

## Studies on *Thapsia* (Apiaceae) from north-western Africa: a forgotten and a new species

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Following a revision of *Thapsia* (Apiaceae) in north-western Africa, the name *Thapsia platycarpa* is resurrected and lectotypified for a species that grows between Algeria and Morocco, and a new species *Thapsia cinerea* is described from the Rif region of north-eastern Morocco. Morphological features that differentiate between these and other species (*T. villosa*, *T. garganica*, *T. transtagana* and *T. gymnesica*) are discussed. An identification key for the plants of the area is presented. © 2003 The Linnean Society of London, *Botanical Journal of the Linnean Society*, 2003, 143, 433–442.

ADDITIONAL KEYWORDS: Algeria – Morocco – Umbelliferae.

### INTRODUCTION

*Thapsia* (Apiaceae, tribe Laserpitieae) is a small genus of about eight species distributed in the Mediterranean area. Its centre of diversity is located in the western Mediterranean and extends to the Atlantic coasts of Portugal and Morocco.

Taxonomically, *Thapsia* is a complex genus. Thus Tutin (1968) cites only three species (*T. garganica* L., *T. maxima* Mill. and *T. villosa* L.) in *Flora Europaea*. Subsequent studies have added, characterized or differentiated other species such as *T. gymnesica* Rosselló & A. Pujadas (Pujadas, Rosselló & Barceló, 1991; Christiansen *et al.*, 1997), *T. transtagana* Brot. (Smitt *et al.*, 1995), *T. minor* Hoffmanns. & Link and *T. nitida* Lacaita (Bayer & López-González, 1996; Pujadas-Salvà, 2000a,b).

The area where the two species are found is located in north-west Africa between Algeria and Morocco. This area has a semi-arid Mediterranean climate with some subhumid enclaves. The predominant vegetation is thermo-Mediterranean with scarce meso-Mediterranean vegetation in mountainous zones (Benabid, 2000). The climax vegetation is composed of sclerophyllous forests with formations of *Tetraclinis articu-*

*lata* (Vahl) Mast., evergreen oak forests of *Quercus ilex* ssp. *ballota* (Desf.) Samp. and pine forests of *Pinus halepensis* Mill. (Benabid, 1984).

Pomel (1874) described *T. stenoptera* and *T. microcarpa* and pointed out their affinity with *T. villosa*. He also described *T. stenocarpa*, *T. platycarpa* and *T. lineariloba*, indicating their relationship with *T. garganica*. These taxa by Pomel have been forgotten or simply accepted as mere variants or forms of similar species. We believe that at least one of them, *T. platycarpa* Pomel, presents different morphological features that confirm its taxonomic rank as a species.

Only Battandier (1888: 371–372) and Battandier & Trabut (1902: 456) recognize *T. platycarpa* and the other species of Pomel, although they relegate them to the rank of variety. *T. platycarpa* has been ignored since then by the authors who have studied the flora of North Africa (Table 1).

Studies of the flora in the region near Melilla and the northern border area between Morocco and Algeria, where *T. platycarpa* is relatively common and where the new species *T. cinerea* can be found, do not make reference to these taxa. Sennen & Mauricio (1933: 50) only record the presence of *T. villosa* and of *T. garganica* var. *decussata* (Lag.) DC.; Pau (1934: 333) cites *T. villosa* var. *dissecta* Boiss.; Urrestarazu-Gavilán (1984: 118) only cites *T. garganica*

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**Table 1.** Taxa cited in north-west Africa

| Author                                   | Taxon   |
|--|---|
| Bonnet & Barratte (1896: 184)            | <i>T. garganica</i> L.<br><i>T. villosa</i> L.  |
| Pitard (1912: 51)                        | <i>T. garganica</i> L.<br><i>T. villosa</i> L.  |
| Jahandiez & Maire (1932: 548–549)        | <i>T. garganica</i> ssp. <i>decussata</i> (Lag.) Maire<br><i>T. villosa</i> var. <i>dissecta</i> Boiss.<br><i>T. villosa</i> var. <i>microcarpa</i> (Pomel) Batt.<br><i>T. villosa</i> var. <i>stenoptera</i> (Pomel) Batt. |
| Emberger & Maire (1941: 1090)            | <i>T. garganica</i> ssp. <i>decussata</i> var. <i>angusta</i> Faure & Maire   |
| Nègre (1962: 114)                        | <i>T. garganica</i> L.  |
| Quézel & Santa (1962: 656)               | <i>T. garganica</i> L. (incl. <i>T. decussata</i> Lag.)<br><i>T. villosa</i> L.   |
| Lebrun & Stork (1978: 335).              | <i>T. garganica</i> ssp. <i>decussata</i> var. <i>angusta</i> Faure & Maire   |
| Pottier-Alapetite (1979: 612–613)        | <i>T. garganica</i> ssp. <i>decussata</i> (Lag.) Maire<br><i>T. garganica</i> L. ssp. <i>garganica</i><br><i>T. villosa</i> L.  |
| Jafri (1985: 111)                        | <i>T. garganica</i> L.<br><i>T. decussata</i> Lag.  |
| González-Bueno <i>et al.</i> (1988: 171) | <i>T. villosa</i> L.  |

(= *T. decussata*). Sennen (1936) does not provide any new information regarding *Thapsia*. The bibliographical references to *T. decussata* by Caballero (1917: 24) and Sennen (1932: 269), however, actually correspond to *T. platycarpa* herbarium material.

## MATERIAL AND METHODS

This paper represents part of a critical review of the North African plants of the genus *Thapsia* housed in the herbaria BC, BCF, G, MA, MAF, MPU and RNG.

Specimens of *T. platycarpa* have been compared with the original material of Pomel, *T. platycarpa*, which is conserved in the MPU Herbarium. Macro-morphological data used to contrast *T. platycarpa* and *T. cinerea* with similar species with which they may be confused have been obtained from the herbarium material housed in BC, BCF, COA, COI, G, GDA, GDAC, JACA, MA, MAF, MGC, MPU, RNG, SALA and SALAF.

## RESULTS AND DISCUSSION

### LECTOTYPIIFICATION OF *THAPSIA PLATYCARPA*

*Thapsia platycarpa* Pomel in *Bull. Soc. Sci. Phys. Algérie* (1874: 313)  
= *T. garganica* var. *platycarpa* Batt., *Fl. Algér.* (1888: 372)

*Lectotype designated here:* O. Ghar-Rouban, Pomel (MPU!). (Fig. 1)

In the Herbarium at the University of Montpellier II, we managed to find Pomel's original material, a herbarium sheet with a flowering specimen and with an added infructescence. In the protologue Pomel indicates the locality of Garrouban, Milliana, which coincides with the one referred to in the voucher as O. Ghar-Rouban. It has been impossible to find any other of Pomel's materials, for which we can consider that this is a valid lectotype for *T. platycarpa*.

On the herbarium sheet there are two labels, the original from Pomel '*Thapsia garganica?* [*garganica* crossed out] *platycarpa*/(*haec ut praecedens species distincta*)/(O. Ghar-Rouban) (Pomel)' and another posterior 'UNIVERSITÉ D'ALGER/HERBIER DE L'AFRIQUE DU NORD'/*Thapsia garganica* L./var. *platycarpa* Batt. /= *T. platycarpa* Pomel!

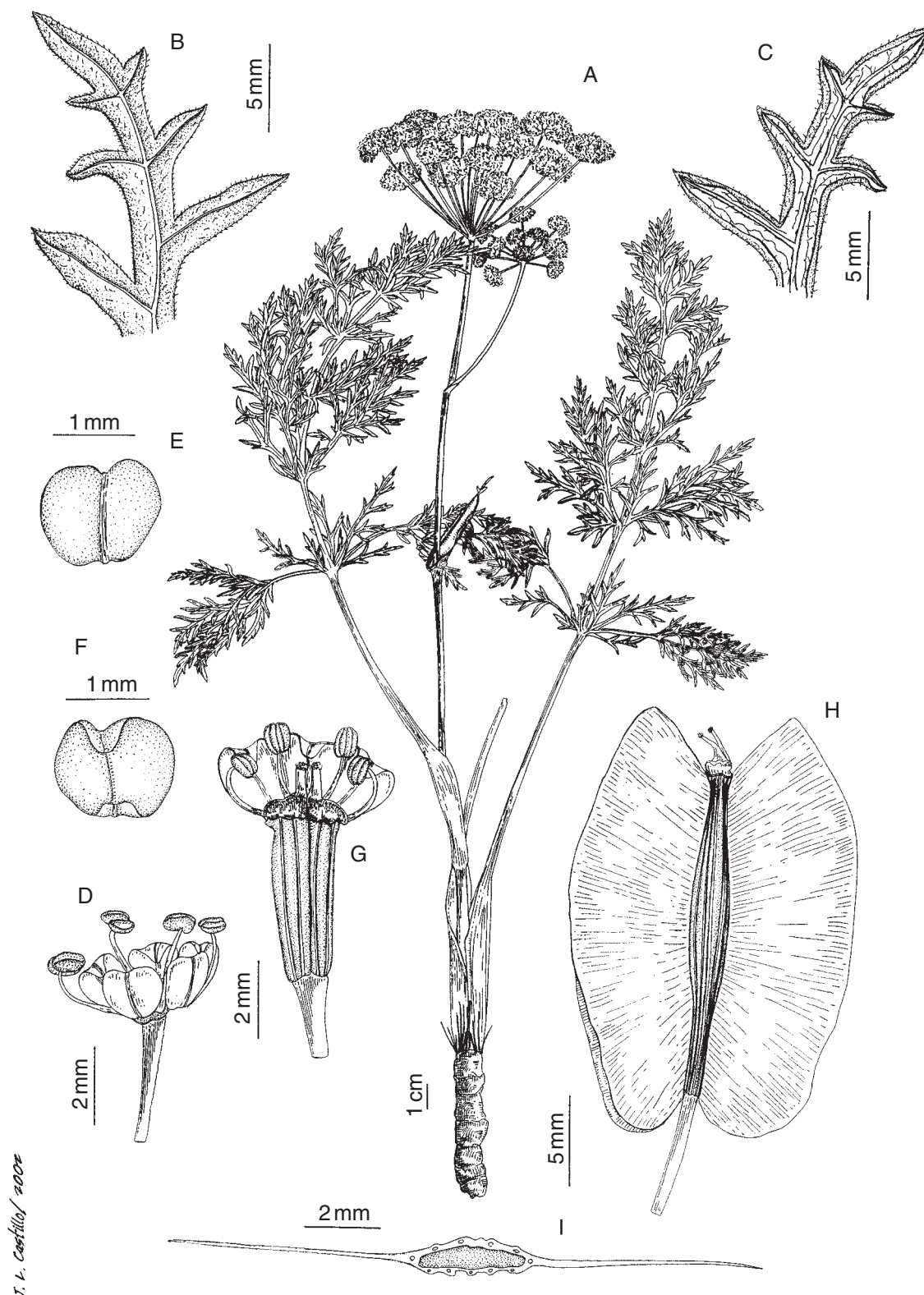
### DESCRIPTION

The description provided by Pomel (1874) is very brief. To facilitate identification we have provided a more complete description and an original illustration (Fig. 2).

HERBACEOUS PERENNIAL 45–60 cm. STOCK with abundant fibres. LOWER LEAVES 23–42 cm. Sheath 12–24 mm wide. Petiole glabrous or sometimes hispidulous. Lamina (15)19–30 × 16–26 cm, triangular to rhomboid in outline (2)3–4 pinnatisect, ultimate lobes (1)4–10(20) × (0.5)0.9–2(3) mm, linear-oblong, obtuse to subacute, shortly acuminate. Rachis glabrous or glabrescent at base, villous in the middle, more dense



**Figure 1.** *Thapsia platycarpa* Pomel. Lectotypus voucher (MPU).



**Figure 2.** *Thapsia platycarpa* Pomel. A, D–G. Morocco, Taza, Djebel Berkane, RNG. H–I. Morocco, Nador, Mont Gourougou, RNG; B, C. Spain, Melilla, MA 88998. A, appearance. B, lamina upper surface detail. C, lamina lower surface detail. D, male flower. E, petal, dorsal view. F, petal, ventral view. G, hermaphrodite flower showing androecium and gynoecium. H, fruit. I, transverse section of mericarp.

in the upper part, sometimes hispidulous on rachis. Upper (adaxial) surface reticulate, canaliculate, densely hispidulous, green; lower (abaxial) surface reticulate, densely hispidulous on the main nerves and on the revolute margin, glaucous rarely pale green. UPPER LEAVES 11–25 cm, similar to the lower leaves, frequently uppermost leaves reduced to a broad sheath. INFLORESCENCE, umbels subhemispherical, bracts absent, rarely very short up to 2 mm; primary rays 9–14(18), 6–11 cm, subequal. Ultimate umbels subhemispherical rarely subglobose, bracteoles absent, secondary rays 29–53. PETALS oblong to obovate, inflexed, acuminate, deep yellow (yellowish-white when dry). ANTHERS whitish. FRUITS (15)19–25 × (9)13–15 mm, elliptical to oblong. Seed part 13–18 × (2)2.2–3.5 mm, fusiform, brown. Wings (3)4–6(7) mm wide, straw or silvery coloured, apex acute and falcate sometimes obtuse triangular, overlapping or open apex, wings are greatly variable in form even in the same umbella. STYLES shorter than wing cleft.

*T. platycarpa* grows in rocky terrain, often on mountainsides, areas of dry grassland, degraded scrubland or forest clearings of *Tetraclinis articulata*. Flowering from February to May. Fructification from April to June. 30–1600 m.

#### SPECIMENS EXAMINED

ALGERIA: Oran, Saïda, 10.v.1901, *B.P.G. Hochreutiner* (G). Tenez, s.d., *L. Trabut*, (MPU). Sponte Cresc, iv–vi, *B. Balansa* (MPU). O. Gar-Rouban, s.d., *Pomel* (MPU), *Lectotypus*. Bizot, Constantine, 6.vii.1909, *Joly* (MPU). SPAIN: Melilla, iv.1910, *C. Pau* (MA 88997, MA 88998). Melilla, Masusa, 23.iv.1933, *Pardo & Martín* (MA 423444). MOROCCO: Gurugú, Muley-Rechid, fl. iii; fr. vi.1931, *Sennen & Mauricio* (BCF 45256, MA 88993, MAF 54282, MAF 57789, MPU). Had de Ruadi, v.1931, *Mas* (MA 88987). Gurugú, 3.vi.1915, *A. Caballero* (MA 88991). Massif des Beni-Snassen, Martimprey au Guerbouz, 600 m, 26.v.1932, *A. Faure* (MPU). Col du Guerbouz, 500 m, 19.iv.1937, *A. Faure* (MPU). Nador, near Melilla, Mont Gourougou, 500 m, 1.vi.1993, *M.A. Mateos & B. Valdés* (RNG). Imzourene, 390 m, 28.ii.1994, *S.L. Jury, A. Taleb, T.M. Upson, G.S. Walters* (RNG). Nador, Oulad Berzayer, estribaciones Djbel Guens, 260 m, 6.iv.1994, *A.M. Romo, M. Bouhmadi, J.B. Peris, G. Stubing* (RNG). Garebarea, 30 m, 21.ii.1995, *S.L. Jury, M. Ait Lafkih, H. Abu Sbaih & R. Ziri* (RNG). Taza, Djebel Berkane, 1600 m, 25.v.1994, *M.J. Diez, M.A. Mateos, E. Moreno, A. Taleb & B. Valdés* (RNG). Nador, Selouane, 60 m, 10.iii.1995, *J. Lambinon & Van den Sande* (RNG). Oujda, Monts des Beni-Snassen, 250 m, 4.v.1995, *R. Vogt & Ch. Oberprieler* (RNG).

#### DISCUSSION

Pomel (1874) described the affinity of *Thapsia platycarpa* with *T. garganica*, owing to the large fruits of similar size of both plants. However, *T. platycarpa* has hispidulous leaves with shorter and narrower lobes. Although *T. transtagana* has large fruit similar to that of *T. platycarpa*, in *T. platycarpa* the lobes of its linear-oblong leaves are smaller in size and much shorter and narrower.

The size and leaves of *T. platycarpa* approximate *T. gymnesica* in appearance although the former can be clearly distinguished by its yellow petals and much larger fruit.

The main differences between *T. platycarpa*, *T. garganica*, *T. transtagana* and *T. gymnesica* are shown in Table 2.

#### DIAGNOSIS AND DESCRIPTION OF *THAPSIA CINEREA*

Based on comparative morphological studies we propose the recognition of a new species:

#### *Thapsia cinerea* A. Pujadas **sp. nov.**

*Planta herbacea, perennis. Folia basalia brevia (11)12–14 cm longa. Vagina angusta, 2–4 mm lata. Lamina 1–2(3) pinnatifida vel pinnatisecta, ambitu late elliptica vel obovata, basi attenuata; lobuli terminales (1)2–7 × (1)1.2–1.9 mm, anguste oblongi, obtusi, mutici; laminae pagina superior reticulato-venosa, atroviridis, cum pilis araneosis dispersis; laminae pagina inferior cum pilis cinereis, densis, adpressis et lanatis. Fructus 20–22 × 15–18 mm; alae marginales 4–6 mm latae, stramineae, cum quoque apice acuto et falcato; apices imbricati. Styli quam alarum sinus breviores.*

*Type:* PLANTES DU MAROC, avec rosette radicale, Beni-Sidel, Segangan, 24.v.1934, *F. Sennen & Hno. Mauricio* (MAF 59036, holotypus, *ut Thapsia decussata* Lag.). (Fig. 3).

*Iconography:* Figure 4.

*Derivatio nominis:* The name ‘cinereus’ refers to the ash grey colour of the leaves.

HERBACEOUS PERENNIAL. STOCK with abundant fibres. LEAVES (11)12–14 cm, in a short basal rosette. Sheath 2–4 mm wide. Petiole 3–5 cm, much shorter than lamina, densely covered with whitish grey woolly adpressed hairs. Lamina (5)7–10 × (3)4–6 cm, broadly elliptical to obovate in outline, attenuate at base, 1–2(3) pinnately cleft to pinnatisect, ultimate lobes (1)2–7 × (1)1.2–1.9 mm, narrowly oblong, obtuse, blunt. Upper (adaxial) surface net-veined, with dispersed cobwebbed hairs, dark green, lower (abaxial) surface densely covered with whitish grey woolly

**Table 2.** Main differences between *T. platycarpa*, *T. garganica*, *T. transtagana* and *T. gymnesica*

|  | <i>T. platycarpa</i>                                    | <i>T. garganica</i>                   | <i>T. transtagana</i>                               | <i>T. gymnesica</i>                             |
|--|---|---------------------------------------|---|---|
| Height (cm)                              | 45–60   | 54–110(135)                           | 140–180   | 45–105  |
| Sheath width (mm)                        | 12–24   | 24–35                                 | (12)20–45   | (11)14–29                                       |
| Lamina shape                             | (2)3–4 pinnatisect                                      | (1)2–3 pinnatisect                    | (1)2–4 pinnatisect                                  | 3–4 pinnatisect                                 |
| Ultimate lobe (mm)                       | (1)4–10(20) ×<br>(0.5)0.9–2(3)                          | (35)50–80 ×<br>(1)2–3(4.5)            | (15)20–60 × 2–7(20)                                 | (1)4–11 × 1–2(2.5)                              |
| Outline of ultimate lobe                 | linear-oblong   | linear-oblong or<br>linear-lanceolate | lanceolate-atenuate or<br>oblong                    | linear-oblong or<br>linear-lanceolate           |
| Ultimate lobe apex                       | obtuse to subacute,<br>mucronate                        | obtuse to subacute,<br>mucronate      | obtuse to acute,<br>mucronate                       | obtuse, mucicous or<br>shortly mucronate        |
| Hair-covering upper<br>surface of lamina | densely hispidulous                                     | glabrous                              | densely hispidulous                                 | glabrescens                                     |
| Hair-covering lower<br>surface of lamina | densely hispidulous on<br>the main nerves and<br>margin | glabrous, rarely<br>subglabrous       | sparsely hispidulous<br>on the nerves and<br>margin | hispidulous on the<br>main nerves and<br>margin |
| Colour upper surface<br>of lamina        | green   | green                                 | green   | glaucous  |
| Primary rays number                      | 9–14  | (6)10–20(24)                          | (5)7–18   | 5–13  |
| Primary rays (cm)                        | 6–11  | 7–16                                  | 6–12  | 3–8.5   |
| Secondary rays number                    | 29–53   | 25–54                                 | 23–56   | 19–31   |
| Petal colour                             | deep yellow   | deep yellow                           | deep yellow   | pale salmon                                     |
| Fruits (mm)                              | (15)19–25 × (9)13–15                                    | (15)17–22 ×<br>(10)11–14(17)          | (18)23–29(33) × 13–18                               | (7)9–12 × (5)7–10                               |
| Shape of fruit                           | elliptical  | elliptical                            | elliptical to oblong                                | oblong  |
| Width of wing (mm)                       | (3)4–6(7)   | (3)4–5(6.5)                           | 3.5–7   | (1)1.5–2.7                                      |
| Wing colour                              | straw or silvery<br>coloured                            | bright yellow<br>straw coloured       | pale brown to yellow<br>straw                       | pale brown nearly<br>whitish                    |

## IDENTIFICATION KEY FOR THE NORTH-WESTERN AFRICAN SPECIES

1. Small fruits of (7)9–15 × (3.5)6–11 mm, wings (1)1.5–4 mm width..... *T. villosa*  
– Large fruits of (15)17–29(33) × (9)11–18 mm, wings (3)3.5–7 mm width..... 2
2. Lamina 1–2(3) pinnately cleft to pinnatisect; upper surface with disperse  
cobwebbed hairs, lower surface densely woolly adpressed hairs ..... *T. cinerea*  
– Lamina (1)2–4 pinnatisect, not pinnately cleft; hair-covering not as above ..... 3
3. Lamina upper surface glabrous, lower surface glabrous rarely subglabrous ..... *T. garganica*  
– Lamina upper surface densely hispidulous, lower surface densely or sparsely  
hispidulous on the nerves and on the margin..... 4
4. Plant 140–180 cm; ultimate lobes of leaves (15)20–60 × 2–7(20) mm,  
lanceolate-attenuate or oblong; fruits (18)23–29(33) mm ..... *T. transtagana*  
– Plant 45–60 cm; ultimate lobes of leaves (1)4–10(20) × (0.5)0.9–2(3) mm,  
linear-oblong; fruits (15)19–25 mm ..... *T. platycarpa*

adpressed hairs. INFLORESCENCE, umbels +/- hemispherical, bracts absent, primary rays 10–16, 4–6.5 cm, subequals. Ultimate umbels subhemispherical, bracteoles absent, secondary rays 24–29. PETALS oblong, inflexed, acuminate, whitish when dry. ANTHERS whit-

ish when dry. FRUITS 20–22 × 15–18 mm, oblong to elliptical. Seed part 14–16 × 3–4.5 mm, fusiform, brown. Wings 4–6 mm wide, straw coloured, acute falcate overlapping apex. STYLES shorter than the wings cleft.

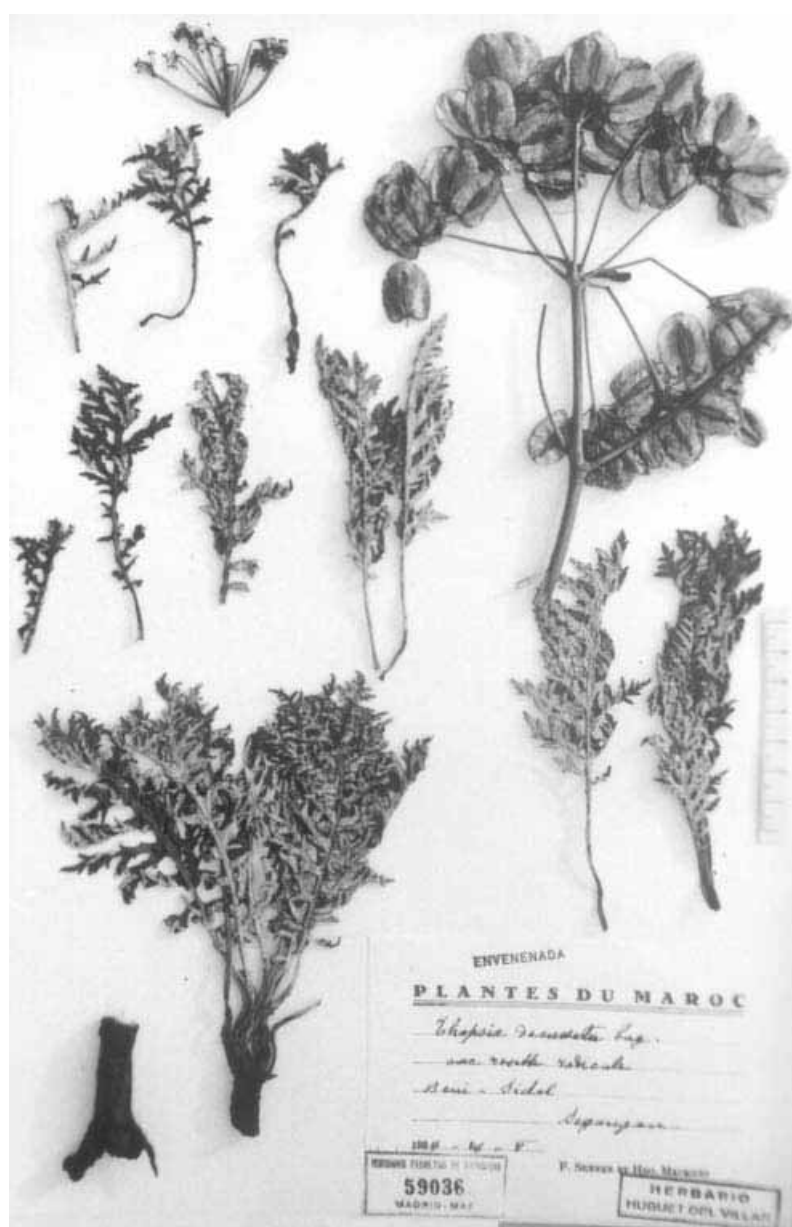


Figure 3. *Thapsia cinerea* A. Pujadas. **sp. nov.** Holotypus voucher (MAF 59036).

#### DISCUSSION

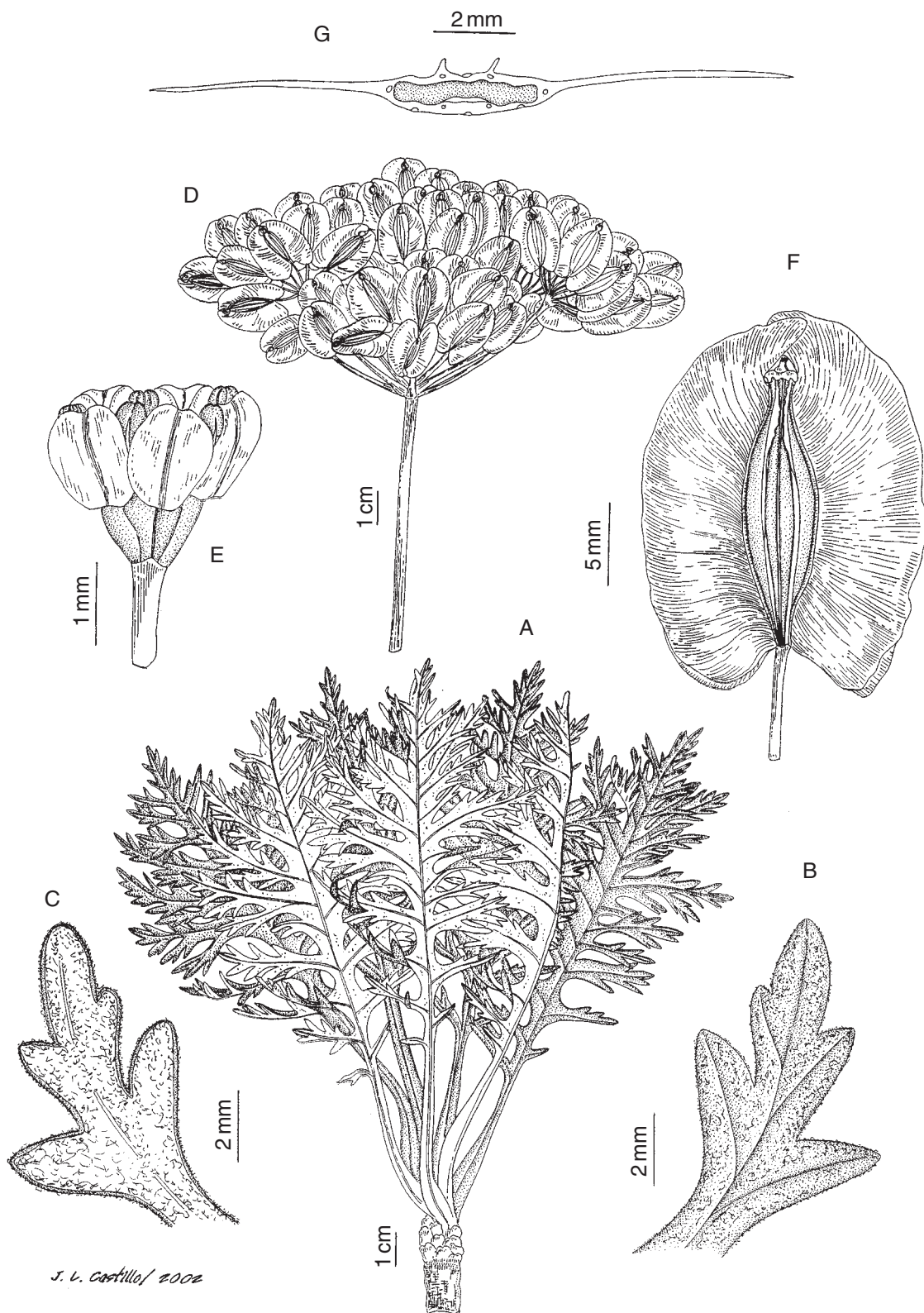
Although only known from the type, *T. cinerea* is easily differentiated from the rest of the species of the genus owing to the silvery-grey (*cinereus*) colour of its leaves. Leaves with disperse long +/- cobwebbed hairs on the upper surface of the lamina and densely white-greyish woolly addressed hairs on the lower surface of the lamina. The size of the fruit approaches that of *T. garganica*, *T. transtagana* and *T. platycarpa*, although it is differentiated from them by the shape of its leaves, which are 1–2(3) pinnately cleft to pinnatisect and are less divided with much shorter ultimate

segments measuring (1)2–7 mm in length. Some forms of *T. villosa* have leaves that are similar to those of *T. cinerea*, although the latter is characterized by its woolly addressed hairs and much larger fruit.

The main differences between *T. cinerea*, *T. garganica*, *T. transtagana*, *T. platycarpa* and *T. villosa* are shown in Table 3.

#### ACKNOWLEDGEMENTS

We would like to express our gratitude to Santos Cabello-Pérez for the Latin diagnosis, to the keepers



J. V. Castillo/2002

**Figure 4.** *Thapsia cinerea* A. Pujadas, Morocco, Beni-Sidel, Segangan, MAF 59036. A, stock and basal rosette. B, ultimate lobe upper surface detail. C, ultimate lobe lower surface detail. D, infructescence. E, hermaphrodite flower. F, fruit. G, transverse section of mericarp.



**Table 3.** Main differences between *T. cinerea*, *T. garganica*, *T. transtagana*, *T. platycarpa* and *T. villosa*

|                                       | <i>T. cinerea</i>                                | <i>T. platycarpa</i>                                     | <i>T. garganica</i>                | <i>T. transtagana</i>                                | <i>T. villosa</i>                   |
|---------------------------------------|--|--|------------------------------------|--|-------------------------------------|
| Sheath width (mm)                     | 2–4  | 12–24  | 24–35                              | (12)20–45  | (12)20–80(115)                      |
| Lamina (cm)                           | (5)7–10 × (3)4–6                                 | (15)19–30 × 16–26  | (17)29–35 × (10)13–24              | (11)18–36 × (8)18–26                                 | (10)12–40 × (8)11–30                |
| Lamina outline                        | broadly elliptical to obovate, attenuate at base | triangular to rhomboid                                   | rhomboid or ovate                  | rhomboid, deltoid, triangular or ovate               | triangular to deltoid               |
| Lamina shape                          | 1–2(3) pinnately cleft to pinnatisect            | (2)3–4 pinnatisect                                       | (1)2–3 pinnatisect                 | (1)2–4 pinnatisect                                   | 1–3 pinnatisect                     |
| Ultimate lobe (mm)                    | (1)2–7 × (1)1.2–1.9                              | (1)4–10(20) × (0.5)0.9–2(3)                              | (35)50–80 × (1)2–3(4,5)            | (15)20–60 × 2–7(20)                                  | 3–45 (60) × 1.5–32(40)              |
| Outline of ultimate lobe              | narrow oblong                                    | linear-oblong  | linear-oblong or linear-lanceolate | lanceolate-attenuate or oblong                       | broadly oblong                      |
| Ultimate lobe apex                    | obtuse, blunt                                    | obtuse to subacute, mucronate                            | obtuse to subacute, mucronate      | obtuse to acute, mucronate                           | crenate or dentate, spiny apiculate |
| Hair-covering upper surface of lamina | disperse cobwebbed hairs                         | densely hispidulous                                      | glabrous                           | densely hispidulous                                  | hispidulous or hairy                |
| Hair-covering lower surface of lamina | densely woolly adpressed hairs                   | densely hispidulous on the main nerves and on the margin | glabrous, rarely subglabrous       | sparsely hispidulous on the nerves and on the margin | hispidulous                         |
| Colour lower surface of lamina        | ash grey   | glaucous, rarely pale green                              | glaucous or pale green             | glaucous or pale green                               | greyish, glaucous or green          |
| Fruit (mm)                            | 20–22 × 15–18                                    | (15)19–25 × (9)13–15                                     | (15)17–22 × (10)11–14(17)          | (18)23–29(33) × 13–18                                | (7)9–15 × (3.5)6–11                 |

and staff of the Herbaria BC, BCF, COI, G, GDA, GDAC, JACA, MA, MAF, MGC, MPU, RNG, SALA and SALAF for providing the specimens used in the study and to Patricia Plaza for revision of the English version.

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