

POLYMORPHISM OF MALES IN *FORMICA EXSECTA*
NYL. (HYM. : FORMICIDAE)

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SUMMARY

Males of *Formica exsecta* from two alpine valleys were found to belong to two significantly different size classes, called micraner and macraner. Nests contained either one or the other or both male types. To test whether both male types were haploid or one was diploid, chromosome numbers in brain cells from prepupae were counted and the relative DNA value of single nuclei from adult brains was determined. Most of the metaphase plates in brains from micraner as well as from macraner turned out to be haploid. The rest of the metaphases showed a $2n$ or $4n$ chromosome set. Workers had diploid brain cells together with some $4n$ cells. A difference between micraner and macraner was the percentage of cells with more than n chromosomes. All macraner had 90 % or more haploid cells in their brain while the percentage of haploid cells in micraner could be much lower, as low as 59 %. Only micraner showed chromosome numbers higher than $2n$. DNA measurements gave principally the same result. Both male types exhibited the same low DNA value, lower than worker brain cells. In agreement with the chromosome countings, macraner had only one class of cells with a higher DNA value. In addition to the DNA values which are thought to represent the chromosome numbers n and $2n$, lower values were found in macraner which are interpreted as degenerating nuclei. Both male types contained sperm.

The presented results show that in *F. exsecta* differences in male size are not induced by a haploid-diploid mechanism. All males were haploid. However, the frequency of endomitotic cycles, the doubling of the chromosome number without subsequent cell division, was lower in macraner than in micraner.

ZUSAMMENFASSUNG

**Polymorphismus bei Maennchen von *Formica exsecta*
Nyl. (Hym. : Formicidae)**

Maennchen von *Formica exsecta* aus zwei Alpentaelern gehoeren zwei verschiedenen Grosseklassen an, Micraner und Macraner genannt. Es wurden Nester mit beiden Grosseklassen, aber auch solche mit nur je einer gefunden. Um zu untersuchen, ob