

NORBERT KILIAN

## *Pulicaria gabrielii* and *Iphionopsis oblanceolata* (Compositae, Inuleae), two new species from NE Somalia

### Abstract

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*Pulicaria gabrielii*, a species of *P.* sect. *Platychaete* with homogamous capitula, and *Iphionopsis oblanceolata*, the third species of a disjunct tropical NE African and SW Madagascan genus, are described as new to science. The material originates from a collection made by the Berlin hydrogeologist Baldur Gabriel in Somalia in the late 1980s and presented to the herbarium in Berlin-Dahlem (B). The relationships of both new species are briefly discussed, illustrations of both species, and keys to the four *Pulicaria* species with homogamous capitula in Somalia and the three species of *Iphionopsis* are given.

The Horn of Africa, and particularly N Somalia, shelters a highly interesting, rich and diverse *Compositae* flora, which is still insufficiently known. A good number of new species has been described in the last few years only, of which the discovery of seven new *Dicoma* species (Ortiz & al. 1998) and of four new *Helichrysum* species (Tadesse & Reilly 1995) are striking examples.

In connection with studies in the *Compositae* of S Arabia specimens from N Somalia in the Berlin herbarium have been studied and two undescribed species found. One is a new species of *Pulicaria*, a genus having a centre of radiation in this region and represented in the area with 19 species (Gamal-Eldin 1981). The second is a new species of *Iphionopsis*, which is a small genus unusual for the tribe, established by Anderberg in 1985 and defined by style branches with joint stigmatic areas, conspicuous median resin ducts in the involucre bracts and corolla, an achene wall without sclerenchyma and achene epidermis cells with numerous minute crystals (Anderberg 1985). Only two species were known so far, one distributed in Somalia, SE Ethiopia and NE Kenya, the second confined to SW Madagascar.

*Pulicaria gabrielii* N. Kilian, **sp. nova** – Fig. 1-2

Holotype: Somalia, Bari Region, 5-10 km NO von Escushuban [Iskushuban, 10°18'N, 50°12'E], 300-400 m, 9.12.1987, B. Gabriel (B).

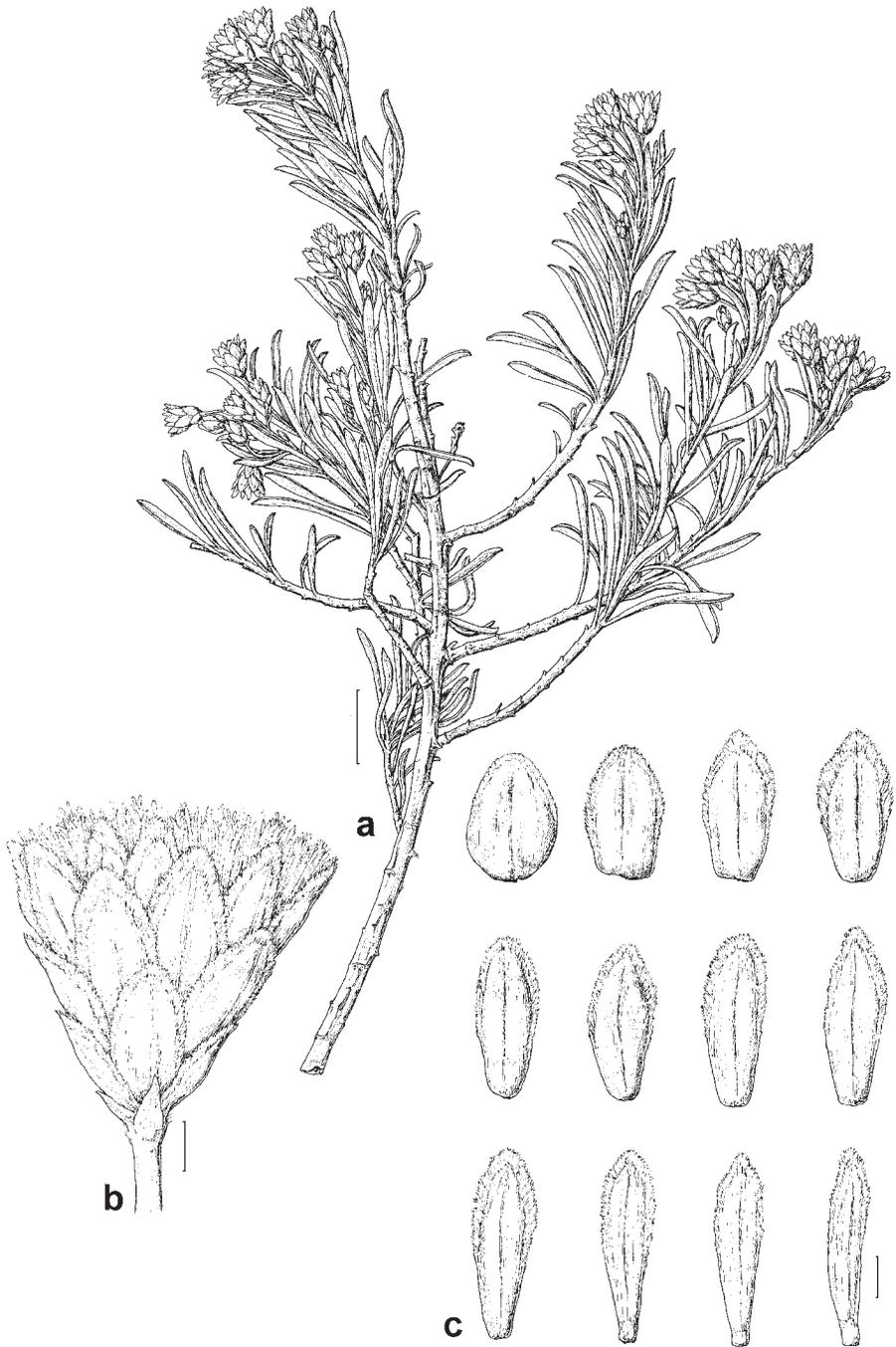


Fig. 1. *Pulicaria gabrielii* – a: flowering branch; b: capitulum at anthesis; c: involucral bracts arranged after their position, starting with the outermost (upper left). – Scale: a = 1 cm, b+c = 1 mm; drawings by Ingo Haas from the holotype.

Species capitulis homogamis et involucri infundibuliformis phyllis imbricatis, oblanceolatis ad obovatis, 1.2-2.3 mm latis, firme coriaceis, fere glabris ab aliis speciebus *P. sect. Platychaete* bene distincta.

This species is dedicated to Prof. Dr Baldur Gabriel, hydrogeologist in Berlin, who, during three field trips to NE Somalia in the late 1980s, brought together a fine plant collection of c. 650 numbers, which he kindly presented to the Berlin herbarium.

#### Description

*Shrub or shrublet(?)*; young branches densely leafy, terminated by a  $\pm$  umbellate panicle or raceme of 3-9 capitula. *Leaves* 12-20  $\times$  1.5-3 mm, linear-oblanceolate, folded along the midrib, apex acute, coriaceous-thick, greyish green, with appressed trichomes up to 0.8-1 mm long, densely covered with sessile glands and therefore  $\pm$  vernicose. *Peduncles* wiry, vernicose, less than 1 cm long. *Capitula* homogamous, discoid, with 20-25 flowers. Receptacle flat, smooth, 1.5-2 mm in diameter at fruiting. *Involucre* approximately funnel-shaped, 6-6.5 mm high and at anthesis 5-6 mm wide; *involucral bracts* imbricate, conspicuously firm and coriaceous, dorsally with sessile glands and  $\pm$  vernicose, with scarious, fimbriate margins, glabrous except for a few trichomes in the apical part of the midrib, straw-coloured, often with somewhat darker midrib and margin, only the outer sometimes slightly greenish along the midrib; the outermost 1-3 bracts triangular-ovate and  $\pm$  acute, similar to the bracts on the peduncles, c. 2 mm long, the second series of bracts  $\pm$  obovate, 3.5-4.2  $\times$  1.9-2.3 mm, the following bracts gradually longer, narrower and more oblanceolate, the innermost bracts 4.8-5.4  $\times$  1.2-1.6 mm and oblanceolate. *Ray flowers* absent. *Disk flowers* perfect, little longer than the involucre, corolla 5-lobed tubular, yellow, 3.8-4.2 mm long, the triangular lobes 0.5-0.7 mm, with a few sessile glands; anther tube and style arms exerted. *Achenes* 1.6-1.9 mm long, 0.6-0.7 mm in diameter, with 10 strong, rounded ribs, straw-coloured, glabrous, apically glandular. *Pappus* double, the outer coroniform pappus 0.1- $<$  0.2 mm long, connate to about half its length; the inner pappus 3.5-4 mm long, of 15-20 bristles with long-connate teeth.

#### Distribution and ecology

The species is so far known only from the holotype. In early December, when collected, the plant was flowering and fruiting.

#### Relationships

*Pulicaria gabrielii* is a member of *P. sect. Platychaete* as circumscribed by Gamal-Eldin (1981). This is evident by its flattened pappus bristles with long-connate teeth, its strongly ribbed, stout achenes and its coriaceous, broad involucral bracts. It resembles *P. somalensis* in leaf shape, leaf indumentum and colour, in the arrangement of the capitula and, perhaps, in general habit (nothing is known about the habit of *P. gabrielii*). *P. gabrielii* is, however, clearly distinct from this species by, in particular, its extraordinary broad involucral bracts, which are exceptional even within *P. sect. Platychaete*, the strongly ribbed achenes, the short outer pappus, the much longer trichomes of the appressed leaf indumentum and the homogamous capitula.

Homogamous capitula are present in several species of *Pulicaria*, of which some are only distantly related to each other. Apart from three other species in N Somalia to be considered below, these are *P. edmondsonii* Gamal-Eldin from N Oman and the U.A.E., *P. mucronifolia* (Boiss.) A. Anderb. from Iran, *P. boissieri* Hook.f., *P. carnosa* (Boiss.) A. Anderb. and *P. glaucescens* (Boiss.) Jaub. & Spach from S Iran and S Pakistan, as well as two further species previously not included in *Pulicaria* (Kilian 1999, King-Jones & Kilian 1999). Homogamous capitula are thus certainly a homoplasy within this genus. The other three N Somalian species with homogamous capitula are *P. aylmeri* Baker, *P. monocephala* Franch. and *P. steinbergii* Gamal-Eldin. Gamal-Eldin (1981) considered each of them more closely related to another heterogamous species than to each other, and there is no evidence for some closer relationship of the new species to one of them. Of these four species, *P. aylmeri* is restricted to the Berbera region in NE Somalia, while *P. gabrielii*, *P. monocephala* and *P. steinbergii* are confined to the Bari and E Sanaag region in NE Somalia. The

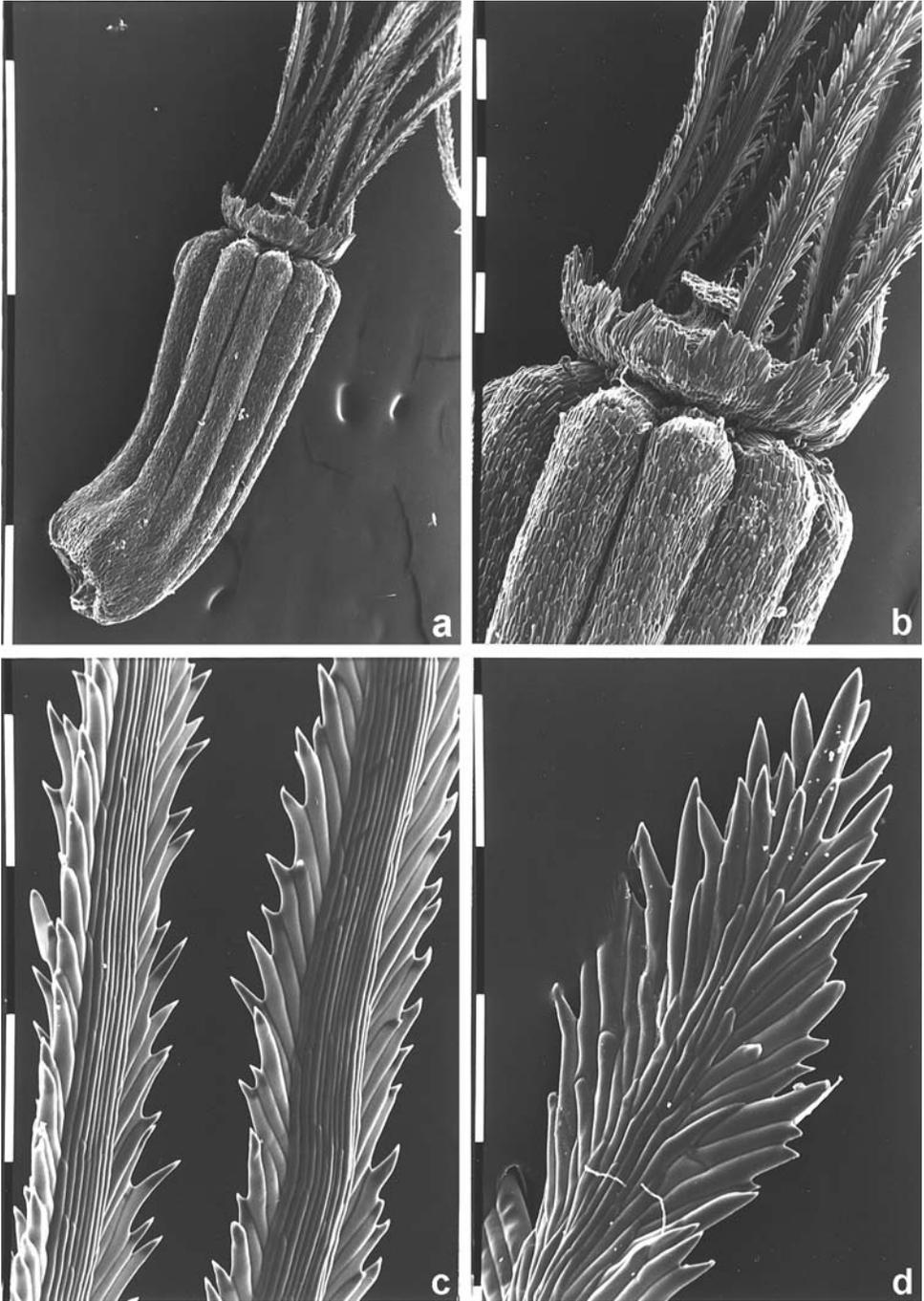


Fig. 2. *Pulicaria gabrielii* – a: achene; b: achene apex with the double pappus in detail; c-d: bristles of the inner pappus, middle third (c) and tip (d). – SEM micrographs from the holotype; scale: a = 1 mm, b-d = 0.1 mm.

latter three species occur even sympatrically in the Iskushuban area, where they were collected by B. Gabriel all at the same day.

For convenience, a key to the four species with homogamous capitula in N Somalia is given:

- 1 Leaves linear to linear-oblongate, folded along the midrib, (unfolded) up to 4 mm wide . . . 2
- Leaves spatulate to cuneate, not folded, 5-10 mm wide . . . . . *P. aylmeri*
- 2 Capitula single at the end of the branches and terminating them; (persisting) peduncles c. 3-6 cm long; involucre bracts linear to linear-lanceolate, acute, ≤ 1 mm wide . . . . . 3
- Capitula by 3-9 in ± umbellate panicles or racemes terminating the branches; peduncles < 1 cm long; involucre bracts obovate to oblanceolate, ± obtuse to subacute, up to 2.3 mm wide . . . . . *P. gabrielii*
- 3 Capitula large and many-flowered (involucre at flowering > 12 mm in diam., receptacle at fruiting c. 6 mm in diam.), leaves linear and entire; achenes with 5 ribs . . . *P. monocephala*
- Capitula smaller (involucre at flowering < 9 mm in diam., receptacle at fruiting c. 2-3 mm in diam.), leaves linear-oblongate with a pair of teeth below the recurved tip; achenes with 10 ribs . . . . . *P. steinbergii*

***Iphionopsis oblanceolata* N. Kilian, sp. nova – Fig. 3**

Holotype: Somalia, Region Bari, bei Karin, [c. 10°56'N, 49°11'E], 'Karin-Formation', breites Tal mit quartären Sedimenten, Travertin-Decken, ca. 200 m, 3.4.1988, B. Gabriel (B; isotype: S).

Ab *Iphionopsis rotundifolia* foliis integris (nec dentatis) anguste oblanceolatis, acutis, ad 20-35 × 2-5 mm (nec spatulatis vel rotundatis, obtusis, 10-50 × 5-25 mm) distinguitur.

**Description**

*Shrub* with scoparious, ascending-erect, glabrous, densely leafy young branches with 1-4 terminal capitula. *Leaves* 20-35 × 2-5 mm, somewhat coriaceous, flat, narrowly oblanceolate, entire, glabrous, attenuate into a very narrow petiol-like base, apex ± acute and with the midrib prolonged into a small mucro. *Capitula* discoid, with 12-14 flowers. *Peduncle* wiry, 0.5-1 cm long, with bracts similar to and passing over into the involucre. *Involucre* at anthesis funnel-shaped, 5-7 mm high; involucre bracts c. 25-30, in 4-5 series, imbricate, coriaceous and straw-coloured to pale reddish brown except for a thin hyaline margin and a conspicuous median, somewhat prominent, reddish dark brown longitudinal resin duct; the outermost bracts narrowly ovoid, c. 2 × 1 mm, those of the following series gradually longer and lanceolate, those of the innermost two series linear-lanceolate to linear-oblongate and 4.6-4.8 × 1 mm. *Flowers* all perfect, distinctly longer than the involucre; corolla 5-lobed tubular, 5.4-5.8 mm long, the lobes 0.6 mm long, probably yellowish-reddish, with 5 conspicuous median reddish black resin ducts running from the base into the tip of the corolla lobes; anther tube including the appendages c. 3.6 mm long, basal appendages unbranched, 0.4-0.5 mm long, apical appendages lanceolate, 0.3-0.4 mm long; style c. 6 mm long, style branches adaxially uniformly papillose, without separated stigmatic bands, abaxially with a longitudinal reddish black resin duct. *Achenes* (mature not seen), approximately obconical, densely villose of white, 0.5-0.7 mm long twin hairs and with sessile glands covered by the villose indumentum. *Pappus* 5-6 mm long, of numerous scabridulose bristles, those of the outer series somewhat thinner than those of the inner series.

**Distribution and ecology**

The species is so far known only from the type collection, growing in the colline zone on travertine deposits (i.e. massive calcium carbonate formed by deposition from spring waters).

**Delimitation from *Iphionopsis rotundifolia* and *I. ilicifolia***

*Iphionopsis oblanceolata* is in involucre, achene, pappus and flowers character very similar to both the tropical E African *I. rotundifolia* (Oliv. & Hiern) A. Anderb. and the Madagascan *I. ilicifolia* (Humbert) A. Anderb. In particular the presence of distinct median resin ducts in the

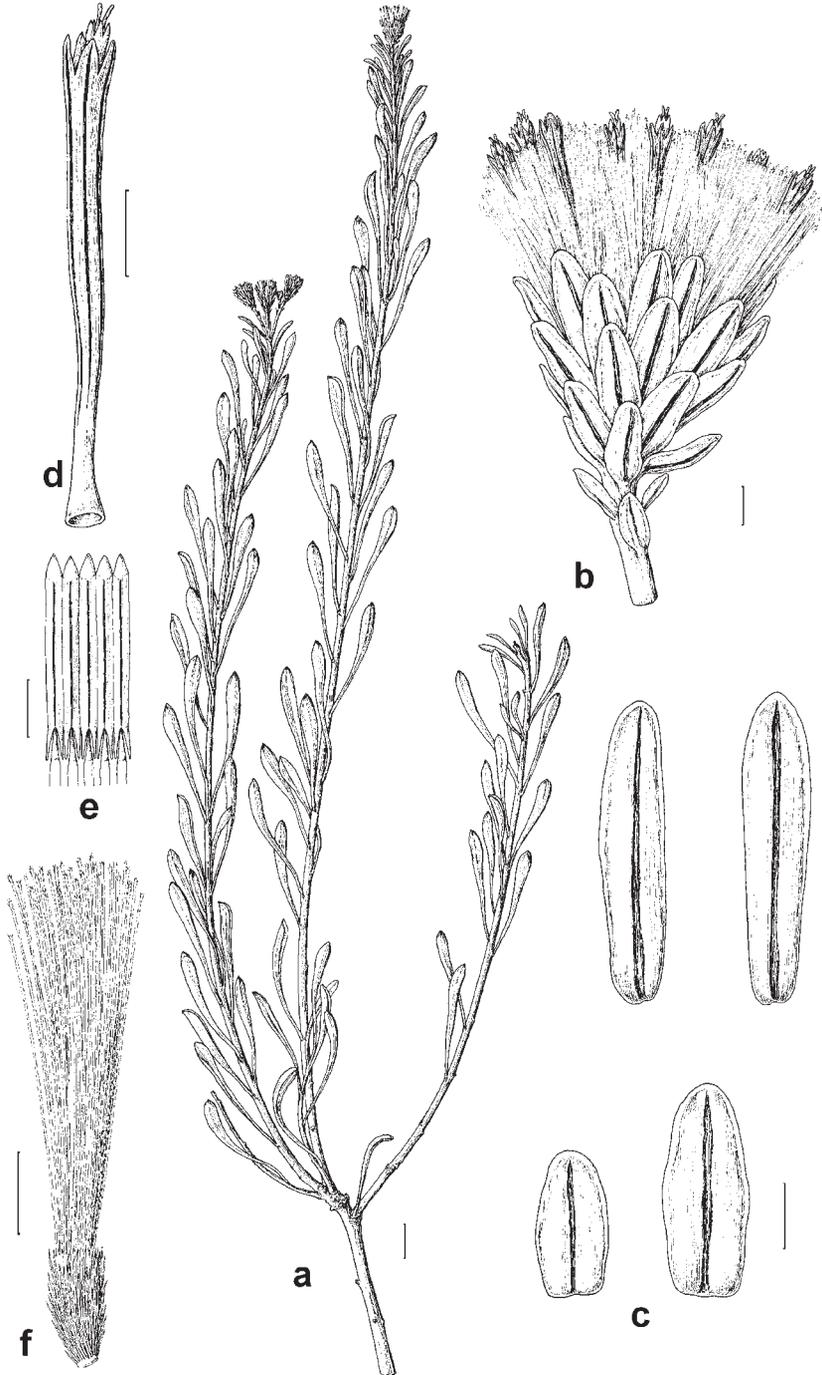


Fig. 3. *Iphionopsis oblanceolata* – a: flowering branch; b: capitulum at anthesis; c: involucre bracts; d: flower (achene removed); e: anther tube (dissected); f: achene (immature). – Scale: a = 1 cm, b-f = 1 mm; drawings by Ingo Haas from the type collection.

involucral bracts and corolla, which is the most conspicuous synapomorphy of the genus (Anderberg 1985), are exactly as in these species. In *I. rotundifolia* and *I. oblanceolata*, I observed such ducts also in the style branches (specimens of *I. rotundifolia* at B, collected near Ufeyn, 10°37'N, 49°43'E, by *Gabriel*). The involucral bracts, however, are narrower and have a somewhat broader hyaline margin in the new species than in *I. rotundifolia*, and they are all obtuse in contrast to both *I. rotundifolia* and *I. ilicifolia* with acute inner bracts. The most striking difference to both known species is provided by the completely entire, narrowly oblanceolate leaves of the new species, which make it unmistakably. Although the leaves of *I. rotundifolia* show some variability in shape, ranging from moderately spatulate to obovate or rotundate, the leaves of the new species are far outside this range, even apart from the likewise conspicuous difference regarding the leaf margin.

#### Key to the species of *Iphionopsis*

- 1 Leaves conspicuously entire, obtuse and narrowly oblanceolate,  $\leq 5$  mm wide; all involucral bracts obtuse . . . . . *I. oblanceolata*
- Leaves coarsely dentate or sharply denticulate, either lanceolate to elliptical and acute, or rotundate to spatulate, obtuse and  $\geq 5$  mm wide; inner involucral bracts acute . . . . . 2
- 2 Leaves rotundate to spatulate, obtuse, sharply denticulate . . . . . *I. rotundifolia*
- Leaves lanceolate to elliptical, acute, with 1-4 large teeth . . . . . *I. ilicifolia*

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Address of the author:

Norbert Kilian, Botanischer Garten und Botanisches Museum Berlin-Dahlem, Freie Universität Berlin, Königin-Luise-Str. 6-8, D-14191 Berlin, Germany; e-mail: n.kilian@mail.bgbm.fu-berlin.de