

GREECE: Sterea Ellas, Mt Pastra, c. 8 km east-northeast of the village of Erithres, limestone rocks, c. 450 m, 38°14'N, 23°23'E, 16.4.1994, *Const. 4409* (UPA).

*Conium divaricatum* is retained as a separate species here, following Leute (1971). The species seems to differ from *C. maculatum* L. in both its morphology and ecological requirements, as it is found in drier and less disturbed habitats, such as at the base of limestone rocks, on screes, and sometimes also as a true chasmophyte. Its chromosome number and karyotype are given here for the first time. The species is diploid with  $2n = 22$  (Fig. 21), thus not differing from the more common *C. maculatum* in this respect (see Fedorov 1969, Goldblatt 1981, 1984 for references). The karyotype is somewhat asymmetrical with respect to relative chromosome size, consisting of predominantly metacentric chromosomes ranging from 1.7 to 5.0  $\mu\text{m}$ . A large, usually double satellite is apparent on the short arm of a submetacentric to acrocentric chromosome, but is not always visible on its homologue. In addition, two metacentric chromosomes seem to be satellited on their long arm and a small B-chromosome is sometimes observed in the complement. The karyotype formula is  $2n = 16m + 2m\text{-SAT} + 2sm + 2sm/st\text{-SAT} = 22 + 0\text{-}1\text{B}$ .

***Johrenia distans*** (Griseb.) Halácsy – Figs 22a-b.

$2n = 22$

GREECE: Sterea Ellas, Mt Pateras, western slopes close to Petra Korakou summit, limestone, c. 520 m, 38°07'N, 23°14'E, 16.6.1991, *Const. 2060* (UPA); Sterea Ellas, Mt Ipaton, close to the summit, remnants of deciduous *Quercus* forest, c. 730–765 m, 38°24'N, 23°24'E, 4.7.1993, *Const. 3981* (UPA); Sterea Ellas, Mt Parnassos, along the road leading to Mana Nerou spring, gravelly slopes on bauxite, c. 1100 m, 38°29'N, 22°35'E, 19.7.1994, *Const. 5048* (UPA); Macedonia, Mt Athos (Agion Oros), between the small monastic communities (= Skites) of Agia Anna and Mikra Agia Anna, calcareous rocky slopes and gravel, c. 300 m, 40°08'N, 24°18'E, 21.8.1995, *Const. 5896* (UPA).

*Johrenia distans* is a Greek endemic of this mainly Asiatic genus. This first report of its chromosome number is based on the examination of four populations. The species is diploid with  $2n = 22$ , and the chromosomes are of medium size (c. 2.8 to 4.8  $\mu\text{m}$ ). In the karyotypes (Figs 22a from Mt Parnassos and 22b from Mt Ipaton), 14 chromosomes appear to be metacentric, six submetacentric and two acrocentric; thus, the karyotype formula is  $2n = 2x = 14m + 6sm + 2st = 22$ . Within the tribe *Peucedaneae*, to which the genus *Johrenia* belongs, the basic number  $x = 11$  is found in the vast majority of the species examined (Moore 1971).

***Malabaila aurea*** (Sm.) Boiss. – Fig. 23.

$2n = 20$

GREECE: Sterea Ellas, Mt Pateras, the low summit Kandili, calcareous rocks and gravel, c. 350–500 m, 38°03'N, 23°24'E, 1.5.1994, *Const. 4507* (UPA).

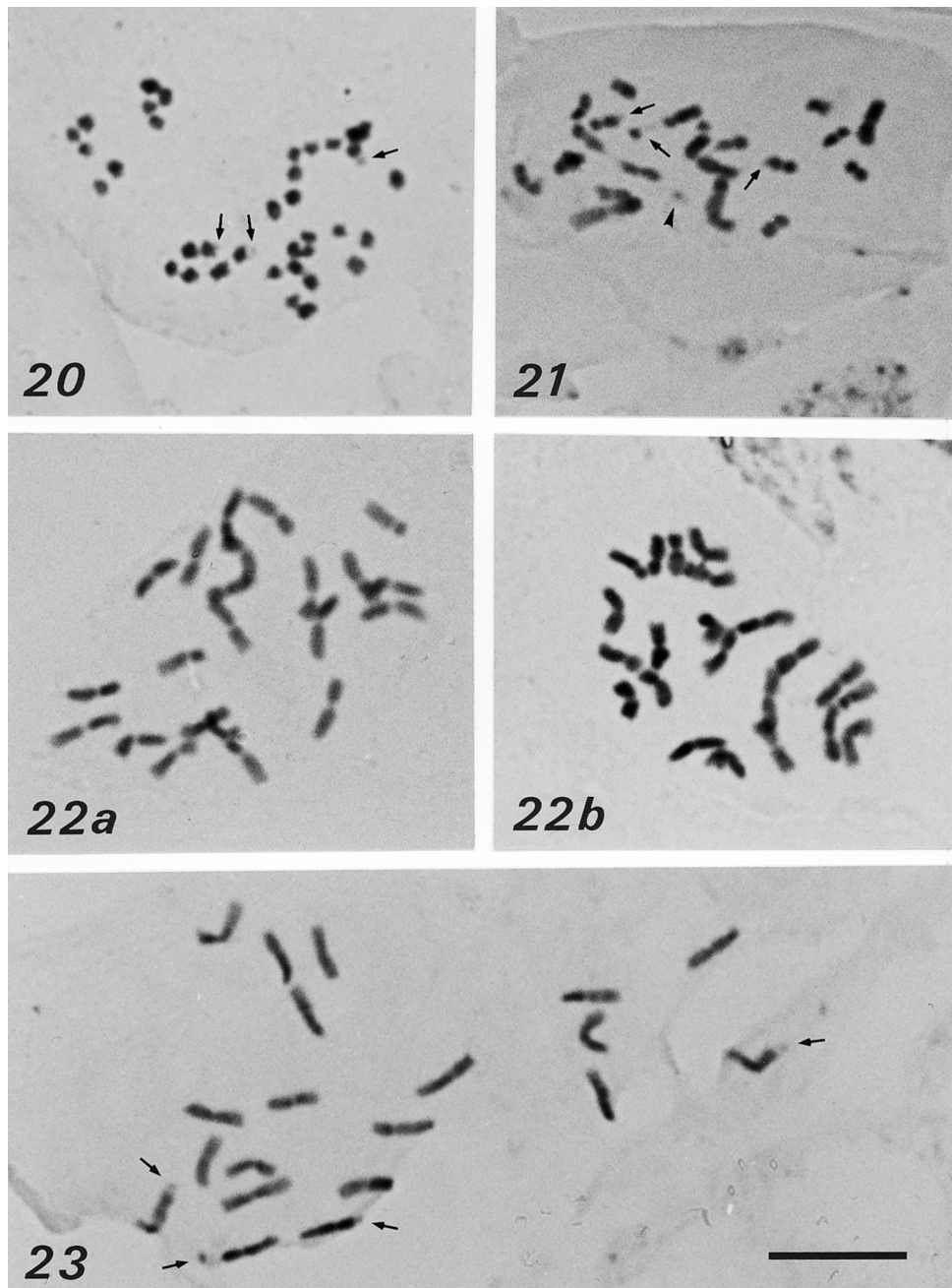
Two different chromosome numbers have been reported for *Malabaila aurea*; van Loon & Snelders (1979) and Moore (1982) reported  $2n = 22$ , the former in material from Macedonia, Greece, while the latter does not mention a provenance; Baltisberger (1991b), however, gives  $2n = 20$ , based on material from the Peloponnisos. Our results are in agreement with this last report. A metaphase photomicrograph is shown in Fig. 23. The karyotype is symmetrical with 12 submetacentric and 8 metacentric chromosomes, ranging in size from 3.6 to 5.1  $\mu\text{m}$ . Two pairs of submetacentric chromosomes are clearly satellited; thus, the karyotype formula is  $2n = 8m + 8sm + 4sm\text{-SAT} = 20$ .

***Peucedanum vittijugum*** Boiss. subsp. *vittijugum* – Figs 24a-b.

$2n = 22 + 0\text{-}1\text{B}$

GREECE: Sterea Ellas, Mt Pateras, northern slopes of the summit Mikri Kolosoura, clearings of *Pinus* forest, c. 700–800 m, 38°07'N, 23°17'E, 1.7.1994, *Const. 4905* (UPA).

Two subspecies have been recognized in the Balkan endemic *Peucedanum vittijugum*. To our knowledge, no previous chromosome count seems to exist for subsp. *vittijugum*, whereas



Figs. 20–23. Mitotic metaphase plates – 20: *Verbascum boissieri*,  $2n = 36$ ; 21: *Conium divaricatum*,  $2n = 22 + 1B$ ; 22: *Johrenia distans*, material from Mt Parnassos (a) and Mt Ipaton (b),  $2n = 22$ ; 23: *Malabaila aurea*,  $2n = 20$ . – Arrows indicate SAT-chromosomes and arrowhead B-chromosome. Scale bar:  $10\ \mu\text{m}$ .

Kuzmanov & al. (1977, 1987) counted  $2n = 22$  for subsp. *minutifolium* (Janka) Kuzm. & Andreev in Bulgarian material. Our results show that subsp. *vittijugum* is also diploid with  $2n =$

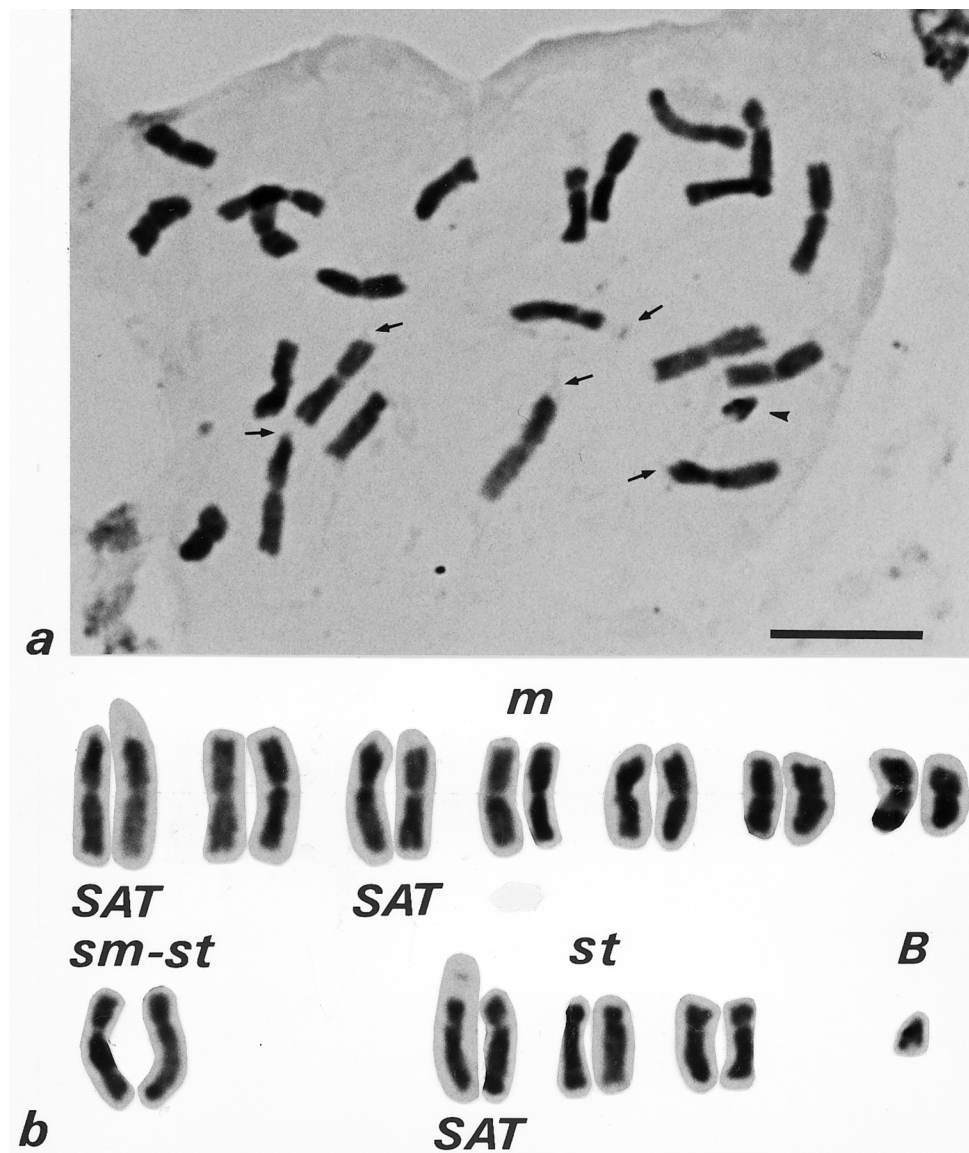


Fig. 24. Mitotic metaphase plate (a) and karyogram (b) of *Peucedanum vittijugum* subsp. *vittijugum*,  $2n = 22 + 1B$ . – Arrows indicate SAT-chromosomes and arrowhead B-chromosome. Scale bar: 10  $\mu$ m.

22. Most of the chromosomes are metacentric, four of them bearing small satellites. Satellites are also visible on a pair of acrocentric chromosomes. In addition, a B-chromosome was usually found in the complement (Fig. 24b). The karyotype formula is  $2n = 2x = 10m + 4m - SAT + 2sm/st + 4st + 2st - SAT = 22 + 0 - 1B$ . In the karyotype (Fig. 24a) and karyogram (Fig. 24b) presented here, the chromosomes range in size from 4.2 to 7.9  $\mu$ m.

There are significant differences between the karyotypes of the two subspecies of *P. vittijugum*. Greek material of subsp. *vittijugum* differs from the Bulgarian subsp. *minutifolium* in the

presence of six arcocentric and one B-chromosome. In subsp. *minutifolium* only metacentric and submetacentric chromosomes were observed (Kuzmanov & al. 1987).

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