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# A new species of *Lolium (Gramineae)* from Fuerteventura and Lanzarote (Canary Islands, Spain)

**Abstract**

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*Lolium saxatile* is described as a species new to science and illustrated. It is related to *L. multiflorum,* but has a perennial habit and other distinguishing morphological features. It forms part of the last remnants of an evergreen vegetation in the humid upper mountain zones of the Jandía massif of Fuerteventura and the Famara massif of Lanzarote.

During our studies of the flora and vegetation of the Jandía massif in Fuerteventura, the first author examined a perennial *Lolium* species, coming to the conclusion that it hardly could be assigned to any of the known species of the genus. Specimens were sent to the second author, who confirmed it as a new species, which is described here.

The plant itself was not a new discovery, being known since 1946, when a specimen was collected by the late E. R. Sventenius, one of the great explorers of the Canarian flora, but its status was not recognized. In some herbaria exist specimens under various names; the sheets examined by us are listed below.

***Lolium saxatile*** H. Scholz & S. Scholz, **sp. nov.**
Holotypus: Insulae Canariensis (Hispania), Fuerteventura, Pico de la Zarza, 2.4.1975, *Acebes & Pérez de Paz 4890* (TFC; isotypus: B) – Fig. 1-2.

A speciebus generis *Lolii* indigenatis canariensibus *(L. canariensis, L. edwardii)* culmis multo robustioribus et ramosis differt. Basi vaginae basales crassiores in fibrillas parallelas solutae.

Perennial grass growing in dense tufts. *Culms* 4-6-noded, ± branched, 25-60 cm tall, erect, glabrous. *Leaves* glabrous; leaf blade up to 30 × 6 mm, rolled in young shoots; auricles absent; leaf sheath usually shorter than blade, the lowest ones at base disintegrating in parallel fibres; ligules 0.2-2 mm, slightly pointed. *Spikes* 6-15 cm long, terminal or lateral, often overtopped by the

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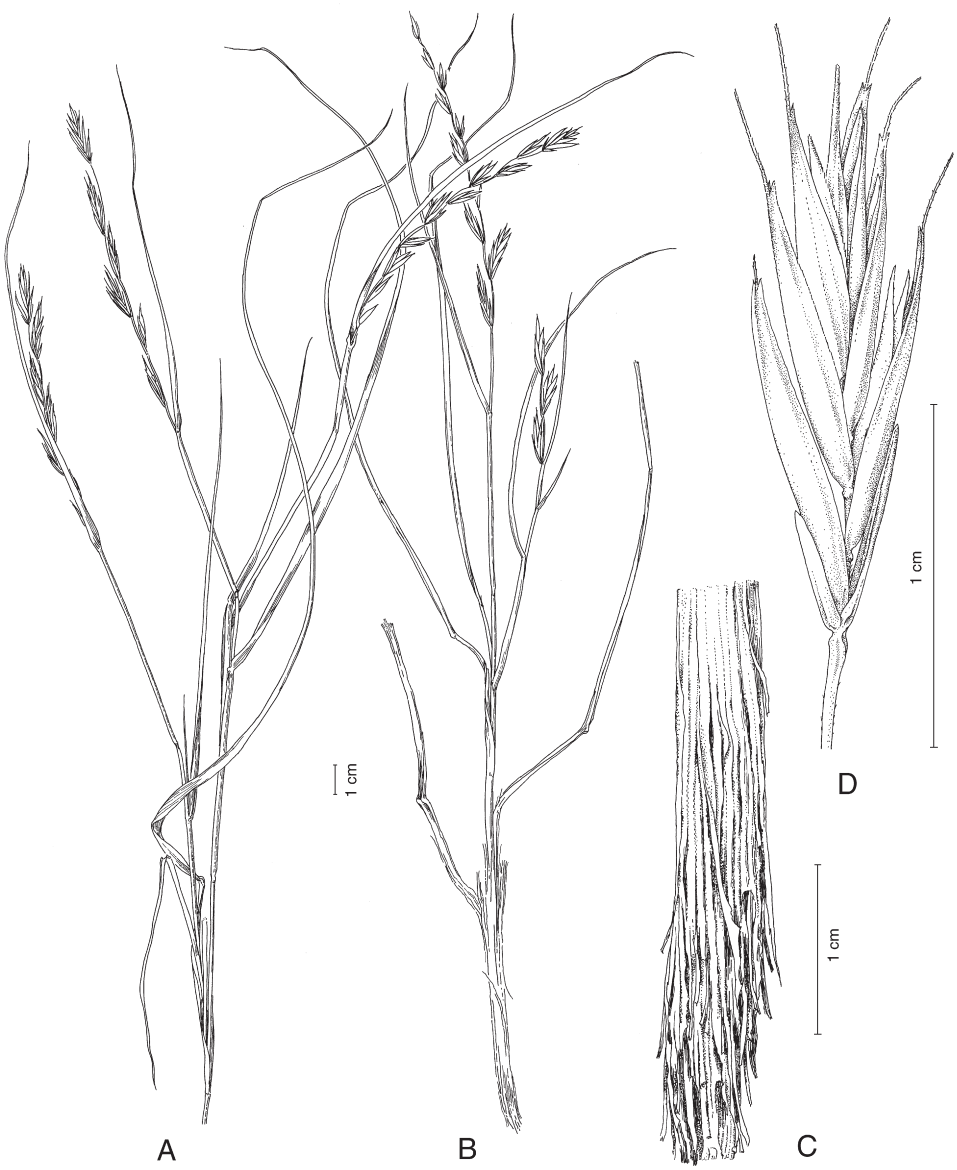



Fig. 1. *Lolium saxatile* – A: culm with upper nodal branches; B: culm with disintegrating leaf sheaths; C: lower leaf sheath basally disintegrating in fibres; D: terminal spikelet. – Drawn by M. Rodewald (Berlin) from the specimen Furteventura, Pico de la Zarza, 800 m, 28.1.2001, *S. Scholz* (B).

blades of the uppermost leaves. *Rhachis* smooth or somewhat scaberulous, convex-concave. *Spikelets* (10-)12–20 mm long (excluding awns), (3-)5-10-flowered, about as long as the rhachis internodes; rhachilla shortly hairy. *Glumes* 5-10-nerved, 4-6 mm long, reaching $^{2}/_{3}$-$^{3}/_{4}$ of the adjacent lemma of the same length; lemma pointed or bidentate, with terminal or subterminal, 1.5-3 mm long awn, glabrous to finely pubescent; palea a little shorter than lemma, its keel nerves with minute teeth. *Anthers* 2.8-4 mm. *Caryopsis* ellipsoidal, 3 × 1 mm.

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*Specimens examined.* – In the herbarium of the Jardín Botánico Canario Viera y Clavijo (LPA) five sheets were found: LPA 002225, LPA 002226, LPA 002227, LPA 002228 and LPA 002229, all are dated 23.4.1986 and come from a plant collected at the type locality by A. Marrero on 21.2.1986 and cultivated in the Jardín Canario in Tafira.

In the herbarium of the Jardín de Aclimatación de la Orotava (ORT) the following sheets were examined: FUERTEVENTURA: Cofete 500 m, 2.4.1957, *E. R. Sventenius* (ORT 21972); Pico de la Zarza, 4.4.1957, *E. R. Sventenius* (ORT 21973); Pico de la Zarza, 21.3.1946, *E. R. Sventenius* (ORT 21981); Pico de la Zarza, sine dato, *E. R. Sventenius* (ORT 23898); Pico de la Zarza, 8.4.1955, *E. R. Sventenius* (ORT 25511); ex horto from seed collected at Pico de la Zarza, Fuerteventura, 24.5.1982, *A. Santos* (ORT 29327).

Of these sheets, ORT 21972, ORT 23898 and ORT 29327 are very typical representatives of the new species, while ORT 21981 and ORT 25511 are rather poorly developed. A further specimen, ORT 21969, without locality, differs slightly by its very long inflorescences but is also assignable to the new species. ORT 21973 is more problematic: the specimen was collected within the geographical range of *L. saxatile,* but has very long, many-flowered spikes and rather short leaves, which do not overtop the inflorescences; it may represent a young plant.

In the herbarium of the Universidad de La Laguna (TFC) beside the type collection are two more sheets: Fuerteventura, Pico de la Zarza, Jandía, 26.2.1993, *P. L. Pérez de Paz & al.* (TFC 35807); Lanzarote, Haría, El Castillejo, 15.3.1997, *J. A. Reyes Betancort* (TFC 40390).

*Taxonomic affinities.* – *Lolium saxatile* is rather extraordinary within *Lolium* because (1) of its perennial habit (although exact field and experimental observations about the longevity of the plants are not yet available), (2) the erect culms with some upper nodal branches terminating in a spike, and (3) basal shoots up to nearly 1 cm wide with sheaths finally splitting along the subepidermal sclerenchyma and vascular bundles, giving the lower culm portion a characteristic appearance.

Evidently, *Lolium saxatile* is closely related to the Mediterranean annual or biennial *L. multiflorum* Lam., which probably originates from Italy (Terrell 1968) but is now widespread and cultivated all over the extratropical world as a valuable fodder grass. Although not mentioned in the *Lolium* monograph (Terrell 1968), *L. multiflorum* also tends to nodal branching. Branching populations exist in N Africa (e.g. Morocco) and are also widespread in the northern parts of the central Canary Islands (Gran Canaria, Tenerife) and perhaps in the western group (La Palma, Gomera, Hierro). However, all these N African and Canarian branched annual or biennal forms of *L. multiflorum* differ from *L. saxatile* by their thinner culms and scarcely disintegrating basal sheaths. More remotely related are the small, graceful Macaronesian annual endemics *L. canariense* Steud. (Porto Santo, Canary and Cape Verde islands) and *L. edwardii* H. Scholz & al. (so far known only on El Hierro, Gomera and Tenerife in the Canary islands).

We do not know the ecological reasons why grass genera that in temperate climates exhibit unbranched above-ground culms, in the Macaronesian islands so often evolve successfully into taxa with branching culms, frequently showing a shrubby habit. Examples are *Anthoxanthum maderense* Teppner, *Brachypodium arbuscula* Knoche, *Dactylis smithii* Link, *Holcus rigidus* Hochst., *H. mollis* subsp. *hierrensis* Stierstorfer and *Melica canariensis* Hempel (= *M. magnolii* var. *gigantea* Bornm.). The phenomenon may be in some way equivalent to the woodiness exhibited by many Macaronesian members of genera that otherwise have herbaceous species in adjacent continental areas (e.g. *Echium*, shrubby Canarian *Rosaceae* genera, etc.), which was formerly often associated with an ancestral status but seems to be a secondary adaptation to island habitats lacking large herbivores (see e.g., for *Echium,* Böhle & al. 1996, and for the woody *Bencomia* alliance, Helfgott & al. 2000). Investigations are needed to clarify these questions for the *Gramineae* members.

*Distribution, ecology and phytosociology.* – The new species grows in the Jandía massif at the southern end of Fuerteventura and in the Famara massif in northern Lanzarote. Both mountain ranges, separated by c. 140 km, have many features in common. They are built of tertiary basalt, represent the highest elevations on each island (807 m at Pico de la Zarza, Fuerteventura, and

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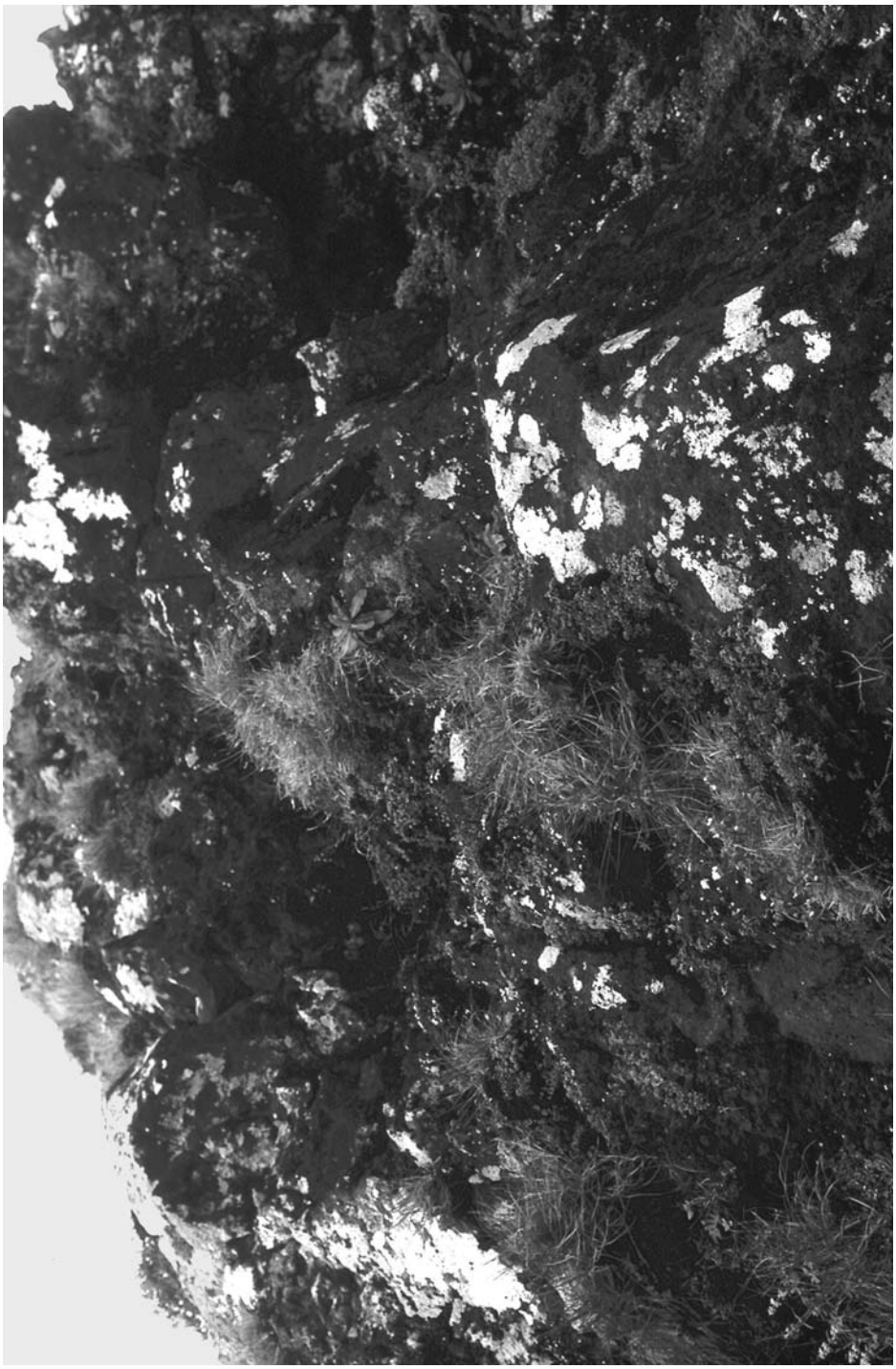


Fig. 2. *Lolium saxatile* in its habitat on Fuerteventura in the northern escarpment of Pico de la Zarza, c. 800 m. – Photograph by S. Scholz.

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670 m at Peñas del Chache, Lanzarote) and are affected by the trade wind clouds. This, together with the special topography of both regions, with presence of high, vertical N facing cliffs, allows a humid microclimate in the higher parts, which contrasts sharply to the general arid climate of the rest of the islands. In the Jandía massif, the uppermost parts shelter small remnants of vegetation related to the laurel forest vegetation of the central and western Canaries (Pruno-Lauretea azoricae Oberdorfer ex Rivas-Martínez, Arnáiz, Barreno & A. Crespo 1977).

The Jandía and Famara regions constitute the most important centres of biodiversity of these islands (Bramwell 1974, 2001, Kunkel 1980, 1982, 1993, Marrero Rodriguez 1991), with a number of local endemic plant and animal (mainly invertebrate) species. For vascular plants, the figures given by different authors vary slightly, the most recent figures are 9 endemic species in the Famara massif (A. Reyes-Betancort unpubl.) and at least 9 in Jandía (S. Scholz, unpubl.). 10-12 species are shared by both localities, constituting a particular Eastern Canarian element.

In the Jandía massif, *Lolium saxatile* is distributed discontinuously along approximately 7 km of the central parts of the mountain ridge between 450 and 800 m, being more common above 650 m. It is an important member of the vegetation of the N facing cliffs and locally abundant, growing together with, among other species, the local endemics *Ononis christii* Bolle and *Echium handiense* Svent., the Eastern Canarian endemics *Sideritis pumila* (Christ) Mend.-Heuer, *Bupleurum handiense* (Bolle) Kunkel and *Reichardia famarae* Bramwell & Kunkel, and more widespread Canarian species such as *Rhamnus crenulata* Aiton and the ferns *Polypodium macaronesicum* Bobrov and *Davallia canariensis* (L.) Sm. Numerous moss and lichen species are also present.

In the Famara massif, the species is much rarer, being restricted to only two localities with very few individuals (A. Reyes-Betancort, unpubl.).

*Lolium saxatile* might have formed an important part of a once more developed and extended shrubby or at some places arboreal vegetation of the higher mountains of both islands, which became degraded probably already after the arrival of the first inhabitants from N Africa in the first millennium before Christ, and destroyed to its near disappearance after the conquest of the islands by the Europeans in the 15th century.

*Conservation status. – Lolium saxatile* grows on vertical, inaccessible cliffs, which constitute refugia from free-roaming goats and sheep and other herbivores such as rabbits. Whereas very rare and threatened with extinction in Lanzarote, the species is still locally frequent in the Jandía massif of Fuerteventura. According to the criteria B 1a, b(iii) and B 2 a, b(iii) (IUCN 2001), the species must be classified as "Endangered (EN)". Advancing habitat degradation affects especially the Jandía massif, although most of this mountain range as well as the Famara massif are protected by Natural Park status.

## References

Böhle, U.-R., Hilger, H. & Martin, W. 1996: Island colonization and evolution of the insular woody habit in *Echium (Boraginaceae).* – Proc. Natl. Acad. Sci. U.S.A. **93:** 11740-11745. [CrossRef]

Bramwell, D. & Bramwell, Z. 1974: Wild flowers of the Canary Islands. – Santa Cruz de Tenerife.

— & — 2001: Flores silvestres de las Islas Canarias, ed. 4. – Madrid.

Helfgott, M., Francisco-Ortega, J., Santos-Guerra, A., Jansen, R. K. & Simpson, B. 2000: Biogeography and breeding evolution of the woody *Bencomia* alliance *(Rosaceae)* in Macaronesia based on ITS sequence data. – Syst. Bot. **25:** 82-97.

IUCN 2001: IUCN Red List categories and criteria, version 3.1. – Gland & Cambridge.

Kunkel, G. 1977: Endemismos canarios. Inventario de las plantas vasculares endémicas en la provincia de Las Palmas. – Naturalia Hispanica **15.**

— 1980: Die Kanarischen Inseln und ihre Pflanzenwelt. – Stuttgart & New York.

— 1982: Los Riscos de Famara (Lanzarote, Islas Canarias). Breve descripción y guía florística. – Naturalia Hispanica **22.**

— 1993: Die Kanarischen Inseln und ihre Pflanzenwelt, ed. 3. – Stuttgart & New York.

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Marrero Rodriguez, A. 1991: La flora y vegetación del Parque Natural de "Los Islotes del Norte de Lanzarote y Riscos de Famara". Su situación actual. – s.l.

Terrell, E. E. 1968: A taxonomic revision of the genus *Lolium*. – Techn. Bull. U.S. Dep. Agric. **1392.**

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