bureni*; the latter, however, disappear after a while.

species. Similar convergent evolution of several inquiline species or species groups may have occurred in *Monomorium*, *Myrmica* (BOLTON 1988), and *Plagiolepis*. This assumption is not improbable, taking into consideration that within the Leptothoracini, slavery has evolved at least four, perhaps five times independently (*Harpagoxenus* from subgenus *Leptothorax*; *Epimyrma*, *Chalepoxenus*, *Protomognathus* and *L. duloticus* from subgenus *Myrmicant*) (BUSCHINGER et al. 1980; STUART and ALLOWAY 1983).

What are the conclusion thus far?

1. Wherever interspecific true social parasitism (except xenobiosis) arose, the various forms of slavery, temporary parasitism and inquilinism very probably evolved independently from each other, inquilinism being the most frequent form.
2. In a few host genera (or subgenera) two or three types of parasitism occur; however, even then there is no conclusive evidence of an evolutionary sequence between the members of different types (the "degenerate slave-makers", Tab. 2 and 3, do not represent true inquilines).
3. All types of true social parasitism are linked by the common feature of parasitic colony foundation of the young queens who penetrate host species nests.

### The new hypothesis: Sympatric speciation and radiative evolution of social parasites

With these facts and arguments in mind I hypothesize that all forms of true social parasitism originate from the adoption of conspecific young queens in colonies of (facultatively) polygynous species. The social organization of the ancestral, and later host species group, its variations in space and time, model the emerging parasite to become an inquiline, temporary parasite, or slave-maker.

In most groups of host species apparently but one option, inquilinism, or temporary parasitism, is open. In other groups, e. g. the subgenus *Leptothorax* (Tab. 3), inquilines, "murder"-parasites, and slave-makers evolved in a radiative manner from a common, pre-parasitic stage. Figure 1C presents a scheme of the factors and processes involved according to this hypothesis.

Since the assumption of a sympatric speciation, moreover, the isolation of a preparasitic genotype within a deme and even within the nests of a given non-parasitic species appears quite unusual and unrealistic I have to explain in more detail why I believe in such a possibility.