Results

Linaria argillicola Juan, Blanca, Cueto, J. Fuentes & L. Sáez, *sp. nov.* (Figs. 1–3)

Type:—SPAIN. Granada: Dehesas de Guadix, Collado de la Higuera, laderas abruptas de litología margosa con yesos, en suelos poco evolucionados, 30SVG9159, 745 m, 21 May 2011, *J. Fuentes* (holo-: GDA 62646!).

Diagnosis:—It differs from *L. accitensis* L. Sáez *et al.* in having flowers with abaxial calyx lobes longer (up to 6 and 9 mm long in flower and fruit, respectively), corolla mostly yellow or orangish, rarely reddish, larger (up to 25 mm long, including the spur), and with a wider tube (3.0–6.5 mm width); seeds larger (1.8–3.8 × 2.1–3.8 mm), with a wider wing (up to 1.4 mm broad), and tuberculate disc; and inflorescence non-continuous in fruiting stage.

Description:—Herbaceous perennial (rarely annual) plant, glaucous, glabrous; fertile stems, up to 14–25(–31) cm long, decumbent to suberect, simple or sometimes branched in the upper part; sterile stems, up to 6–7 cm long. Leaves of fertile stems 6.5–20.0 × 0.3–1.2(–1.4) mm, linear, narrowly oblong, flat, acute (sometimes obtuse), alternate, sometimes the lowermost in whorls of 3–4; leaves of sterile stems (3.0–)5.0–12.0 × 0.5–1.0 mm, similar to the leaves of fertile stems, flat, acute (sometimes obtuse), mostly alternate, sometimes basal leaves in whorls of 3–4. Inflorescence simple or clearly branched, (2–)3–11 cm long [2–7(–8.5) cm long in fruit], with 3–15(–18) flowers, glabrous (rarely with sparse hairs 0.1–0.2 mm long on the axis); aborted fruits sometimes appearing among well-developed flowers and fruits in the same inflorescence. Bracts (1.0–)1.5–5.8 × 0.1–0.9 mm, oblanceolate or oblong, acute or obtuse, glabrous. Pedicels 0.3–1.8(–2.3) mm long in flower [0.6–3.5(–4.5) mm long in fruit], erect. Calyx lobes unequal, glabrous, obovate, oblong-obovate or oblanceolate, acute or subacute in flower, oblong, obtuse in fruit; adaxial lobe 4.0–9.0 × 0.6–1.0 mm in flower (5.0–10.0 × 0.5–12.0 mm in fruit); abaxial lobes 3.0–6.0 × 0.5–1.0 mm in flower (4.0–9.0 × 0.5–2.0 mm in fruit). Corolla (12.0–)14.5–25.0 mm long, mostly yellow or orangish, rarely reddish; tube 3.0–6.5 mm broad in dorsiventral section; adaxial lip sinus 4–6 mm; abaxial lip sinus 6–10(–12) mm; spur (4.5–)5.0–10.0 × 0.8–2.0(–2.3) mm, stout, straight or slightly curved at the apical part, shorter than or slightly subequalling the rest of the corolla. Capsule 3.2–7.1 × 3.0–7.2 mm, globose, subglobose or obovate-globose, glabrous. Seeds 1.8–3.2 × 2.1–3.8 mm, suborbicular, discoid, slightly concavo-convex to flat; wing 0.4–1.4 mm broad, dark greyish to brownish, membranous, entire; disc 0.7–1.8 mm, reniform, greyish to blackish-brown, densely tuberculate.

Etymology:—The specific epithet refers to the type of substrate on which the new species typically grows.

Distribution and ecology:—Only four populations of *L. argillicola* are known so far, including about 9000–10000 reproductive individuals in total, with an extent of occurrence of 87 km^2, and an occupancy area of 2.05 km^2. This taxon would be considered an edapho-endemic species from the southern Iberian Peninsula (Fig. 4), growing on the marly gypsiferous deposits from the Guadiana Menor river basin, on the border of Granada and Jaén provinces. The populations appear on steep hillsides, between 600–800 m elevation, with poorly evolved soils of marls with gypsum deposits, belonging to the Keuper (Triassic origin). *Linaria argillicola* typically participates in ephemeral therophyte pastures characterized by scant plant biomass and cover. The populations are found under a xeric oceanic Mediterranean Ombroclime with a Mesomediterranean Thermotype and semiarid Ombrotype (Marchal *et al.* 2011).

Phenology:—The flowering period occurs from mid-March to early June, and fruiting time from April to the end of June.

Conservation status:—The distribution area of *L. argillicola* is not included within any Site of Community Importance (SCI) and hence remains outside any protected areas of the Nature 2000 Network. Its natural habitat shows remarkable environmental stochasticity, with strong interannual fluctuations during different phenological states. Potential causes of threat include the erosion and disturbance of the habitat; the low environmental valuation of gypsiferous and semiarid sites, since they are traditionally considered to be uncultivated lands, and thus apt for agricultural and forestry uses; the cattle overload in critical drought years; the direct predation of the individuals by coleopteran larvae (Fam. Chrysomelidae), which sometimes consume nearly entire populations; future urban expansion; and, finally, climatic change.

According to the IUCN categories (2012) and recommendations provided by IUCN (2017), we suggest labelling *L. argillicola* as Endangered (EN), with the following criteria B1ac(i,ii,iv) + B2ac(i,ii,iv). Further monitoring of the evolution of the known populations is recommended to more accurately evaluate the conservation status of the newly described species. *Linaria argillicola* may require conservation actions and management plan, and therefore it should be included in the Spanish and Andalusian Red Lists of vascular plants (i.e. Cabezudo *et al.* 2005).