

Tab. 2: Sizes and indices of males of *T. minutissimus*, *T. curvispinosus*, *T. duloticus* and *P. americanus*. HW = head width incl. eyes; TL = Length of thorax; total L = length of whole specimen; Eye D = largest diameter of compound eye; SL = scape length. All measurements in  $\mu\text{m}$ .

Species	HW	TL	Total L	Eye D	SL	Index SL : HW	Index TL : Eye D
<i>T. minutissimus</i> 1	460	780	2160	130	250		
<i>T. minutissimus</i> 2	440	760	2200	124	220		
<i>T. minutissimus</i> 3	460	760	2080	128	240		
<b>Mean <i>T. minutissimus</i></b>	- 453 -	- 766.6 -	- 2147 -	- 127.3 -	- 236.6 -	<b>0.52</b>	<b>6.02</b>
<i>T. curvispinosus</i> 1	640	1120	2800	280	200		
<i>T. curvispinosus</i> 2	620	1060	2840	270	180		
<i>T. curvispinosus</i> 3	630	1140	2800	260	200		
<b>Mean <i>T. curvispinosus</i></b>	- 630 -	- 1107 -	- 2813 -	- 270 -	- 193.3 -	<b>0.30</b>	<b>4.1</b>
<i>T. duloticus</i> 1	620	1040	2600	240	230	<b>0.37</b>	<b>4.33</b>
<i>P. americanus</i> 1	640	1080	2320	230	280	<b>0.43</b>	<b>4.7</b>

other hand, usually enslave more than one host species, which also applies for *Protomognathus americanus* enslaving the host species of *T. minutissimus* as well as *T. ambiguus* (EMERY, 1895) and *T. longispinosus* (ROGER, 1863), species that as yet have never been found parasitized by any inquiline species (BUSCHINGER 1990). *Temnothorax duloticus* has been found with *T. curvispinosus* and *T. longispinosus*.

*Temnothorax minutissimus* may live both in monogynous and polygynous colonies of the host species, and may itself be monogynous or slightly polygynous (Appendix, col. # 1268, # 884). Polygyny means that more than one female of either species are reproductive, functional queens. As yet, however, no colony with multiple queens of both host and parasite has been found. Facultative polygyny both of host and parasite species is not unusual among inquilines. It has been observed, among others, in *Leptothorax* (= *Doronomyrmex*) *kutteri* (BUSCHINGER, 1966), an inquiline of *L. acervorum* (FABRICIUS, 1793) (BUSCHINGER 1966), and in *Plagiolepis xene* STÄRCKE, 1936 and *P. grassei* LE MASNE, 1956, both inquilines of *P. pygmaea* (LATREILLE, 1798) (PASSERA 1969).

Since both host and parasite queens coexist within one host nest, *T. minutissimus* must be considered a "host-queen tolerant inquiline" (BOURKE & FRANKS 1991). Its life history with respect to queen numbers perfectly fits the suggestions of BOURKE & FRANKS (1991) and BUSCHINGER (1990). In both papers a condition of (facultative) polygyny in an independent species is considered a likely precondition for sympatric speciation and evolution of inquiline ants which consequently should be closely related to the respective host species.

In several instances clear evidence of intranidal mating has been found in *T. minutissimus* (Appendix, col. # 251, # 521, # 884), though except for vigorous mating attempts in the nests, mating itself could

not be seen. Mating hence takes place among sisters and brothers (or at least close relatives in polygynous colonies), and the males must be polygamous. Due to the sometimes very small number of males it nevertheless may happen that some of the gynes do not receive enough sperm to completely fill up their spermathecae (Appendix, col. # 251, # 326). Intranidal mating is not unusual in inquiline ants (HÖLDOBLER & WILSON 1990) or in "degenerate slavemakers" of the genus *Myrmoxenus* (BUSCHINGER 1986a).

Evidently the mated dealate (but sometimes also alate) females of *T. minutissimus* remain in the mother nests over winter. Considerable numbers have been found in colonies collected in the spring (Tab. 1). This behavior has been described also to occur in several species of the genus *Myrmoxenus*, another group of slavemakers and "degenerate slavemakers" of *Temnothorax* species in Europe (BUSCHINGER 1986a). In the European independent *T. gredosi* this feature had been dubbed "IMOH", Intranidal Mated Offspring Hibernation (BUSCHINGER 2002).

In the spring the mated young queens of *T. minutissimus* have the tendency to leave from the mother colonies. Colony foundation thus apparently occurs after hibernation. Put into formicaries containing unparasitized host colonies young mated females of *T. minutissimus* can be accepted in host species colonies both in spring and in fall. Their trials to penetrate the host nest may result either in an uncomplicated acceptance or, in other instances, in the eviction of the parasites by host colony workers (Appendix, col. # 519, # 521, # 883, # 1256). According to our lab and field observations we suggest that females of *T. minutissimus* penetrate the host colonies in spring. Since most mated females at that time are already dealate, and since probably the alate ones only rarely, if at all, will use their wings, this mode of dispersion on foot cannot be very effective in colonizing distant host nests. Dispersal on foot pro-