

## *Bromus optimae*, a new annual brome-grass (*Gramineae*) from Cyprus

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### Introduction

Circumscription and subdivision of the genus *Bromus* L. are still controversial. Smith (1970) and Clayton & Renvoize (1986) prefer a broad generic concept, including in *Bromus* several groups of perennials and annuals that Russian authors (i.a. Czvelev 1976) treat as separate genera, such as the Old World annuals *Anisantha* C. Koch, *Boissiera* Hochst. ex Steud. and *Nevskiella* Krecz. & Vved. Their exclusion results in a fairly homogeneous taxon, *Bromus* s. str., the delimitation of which becomes more practicable.

Czvelev (1976) subdivided the genus *Bromus* s. str. into three sections: *B.* sect. *Bromus* (sect. *Aphaneroneuron* Nevski) with *B. secalinus* L., the type of the genus; *B.* sect. *Triniusia* (Steud.) Nevski, and *B.* sect. *Sapheneuron* Nevski. Diagnostic characters include the unusual awn equipment in *B.* sect. *Triniusia* as well as the consistence and surface structure of the lemmas. Species of *B.* sect. *Sapheneuron* are characterized by thin, hyaline lemmas distinctly nerved on the back at fruiting time, whereas *B.* *Bromus* representatives possess thicker, coriaceous and more or less even lemmas without prominent nerves (Holmberg 1924, Scholz 1970, 1981; see also Sales & Smith 1990). The following members of *B.* sect. *Sapheneuron* are widely distributed in the Mediterranean area: *B. chrysopogon* Viv., *B. hordeaceus* L. (included by Czvelev in sect. *Bromus*), *B. intermedius* Guss., *B. lanceolatus* Roth, and *B. scoparius* L. (taxonomy and nomenclature as in Smith 1980, 1985). As a connecting link to the genus *Anisantha*, *B. pulchellus* Fig. & De Not., a Middle East species with relict occurrences in Egypt and on the Sinai peninsula, deserves special mention (Scholz 1981).

### Results

Among the grasses collected in spring 1991 in Cyprus (OPTIMA, Iter Mediterraneum IV) there were four samples of a *Bromus*, undoubtedly belonging to *B.* sect. *Sapheneuron*, that could not be identified with any known species. Their most striking feature is the anther length of (2.5-)3-5 mm. For the known members of *B.* sect. *Sapheneuron*, anther length never exceeds 2 mm and is distinctly less than half of the lemma length. Anther measurements for *B. intermedius* as reported in the literature are 0.75-1 mm (Smith 1980) or 1-1.5 mm (Bor 1985) and only exceptionally 2 mm in var. *hughii* (Tod.) Nyman (Pénzes 1936). My own measurements (0.5-2 mm) show that these figures need correction. Long anthers occur in some species of *B.* sect. *Bromus*, especially in *B. arvensis* L., described by Holmberg (1924: 324) as follows: "antherae longitudine

paleam inferiorem demidiam aequantes vel superantes". Within the latter section this led to recognition of *B. ser. Macrantherae* Krecz. & Vved. (Krečetovič & Vvedenskij 1934). Satellite species of *B. arvensis* include *B. brachystachys* Hornung, more distantly related are *B. pseudobrachystachys* H. Scholz and *B. tigridis* Boiss. & Noë. It may be noted that in annual grasses long anthers are commonly regarded as a plesiomorphic character and indicate a high degree of allogamy (Hammer 1984, for *Hordeum*).

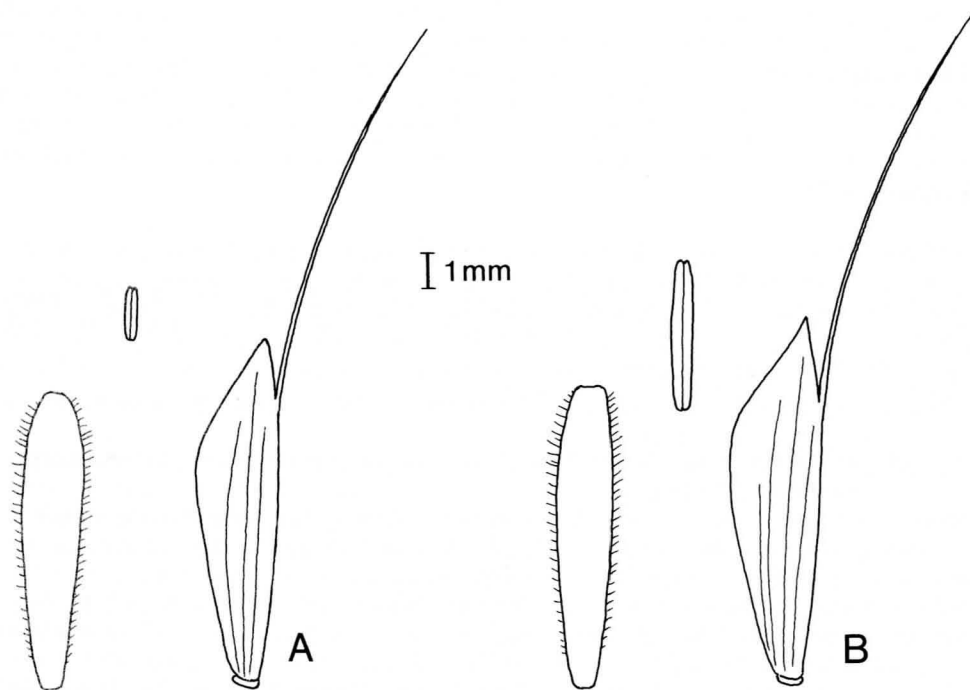


Fig. 1. Lemmas, paleas and anthers of *Bromus*. **A**, *B. intermedius* (Greece, 20 Jun 1986, Hagemann & al. 20D, B); **B**, *B. optimae* (holotype).

*Bromus optimae* H. Scholz, **sp. nova** (Fig. 1B). — Holotype: Cyprus, Larnaka, Cape Greco, lac salé, 5 m, 13 Avr 1991, Alziar & al. 196 (B). A *Bromo* (sect. *Sapheneuron*) *intermedio* lemmatibus latioribus (4-5 mm nec 3-4 mm latis) antherisque longioribus (3-5 mm nec 0.5-2.0 mm longis) differt.

*Specimina visa*. — Cyprus: Paphos, entre Nata et Axylou, garigue aride et friche, 350-400 m, 22 Mai 1991, Alziar & al. 1077 (B, CYP, G, JBVN, PAL, SEV). Larnaka, Cape Greco, calcaire coralliens et sables, 10-20 m, 12 Avr 1991, Alziar & al. 119 (G, JBVN, PAL, SEV), 157 (B, CYP, G, NICE, PAL, SEV) *ibid.*, lac salé, 5 m, 13 Avr 1991, Alziar & al. 196 (B, CYP, G, JBVN, PAL, SEV).

This new species of *Bromus* sect. *Sapheneuron* is closely related to *B. intermedius* Guss., but differs not only by its much longer anthers but also by wider lemmas, similar to those of *B. (sect. Bromus) japonicus* Thunb. ex Murray, with more sharply pointed apical teeth (Fig. 1A & B). The lemmas have 7-9 nerves, those of *B. intermedius* mostly not more than 7. Characters distinguishing both *B. intermedius* and *B. optimae* from

*B. japonicus* are their rather contracted panicles and their spikelets shorter than 20 mm. The awn is inserted 2-3 mm below the lemma apex. *B.* (sect. *Bromus*, ser. *Macrantherae*) *arvensis* differs i.a. in having looser and larger panicles, narrower lemmas (resembling those of *B. intermedius*), and a higher point of attachment of the awn.

Whether in the past *Bromus optima*e, on Cyprus, has been confused with *B. intermedius* or *B. japonicus*, and, more importantly, whether *B. optima*e is indeed endemic to this island remains to be seen. In these three species the leaf sheaths are uniformly silky-villous and do not permit species discrimination; nor does the spikelet indumentum, which considerably varies even within populations. The holotype of *B. optima*e consists of plants with glabrous spikelets only; in the other material seen, the hairiness varies between individuals. Rare specimens of *B. intermedius* with completely glabrous spikelets (var. *laevis* Hausskn.) were often mistaken for other species, e.g. in the Berlin herbarium.

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