

# ***Santolina orocarpetana* sp. nov. (Asteraceae: Anthemideae), a new species from the Iberian Peninsula. Revision of the lectotype of *S. oblongifolia* Boiss.**

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## **ABSTRACT**

### **KEY WORDS**

Asteraceae,  
Iberian Peninsula,  
Spain,  
lectotypification,  
neotypification,  
new species.

The lectotype of *Santolina oblongifolia* Boiss. is examined and discussed. *Santolina heterophylla* Willk. & Cut., *S. oblongifolia* Boiss. var. *obtusifolia* Willk., *S. oblongifolia* var. *ceratophylla* Willk., and *S. lobata* Jord. & Fourr. are lectotypified. *Santolina oblongifolia* Boiss. f. *intermedia* Pau is neoty whole. The current status of these names is discussed. A new species from the Iberian Peninsula, *S. orocarpetana* sp. nov., is described.

## **RÉSUMÉ**

*Santolina orocarpetana* sp. nov. (Asteraceae: Anthemideae), une espèce nouvelle de la Péninsule Ibérique. Révision du lectotype de *S. oblongifolia* Boiss.

Le lectotype de *Santolina oblongifolia* Boiss. est examiné et discuté. *Santolina heterophylla* Willk. & Cut., *S. oblongifolia* Boiss. var. *obtusifolia* Willk., *S. oblongifolia* var. *ceratophylla* Willk. et *S. lobata* Jord. & Fourr. sont lectotypifiés. *Santolina oblongifolia* Boiss. f. *intermedia* Pau est néoty whole. Le statut actuel de ces noms est discuté. Une nouvelle espèce de la péninsule Ibérique, *S. orocarpetana* sp. nov., est décrite.

**MOTS CLÉS**  
Asteraceae,  
péninsule Ibérique,  
Espagne,  
lectotypification,  
néotypification,  
espèce nouvelle.

## INTRODUCTION

Boissier (1856) erected and defined the species *Santolina oblongifolia* Boiss. This species is located in the Central System of the Iberian Peninsula, on granite substrate, at 900–2360 m. The populations of *S. oblongifolia* that inhabit the highest altitudes are apparently isolated, without signs of phenotypic hybridisation, whereas this species coexists and hybridises with *S. rosmarinifolia* L. subsp. *rosmarinifolia* at 900–1800 m (Rivero-Guerra 2009). Morphological characteristics that differentiate the populations of *S. oblongifolia* that live more than 1800 m above sea level from the populations that grow at below 1800 m are shown in Tables 1 and 2. Backcrossing of the putative hybrids with both parents has formed an ample spectrum of phenotypes. A multitude of investigations granting both specific and infraspecific status to various forms, among the observed variation, has resulted in a confusing taxonomy for *S. oblongifolia*. For example: *S. heterophylla* Willk. & Cut. (Willkomm 1859), *S. oblongifolia* var. *obtusifolia* Willk. and *S. oblongifolia* var. *ceratophylla* Willk. (Willkomm & Lange 1865), *S. lobata* Jord. & Fourr. and *S. sericea* Jord. & Fourr. (Jordan & Fourreau 1869), *S. oblongifolia* f. *intermedia* Pau (Pau 1900), *S. rosmarinifolia* var. *lobata* (Jord. & Fourr.) Guinea (Guinea 1970), and *S. oblongifolia* subsp. *obtusifolia* Rivas Mart. (Rivas-Martínez 1975).

Furthermore, Nyman (1879) and Ladero Álvarez *et al.* (1985) suggest that *S. heterophylla* is a synonym of *S. oblongifolia*, whereas Willkomm & Lange (1865), Rouy (1884) and Colmeiro (1887) suggest that it is a synonym of *S. oblongifolia* β *ceratophylla*; however, Rivas Mateos (1898) considers that *S. heterophylla*, *S. canescens* Lag. and *S. rosmarinifolia* var. β *canescens* Boiss. are the same taxon. Nevertheless, Cerveira Rodrigues Gomes (2000) suggests that *S. oblongifolia* β *ceratophylla* is a homotypic synonym of *S. heterophylla*. In addition, Guinea & Ceballos Jiménez (1974), and Ladero Álvarez *et al.* (1985) cite *S. sericea* as a synonym of *S. oblongifolia*. Guinea (1970) cites *S. lobata* as *S. rosmarinifolia* L. var. *lobata* (Jord. & Fourr.) Guinea. Rivas-Martínez (1975) cites *S. oblongifolia* α *obtusifolia* Willk. as *S. oblongifolia* subsp. *obtusifolia* (Willk.) Rivas-Martínez. However, Rivas Goday *et al.* (1956)

applied the epithet “*obtusifolia*” at subspecies rank to *S. oblongifolia*, this combination is invalid, cf. Art. 33.4 ICBN, McNeill *et al.* 2006.

The main objects of this study are to re-examine the lectotype of *S. oblongifolia*, as it was designated by Sánchez-Mata *et al.* (1994) (Fig. 1), and to typify and evaluate the status of *S. heterophylla*, *S. oblongifolia* var. *obtusifolia*, *S. oblongifolia* var. *ceratophylla*, *S. lobata*, *S. sericea* and *S. oblongifolia* f. *intermedia*.

## RESULTS

### 1. *Santolina oblongifolia* Boiss.

*Diagnoses plantarum orientalium novarum*. Ser. II (3, 3), fasc. (1–6): 18 (1856). — Type (as given in protologue): “In Hispania loco non notato (Herb. Pavon)”. — Lectotype (designated by Sánchez-Mata *et al.* [1994]): Hispania, *Pavon s.n.* (Fig. 1[G]).

## REMARKS

The lectotype shows two large flowering stems and a single sterile stem. The flowering stems are either not widened at the tip or only slightly widened. The widening observed on one of the stems appears to result from dessication or flattening of this stem. The leaves of the flowering stems are narrowly spatulate. As in the population that lives at high altitude, all the leaves of the sterile stems of the type are broadly spatulate. The capitula are very poorly preserved and the bracts were damaged during dissection by botanists. It is thus impossible to know how many external bracts were originally present. The morphological characteristics listed in Table 2 are essential to determine hybrid characters in *Santolina*'s populations, however the poorly preserved capitula did not allow a complete examination of Boissier's original material. Therefore, it is not possible to determine if the lectotype of *S. oblongifolia* has hybrid characteristics or not. However, the morphological characteristics of this sample in the G-BOISS herbarium suggests that it was probably collected at an altitude below 1800 m in a mixed population including *S. oblongifolia*, *S. rosmarinifolia* subsp. *rosmarinifolia* and their putative hybrids. Rivas Goday (1955) considered that probably Pavon collected the original material of *S. oblongifolia* in

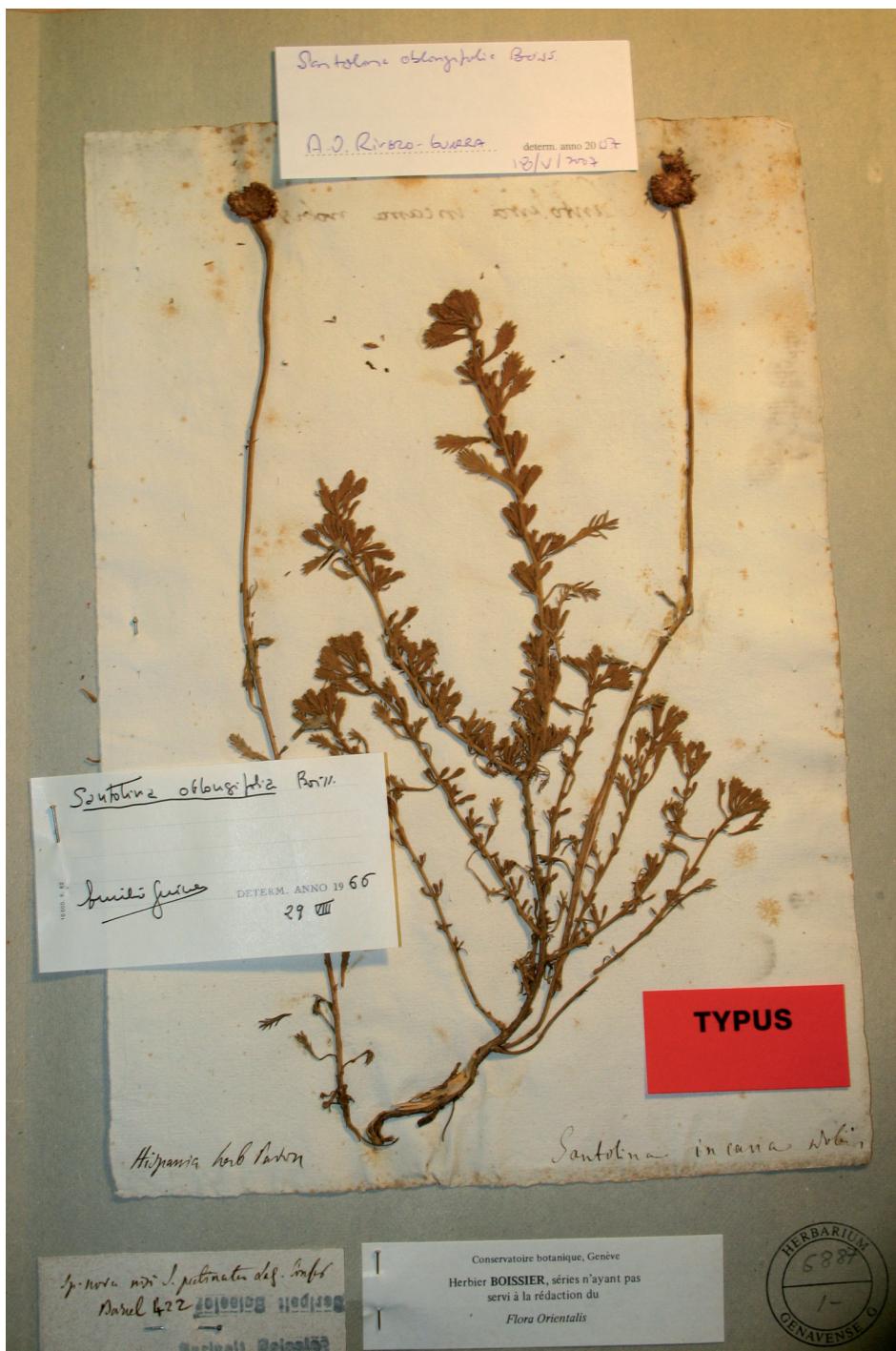


FIG 1. — Lectotype of *Santolina oblongifolia* Boiss.

locations close to Casatejada (Cáceres). Casatejada is located south of Central System, at not more than 300 m, outside the altitudinal range of this taxon. The present evaluation of the original material of *S. oblongifolia* suggests that the lectotype does not match with the current use of the name.

**2. *Santolina heterophylla* Willk. & Cut.,  
non *S. pectinata* Benth.,  
non Lag. var.  $\beta$  *heterophylla* DC, *nom inval.***

In Willkomm, *Linnaea* 30: 106 (1859). — Type (as given in protologue): “In Hispania centrali regione montana: in monte Sierra de Gredos et in provinciae Avilensi prope Servanillos, Cutanda et Ysern! (1857). Floret Julio”. — Lectotype (here designated): Spain, Sierra de Gredos, VI.1855, Ysern s.n. (COI-WILLK 00035956; Fig. 2).

REMARKS

De Candolle (1837) included *S. canescens* and *S. viscosa* into the circumscription of the genus *Santolina* L., and reduced *S. pectinata* Lag. as a variety of *S. pectinata* Benth. (*nom. illegit.*). The author retained the epithet “pectinata” for a variety  $\alpha$ , whereas he conserved the type of *S. pectinata* Lag. for a variety  $\beta$ . He published var.  $\beta$  *heterophylla* based on plants from the *locus classicus* of *S. pectinata*. He also cited *S. pectinata* Lag. as a synonym of this name, adding a short note as diagnosis “foliis infimis et junioribus linearibus indivisis margine tuberculatis”. *Santolina pectinata* Benth., non Lag. var.  $\beta$  *heterophylla* DC., is an invalid name (ICBN: arts 53.1, 26.2; Mcneill *et al.* 2006).

Furthermore, Willkomm & Cutanda in Willkomm (1859), and Willkomm in Willkomm & Lange (1865) ignored the variety  $\beta$  *heterophylla* published by De Candolle (1837). Willkomm & Cutanda in Willkomm (1859) published a new taxon, *S. heterophylla*, based on a specimen from Sierra de Gredos. Willkomm in Willkomm & Lange (1865) reduced *S. heterophylla* Wilk. & Cut. to a variety of *S. rosmarinifolia*, but he omitted Cutanda as author of the epithet. He cited *S. pectinata* Lag. as a synonym of “variata 1” of *S. rosmarinifolia* L. var.  $\beta$  *heterophylla* Willk., whereas Willkomm (1893) changed the original concept and accepted *S. rosmarinifolia*

var.  $\beta$  *heterophylla* Willk., f. 1 Willk. as synonym of *S. pectinata*. He placed this *variata* in the type locality of *S. pectinata*, and in Sierra de la Sagra (COI-WILLK 00035964, MPU, P 00752621 from “La Puebla de Don Fadrique et montem La Sagra”).

Willkomm misspelled the locality for the lectotype of *S. heterophylla*; the correct name is “Serranillos” (Cerveira Rodrigues Gomes 2000), and it will be used hereafter in this paper.

Two collections of Isern were found. In the first one, labelled with the name “*S. oblongifolia*”, from Puerto del Pico (MA 126799), the date is only indicated as “August”. The other specimen (COI-WILLK 00035956), labelled by Willkomm with the names *S. oblongifolia*  $\beta$  *ceratophylla* and *S. heterophylla* was gathered by Isern in July 1855 in Sierra de Gredos. Presumably, Willkomm changed 1855 into 1857 during transcription of the original label.

The lectotype (COI-WILLK 00035956; Fig. 2) has six flowering stems and various sterile stems. The sheet has two labels in the centre of the lower margin with the following notation in black ink: **Label 1:** “Herbarium Willkommi [printed] // *Santolina rosmarinifolia* Mill. [underlined] var. *sericea* [underlined] Wk. = *S. heterophylla* Wk. [underlined] et Cut. // Sierra de Gredos [Willkomm’s handwritten notation] // Legit [printed] Ysern // Julio 1855 [Willkomm’s handwritten notation]”; **Label 2:** “*Santolina oblongifolia* Boiss. [underlined]  $\beta$  *ceratophylla* [underlined] Wk. [Willkomm’s handwritten notation]”. This specimen has two revision labels by D. Sánchez-Mata and S. Sardinero with the following notation in black ink: **Label 1:** “*Santolina oblongifolia* Boiss var. *ceratophylla* Willk. in Willk. & Lange // Typus [handwritten] // Coimbra [printed] 1993 IX [handwritten]”; **Label 2:** “*Santolina oblongifolia* Boiss. [handwritten] // Coimbra [printed] 1993 IX [handwritten]”. This specimen displays all the characteristics listed in the protologue (Appendix 1). The lectotype clearly shows intermediate characteristics between *S. oblongifolia* and *S. rosmarinifolia* subsp. *rosmarinifolia*. The relationship between *S. heterophylla*, *S. rosmarinifolia* subsp. *rosmarinifolia* and *S. oblongifolia* has been cited by Willkomm (1859) in the protologue: “*Specie proxima* *S. rosmarinifoliae* Mill., *a cuius formis numerosis foliis eximie heteromorphis planis sericeis statim distinguitur. Calathiorum*

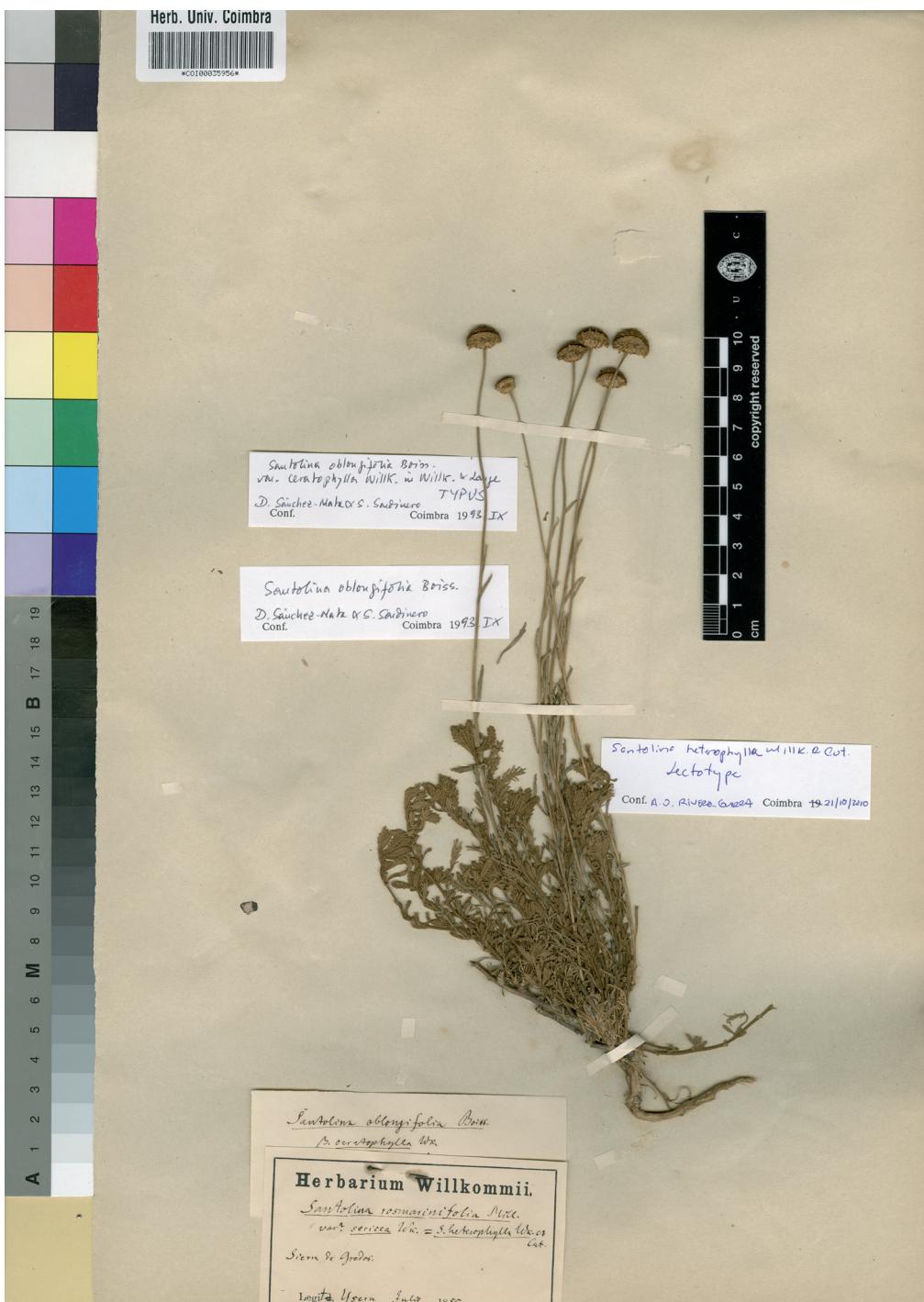


FIG 2. — Lectotype of *Santolina heterophylla* Willk. (COI-WILLK 00035956).

*florumque structura a S. rosmarinifolia non differre  
videtur, sed propter foliorum formam ab omnibus  
Santolinis valde discrepantem hanc stirpem ad illam  
speciem referre non audeo. S. oblongifolia Boiss. foliis  
planis sericeis pariter gaudens ramis sterilibus elongatis,  
foliis multo minus difformibus aliaque ratione formatis  
a nostra differre videtur [...].”*

The sheet A 00251592 has two labels in the lower left margin: **Label 1:** “HERBARIUM GRAELSIANUM // PLANTAE CASTELLANAЕ [printed] // Santolina heterophylla Wk. // in saxosis Sierra de Gredos et Puerto del Pico prope riventos // Julio [Graells’ handwritten notation]”; and **Label 2** (printed): “HERBARIUM OF GEORGE CURLING JOAD. PRESENTED BY THE ROYAL GARDENS, KEW, 1882”. The labels do not show the collector and year. The notation of the labels does not match with the lectotype, however, this specimen is the counterpart of the type material of this name. Carrasco *et al.* (2002) discuss the value of the collections of the *Real Colegio Alfonso XII* historical herbarium of *San Lorenzo del Escorial* (Madrid, Spain). They argue that the Graells’ collection was used by Willkomm & Lange as part of the material examined for the *Prodromus florae hispanicae*. However, *S. heterophylla* was published several years before the publication of the species corology of the genus *Santolina* in *Prodromus florae hispanicae* (1865). There is not enough evidence to justify the choice of this material as original material of *S. heterophylla*.

### 3. *Santolina oblongifolia* Boiss. var. $\alpha$ *obtusifolia* Willk.

In Willkomm & Lange, *Prodromus Florae Hispanicae* 2: 82 (1865). — *S. sericea* Jord. & Fourr., *Icones ad Floram Europae novo fundamento instaurandam spectantes* 2: 13. (1869). — Type (as given in protologue): “In rupestribus regionis montanae Hispanicae centralis, hucusque non nisi in Sierra de Gredos reperta (ad Serranillos, Isern, Cut!. Puerto del Pico, Bourg!) ubi utraque forma promiscue crescere videtur. — Julio (v.s.)”. — Lectotype (here designated): Spain, Rochers de la Sierra de Gredos au Puerto del Pico, 8-25.VII.1863, Bourgeau 2540 (COI-WILLK 00035989 [Fig. 3]; isolecto-, A 00251664 (specimen to the left), HEID 702282 (specimen to the left), MPU (2 sheets), W (2 sheets, one of them with two specimen; the isolectotype is the specimen to the left]).

### 4. *Santolina oblongifolia* Boiss. var. $\beta$ *ceratophylla* Willk.

In Willkomm & Lange, *Prodromus Florae Hispanicae* 2: 82 (1865). — Type (as given in protologue): “In rupestribus regionis montanae Hispanicae centralis, hucusque non nisi in Sierra de Gredos reperta (ad Serranillos, Isern, Cut!. Puerto del Pico, Bourg!) ubi utraque forma promiscue crescere videtur. — Julio (v.s.)”. — Lectotype (here designated): Spain, Rochers de la Sierra de Gredos au Puerto del Pico, 8-25.VII.1863, Bourgeau 2540 (COI-WILLK 00035989 [Fig. 3]; isolecto-, A 00251664 (specimen to the left), HEID 702282 (specimen to the left), MPU (2 sheets), W (2 sheets, one of them with two specimen; the isolectotype is the specimen to the left)).

### REMARKS

These names were published by Willkomm in Willkomm & Lange (1865) as *S. oblongifolia*  $\alpha$  *obtusifolia* and *S. oblongifolia*  $\beta$  *ceratophylla*. The author did not mentioned the rank of “ $\alpha$ ” and “ $\beta$ ” in the introductory chapter of *Prodromus Florae Hispanicae*. However, Willkomm (Willkomm & Lange 1865: 81) cited “*S. var. vulgaris* *S. rosmarinifoliae*”, indicating the rank of *S. rosmarinifolia* L.  $\alpha$  *vulgaris* Boiss.; therefore the rank of “ $\alpha$ ” and “ $\beta$ ” can clearly be established as variety. In addition, Lange in Willkomm & Lange (1880), cited the varietal status of both names.

The varieties “*obtusifolia*” and “*ceratophylla*” are from the same *locus classicus*: “*In rupestribus regionis montanae Hispanicae centralis, hucusque non nisi in Sierra de Gredos reperta (ad Serranillos, Isern, Cut!. Puerto del Pico, Bourg!) ubi utraque forma promiscue crescere videtur. — Julio (v.s.)*” (Willkomm in Willkomm & Lange 1865). Willkomm also mentioned “*Serranillos*” in the protologue of *S. heterophylla*. This indicates that Willkomm granted a varietal status to the intrapopulational variation.

The specimens COI-WILLK 00035955 and COI-WILLK 00035989 of Willkomm’s herbarium are on the same sheet (Fig. 3). This sheet has two labels in the lower left-hand margin with the following notation in black ink: **Label 1** (Bourgeau’s handwritten notation): “E. Bourgeau – Pl. d’Espagne 1863 // 2540. *Santolina oblongifolia* Boiss. Diagn. / Pl. Or. Ser. 2, fasc. 3, p. 18 (Planta herbaria Paroniani, cuius patria nodium involucrate) // (J. Gay) // Rochers de la Sierra de Gredos au Puerto del Pico // 8 et



FIG 3. — Lectotype of *Santolina oblongifolia* var. *a* *obtusifolia* Willk. (COI-WILLK 00035955) and lectotype of *S. oblongifolia* var. *β* *ceratophylla* Willk. (COI-WILLK 00035989).

25 juill”; Label 2 (Willkomm’s handwritten notation): “*Santolina oblongifolia* Boiss. [underlined] // 1. var.  $\alpha$  *obtusifolia* / 2. var.  $\beta$  *ceratophylla*”. Voucher specimens from the *locus classicus* and with the number “2540” were found in A 00251664, G, HEID 702282, LY (2 sheets), MA 720935, MPU (3 sheets), P (3 sheets) and W (3 sheets), but they do not include a revision label of Willkomm with the epithets “*obtusifolia*” and “*ceratophylla*”.

The collection to the left, COI-WILLK 00035955, comprises two samples from the same gathering, labelled with the name “*Santolina oblongifolia* var.  $\alpha$  *obtusifolia*” (lectotype here designated; Fig. 3). One of them (sample to the right) has three flowering stems and a small sterile stem, and the other (sample to the left) is a robust sample with four flowering stems and several vegetative stems. The lectotype has two revision labels by Sánchez-Mata and Sardinero with the following notation in black ink: Label 1: “*Santolina oblongifolia* Boiss. var. *obtusifolia* Willk. in Willk. & Lange // Lectotype [handwritten] // Coimbra [printed] 1993 IX [handwritten]”; Label 2: “*Santolina oblongifolia* Boiss. [handwritten] // Coimbra [printed] 1993 IX [handwritten]”. Both samples have spatulate leaves, but the flowering stems are strongly thickened above and the capitula are big (Fig. 3). The literature does not show the publication of this lectotype by Sánchez-Mata & Sardinero. There is another specimen with the name “*Santolina oblongifolia* var.  $\alpha$  *obtusifolia*” in W herbarium. The sheet (W 0026403; Fig. 4) has a different collection date (Sierra de Gredos, Leg. Bourgeau 3.VII.1863, Cour. Willkomm), and the number “2540” is not shown. This specimen does not show intermediate characteristics between *S. oblongifolia* and *S. rosmarinifolia* subsp. *rosmarinifolia*. All the characteristics fit with those listed in the protologue (Appendix 1).

Jordan & Fourreau (1869) published a new taxon (*S. sericea*) based on plants from the *locus classicus* of the varieties *obtusifolia* and *ceratophylla*. However, they did not cite it in the protologue. They also published a detailed diagnosis of *S. sericea* (Appendix 1). Furthermore, figure 321, table 240 (Jordan & Fourreau 1869) shows a robust sample of *S. sericea*. Two sheets are preserved in the Jordan’s herbarium (LY) with the epithets “*sericea*”.

The records indicate that the sample Jordan used to illustrate this name was split into two units and mounted on two sheets. They were labelled as “*1ère feuille*” (Fig. 5) and “*2ème feuille*” (Fig. 6, specimen to the right).

The sheet designated “*1ère feuille*” (Jordan’s handwritten notation in graphite in the lower left margin) has a sample, in the centre of the sheet, with three flowering stems, two fragments of flowering stems and three sterile stems. There is also a large, isolated sterile stem to the right of the sample (Fig. 5) [this sample is the portion to the right-hand of the original specimen]. A label in the central lower margin indicates: “*Santolina sericea* [underlined] // Jord. et Fourr. // Lectotypus [underlined] // D. Rivera // 18/10/1984 [D. Rivera’s handwritten notation]”. This lectotype was not published by D. Rivera.

The sheet designated “*2ème feuille*” (Jordan’s handwritten notation in the central lower margin in graphite) has two samples (Fig. 6). The sample to the right is the portion to the left-hand-side of the original material. It has a decumbent branch with eight flowering stems. The sample to the left (representing a different gathering) has a small branch with three flowering stems. This sample shows clear intermediate characteristics (linear and narrowly spatulate leaves, peduncles strongly thickened above and umbilicate capitula) between *S. oblongifolia* and *S. rosmarinifolia* subsp. *rosmarinifolia*.

The lectotype is the specimen from the sheet designated “*1ère feuille*” (Fig. 5 [sample to the left]). It has three flowering stems and three other short vegetative stems. Furthermore, Nyman (1879) cited the present Bourgeau’s collection as *S. oblongifolia*.

Willkomm in Willkomm & Lage (1865), in the protologue of the variety *ceratophylla*, cited *S. heterophylla* as a synonym of this name.

There are two possibilities regarding *S. oblongifolia* var.  $\beta$  *ceratophylla*:

– Option 1: Willkomm created a new name, at varietal rank for *S. heterophylla* (even if he did not use the same final epithet). This theory is supported by the following evidences: 1) Willkomm & Cutanda in Willkomm (1859) in the protologue of *S. heterophylla* wrote “An varietas *S. oblongifoliae?*”, indicating that the authors had doubts about the species status of *S. heterophylla*; 2) both



FIG 4. — Specimen labelled by Willkomm as *Santolina oblongifolia* var. *obtusifolia* Willk. The sheet has a different collection date for the type material (Sierra de Gredos, Leg. Bourgeau 3.VII.1863, Cour. Willkomm), and the number "2540" is not shown.





FIG 6. — Isolectotype of *Santolina sericea* Jord. & Fourr. (LY, "2ème feuille", specimen to the right).

names have the same *locus classicus*; 3) the single specimen cited in the protologue of *S. heterophylla* (COI-WILLK 0035956) bears the both names; 4) Willkomm (1865) cited *S. heterophylla* as synonym of the variety “*ceratophylla*”. If this is the case, the two names (*S. heterophylla* and *S. oblongifolia* var.  $\beta$  *ceratophylla*) have the same lectotype (COI-WILLK 0035956, here designated; see ICBN: art. 7.3 and 7.4; McNeill *et al.* 2006), therefore the both names are homotypic synonyms.

– Option 2: Willkomm created a new taxon at varietal rank for *S. heterophylla*. This theory is supported by the following evidences: 1) the author published a more accurate diagnosis with elements of the diagnosis of *S. heterophylla*; 2) he changed “*spathulato-linearibus*” (*S. heterophylla*) to “*cuneato-linearia*” (*S. oblongifolia* var.  $\beta$  *ceratophylla*); 3) the author included new elements in the diagnosis: “*folia superiora aut summa integerrima, omnia virentia*”; and 4) Willkomm studied more specimens and redefined the concept of *S. heterophylla*. If the option 2 is correct, the specimen to the right (Fig. 3; COI-WILLK 00035989) is the lectotype (here designated) of *S. oblongifolia* var.  $\beta$  *ceratophylla*. The sample has two flowering stems and a sterile stem. This specimen has two revision labels by Sánchez-Mata & Sardinero with the following notation in black ink (the labels are placed under one of the specimens of the variety “*obtusifolia*”, probably a handling error): Label 1: “*Santolina oblongifolia* Boiss. var. *ceratophylla* Willk. in Willk. & Lange // Typus [handwritten] // Coimbra [printed] 1993 IX [handwritten]”; Label 2: “*Santolina oblongifolia* Boiss. [handwritten] // Coimbra [printed] 1993 IX [handwritten]”. However, the specimen COI-WILLK 00035956 (Fig. 2, see lectotypification of *S. heterophylla*) was also selected by Sánchez-Mata & Sardinero as *typus* of *Santolina oblongifolia* var. *ceratophylla*. The specimens display characteristics consistent with those listed in the protologue (Appendix 1) and show characteristics intermediate between *S. oblongifolia* and *S. rosmarinifolia* subsp. *rosmarinifolia*. AORG considers that option 2 is the most appropriate.

### 5. *Santolina lobata* Jord. & Fourr.

*Icones ad Floram Europae novo fundamento instaurandam spectantes* 2: 12 (1869). — Type (as given in protologue): “Hispania central. Sierra de Gredos, prope Bohoyo”. — Lectotype (here designated): fig. 320, tab. 239: 12, 13 (Jordan & Fourreau 1869), cf. ICBN: arts 8.1 and 8A.1 (McNeill *et al.* 2006).

#### REMARKS

Specimens from this locality were not found in the Lyon Herbarium (LY). Four specimens from the *locus classicus* were found in G, P (00752616, Fig. 8; 00752617, Fig. 9) and W (0026402, Fig. 7) herbaria. They are labelled as “Sierra de Gredos, bords de la rivière près Bohoyo, à la base de la Sierra de Gredos, 9.VII.1863, Bourgeau s.n.”. They do not show the epithet “*lobata*”. Probably, these materials were not examined by the authors of *S. lobata*. The figure 320 (Jordan & Fourreau 1869) has been selected as a lectotype of this name, in agreement with the articles 8.1 and 8A.1 of the ICBN (McNeill *et al.* 2006).

### 6. *Santolina oblongifolia* Boiss. f. *intermedia* Pau

*Acta de la Reunión de la Sociedad Española de Historia Natural* 29: 287. 1900. — Type (as given in protologue): “Entre Baños de Montemayor y Garganta de Béjar; al pie de la Sierra, saliendo de la Garganta, abundante”. — Neotype (here designated): Spain, Salamanca: Béjar, La Garganta, 40°19'48"N, 5°49'10"W, 1000 m, granites, A. O. Rivero-Guerra s.n. (SEV 249072).

#### REMARKS

Pau (1900) indicated that the plants from these localities show intermediate morphological characteristics between *S. rosmarinifolia* and the varieties “*obtusifolia*” and “*ceratophylla*”: “Las hojas de los tallos floríferos, parecidos algo á los de la *S. rosmarinifolia* L., tan abundante en Castilla, son como los de la variedad *ceratophylla* Wk.; el color de todas la planta como en la *obtusifolia* Wk.”.

The type specimen of this name has been lost or destroyed and duplicates of the original material were not distributed. Consequently, no duplicate material is known, and unfortunately, no safe interpretation of



FIG 7. — Representative specimen from the locus classicus of *Santolina lobata* Jord. & Fourr. (W 0026402).

TABLE 1. — Summary of the quantitative characteristics of the individuals of *Santolina oblongifolia* Boiss. that live above and below 1800 m in the Central System of the Iberian Peninsula. Abbreviations: **N**, number of individuals studied; **sd**, standard deviation.

<b>Characteristics</b>	<b>Above 1800 m (N = 96)</b>		<b>Below 1800 m (N = 83)</b>	
	Range (mm)	Mean ± sd (mm)	Range (mm)	Mean ± sd (mm)
Length of the flowering stem	140-495	238.54 ± 57.33	160-540	284.18 ± 67.31
Length of the peduncle	23.12-142.43	66.16 ± 22.16	10.12-170.45	72.43 ± 28.72
Diameter of the flowering stem	0.44-2.74	1.20 ± 0.43	0.53-3.34	1.40 ± 0.46
Length of the sterile stem	36-210	86.47 ± 36.80	51-280	123.78 ± 49.13
Lobes number of the lower leaf of the flowering stem	0-7	2.69 ± 1.88	0-18	4.13 ± 2.65
Lobes number of the middle leaf of the flowering stem	0-10	3.58 ± 2.12	0-25	4.89 ± 2.47
Lobes length of the lower leaf of the flowering stem	0-4	1.59 ± 0.96	0-9	1.16 ± 0.89
Lobes length of the middle leaf of the flowering stem	0-7.30	1.61 ± 0.90	0-13	0.76 ± 0.36
Lobes number of the basal and fascicular leaf	8-52	15.89 ± 8.01	8-140	36.28 ± 19.35
Capitulum diameter	5.48-14.08	8.73 ± 1.90	8.81-16.56	11.49 ± 2.03
Capitulum height	2.69-6.56	4.68 ± 0.51	4.36-10.78	6.07 ± 1.02

this name can be provided by examination of the type specimen. No voucher specimen from this locality was found in more than 40 European Herbaria consulted. Therefore, in agreement with articles 9.6, 9.9 and 9.11 of the ICBN (McNeill *et al.* 2006), a neotype for *S. oblongifolia* Boiss. f. *intermedia* is designated.

## DISCUSSION

### DIAGNOSTIC CHARACTERISTICS

Several authors have cited the characteristics of the indument, leaf shape of the flowering stems (Boissier 1856; Willkomm & Cutanda in Willkomm 1859; Willkomm in Willkomm & Lange 1865; Jordan & Fourreau 1869) and leaf shape of the sterile stems (Willkomm & Cutanda in Willkomm 1859; Jordan & Fourreau 1869) as well as diagnostic characteristics (Appendix 1).

Willkomm & Cutanda in Willkomm (1859) and Jordan & Fourreau (1869) were the first to include the characteristics of the leaf apex and appendage of the involucral bracts, respectively, as relevant (Appendix 1). Rivero-Guerra (2011) demonstrated that plant colour, plant indument, presence of hollow flowering and sterile stems, peduncle shape, leaf shape and leaf apex of flowering and sterile

stems, number of rows of the involucral bracts, and position of peripheral and central flowers are good taxonomic features to differentiate *S. oblongifolia* from the other taxa of the genus. The same study found that the shape of involucral bracts, appendage insertion of the involucral bracts, leaf incision, lobe insertion, and shape of the capitulum have little taxonomic value.

### TAXONOMIC IMPLICATIONS

Willkomm in Willkomm & Lange (1865) and Jordan & Fourreau (1869) have granted specific and infraspecific status to the intrapopulation variation of the population of the *Puerto del Pico* gathered by Bourgeau in 1863. The same is true for Willkomm & Cutanda in Willkomm (1859) and Willkomm in Willkomm & Lange (1865) with regard to the plants from Sierra de Gredos, Serranillos. The *locus classicus* of all the names examined in the present work supports hybrid swarms. Rivero-Guerra (2011) demonstrated that the hybrid swarms between these taxa (*S. oblongifolia* and *S. rosmarinifolia* subsp. *rosmarinifolia*) do not have species status. The intriguing taxonomic complexity of *S. oblongifolia* can probably be explained, to a large extent, by recurrent hybridisation and subsequent interbreeding of the resulting genotypes, and by



Fig 8. — Representative specimen from the locus classicus of *Santolina lobata* Jord. & Fourr. (P 00752616).

TABLE 2. — Summary of the qualitative characteristics of the individuals of *Santolina oblongifolia* Boiss. that live above and below 1800 m in the Central System of the Iberian Peninsula. Abbreviation: N, number of individuals studied.

Characteristics	Above 1800 m (N = 96)	Below 1800 m (N = 83)
Plant colour	Glaucous	Glaucous or bright dark-green
Plant indument	Sericous	Sericous, rarely glabrous
Peduncle shape	Not thickened above	Strongly thickened above
Middle leaf shape of the flowering stems	Spatulate	Spatulate, narrowly spatulate, or linear
Middle leaf shape of the sterile stems	Spatulate	Spatulate, narrowly spatulate, lanceolate or linear
Fascicular leaf shape	Spatulate, without grooves	Spatulate, without grooves or elliptical, grooved on both sides
Basal leaf shape	Spatulate, without grooves	Spatulate, without grooves, or subterete and elliptical grooved on both sides
Lobe shape	Elliptical	Elliptical or linear
Capitulum base	Not umbilicate	Strongly umbilicate

the absence of karyotypic divergences and of spatial isolation between *S. oblongifolia* and *S. rosmarinifolia* subsp. *rosmarinifolia* (Rivero-Guerra 2009, 2011). Furthermore, the hybrid zone between the two taxa is active, large and stable, and constitutes a natural experiment that can be used to study phenomena related to adaptation and speciation.

*Santolina lobata*, *S. heterophylla*, *S. oblongifolia* f. *intermedia*, *S. oblongifolia* var. *obtusifolia*, *S. oblongifolia* var. *ceratophylla*, and *S. sericea* conform to the morphological characteristics listed in Tables 1 and 2 for the plants that live below 1800 m in the Central System of the Iberian Peninsula. The intermediate morphological characteristics are more relevant in *S. lobata*, *S. heterophylla*, *S. oblongifolia* var. *ceratophylla*, and *S. oblongifolia* f. *intermedia* than in *S. oblongifolia*, *S. oblongifolia* var. *obtusifolia*, and *S. sericea*. The results support the conclusion that all these names are synonyms of *S. oblongifolia*.

The results indicate that the populations growing below 1800 m are *S. oblongifolia* Boiss. Regarding the taxonomic treatment, both options 1 and 2 are valid. The heterotypic synonyms have to be listed according to their date of publication, giving:

#### Option 1

Willkomm created a new name (*S. oblongifolia* Boiss. var.  $\beta$  *ceratophylla* Willk.), at a varietal rank for *S. heterophylla* (even if he did not use the same final epithet).

#### *Santolina x oblongifolia* Boiss., nothosp., stat. nov.

*Diagnoses plantarum orientalium novarum*. Ser. II (3,3), fasc. (1-6): 18 (1856) [pro. sp.]. — Type (as given in protologue): “In Hispania loco non notato (Herb. Pavon)”. — Lectotype (designated by Sánchez-Mata et al. [1994]): *Hispania, Pavon s.n.* (G).

*Santolina heterophylla* Willk. & Cut. in Willkomm, *Linnaea* 30: 106-107 (1859). — *S. oblongifolia* Boiss. var.  $\beta$  *ceratophylla* Willk. in Willkomm & Lange, *Prodromus Florae Hispanicae* 2: 82 (1865). — Type (as given in protologue): “In Hispania centrali regione montana: in monte Sierra de Gredos et in province Avilensi prope Servanillos, Cutanda et Ysern! (1857). Floret Julio”. — Lectotype (here designated): Spain, Sierra de Gredos VI.1855, *Ysern s.n.* (COI-WILLK 00035956).

*Santolina oblongifolia* Boiss. var.  $\alpha$  *obtusifolia* Willk. in Willkomm & Lange, *Prodromus Florae Hispanicae* 2: 82 (1865). — *S. oblongifolia* Boiss. subsp. *obtusifolia* (Willk.) Rivas Mart., *Anales del Instituto Botánico Cavanilles* 32: 1542 (1975). — Type (as given in protologue): “In rupestribus regionis montanae Hispanicae centralis, hucusque non nisi in Sierra de Gredos reperta (ad Serranillos, Isern, Cut!. Puerto del Pico, Bourg!) ubi utraque forma promiscue crescere videtur. — Julio (v.s.)”. — Lectotype (here designated): Spain, Rochers de la Sierra de Gredos au Puerto del Pico, 8-25. VII.1863, Bourgeau 2540 (COI-WILLK 00035955; isolecto-, MANCH, MPU, P (2 sheets), W (2 sheets, one of them with two specimen; the isolectotype is the specimen to the right).

*Santolina sericea* Jord. & Fourr., in Jord. & Fourr., *Icones ad Floram Europae novo fundamento instaurandam*



Fig 9. — Representative specimen from the locus classicus of *Santolina lobata* Jord. & Fourr. (P 00752617).

*spectantes* 2: 13. (1869). — Type (as given in protologue): “*Hispania central. Sierra de Gredos ad Puerto del Pico*”. — Lectotype (designated here): Spain, Rochers de la Sierra de Gredos au Puerto del Pico, 8-25. VII.1863, Bourgeau 2540 (LY [Fig. 5, sample to the left]). Isolec-LY (Fig. 6, specimen to the right), cf. article 8.3 of the ICBN (McNeill *et al.* 2006).

*Santolina lobata* Jord. & Fourr. *in* Jord. & Fourr., *Icones ad Floram Europae novo fundamento instaurandam spectantes* 2: 12 (1869). — *S. rosmarinifolia* L. var. *lobata* (Jord. & Fourr.) Guinea, *Anales del Instituto Botánico Cavanilles* 27: 39 (1970) “*nom. inval. cf. art. 33.4 of ICBN*”. — Basionym not cited. — Type (as given in protologue): “*Hispania central. Sierra de Gredos, prope Bohoyo*”. — Lectotype (here designated): fig. 320, tab. 239: 12, 13 (Jordan & Fourreau 1869), cf. articles 8.1 and 8A.1 of the ICBN (McNeill *et al.* 2006).

*Santolina oblongifolia* Boiss. f. *intermedia* Pau, *Acta de la Reunión de la Sociedad Española de Historia Natural* 29: 282-288. 1900. — Type (as given in protologue): “Entre Baños de Montemayor y Garganta de Béjar; al pie de la Sierra, saliendo de la Garganta, abundante”. — Neotype (designated here): Spain, Salamanca: Béjar, La Garganta, 40°19'48"N, 5°49'10"W, 1000 m, granites, A. O. Rivero-Guerra s.n. (SEV 249072).

#### Option 2

Willkomm created a new taxon (*S. oblongifolia* Boiss. var.  $\beta$  *ceratophylla* Willk.) at varietal rank for *S. heterophylla*.

*Santolina x oblongifolia* Boiss., nothosp., stat. nov.

*Diagnoses plantarum orientalium novarum*. Ser. II (3,3), fasc. (1-6): 18 (1856) [pro. sp.]. — Type (as given in protologue): “In Hispania loco non notato (Herb. Pavon)”. — Lectotype (designated by Sánchez-Mata *et al.* [1994]): Hispania, *Pavon s.n.* (G).

*Santolina heterophylla* Willk. & Cut. *in* Willkomm, *Linnaea* 30: 106-107 (1859). — Type (as given in protologue): “In Hispania centrali regione montana: in monte Sierra de Gredos et in province Avilensi prope Servanillos, Cutanda et Ysern! (1857). Floret Julio”. — Lectotype (here designated): Spain, Sierra de Gredos VI.1855, *Ysern s.n.* (COI-WILLK 00035956).

*Santolina oblongifolia* Boiss. var.  $\alpha$  *obtusifolia* Willk. *in* Willkomm & Lange, *Prodromus Flora Hispanicae* 2: 82 (1865). — *S. oblongifolia* Boiss. subsp. *obtusifolia* (Willk.) Rivas Mart., *Anales del Instituto Botánico Cavanilles* 32: 1542 (1975). — Type (as given in proto-

logue): “In rupestribus regionis montanae Hispanicae centralis, hucusque non nisi in Sierra de Gredos reperta (ad Serranillos, Isern, Cut.! Puerto del Pico, Bourg.!) ubi utraque forma promiscue crescere videtur. — Julio (v.s.)”. — Lectotype (here designated): Spain, Rochers de la Sierra de Gredos au Puerto del Pico, 8-25. VII.1863, Bourgeau 2540 (COI-WILLK 00035955; isolecto-, MANCH, MPU, P (2 sheets), W (2 sheets, one of them with two specimen; the isolectotype is the specimen to the right).

*Santolina oblongifolia* Boiss. var.  $\beta$  *ceratophylla* Willk. *in* Willkomm & Lange, *Prodromus Flora Hispanicae* 2: 82 (1865). — Type (as given in protologue): “In rupestribus regionis montanae Hispanicae centralis, hucusque non nisi in Sierra de Gredos reperta (ad Serranillos, Isern, Cut.! Puerto del Pico, Bourg.!) ubi utraque forma promiscue crescere videtur. — Julio (v.s.)”. — Lectotype (here designated): Spain, Rochers de la Sierra de Gredos au Puerto del Pico, 8-25.VII.1863, Bourgeau 2540 (COI-WILLK 00035989; isolecto-, A 00251664 (specimen to the left), HEID 702282 [specimen to the left], MPU (2 sheets), W (2 sheets, one of them with two specimen; the isolectotype is the specimen to the left).

*Santolina lobata* Jord. & Fourr. *in* Jord. & Fourr., *Icones ad Floram Europae novo fundamento instaurandam spectantes* 2: 12 (1869). — *S. rosmarinifolia* L. var. *lobata* (Jord. & Fourr.) Guinea, *Anales del Instituto Botánico Cavanilles* 27: 39 (1970) “*nom. inval. cf. art. 33.4 of ICBN*”. — Basionym not cited. — Type (as given in protologue): “*Hispania central. Sierra de Gredos, prope Bohoyo*”. — Lectotype (here designated): fig. 320, tab. 239: 12, 13 (Jordan & Fourreau 1869), cf. articles 8.1 and 8A.1 of the ICBN (McNeill *et al.* 2006).

*Santolina sericea* Jord. & Fourr., *in* Jord. & Fourr., *Icones ad Floram Europae novo fundamento instaurandam spectantes* 2: 13. (1869). — Type (as given in protologue): “*Hispania central. Sierra de Gredos ad Puerto del Pico*”. — Lectotype (designated here): Spain, Rochers de la Sierra de Gredos au Puerto del Pico, 8-25. VII.1863, Bourgeau 2540 (LY [Fig. 5, sample to the left]). Isolec-LY [Fig. 6, specimen to the right], cf. artticle 8.3 of the ICBN (McNeill *et al.* 2006).

*Santolina oblongifolia* Boiss. f. *intermedia* Pau, *Acta de la Reunión de la Sociedad Española de Historia Natural* 29: 282-288 (1900). — Type (as given in protologue): “Entre Baños de Montemayor y Garganta de Béjar; al pie de la Sierra, saliendo de la Garganta, abundante”. — Neotype (designated here): Spain, Salamanca: Béjar, La Garganta, 40°19'48"N, 5°49'10"W, 1000 m, granites, A. O. Rivero-Guerra s.n. (SEV 249072).

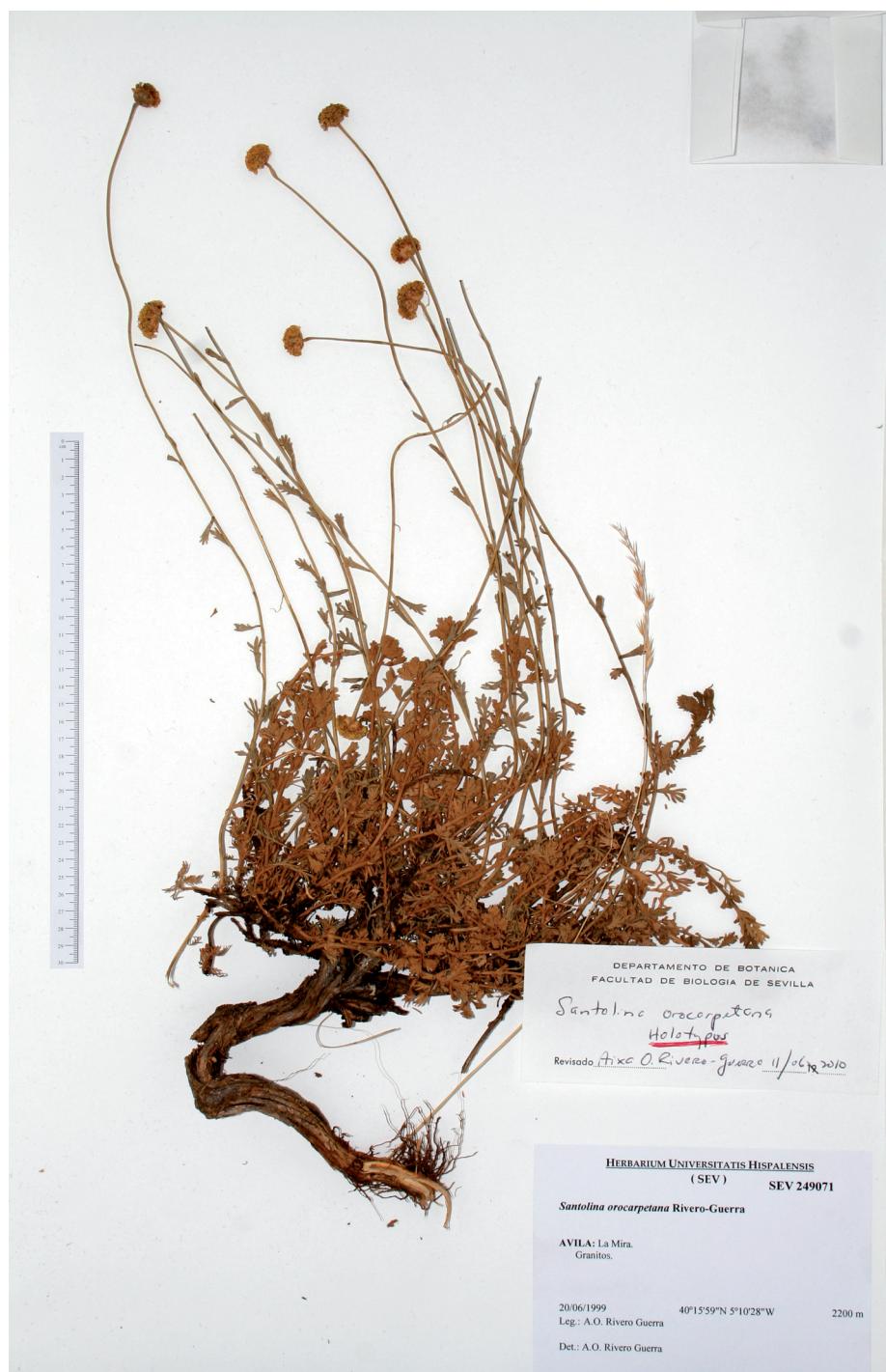


FIG 10. — Holotype of *Santolina orocarpetana* Rivero-Guerra, sp. nov. (SEV 249071).

The clarifications provided in the present paper can be applied to studies of speciation patterns and process in *Santolina* and, by extension, in angiosperms in general, and combined with the previous results of Rivero-Guerra (2011), they support recognition of the populations living above 1800 m (in the summit region) in the Central System of the Iberian Peninsula at the species level. The following new species is proposed:

*Santolina orocarpetana* Rivero-Guerra, sp. nov.  
(Fig. 10)

*A S. x oblongifolia* Boiss., floriferis simplicibus caulinibus 14.1-32.1 (47.5) cm longis (vs 16.1-54.1 cm longis), pedunculo 0.5-1.2 (2.2) mm, haud incrassato (vs (0.9) 1.1-2.0 mm, crasso), foliis spathulatis (vs spathulatis, anguste spathulatis vel linearis), (0) 1-8 (13) lobulis ellipticis (vs (0) 1-25 ellipticis vel linearibus), foliis basalibus fasciculatis cum 8-18 (52) lobis (vs (8) 14-80 (140) lobis), sterilibus caulinibus 3.6-8.8 (21.1) cm in longitudine (vs 5.1-28.6 cm in longitudine), capitulo (5.5) 6.5-12.6 (14.08) × (2.7) 3.6-6.6 mm, haud umbilicato (vs (8.8) 10.3-16.6 × 4.4-6.7 (10.8) mm umbilicato), involucralibus trifariis bracteis (vs involucralibus 3-4 fariis bracteis) praecipue differt.

TYPIUS. — Spain. Ávila, La Mira, 40°15'59"N, 5°10'28"W, 2200 m, granites, 20.VII.1999, Rivero-Guerra s.n. (holo-, SEV 249071).

PARATYPI. — Spain. Ávila, Canchal Negro, 40°20'88"N, 5°40'27"W, 2000 m, granites, 19.VII.1999, Rivero-Guerra, s.n. (SEV 249072). — Salamanca, Béjar, La Garganta, 40°19'48"N, 5°49'10"W, 1000 m, granites, 10.VII.1995, Rivero-Guerra s.n. (SEV 249073). — El Calvitero, 40°17'16"N, 5°44'18"W, 2360 m, granites, 19.VII.1999, Rivero-Guerra s.n. (SEV 249074).

#### DESCRIPTION

Plant 35-70 × 18-60 cm, with 1-9 branches stock, glaucous, with indument sericeous. Flowering stem 14.1-32.1 (47.53) cm long, 0.5-1.2 (2.2) mm in diameter, simple, usually not solid. Peduncle 23.1-92.6 (142.4) mm long, not thickened above. Sterile stem 3.6-8.8 (21.1) cm long. Leaf 5.4-20.8 × 2.1-6.2 mm, spatulate, plane, with bi or trilobulate apex, usually pinnatisect or pinnatifidate, with (0) 1-8 (13) lobes of 0.4-4.1

(5.0) mm long; basal and fascicular leaves, usually pinnatifid or pinnatipartite. Lobes elliptical, along 1/3 upper, generally with obtuse-mucronate or acute-mucronate apex. Upper leaf 5.3-13.4 (15.8) × 0.8-2.1 (2.4) mm, narrowly elliptical, entire, with a beaked apex. Capitulum (5.5) 6.5-12.6 (14.1) × (2.7) 3.6-6.6 mm, usually campanulate, not umbilicate, with the flowers covering the capitulum. Receptacle 4.4-5.1 × 2.4-3.0 mm, hemispherical. Involucral bracts (1.7) 2.0-3.2 (3.7) × 0.7-1.6 (1.7) mm, in three rows, carinate, with an apical scarious appendage 0.2-0.8 × 0.2-2.5 (2.9) mm, generally decurrent along the upper 1/3 or 1/2; outer and middle bracts usually triangular or ovate, inner bracts usually ovate or elliptical. Intersepaline bracts (1.8) 1.9-3.1 × 0.8-2.0 mm, usually elliptical or oblong, rarely obovate, with truncate or rounded apex, with erose or dentate margin. Corolla 3.5-5.1 mm long. Anthers 2.5-3.8 mm long. Style 3.0-5.1 mm long. Corolla tube 1.6-3.0 mm long. Corolla aperture 0.8-1.5 mm long. Corolla lobes 0.4-1.1 mm long. Achene 1.2-2.3 × 0.4-0.9 mm. Flowering from July to August.

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## APPENDIX 1

Diagnostic characteristics listed in the protologue of *S. oblongifolia* Boiss., *S. heterophylla* Willk. & Cut., *S. lobata* Jord. & Fourr., *S. sericea* Jord. & Fourr., *S. oblongifolia* Boiss. var. *obtusifolia* Willk., *S. oblongifolia* Boiss. var. *ceratophylla* Willk.

Name	Reference	Diagnostic characteristics
<i>S. oblongifolia</i> Boiss.	Boissier (1856)	" <i>S. tota adpressè sericea suffruticosa, ramis sterilibus elongatis ramulosis, floriferis parte inferiori laxiusculè foliosis supernè denudatis apice subincrassatis, foliis oblongo-spatulatis in petiolum sensim attenuatis planis aliis pinnatifidis laciniis utrinquè 3-5 linear-i-oblongis obtusis aliis praesertim ad ramos steriles utrinquè obtusè 3-5 dentatis, capitulis majusculis, involucri glabriusculi squamis adpressis</i> ".
<i>S. heterophylla</i> Willk. & Cut.	Willkomm (1859)	" <i>Suffrutescens, multicaulis, caulis simplicibus supernenudis, foliis planis adpresso sericeis difformibus, caulinis inferioribus et mediis spathulato-linearibus in petiolum latum sensim attenuatis, apice triad quinquefidis, dentibus callosis mucronulatis, summis linearibus integerrimis in mucronem longum, mollem desinentibus, fol. ramulorum sterilium juvenilibus obovato-lanceolatis in petiolum brevem attenuatis, utroque margine inciso-crenatis, adultis pinnatifidis imo pinnatopartitis, crenis vel laciniis obtusiusculis linearibus; calathis hemisphaericis, anthodii squamis imbricatis valde carinatis apice late scariosis</i> ".
<i>S. oblongifolia</i> Boiss. var. $\alpha$ <i>obtusifolia</i> Willk.	Willkomm in Willkomm & Lange (1865)	" <i>Folia ramorum fertilium fere omnia oblongo-cuneata obtuse crenata, junioribus ramorum sterilium simillima, omnia incana</i> ".
<i>S. oblongifolia</i> Boiss. var. $\beta$ <i>ceratophylla</i> Willk.	Willkomm in Willkomm & Lange (1865)	" <i>Folia ramorum fertilium cuneato-linearia, inferiora vel etiam media apice 3-5 fida, dentibus, laciniis calloso-mucronulatis, superiora aut summa integerrima, omnia virentia (<i>S. heterophylla</i> Wk. et Cut. in Linnaea 1859, p. 106!)</i> ".
<i>S. lobata</i> Jord. & Fourr.	Jordan & Fourreau (1869)	" <i>S. capitulis hemisphaericis, crassis; involuci concavi, basi subtruncata umbilicata, canescenti-pubescentis foliolis lanceolatis, dorso carinatis interioribus apice margine scarioso rotundato lacerate-denticulato cinctis; flosculis vivide luteis, exterioribus geniculato-recurvis involucrum omnino occultantibus; foliis erecto-adpresso, incano-sericeis, oblongo-linearibus, subulatis, apice pinnatifidis laciniis utrinque 1-3 breviusculis suberectis acutis, superioribus integris, illis caulum hornotinorum utrinque 3-4 laciniatis axillaribus numerosis confertis dentatis dentibus utrinque 6-7 brevibus contiguis; caulis elongates, erectis, rigidis, validulis, cinereo-pubescentibus, superne nudis, monocephalis, hornotinis subincanis duplo circiter brevioribus, e caudice ramoso fruticoso productis</i> ".
<i>S. sericea</i> Jord. & Fourr.	Jordan & Fourreau (1869)	" <i>S. capitulis hemisphaericis, crassis; involuci concavi, basi subtruncata umbilicata, canescenti-pubescentis foliolis lanceolatis, dorso leviter carinatis, interioribus apice margine scarioso rotundato lacerate-denticulato cinctis; flosculis vivide luteis, exterioribus geniculato-recurvis involucrum omnino occultantibus; foliis suberectis, sat numerosis, incano-sericeis; oblongis, breviusculis, inferne vix angustati, apice dentatis utrinque 2-3 obtusis suberectis approximatim superioribus integris apice mucrone molli terminatis, illis caulum hornotinorum numerosis confertis late spathulatis infra medium in petiolum contactis supra medium pinnatifidis laciniis utrinque 6-7 linear-i-oblongis subacutis subcontiguis, axillaribus sat parvis erectis dentatis; caulis erecto-ascendentibus, cinereo-pubescentibus, superne longe nudis, monocephalis, hornotinis subprostratis breviusculis cano-sericeis, e caudice fruticoso productis</i> ".