

MOLINIA IN SW SPAIN

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(Recibido el 17 de junio de 1975)

Resumen. Se da a conocer en esta nota la presencia de *Molinia caerulea* subsp. *arundinacea* (Schrank) Paul en varias localidades entre Los Barrios y Tarifa (SW de España). Se hace un comentario de los caracteres morfológicos y números cromosómicos de las distintas subespecies de *M. caerulea* (L.) Moench.

Summary. The occurrence of *Molinia caerulea* subsp. *arundinacea* (Schrank) Paul in a number of valleys between Los Barrios and Tarifa (SW Spain) is reported. The morphological characters and chromosome numbers of the subspecies are discussed.

Molinia is a rare grass in the Mediterranean region and the only published records from S. Spain appear to be those of BOISSIER (1841) and WILLKOMM (1870), both from an altitude of c. 1000 m. in the Sierra Nevada. It has also been recorded from the Sierra de Cazorla, rather further north, by GALIANO and HEYWOOD (1960). In C. and N. Spain it is not uncommon in suitable damp habitats.

Recently specimens of *Molinia* have been sent by Mrs. B. MOLESWORTH-ALLEN from a number of localities beside streams between Los Barrios and Tarifa at altitudes ranging from c. 45 m. to c. 450 m. These specimens are preserved in the Herbarium of the University of Leicester (LTR) and the details are as follows:

- 5905. Arroyo de Ahojiz, near Los Barrios; locally common. Altitude c. 170 m. 19.6.1968.
- 6699. Mojeda del Muerto, near Los Barrios; damp place by stream. Altitude c. 180 m. 29.6.1970.

6750. Garganta del Capitán, Los Barrios, Algeciras; abundant at edge of stream. Altitude c. 45 m. 17.10.1970.
7227. Stream above Puerto de Zanora, Tarifa; very rare, in water, with *Fuirena pubescens*, *Eleocharis multicaulis*, etc. Altitude c. 450 m. 5.9.1971.

The taxonomy and cytology of the genus *Molinia* has been the subject of a number of papers, among the more recent being those by PAUL (1937), CONERT (1961), JIRÁSEK (1965) and FREY (1973). It now seems fairly clear that two taxa can be distinguished, one with $2n = 36$ and the other with $2n = 36$ or 90. The chromosome number $2n = 18$ was reported by MATTICK in TISCHLER (1950), presumably from plants growing in Tirol (Austria), but this number has never been found since and the probability is that it should have been reported as $n = 18$.

As JIRÁSEK (1965) has pointed out and as I am able to confirm from the examination of material not seen by him, the correlation of morphological characters with one another and with chromosome number is far from perfect and many intermediates occur. In view of this inter-gradation it seems best to regard these taxa as subspecies. They may be characterised as follows:

***M. caerulea* (L.) Moench subsp. *caerulea*:** Stems usually not more than 90 cm. high; leaves 3-6 (—10) mm. wide; panicle narrow, with short, more or less erect branches; lowest lemma 3 (—4) mm. long, subobtusely; caryopsis c. 2 mm. long.

***M. caerulea* subsp. *arundinacea* (Schrank) Paul, *Ber. Bayer. Bot. Ges.* 23: 154 (1938) (incl. *M. litoralis* Host, *M. altissima* Link):** stems up to 250 cm. high; leaves usually 8-12 mm. wide; panicle with long, spreading branches; lowest lemma 4-6 mm. long, long-acute; caryopsis c. 3 mm. long.

ROTHMALER (1963) recognises in addition subsp. *litoralis* (Host) Paul and subsp. *altissima* (Link) Domin, but these seem best included in subsp. *arundinacea*, from which they differ in minor characters only.

Chromosome counts have been published for subsp. *caerulea* from Norway, U.S.S.R. (Kola peninsula), Germany, Poland, Hungary, France and the Netherlands. These are uniformly 36 and the same number is known for a plant from NW England (TUTIN, unpub.). It is evident that this is the

commonest and most widespread subspecies; it usually grows on damp, humus-rich, base-poor substrata.

Chromosome counts of $2n = 90$ have been made on large, reedlike plants of subsp. *arundinacea* from several localities in C. Europe (S. Poland, both sides of the Franco-Swiss border and from Hungary), but this number certainly occurs much less frequently than the tetraploid number. Plants with $2n = 36$ having the morphological characters of subsp. *arundinacea* have been reported (ROTHMALER, 1963; JIRÁSEK, 1965) but require further investigation.

The specimens from SW Spain clearly belong to subsp. *arundinacea* but differ from other specimens of this subspecies that have been examined in having hairs c. 0.5 mm. long on the joints of the rhachilla. In material from other parts of Europe the rhachilla usually has very short hairs or less commonly hairs c. 0.3 mm. long throughout its length. Chromosome counts on plants from SW Spain would be very desirable.

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