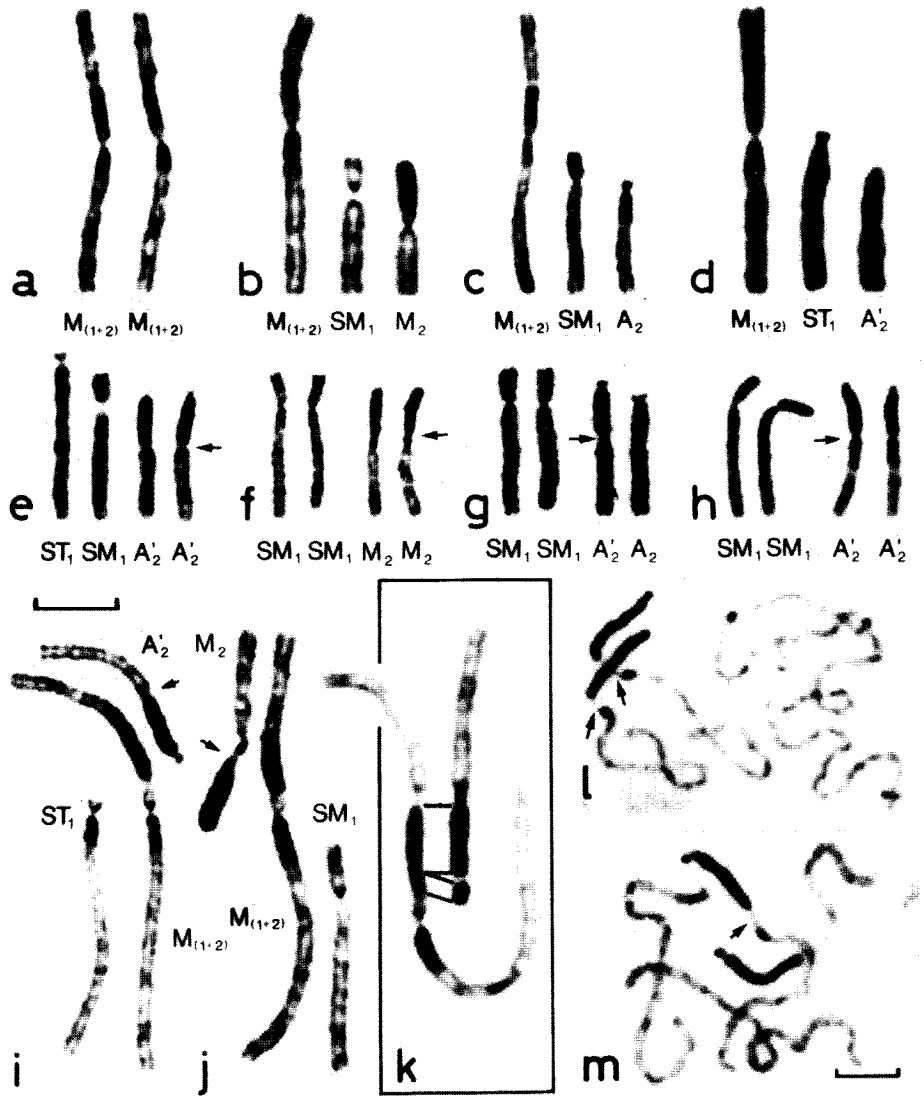

Fig. 2a–m. Diploid karyotypes (2K) in *Myrmecia (pilosula)* $n=1$. **a** $2n=2$, **b–d** $2n=3$, **e–h** $2n=4$. The polymorphic karyotypes are formulated as follows: **a** $2K_1=2M_{(1+2)}$, **b** $2K_2=1M_{(1+2)}+1SM_1+1M_2$, **c** $2K_3=1M_{(1+2)}+1SM_1+1A_2$, **d** $2K_4=1M_{(1+2)}+1ST_1+1A'_2$, **e** $2K_5=1ST_1+1SM_1+2A'_2$, **f** $2K_6=2SM_1+2M_2$, **g** $2K_7=2SM_1+1A'_2+1A_2$, and **h** $2K_8=2SM_{(1+2)}+2A'_2$. Early prometaphase karyotypes with C-banding of $2K_4$, $2K_2$ and $2K_3$ are represented in **i**, **j**, and **k**, respectively. *Arrows* indicate chromosomal gaps inserted in A'_2. **l** and **m** show individuals homozygous and heterozygous for the chromosomal gap of A'_2, respectively. Bars represent 5 μm

highly heterogeneous in components. As is shown in Figure 2b–h, three types of $2n=3$ karyotypes and four types of $2n=4$ karyotypes can be discriminated. To describe these complicated karyotypes more simply, we will take the $2n=4$ karyotype shown in Figure 2h as the standard.

The karyotype shown in Figure 2h is comprised of one pair of submetacentrics (SM) and one pair of acrocentrics with a secondary constriction (denoted as A′; see arrow in Fig. 2h). We define SM and A′ as chromosome 1 and chromosome 2, respectively, and represent them by SM_1 and A'_2. In Figure 2e, the homologues of chromosome 2 are homomorphic ($2A'_2$), but those of chromosome 1 are heteromorphic, i.e., one is the SM_1 mentioned above and the other is subtelocentric. The subtelocentric is termed here ST_1. The example in Figure 2g, the karyotype has $2SM_1$, but chromosome 2 is heteromorphic. One of the two is A'_2; the other is acrocentric, but there is no secondary constriction. We denote it A_2 to discriminate it from A'_2. The karyotype shown in Figure 2f has $2SM_1$, but chromosome 2 is metacentric with a secondary constriction (see arrow), like A'_2. It is named M_2. By these definitions, two types of chromosome 1 (SM_1 and ST_1) and three types of chromosome 2 (A_2, A'_2 and M_2) are discriminated in $2n=4$ karyotypes (Figs. 1 and 2). These ST_1, A_2, A'_2, and M_2 chromosomes are characterized by a large heterochromatin block at the pericentromeric region or in their short arms (see the black column in Fig. 1). We also use the term $M_{(1+2)}$ for the large metacentric found in $2n=2$ or 3 karyotypes (see below).

By using $M_{(1+2)}$, SM_1, ST_1, A_2, A'_2 and M_2 as defined above, the eight unique diploid karyotypes (2K) shown in Figure 2a–h (temporarily abbreviated here as $2K_1$, $2K_2$, ..., $2K_8$) are formulated as follows:

$2n=2$: $2K_1=2M_{(1+2)}$ (Fig. 2a)
$2n=3$: $2K_2=1M_{(1+2)}+1SM_1+1M_2$ (Fig. 2b)
$2K_3=1M_{(1+2)}+1SM_1+1A_2$ (Fig. 2c)
$2K_4=1M_{(1+2)}+1ST_1+1A'_2$ (Fig. 2d)
$2n=4$: $2K_5=1ST_1+1SM_1+2A'_2$ (Fig. 2e)
$2K_6=2SM_1+2M_2$ (Fig. 2f)
$2K_7=2SM_1+1A_2+1A'_2$ (Fig. 2g)
$2K_8=2SM_1+2A'_2$ (Fig. 2h)

The $2K_1$ and $2K_2$ karyotypes were the two dominant types, with 33.7% for the former and 28.1% for the latter. The