FURTHER NOTES ON UMBELLIFERAE-ECHINOPHOREAE

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ABSTRACT. A supplement to a previous review of the tribe Echinophoreae of Umbelliferae includes the description of two new species in *Pycnocycla* (*P. prostrata* from SE Arabia and *P. musiformis* from SW Iran) and two new varietal combinations in the same genus. A new specific combination is made in *Echinophora* (the basionym *Ferulago cinerea* from Iran). Several new distributional records are given for the Arabian peninsula.

In an earlier paper on the Umbelliferae-Echinophoreae, the present authors (*Notes R.B.G. Edinb.* 32:167–188, 1973) revised and discussed this distinctive tribe. Since then a considerable amount of new material has become available. This has necessitated updating the taxonomy of *Pycnocycla* and *Echinophora*.

Many of the taxa in the tribe as a whole have been, or will be, dealt with in the standard Floras of Caucasus, Iraq, Palestine, Pakistan, Turkey and in *Flora Iranica*. Consequently, specimens from these areas are, in general, not cited below; but because of the paucity of published records from the Arabian peninsula we have given details of some recent collections from there.

The sequence and numbering of the taxa follow that of the previous paper; unless otherwise indicated all cited specimens have been seen.

PYCNOCYCLA

As a result of the two new species described below and the reduction of two previously recognized species to varietal rank, the specific total in the genus remains at 12. The following key replaces that previously published.

1. Plant not spiny; leaves pinnate [outwith the Flora Iranica area] . 2
\+ Plant spiny; leaves entire or bifidly or palmately divided or veined [Flora Iranica area and N Arabian peninsula] 5
2. Plant ± prostrate; umbels densely capitate [Oman] . *P. prostrata*
\+ Plant ± erect; umbels eventually somewhat lax . . . 3
3. Segments of leaves ovate-lanceolate, ± dentate, sometimes deeply so [Sinai, W Arabia] . . . . . *P. tomentosa*
\+ Segments of leaves linear or filiform, entire margined . . 4
4. Bracts 5–9, 4–8 mm; stems with few leaves, up to 75 cm high [India, Yemen, Ethiopia] . . . . . *P. glauca*
\+ Bracts c. 12, 10–13 mm; stems leafy, up to 1·5 m [W Africa] . *P. ledermannii*
5. Basal and cauline leaves entire or palmately divided up to c. $\frac{3}{4}$ of the length of the lamina, flat 6
\+ Basal and lower cauline leaves 3-fid to palmately divided to the base, or near the base, of lamina, rarely simple, segments ± acicular 8

6. Juvenile foliage white-tomentose; leaves all in basal rosettes . *P. cephalantha*
\+ Juvenile foliage pilose or glabrous; leaves not confined to basal rosettes 7
7. Bracts ± shorter than rays; longest spines of leaf shorter than width of lamina . . . . . *P. flabellifolia*
\+ Bracts longer than rays; longest spines of leaf equal to or longer than width of lamina . . . . . *P. acanthorhipsis*
8. Peduncles up to 1·8 cm, axillary; leaf segments seldom exceeding 3 cm . . . . . *P. nodiflora*
\+ Peduncles 2–50 cm, terminal or axillary; leaf segments up to 10 cm 9
9. Bracts ± acicular, 0·5–4·5 cm 10
\+ Bracts linear to lanceolate-triangular, 0·2–0·5 cm . . . 11
10. Upper leaves entire or with short lateral lobes; calyx lobes ± absent . . . . . *P. spinosa*
\+ Upper leaves never entire, lateral lobes up to 5·5 cm; calyx lobes conspicuous . . . . . *P. aucherana*
11. Pedicels shortly and finely puberulent, ± inflated in fruit *P. musiformis*
\+ Pedicels hirsute with spreading hairs, (?) not inflated in fruit . *P. caespitosa*

1. P. glauca Lindl.

YEMEN ARAB REPUBLIC: Hajjah, c. 1370 m, 7 iii 1973, *J. R. I. Wood* 73/27 (BM); Mahwit [S of Hajjah], c. 1220 m, 1 iii 1972, *J. R. I. Wood* 72/34 (BM); Yarim, c. 3050 m, 26 ix 1972, *J. R. I. Wood* 72/25a (BM); Jabal Sabir [S of Ta'iz], 2300 m, 4 iv 1974, *Lavranos* 11415 (E).
Ethiopia, Yemen, N & C India; 1370–3050 m; fl. Apr.–May, Sept.

P. prostrata Hedge & Lamond, **sp. nov.** Species affinis *P. glauca* sed foliis et scapis prostratis, umbellis dense capitatis differt.

Herba perennis, foliis et scapis prostratis. *Folia* 3·5–21·0 × 0·7–8·0 cm [petiolis 2–11(–15) cm longis inclusis], pinnata, 1–2-juga, segmentis 0·5–3·0 (–5·5) cm longis, ± ovatis dentatis vel linearibus integris, supra glabra vel puberula infra puberula. *Scapi* 8–35 cm longi, aliquantum flexuosi, glabri vel supra puberuli. *Umbellae* terminales 7–10 mm diametro, densissime capitatae, ubique ± incanae. *Bracteae* 10–16, 2–6 mm longae, triangulati-lanceolatae vel lineares. *Radii* umbellarum c. 20, 3–4 mm, spissescentes. *Bracteolae* 6–7, triangulati-lanceolatae, inaequales pedicellis breviores. *Pedicelli* 5–6, post anthesin 5–7 mm, spissescentes. *Sepala* minus quam 1 mm longa, inaequales, triangulares. *Petala* quam sepala paulo superantes, eburneae interdum rosea suffusa. *Stamina* globulo oleoso vix provisa. *Fructus* 4·5–5 mm longus, pyriformis, puberulus, mericarpiis uno vel duobus maturescentibus.

OMAN: Birkat Sahfan, 23° 10′ N 57° 19′ E, c. 1525 m, 18 iv 1975, *Mandaville* 6624 (holo. BM), 6631 (BM, E); Wadi Siq, 23° 04′ N 57° 38·5′ E, c. 1890 m, 17 iii 1972, *Mandaville* 3569 (BM); Ra's as Sayyid, 23° 05·5′ N 57° 37′ E, 2285 m, 18 iii 1972, *Mandaville* 3599 (BM); Ra's ar Rumad, 23° 06·5′ N 57° 39′ E, c. 2400 m, 18 iii 1972, *Mandaville* 3607 (BM); Jabal al-Aswad, summit, 23° 10′ N 58° 37′ E, 1830 m, 23 iv 1975, *Mandaville* 6746, 6777 (BM).
Endemic; 1525–2400 m; fl. Mar.–Apr.

P. prostrata is another of the non-spiny species of the genus found west and east of the Flora Iranica area, together with *P. ledermanni* from W & C Africa, *P. tomentosa* from Sinai and W Arabia, *P. glauca* from Ethiopia, Yemen and India. It is closest to *P. glauca* from which it differs in its prostrate habit and dense capitate umbels.

We are grateful to Miss Dorothy Hillcoat, British Museum (Natural History), for drawing our attention to this new species.

3. P. tomentosa Dcne.
SAUDI ARABIA: Wadi Nejd, 26° 40′ N 37° 20′ E, c. 1000 m, 4 i 1947, *D. Vesey-Fitzgerald* 16674/7 (BM).
Sinai, Saudi Arabia; fl. Jan., May–June.

Another specimen from Saudi Arabia [Bani Ghamid, 19° 50′ N 41° 43′ E, c. 1980 m, 14 vi 1946, *Thesiger* s.n. (BM)] may belong here but lacks leaves.

4a. P. spinosa [Dcne. ex] Boiss. var. **aitchisonii** (Rech. f. & Riedl) Hedge & Lamond, **comb. et stat. nov.**
Syn.: *P. aitchisonii* Rech. f. & Riedl in Biol. Skr. 13, 4:117 (1963).
Type. Iran, Khorassan/Malkat, *Aitchison* 817 (holo. C; iso. K, W).
E Iran, SW Afghanistan.

Study of additional material of this taxon has confirmed our earlier suspicion that *P. aitchisonii* cannot be specifically separated from *P. spinosa*. It is maintained at varietal rank on account of the very long bracts.

5. P. nodiflora [Dcne. ex] Boiss.
SAUDI ARABIA: Wadi Kumrah [c. 50–70 km NW Riyadh], 15 v 1976, *Vincett* s.n. (BM).
E & S Iran, C Arabia; 20–2300 m; fl. Apr.–June (–Oct.).

This and the following species had previously been considered by us as endemic to Iran (a Bunge specimen cited in *Flora Orientalis* from Afghanistan was probably collected in Iran). Both are now known from the Arabian peninsula.

5a. P. caespitosa [Boiss. & Hausskn. ex] Boiss.
UNITED ARAB EMIRATES: above Wadi Galila, nr Ra's al Khaymah, 24 xi 1950, *K. M. Guichard* KG/123/Oman (BM); near Rams [north of Ra's al Khaymah], 16 ii 1973, *S. J. Tyler* s.n. (BM).
SW Iran, E Arabia.

A sterile specimen from S Oman (19° N 56° E, 13 ii 1968, *G. Popov* 68/16, BM) probably belongs here although the leaf segments are shorter and coarser than usual.

P. musiformis Hedge & Lamond, **sp. nov.** Species affinis *P. caespitosa* sed pedicellis fructu ± inflatis, breviter subtiliterque puberulentis vix hirsutis.

Suffrutex rigidus, valde spinosus, plerumque omnino brevissime puberulus.

Caules floriferi efoliati, simplices, erecti, teretes, tenuiter striati, 5–50 cm. *Folia* omnia basalia, congesta, ad 8 × 5 cm, in 3–5 segmentis linearibus, acicularibus vel triquetris profunde divisa raro simplices et glabris, omnibus in spinas vulnerantes excurrentibus; segmenta ultima 0·5–4·5 cm; petiolus laminam ± aequans. *Inflorescentia* terminalis, semiglobosa, densissime capitata, c. 12–15 mm diametro. *Bracteae* c. 10, primo vix spinosae, triangulati-lanceolatae ad lineares, c. 5 mm. *Radii umbellarum* c. 30, ± complanati, patento-erecti, 6–11 mm in statu fructifero. *Bracteolae* c. 10, valde inaequales ad 3 mm longae. *Pedicelli* 7–9, post anthesin incrassati vel inflati, c. 8 mm longi. *Sepala* aequaliter triangularia, minus quam 1 mm, fructu persistentia. *Petala* ad 2·5 mm in vivo alba interdum subrosea tincta, profunde bilobata, exteriores parum radiantia. *Stamina* globulo oleoso provisa. *Mericarpia* oblongo-cylindrica, brevissime puberula, incurvata, c. 6 × 1·5 mm.

IRAN. Kerman: Mughak pass, 20 km N of Jiroft towards Deh Bakri pass, rocky slopes, *Artemisia* steppe, 28° 35′ N 57° 51′ E, 1500 m, 12 vi 1977, *Assadi, Edmondson & Miller, E.* 2148 (holo. E; iso. W); between Jiroft and Deh Bakri, Amirabad, 22 vi 1960, *Dadashzadeh* DK (X) in *Pabot* (G); Jiroft district, *sine coll.*, Evin 30052E (IRAN, W). Baluchistan: Ziaratjah to Sarbaz, 10 iii 1974, *Iranshahr & Ershad*, Evin 16573 (IRAN).

Although superficially resembling *P. aucherana*, the new species seems closer to *P. caespitosa* on account of its short non-acicular bracts. The specimen from Baluchistan cited above (Evin 16573) differs from the others in having simple glabrous leaves; it is, however, immature and when more material for comparison is available from the area it may require separate taxonomic rank.

The specific name refers to the similarity of the fruiting umbellule to a miniature bunch of bananas.

6. P. aucherana [Dcne. ex] Boiss. var. **aucherana**

OMAN: nr Misfah, 23° 08′ N 57° 19′ E, c. 975 m, 19 iv 1975, *Mandaville* 6651 (BM); nr Jabal Khamaila, 30 iii 1949, *Thesiger* s.n. (BM); foothills of Jabal al Akhdar, 609 m, 2 v 1957, *G. Popov* 57/89 (BM).

Fl. Mar.–May.

7a. P. aucherana [Dcne. ex] Boiss. var. **mesomorpha** (Rech. f., Aell. & Esfand.) Hedge & Lamond, **comb. et stat. nov.**

Syn.: *P. mesomorpha* Rech. f., Aell. & Esfand. in Anz. math.-naturw. Klasse Oesterr. Akad. Wiss. 89:196 (1952).

Type. Iran: Baluchistan, SE limit of Lut desert near Nasratabad, between Bam and Zahedan, c. 1400 m, 11 v 1948, *Rechinger, Aellen & Esfandiari* 3921 (holo. W; iso. E, IRAN).

Endemic.

Additional material of var. *mesomorpha* will be cited in the *Flora Iranica* account.

When they originally described it at specific level, the authors pointed out that *P. mesomorpha* was identical in floral characters to *P. acanthorhipsis* and was intermediate in leaf characters between that species and *P. aucherana*.

Some extra material has been collected since the original description was published and it now seems preferable to reduce *P. mesomorpha* to varietal rank. Although the only difference, with the material at hand, between the typical variety and var. *mesomorpha* is that of leaf division, there are few specimens that cannot be readily assigned to one or the other variety. Field observations are needed to determine whether the webbed-leaf variety, var. *mesomorpha*, is constantly so or merely a habitat form.

Anisosciadium

1. A. orientale DC.

De Marco & Dinelli cite *A. orientale* in their preliminary Check List of plants of Saudi Arabia [*Ann. Bot.* (*Roma*) 33:218, 1974]. We have seen no specimens.

2. A. isosciadium Bornm.

SAUDI ARABIA (N): Sakaka, 30° N 40° 15′ E, 5 v 1962, *W. Zeller* 13910 (BM); c. 520 m, 20 iv 1971, *J. R. I. Wood* W/240 (BM).
Syria, Jordan, W & S Iraq, N Arabia.

3. A. lanatum Boiss.

SAUDI ARABIA (W): Hejar eastern foothills, 20° 30′ N 42° E, c. 1400 m, ann. 1947, *D. Vesey-Fitzgerald* 17010/1 (BM).

This record extends the known distribution of the species somewhat to the south and west and its altitudinal range from 100 to 1400 m.

Echinophora

E. cinerea (Boiss.) Hedge & Lamond, **comb. nov.** [subgenus *Lamprosciadium* Hedge & Lamond].

Syn.: *Ferulago cinerea* Boiss., Diagn. ser. 1, 6:60 (1845).

Type. Iran: in rupestribus m. Kuh-Daena frequens, 15 vii 1842 (folia una cum oryza cocta comeduntur), *Kotschy* 652 (BM).

IRAN. Luristan: Tchniar, vii 1868, *Haussknecht* s.n. (BM); Bakhtiari, Teng Nagun, viii 1868, *Haussknecht* s.n. (BM). Montagnes E Sefid-Dasht, Sefid Kuh, 6 xi 1969, *Pabot* 2551 (W). Pers. australis, 3050 m, ix 1868, *Haussknecht* s.n. (BM).

This new addition to *Echinophora* belongs to the previously monotypic subgenus *Lamprosciadium* together with *E. chrysantha* Freyn & Sintenis. It differs from the latter in the clearly smaller, dull, not shining, calyx lobes of the outer flowers. Although geographically the two species are far distant from each other—one in central E Anatolia, the other in SW Iran—morphologically they are fairly close. They are rather distant from the other species of the genus on account of the 3–4 × pinnate leaves with very short linear ultimate segments, the broadly ovate bracteoles, the foliaceous calyx lobes, the ± free, scarcely indurated bracteoles and the fruit scarcely immersed in the receptacle.

When Boissier originally described the species in *Ferulago*, he was dealing with very immature specimens, quite without fruit, and he was uncertain about the correct genus in which to place it. The recent Pabot gathering, cited above, complements the earlier Haussknecht and Kotschy gatherings and has young fruits which clearly show the characteristic structure of the *Echinophora* fruiting umbellule.

We are indebted to Dr D. F. Chamberlain for initially drawing our attention to this species whilst he was preparing the account of *Ferulago* for *Flora Iranica*.