THE GENUS AINSWORTHIA (UMBELLIFERAE)

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ABSTRACT. Boissier's genus *Ainsworthia* and the validity of his concept of *A. cordata* are considered.

At the time of his study of Aucher-Eloy's collections from the Eastern Mediterranean region, Boissier (1844) described a new genus, *Ainsworthia*, based on material he identified as the species *Hasselquistia cordata* Jacq., but seems not to have consulted Jacquin's original material in designating this taxon.

Hasselquistia cordata had been named and described by N. J. Jacquin (1772) on the basis of specimens which he had grown in the Botanical Garden in Vienna. In respect to the origin of this taxon, Jacquin states that he had obtained the seeds from Dick who had received them from Spielmann: "Semina sub memorato titulo accepi a reverendo Joanne Jacobo Dick, sibi sic missa ab illustri Spielmanno." (*loc. cit.* p. 91). As the distinguishing criteria for this species, and the reason for placing it in the genus *Hasselquistia*, Jacquin gives, among others, the fruit characteristics, since the mericarps were similar to those of *Hasselquistia aegyptiaca* L.; in other words, the mericarps of *Hasselquistia cordata* also are dimorphic, although only one third of the size of those of *H. aegyptiaca*. Linné fil., who took Jacquin's species into account in his *Supplementum Plantarum* (1781), also states that the mericarps are dimorphic. This same character, likewise, was the main reason for De Candolle's (1830) retention of this species in *Hasselquistia* in contrast to Poiret (1806), who transferred the *Hasselquistia* species into *Tordylium* on the basis of some other mericarp characters in which they resembled *Tordylium*.

When Boissier (1844) described his new genus *Ainsworthia*—transferring Jacquin's *Hasselquistia cordata* into it—he seems to have consulted only the specimens of the De Candolle herbarium as he does not quote any others. Boissier, contrary to the previous investigators (Jacquin, Linné fil., De Candolle), in his description of *Ainsworthia cordata*—even though he cites "*Hasselquistia cordata*, L. fil. Jacq., *Tordylium cordatum* Poir."—does not mention the mericarps as being dimorphic, but only states: "Mericarpia suborbiculata apice et etiam basi minute emarginata 2 lineas longa sesquilineam aut paulo amplius lata" (*loc. cit.* p. 344).

Hasselquistia cordata is represented in the De Candolle herbarium by specimens on four separate sheets. But, as pointed out by Boissier (1844), among the specimens—some of which are quite fragmentary—there are two distinct taxa. Judging from the information on the labels, the specimens are of different origin. Most of them are from plants grown in different botanical gardens, for example, "Hort. Gen.", "J. de Berlin", "Jard. d'Edin-

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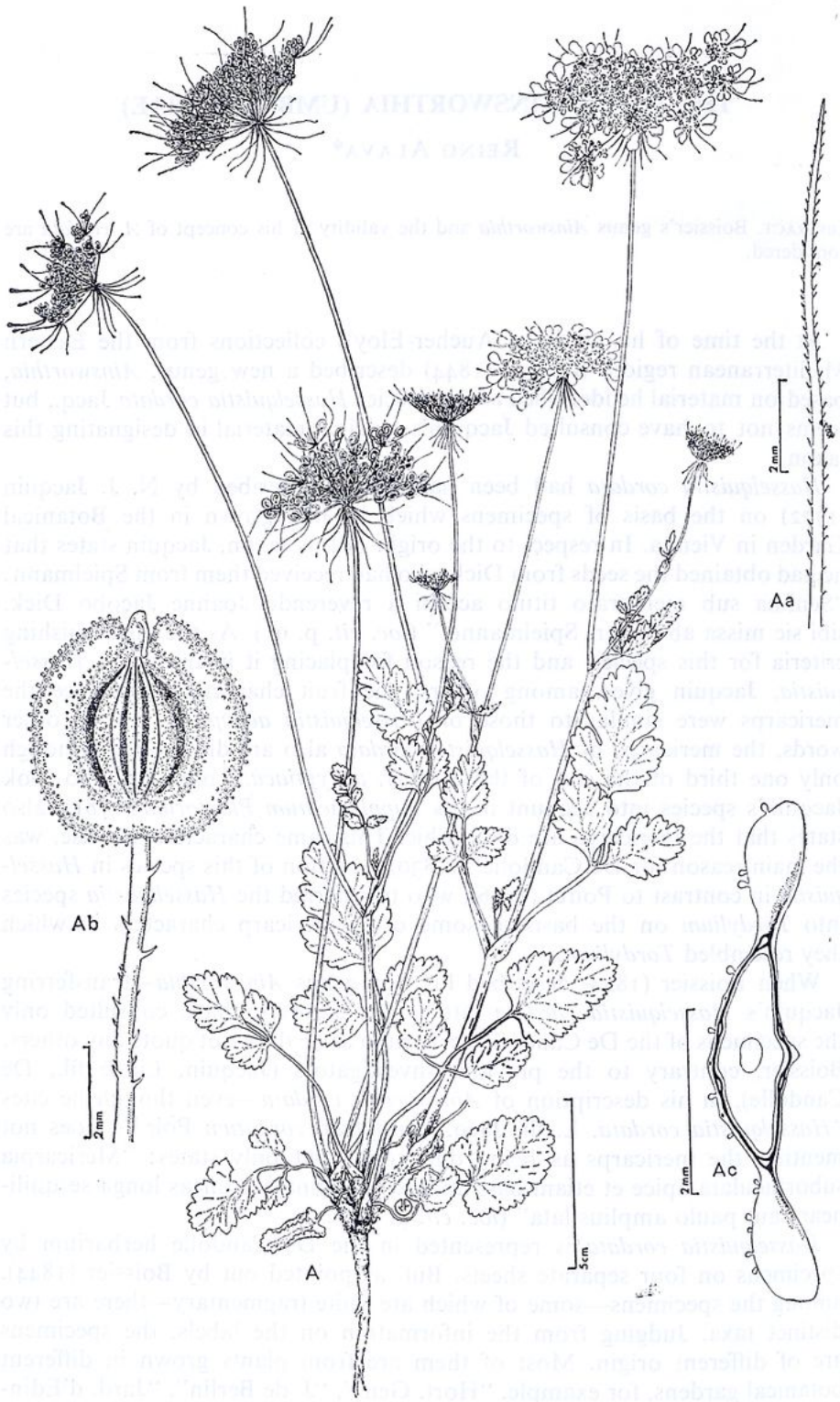

FIG. 1. Lectotype of *Ainsworthia trachycarpa* Boiss.: A, habit; Aa, involucel bracteole; Ab, mericarp; Ac, cross section of mericarp.

bourg". It seems, however, that one of the specimens had been collected from the wild, probably Syria: "Labillardière? Lemonnier 1788".

Boissier apparently overlooked the descriptions of the fruit characters in the previous treatments (Jacquin 1772, Linné fil. 1781, De Candolle 1830), and thought that the specimens, which have uniform and rather small mericarps, for example "Hort. Gen.", "J. de Berlin", represented *Hasselquistia cordata*. Of the one specimen (obviously that of Lemonnier 1788), with large and dimorphic fruit, he says: "In specimine herb. Candolleani cum aliis formae vulgaris mixto et eis ceterum simillimo singularis adest monstrositas, mericarpia paulo majora sunt, ————, fructus interiores insuper ut in *Hasselquistia* urceolati sunt." (1844, p. 344), believing it to represent a new and as yet undescribed taxon. He again refers to this same specimen in connection with the description of a new species, *Ainsworthia carmeli*, (1849): "Hanc speciem in nota operis citati (1844) pro variet. monstrosa *A. cordatae* habui sed in centenis exemplaribus loco natali observatis haec fructus forma semper eadem fuit." (1849, p. 44). Thus, Boissier considers this new species, *Ainsworthia carmeli*, to be identical with the "monstrosity" in the De Candolle herbarium, which had already been described by Jacquin as *Hasselquistia cordata*, and recognized as such by De Candolle, and others.

At the same time when Boissier described *Ainsworthia carmeli* (1849) he described another new species, *A. trachycarpa*, on the basis of specimens that he had collected in Palestine. This taxon, however, is identical with the specimens "Hort. Gen.", "J. de Berlin", and some of the other specimens in the De Candolle herbarium, which Boissier erroneously believed to represent *Ainsworthia* (*Hasselquistia*) *cordata*. Consequently: *Hasselquistia cordata* Jacq. = *Ainsworthia carmeli* Boiss. = *Ainsworthia cordata* (Jacq.) Boiss., and *Ainsworthia cordata* sensu Boiss. = *Ainsworthia trachycarpa* Boiss.

The Jacquin herbarium and the type specimen of Hasselquistia cordata

Stafleu (1967) states that Sir Joseph Banks acquired Jacquin material, which now, as a part of the Banks herbarium, is preserved in the British Museum (Natural History). He further states that some of the Austrian and garden-grown plants are represented in varying numbers in the following herbaria: AWH, CGE, LIV, OXF, UPS (Thunberg Herbarium) and W. Although there are old specimens of *Hasselquistia cordata* in these herbaria —all of which seem to have been grown in botanical gardens—none has been reported to have originated from Jacquin's material. There are also three specimens of *Hasselquistia cordata* in the Linnaean Herbarium of the Naturhistoriska Riksmuseet in Stockholm. One of these is part of the herbarium of Lars Montin, a pupil of Linnaeus (later a physician in Halmstad, cf. Eriksson, 1969, p. 300), and an ardent collector of plants. This specimen has the following information—written in Montin's hand—on the back of the herbarium sheet:

"Hasselquistia (cordata) foliis cordatis. Suppl. pl. p. 149 n. 2
Jacquin: hort: vindob: 2, p. 91. t. 193
Habitat ————
Specimen herbarii Jacquin: misit Nob. Dnus. Banks, a: 1778"

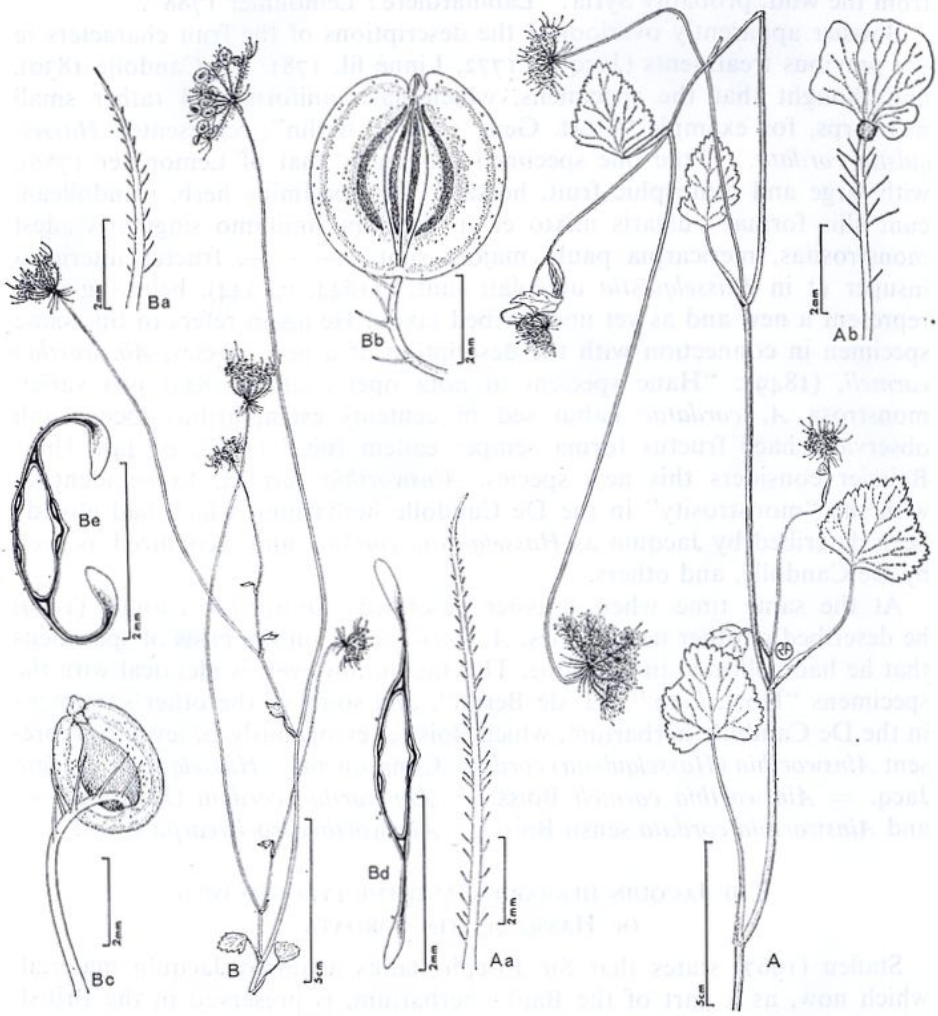

FIG. 2. *Ainsworthia cordata* (Jacq.) Boiss. emend. Alava. Drawn from A, the Jacquin lectotype and B, an Alm specimen. A, habit; Aa, involucel bracteole; Ab, flower with pedicel hairs. B, habit; Ba, involucel bracteole; Bb, compressed mericarp with long pedicel hairs; Bc, ellipsoid mericarp; Bd, cross section of "Bb"; Be, cross section of "Bc".

How did this specimen—which undoubtedly is the only authentic Jacquin specimen of *Hasselquistia cordata* so far—come to be in Montin's herbarium? Jonas Dryander, Montin's nephew, was at that time Sir Joseph Banks' secretary and librarian, and is known to have secured specimens from various sources in England for his uncle's herbarium (Eriksson, 1969, p. 300). There can be little doubt but that this specimen is one of them and, furthermore, seems to have been the only specimen of *Hasselquistia cordata* in the Banks herbarium, as no other Jacquin specimens are recorded in the herbarium of the British Museum (Natural History), the repository of the Banks herbarium.

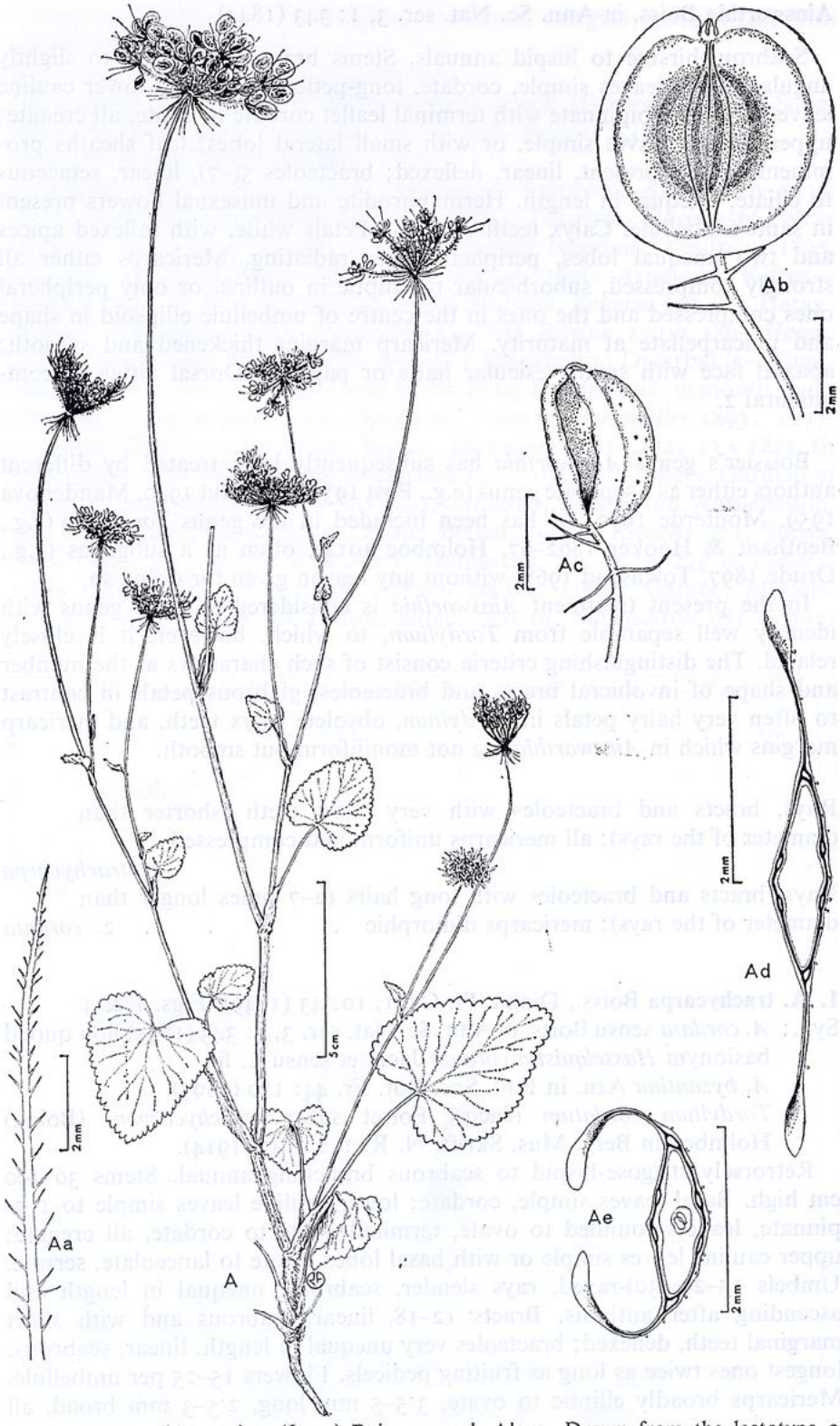

FIG. 3. *Ainsworthia cordata* (Jacq.) Boiss. emend. Alava. Drawn from the lectotype of *A. carmelii* Boiss. A, habit; Aa, involucel bracteole; Ab, compressed mericarp with long pedicel hairs; Ac, ellipsoid mericarp; Ad, cross section of "Ab"; Ae, cross section of "Ac".

Ainsworthia Boiss. in Ann. Sc. Nat. ser. 3, 1: 343 (1844)

Scabrous-hirsute to hispid annuals. Stems branching, striate to slightly angular. Basal leaves simple, cordate, long-petioled, crenate; lower cauline leaves simple to bipinnate with terminal leaflet cordate to ovate, all crenate; upper cauline leaves simple, or with small lateral lobes; leaf sheaths prominent. Bracts present, linear, deflexed; bracteoles 5(–7), linear, setaceous to ciliate, unequal in length. Hermaphrodite and unisexual flowers present in same umbellule. Calyx teeth obsolete. Petals white, with inflexed apices and two unequal lobes, peripheral ones radiating. Mericarps either all strongly compressed, suborbicular to elliptic in outline, or only peripheral ones compressed and the ones in the centre of umbellule ellipsoid in shape and unicarpellate at maturity. Mericarp margins thickened and smooth; abaxial face with small vesicular hairs or papillae. Dorsal vittae 4, commissural 2.

Boissier's genus *Ainsworthia* has subsequently been treated by different authors either as a separate genus (e.g., Post 1932, Thiébaut 1940, Manden̈ova 1959, Mouterde 1970), or has been included in the genus *Tordylium* (e.g., Bentham & Hooker 1862–67, Holmboe 1914), often as a subgenus (e.g., Drude 1897, Townsend 1968) without any reason given for doing so.

In the present treatment *Ainsworthia* is considered to be a genus with identity well separable from *Tordylium*, to which, however, it is closely related. The distinguishing criteria consist of such characters as the number and shape of involucral bracts and bracteoles, glabrous petals in contrast to often very hairy petals in *Tordylium*, obsolete calyx teeth, and mericarp margins which in *Ainsworthia* are not moniliform but smooth.

Rays, bracts and bracteoles with very short teeth (shorter than diameter of the rays); all mericarps uniform and compressed
1. *trachycarpa*

Rays, bracts and bracteoles with long hairs (2–7 times longer than diameter of the rays); mericarps dimorphic . . . . 2. *cordata*

1. A. trachycarpa Boiss., Diagn. Pl. Or. 1, 10: 43 (1849). Figs. 1 & 4.

Syn.: *A. cordata* sensu Boiss. in Ann. Sc. Nat. ser. 3, 1: 343 (1844) non quoad basionym *Hasselquistia cordata* Jacq. et sensu L. fil.
A. byzantina Azn. in Bull. Soc. Bot. Fr. 44: 170 (1897).
Tordylium cordatum (Jacq.) Poiret subsp. *trachycarpum* (Boiss.) Holmboe in Berg. Mus. Skrift. N. R. 1, 2: 141 (1914).

Retrorsely strigose-hispid to scabrous branching annual. Stems 30–100 cm high. Basal leaves simple, cordate; lower cauline leaves simple to 1–2-pinnate, leaflets rounded to ovate, terminal ovate to cordate, all crenate; upper cauline leaves simple or with basal lobes, ovate to lanceolate, serrate. Umbels 15–25(–30)-rayed, rays slender, scabrous, unequal in length and ascending after anthesis. Bracts 12–18, linear, scabrous and with short marginal teeth, deflexed; bracteoles very unequal in length, linear, scabrous, longest ones twice as long as fruiting pedicels. Flowers 15–25 per umbellule. Mericarps broadly elliptic to ovate, 3·5–5 mm long, 2·5–3 mm broad, all

strongly compressed and with smooth thickened margins; abaxial face with very short vesicular hairs.

Fl. 4–6. Open hillsides, fields, roadbanks.

Type: (Israel) in collibus et cultis Judaeae prope Hierosolymam, S Saba, et in descensu ad mare Mortuum, Aprili 1846, *Boissier* (G!)

Partial list of specimens studied.

CYPRUS. Larnaka, iv 1928, *Druce*. Akanthou, Apostolos Andreas, iv 1930, *Druce*. Ayia Irini (Morphou), banks of Kryos Potamos, *Davis* 2566. Near Yerolena, 22 iv 1944, *Evenari*. TURKEY. A2(E) Istanbul: Yeşilköy, 1895, *Aznavour*. A2(A) Istanbul: vignes près Kartal, 1896, *Aznavour*; Kifrez—Göztepe, 1939, *B. Post*. C 5 Içel: plaine de Mersina, *Balansa* 570. C 6 Hatay: Iskenderun, fields N of town, *Alava* 6590. C 7 Urfa: Birecik, 270 m, 1865, *Haussknecht*; Haschnadi, *Sintenis* 1888: 465. C 8 Diyarbakir: Diyarbakir—Çinar, 8 km from Diyarbakir, 650 m, *Davis* 28778. IRAQ. Kurdistania: in montis Kuh-Sefin, supra pagum Schaklava (Shaqlawa), 1000 m, *Bornmüller* 1893: 1277; Shaqlawa, *Harris* 764. LEBANON. Beirut: *Ehrenberg* 1822: 222; 13 v 1871, *G. Post*; v 1891, *Ball*. Nahr el Kelb, prope Beirut, 1 v 1931, *M. Zohary*. Gardens of Tripoli, 4 v 1865, *G. Post*. Saida, 8 iv 1893, *Gaillardot*. Messaloun, Antilebanon, 1460 m, *Meinertzhagen*. SYRIA. Prope Beilan, 790 m, *Kotschy* 261. Sueda, Gebel Druz, 15 v 1931, *M. Zohary*. Damascus, 3 v 1933, *Eig & Zohary*. Nebek (En Nebk), 20 iv 1945, *Ingram*. ISRAEL. Upper Galilee: Metulla. 1 v 1925, *Smoly*; Ain Es Zeitun, Safed, 700 m, *Samuelsson* 981. Lower

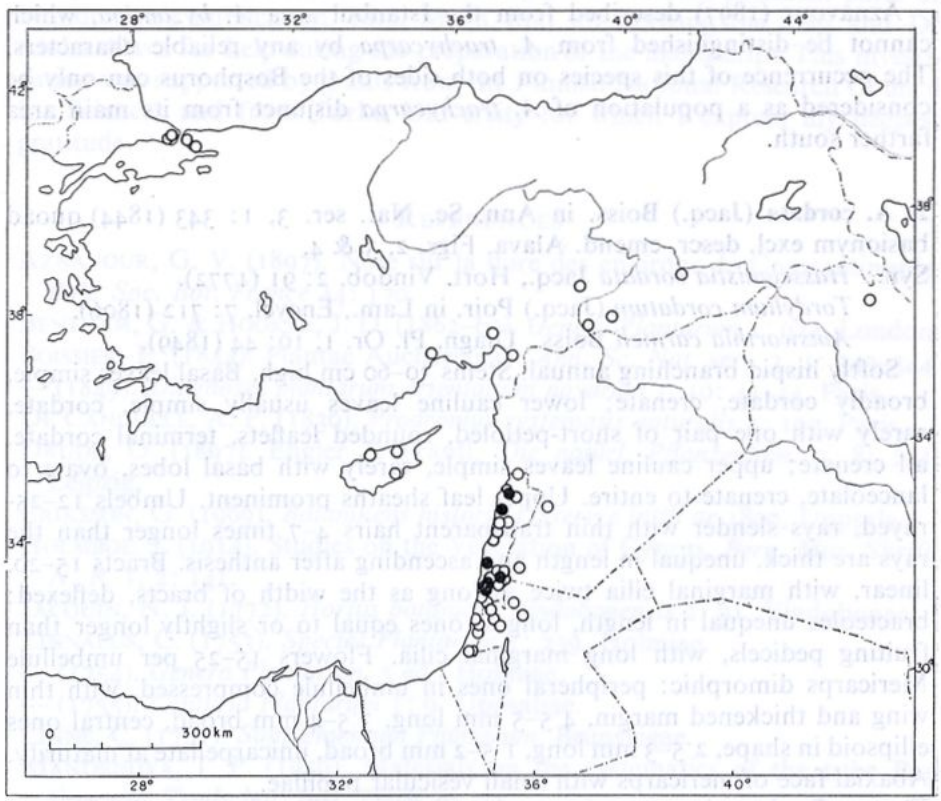

FIG. 4. Distribution of ○ *Ainsworthia trachycarpa* and ● *A. cordata*.

Galilee: Har Tabor, 31 iii 1954, *Jaffe & Sheinkar;* Nazareth, v 1877, *Ball.* Hula Valley: Lahavat Ha Bashan, 6 iv 1954, *Jaffe*; Amir, at foot of Golan Mts., 7 iv 1941, *Weissman.* Mt. Carmel: c. 100 m, *Bornmüller* 1897: 687, 690 p.p.; env. of Zikhroun-Ja'gov, 17 iv 1926, *M. Zohary & Feinbrun.* Sharon Plain, Kefar Witkin to Qeisari, 3 iv 1957, *Orshan.* Upper Jordan Valley, Tiberias, 2 iv 1923, *Eig*; Lower Jordan Valley, Jericho, iv–v 1846, *Boissier.* Judean Mts., Jerusalem, iv 1877, *Ball.* Talpioth, 15 iv 1933, *Zohary & Jaffe.* Shefela, 2 km W of Lahav, 26 iv 1967, *Danin.* JORDAN. Amman, 7 v 1927, *Eig, Zohary & Feinbrun.* Between Ajlun & Mar Elias, *Davis* 9440. Jerash, *Crowfoot* 53. Shomron Mts., Deir Sharaf, 19 iii 1933, *Feinbrun.*

This species—owing to Boissier's (1844, 1849) misinterpretation of Jacquin's *Hasselquistia cordata* in the De Candolle herbarium—has long been confused with the real *Ainsworthia cordata.*

A. trachycarpa is very variable in regard to the fruit characters: the size of the mericarps varies considerably between individuals within the same population, and even between different umbels in the same individual. The colour of the adaxial face of the mericarps, and the presence or absence of the papillae on the mericarp margins, likewise, are "characters" which vary among different populations (see also Townsend 1968, p. 433). As to the shape of the leaves, *A. trachycarpa*, when grown in an unfavourable environment, often has only simple, mostly cordate or ovate leaves, similar to those of 'var. *simplicifolia*' (*Bornm.* 1277).

Aznavour (1897) described from the Istanbul area *A. byzantina*, which cannot be distinguished from *A. trachycarpa* by any reliable characters. The occurrence of this species on both sides of the Bosphorus can only be considered as a population of *A. trachycarpa* disjunct from its main area farther south.

2. A. cordata (Jacq.) Boiss. in Ann. Sc. Nat. ser. 3, 1: 343 (1844) quoad basionym excl. descr. emend. Alava. Figs. 2, 3 & 4.

Syn.: *Hasselquistia cordata* Jacq., Hort. Vindob. 2: 91 (1772).
Tordylium cordatum (Jacq.) Poir. in Lam., Encycl. 7: 712 (1806).
Ainsworthia carmeli Boiss., Diagn. Pl. Or. 1, 10: 44 (1849).

Softly hispid branching annual. Stems 30–60 cm high. Basal leaves simple, broadly cordate, crenate; lower cauline leaves usually simple, cordate, rarely with one pair of short-petioled, rounded leaflets, terminal cordate, all crenate; upper cauline leaves simple, rarely with basal lobes, ovate to lanceolate, crenate to entire. Upper leaf sheaths prominent. Umbels 12–25-rayed, rays slender with thin transparent hairs 4–7 times longer than the rays are thick, unequal in length and ascending after anthesis. Bracts 15–20, linear, with marginal cilia twice as long as the width of bracts, deflexed; bracteoles unequal in length, longest ones equal to or slightly longer than fruiting pedicels, with long marginal cilia. Flowers 15–25 per umbellule Mericarps dimorphic: peripheral ones in umbellule compressed, with thin wing and thickened margin, 4·5–5 mm long, 3·5–4 mm broad, central ones ellipsoid in shape, 2·5–3 mm long, 1·5–2 mm broad, unicarpellate at maturity. Abaxial face of mericarps with small vesicular papillae.

Fl. 4–5. Rocky calcareous slopes, among shrubs.

Described from a cultivated specimen, origin (of seeds) unknown. In herb. Linn. (S).

Partial list of specimens studied.

LEBANON. Vallis ad Kenobina (Quannoubine), *Haussknecht* 1866: 252. In declivitatibus occidentalibus, in rupestribus Wadi Hammana, 1050–1100 m, *Bornmüller* 1910: 11813b. Nahr el Kelb, *Wall* 217. Litani rivei, 15 iii 1925, *Smoly*. ISRAEL. Mt. Carmel: inter frutices lateris septentrionalis, iv 1846, *Boissier*; solo calc., 100 m, *Bornmüller* 1897: 689, 690 p.p.; *Dinsmore* 1387; *Alava* 6364. Wadi Falah, 5 v 1955, *Waisel.* Above Yagur, 5 iv 1943, *Feinbrun.* Upper Galilee, Jebel el Arus, 4 iv 1926, *Eig, Zohary & Feinbrun.* Lower Galilee, Tiberias, 6 iv 1923, *Eig.*

EXCLUDED SPECIES

Ainsworthia elegans Boiss. & Bal. in Boiss., Diagn. Pl. Or. 2, 5: 100 (1856) = **Tordylium elegans** (Boiss. & Bal.) Alava & Hub.-Mor., **comb. nov.**

ACKNOWLEDGMENTS

I wish to thank the curators of the following herbaria for their kindness in sending specimens on loan or giving me access to their collections: AWH, BM, CGE, E, FI, G, HUJ, JE, K, LD, LIV, OXF, P, S, UPS, W, as well as Dr A. Huber-Morath, Basel, for the loan of his collections. I also want to thank Prof. Arne Rousi for translating from Russian pertinent parts of Mandenova's publication, Mrs. Maija Inki for drawing the map and Dr Aloha Alava for help during the preparation of the manuscript. This investigation was supported by grants from the Finnish National Research Council for Sciences and from Turku University for which I express my deepest gratitude.

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