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Ixia nutans, a new species of *Ixia* sect. *Morphixia* (Iridaceae) from the western Little Karoo, Western Cape, South Africa

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ABSTRACT

A population of *Ixia* from the western Little Karoo discovered in August 2015 does not conform to any known species of the genus. It has the vegetative morphology of sect. *Morphixia*, with two basal leaves with well-developed blades and a third upper leaf largely to entirely sheathing the stem. Within the section the flowers are consistent with the *Ixia latifolia* group (series *Morphixia*) in their funnel-shaped perianth tube and partly exserted filaments. The foliage leaves of this population stand out in their linear, soft textured blades ± 3 mm wide, slightly twisted distally and lacking raised margins. This contrasts with other species of the group, which typically have falcate leaves broadest in the middle and prominently thickened margins and main veins. The nodding to slightly pendent flowers have a perianth tube 6–7 mm long and tepals ± twice as long. We describe these plants as *Ixia nutans* and provide key to sect. *Morphixia* as an aid to identification. Sect. *Morphixia*, one of four sections of the genus, now has 35 species.

1. Introduction

The genus *Ixia* L., restricted to the winter rainfall zone of South Africa, comprises 100 species distributed among the four sections *Dichone* (Salisb. ex Baker) Goldblatt & J.C. Manning (17 spp.), *Hyalis* (Baker) Diels (19 spp.), *Ixia* (29 spp.), and *Morphixia* (Ker Gawl.) Pax (now 35 spp.), all of which have been revised within the past five years (Goldblatt and Manning, 2011, 2012, 2016). Here we describe an additional species for a recently discovered population of plants from near Montagu in the western Little Karoo. This population has the typical characteristics of sect. *Morphixia* viz. two basal foliage leaves plus a third cauline sheathing leaf, and translucent floral bracts with the outer 3-veined and acutely 3-toothed, but it differs from all species in the section in its narrow, soft-textured, linear foliage leaves, slightly twisted distally and without thickened margins and main vein. The flowers are slightly pendent and borne on twisted branches, with the filaments exserted from a funnel-shaped perianth tube 6–7 mm long. This new collection is described here as the new *Ixia nutans* Goldblatt & J.C. Manning. Although capsules and seeds are lacking for the new species these are relatively uniform through the genus (Goldblatt and Manning, 2012, 2016).

2. Material and methods

I. nutans was described and illustrated from fresh specimens collected in the wild, where population size, floral ecology and habitat details were noted, including associated vegetation and substrate. Pressed herbarium specimens were subsequently made of a sample of plants gathered in the wild. A search in herbaria containing significant holdings of southern African flora, mainly BOL, MO, NBG and PRE (abbreviations following Holmgren et al., 1990) revealed no additional specimens matching the new species. With our wide experience of the taxonomy and biology of *Ixia* in the field and laboratory (Goldblatt and Manning, 2011, 2012) we are confident that the species described here is indeed new, differing in at least two features from related taxa. Author names are abbreviated according to Brummitt and Powell (1992).

3. Taxonomy

3.1. Key to species of sect. Morphixia

1a. Leaf blades linear-filiform and up to 2 mm (and usually less than 1.5 mm) wide when alive.

2a. Leaves ovate-elliptic in cross section; perianth tube ± 5 mm long. *Ixia teretifolia*.

2b. Leaves not as above, either with a slightly to prominently thickened main vein ± in the center of blade or margins raised into narrow fleshy wings and main vein obscure or with main vein not evident when alive unless held to the light, lying closer to abaxial margin,

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when dry, main vein and margins become evident and appear thickened due to collapse of mesophyll between them; perianth tube 4–22 mm long.

3a. Leaf margins raised into narrow fleshy wings and main vein obscure; perianth tube ±5 mm long. *Ixia linearifolia*.

3b. Leaves with margins not raised and with main vein either slightly to prominently thickened main vein or main vein not raised when alive.

4a. Leaf with main vein slightly to prominently thickened; flowers with perianth tube cylindric throughout, (12–)15–20 mm long and uniformly ±2 mm diam. *Ixia stenophylla*.

4b. Leaf with main vein not evident when alive unless held to light and lying closer to abaxial margin, when dry, main vein and margins become evident and appear thickened due to collapse of tissue between them; perianth tube funnel-shaped to cylindric, 4–22 mm long.

5a. Perianth tube 4–10 mm long; filaments included or exserted up to 2 mm from tube; anthers symmetrically arranged in a column enclosing style.

6a. Perianth tube 4–8 mm long; tepals 11–15 mm long, thus ± twice as long as tube; filaments exserted 1–2 mm and anthers fully exserted; anthers (3–)4–5 mm long. *Ixia capillaris*.

6b. Perianth tube 8–10 mm long; tepals 8–10 mm long, thus ± as long or slightly longer than the tube; filaments included and bases of anthers held within tube; anthers 3.5–4.0 mm long. *Ixia exiliflora*.

5b. Perianth tube 12–22 mm long; filaments included or well-exserted from tube; anthers symmetrically arranged or unilateral and facing upward, then style lying below anthers.

7a. Stamens symmetrically arranged; filaments included, 3–6 mm long; anthers 2.5–3.5 mm long, bases usually included in tube. *Ixia dieramoides*.

7b. Stamens usually (?always) unilateral and horizontal to declinate; filaments 12–15 mm long, exserted 2–10 mm from tube; anthers 4–5 mm long, fully exserted from tube.

8a. Filaments exserted 2–6 mm from tube; stem simple or with 1 or 2(3) lateral branches, branches subtended by attenuate bracts and prophylls; cataphylls chestnut-brown above ground. *Ixia pauciflora*.

8b. Filaments exserted 8–10 mm from tube; stem with 1–3 lateral branches, branches subtended by truncate bracts and prophylls; cataphylls green with ± membranous margins. *Ixia reclinata*.

1b. Foliage leaves 1–4, blades linear to lanceolate or falcate, rarely linear-filiform but then with a moderately to prominently thickened central vein, usually >2 mm wide in mature plants; main vein evident when alive, ± central or slightly displaced toward abaxial margin.

9a. Foliage leaves with margins broadly winged, thus H-shaped in cross section; ovary and capsules warty.

10a. Flowers pale pink with white to pale yellow throat; perianth tube 5–6 mm long; anthers ±5 mm long. *Ixia alata*.

10b. Flowers pale blue-mauve, white in throat; perianth tube 8–10 mm long; anthers ±6 mm long. *Ixia thomasiae*.

9b. Foliage leaves plane, sometimes with margins heavily thickened but never winged; ovary and capsules smooth, rarely surface obscurely roughened.

11a. Perianth tube cylindric or subcylindric; tepals shorter than tube.

12a. Perianth tube 12–18 mm long; flowers pale lilac to white flushed lilac. *Ixia dolichosiphon*.

12b. Perianth tube 20–34 mm long; flowers pale beige, white or pale cherry red.

13a. Corm tunics of coarse, woody fibers; flowers pale beige, usually purple outside; tepals oblong, 11–15 × 3.0–4.5 mm. *Ixia paucifolia*.

13b. Corm tunics of fine, pale fibers; tepals ovate, 10–16 × 5–6 mm.

14a. Flowers white, sometimes flushed mauve to pink outside, and sweetly scented; lower two leaves subequal, both 2–4(5) mm wide. .*Ixia cedarmontana*.

14b. Flowers pale cherry red, unscented; lower two leaves unequal with lowermost 6–8 mm wide. *Ixia seracina*.

11b. Perianth tube broadly or narrowly funnel-shaped; tepals usually as long as or longer than tube.

15a. Filaments reaching mouth of perianth tube or exserted (sometimes for only 1 mm), anthers always completely exserted.

16a. Foliage leaf solitary, linear; stem usually unbranched. *Ixia saundersiana*.

16b. Foliage leaves 2–4, linear to lanceolate; stem simple or branched.

17a. Perianth tube (2.5–)3.0–5.0 mm long; lateral branches usually several and always short, bearing 1–3(4) flowers.

18a. Filaments pale blue to white, 5–7 mm long; lateral branches mostly 2- or 3-flowered. . . *Ixia marginifolia*.

18b. Filaments purple-black, ±4 mm long; lateral branches mostly 1-flowered. *Ixia pavonia*.

17b. Perianth tube 6–18 mm long; lateral branches various.

19a. Lateral branches mostly 3–6, short and thread-like, each bearing 1 or 2(3) flowers; perianth deep maroon-purple, magenta-pink, blue-mauve or white with yellow cup. *Ixia ramulosa*.

19b. Lateral branches mostly 1–3, or plants unbranched, branches typically well-developed, straight or twisted, bearing 1–6 or more flowers.

20a. Branches straight and bearing 2–several flowers in distal half or plants unbranched.

21a. Leaves soft textured, linear, up to 3 mm wide; margins not raised and thickened. *I. nutans*.

21b. Leaves firm and leathery, usually falcate, > 5 mm wide; margins somewhat to strongly thickened.

22a. Leaves (5–)10–18 mm wide, with moderately to heavily thickened margins; perianth tube 14–23 mm long; tepals 15–18 mm long; bracts 8–10 mm long; perianth usually deep pink to cherry-red. *Ixia latifolia*.

22b. Leaves mostly narrowly sword-shaped to falcate, usually <5 mm wide, with slightly thickened margins; perianth tube 8–11 mm long; tepals 11–14 mm long; bracts 5–7 mm long; perianth white, pale pink or purple.

23a. Branches 0 to 2, short, wiry and suberect; corm with papery, onion-skin-like, pale brown tunics not persisting; perianth tube ±10 mm long; tepals 12–17 mm long. *Ixia monticola*.

23b. Branches nearly always present, diverging; corm with fibrous, medium to coarse fibers; perianth tube 8–11 mm long and tepals 11–14 mm long.

24a. Branches mostly held at more than 45° from main axis, sometimes nearly horizontally; perianth tube 8–11 mm long; filaments exserted (1–)2 mm or included in tube; anthers 4.0–5.5 mm long. *Ixia divaricata*.

24b. Branches ascending; perianth tube 12–14 mm long; filaments exserted ±4 mm from tube; anthers ±6 mm long. *Ixia arenosa*.

20b. Branches and main spike always 1-flowered or branches twisted and flexuose, with flowers not obviously crowded in distal half.

25a. Perianth tube 11–23 mm long; tepals 13–23 mm long; bracts pale, ± translucent with dark veins evident. *I. latifolia*.

25b. Perianth tube (5–)6–11 mm long; tepals 10–15 mm long; bracts veins ± obscured.

26a. Bracts pale; stem with (1)2 or 3 short, wiry twisted branches 5–8 mm long, each bearing a solitary flower. *Ixia ecklonii*.

26b. Bracts purple to glossy brown and veins obscured; stem branching not as above.

27a. Plants mostly <10 mm high; bracts 5–6 mm long, flushed purple; cormlets when present borne at base of corm. *Ixia parva*.

27b. Plants mostly 250–450 mm high; bracts 7–10 mm long, glossy dark brown; cormlets borne on long, slender stolons. *Ixia brunneobracteata*.

15b. Filaments not reaching mouth of perianth tube; anthers partly to entirely included in tube.

28a. Main spike long, straight and erect, lateral spikes ascending to spreading, with upright flowers crowded in distal half. *I. divaricata*.

28a. Inflorescence not as above.