A SYNOPTIC REVIEW OF THE AFRICAN GENUS *HESPERANTHA* (IRIDACEAE: CROCOIDEAE)[1]

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ABSTRACT

Although revised in the past 20 years for the two major centers of its range, the southern African winter-rainfall zone and the eastern southern African Drakensberg, the sub-Saharan African genus *Hesperantha* remains inadequately understood. Continuing botanical exploration in southern Africa has resulted in the discovery of several new species and of populations of species known only from the type or very few collections. Species are listed here in a revised taxonomic order together with keys for the genus in the southern African winter-rainfall zone and in eastern southern Africa and tropical Africa that have a summer-rainfall climate. Included here are 11 new species, a shift in the application of the name *H. candida* to plants called *H. vernalis,* recognition of *H. leucantha* for plants previously called *H. candida,* and a series of novel observations relating to species delimitation, biology, geography, and taxonomy. Important range extensions are also noted for poorly known species, among them *H. ciliolata, H. flava, H. quadrangula,* and *H. teretifolia.* Including the novelties described in this account, 79 species of *Hesperantha* are now recognized, 4 in tropical Africa, 37 in summer-rainfall southern Africa, mostly of the Drakensberg, and 42 in winter-rainfall southern Africa. *Hesperantha longicollis* and *H. coccinea* are shared between tropical and eastern southern Africa, and *H. radiata* and *H. bachmannii* between the winter- and summer-rainfall zones of southern Africa. The new species from the southern African winter-rainfall zone are: *H. decipiens,* from Namaqualand, allied to *H. radiata*; *H. glabrescens,* from the Roggeveld Escarpment, closely related to *H. pilosa*; *H. malvina,* also related to *H. pilosa,* from cliffs on the Anysberg in the Little Karoo; *H. rupicola,* a lithophyte from western Bushmanland, possibly most closely related to *H. acuta*; and *H. sufflava,* a member of section *Hesperantha* from Malmesbury in Western Cape Province. New species from the southern African summer-rainfall zone are: *H. altimontana,* a spring-blooming, white-flowered species of the high Drakensberg of Lesotho and KwaZulu-Natal; *H. brevistyla,* a dwarf plant from Free State and adjacent KwaZulu-Natal; *H. debilis,* evidently allied to the widespread *H. bachmannii,* from the Albany District of Eastern Cape Province; *H. exiliflora,* from Lesotho, which has small, purple flowers; *H. saxicola,* of rocky outcrops in Mpumalanga, South Africa, which has large white flowers with short anthers; and *H. stenosiphon,* a long-tubed, pink-flowered species with blackish anthers from Eastern Cape, South Africa.

Key words: Africa, biogeography, Crocoideae, *Hesperantha,* Iridaceae, systematics.

Despite the publication in the past 20 years of revisions and floristic accounts of *Hesperantha* Ker Gawl. covering most of its range across southern and tropical Africa (Goldblatt, 1984; Hilliard & Burtt, 1986; Goldblatt, 1986, 1987, 1993; Goldblatt & Manning, 1996) and extensive fieldwork by many botanists, this sub-Saharan African and largely southern African genus of Iridaceae subfamily Crocoideae G. T. Burnett (1835) (syn. Ixioideae Klatt, 1866, as subordo Ixieae) continues to yield novelties, significant range extensions, and new collections that contribute to our understanding of known species. In the southern African winter-rainfall zone, several major range extensions have been recorded in the past 10 years and new collections have been made of plants that are here recognized as the new species *H. decipiens, H. glabrescens, H. malvina, H. rupicola,* and *H. sufflava.* Important range extensions or additional populations in the winter-rainfall zone include those for *H. ciliolata, H. flava, H. quadrangula,* and *H. teretifolia,* while the rare *H. minima,* a species first collected in 1830, was rediscovered in Namaqualand in 1991.

Collecting in the summer-rainfall region of eastern southern Africa over the past 15 years has yielded three new species, *Hesperantha exiliflora* from subalpine elevations in Lesotho, *H. brevistyla*

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from the northern high Drakensberg of Free State and KwaZulu-Natal in South Africa, and *H. stenosiphon* from Eastern Cape Province, South Africa. Additional records suggest that white-flowered *H. hygrophila,* as defined by Hilliard and Burtt, includes three species. *Hesperantha hygrophila* has distinctive leaves with raised and winged margins and midrib, features that define the species (Hilliard & Burtt, 1986). A second species has nearly plane, somewhat leathery leaves and a robust habit with an erect, many-flowered spike, while the third, confined to cliffs in the Long Tom Pass area of Mpumalanga, has trailing stems and leaves, and a few-flowered spike. The earliest name for the former is *Gladiolus inconspicuus,* here transferred to *Hesperantha,* and the second is a new species, *H. saxicola.* Late winter- and spring-flowering plants included in *H. baurii* (which flowers in mid to late summer) by Hilliard and Burtt and corresponding to *H. modesta* Baker are recognized as a distinct species. In addition, spring-flowering plants with large, white flowers from the northern Drakensberg allied to *H. schelpeana* are recognized as a new species, *H. altimontana.* First discussed by Hilliard and Burtt (1986) as differing from *H. schelpeana* in having a white flower with a longer perianth tube, *H. altimontana* has plane, falcate leaves whereas *H. schelpeana* has slender, terete leaves. The enigmatic high-altitude Drakensberg endemic, *H. pubinervia,* originally known from fragmentary material, has been rediscovered, and the range of *H. grandiflora* extended northward to The Sentinel in Free State, South Africa. Study of living plants in the southern Drakensberg has shown that a second species was included in *H. grandiflora* by Hilliard and Burtt (1986). These plants match the type of *H. galpinii* (Foster, 1948), currently a synonym of *H. grandiflora,* and indicate the need for an expanded definition of *H. woodii,* of which *H. galpinii* must be a synonym. Lastly, reexamination of the type collection of *H. candida* makes this species an earlier name for *H. vernalis* Hilliard & Burtt. The species called *H. candida* by Hilliard and Burt assumes its earlier name, *H. leucantha.*

Additional species described for the southern African winter-rainfall zone (Goldblatt, 1987) and here render my 1984 account of *Hesperantha* out of date and the keys valueless. Likewise, for eastern southern Africa the only post-*Flora Capensis* (Baker, 1896) treatment of the genus by Hilliard and Burtt (1986) dealt only with the species of the KwaZulu-Natal–Lesotho region and now requires expansion even there. Keys for the entire genus are provided here, one for the southern African winter-rainfall zone, and the other for tropical and eastern southern Africa combined. This account includes expanded descriptions and geographic information for *H. pubinervia, H. woodii,* and the incompletely understood species of Limpopo and Mpumalanga Provinces, *H. schlechteri* and *H. brevicaulis.* This last species is the only long-tubed *Hesperantha* with pink flowers from the northern provinces of South Africa.

The difficulty in distinguishing herbarium specimens of several closely allied species, including, for example, *Hesperantha grandiflora* from *H. woodii, H. hygrophila* from *H. inconspicua,* and *H. glareosa* from *H. schlechteri,* emphasizes the importance of fieldwork and knowledge of living plants, particularly for a genus like *Hesperantha* in which the basic floral morphology is highly conserved and useful taxonomic characters include the timing of anthesis, perianth and anther color, and the orientation of floral parts. It is likely, too, that critical characters for some species lie in the capsules and seeds, or in the corms. These are, however, seldom collected: fruiting material because it is absent at flowering time, and corms because they are often difficult to dig up (and because collectors are often reluctant to destroy plants). For *Hesperantha,* collectors should try to record time of opening and closing of the flower, presence or absence of scent (and scent characteristics), flower color, presence of nectar, and any other feature not evident when the plant is pressed.

Morphology and Diagnostic Characters of *Hesperantha*

Species of *Hesperantha* are small to medium-sized, deciduous geophytes, and with the exception of the rhizomatous *H. coccinea,* have a cormous rootstock (Fig. 1). Although I formerly subdivided the genus into four sections (Goldlbatt, 1982, 1984), I now recognize only three sections, section *Concentrica* (62 species), section *Hesperantha* (8 species), and section *Radiata* (9 species), based largely on corm characters. The corm body is asymmetric with a lateral ridge produced from the base from which the roots emerge. The woody corm tunics usually reflect the internal asymmetry in section *Concentrica,* but in sections *Hesperantha* and *Radiata* the corms are more or less symmetric and bell-shaped (but the flat base is often oblique) (Fig. 1C–E). Section *Radiata* is additionally distinguished by a bract character, the outer bracts united in the lower half around the spike axis, and flowers with a curved perianth tube. Species of section *Hesperantha* also appear to comprise a close-knit assemblage based on their distinctive corm,

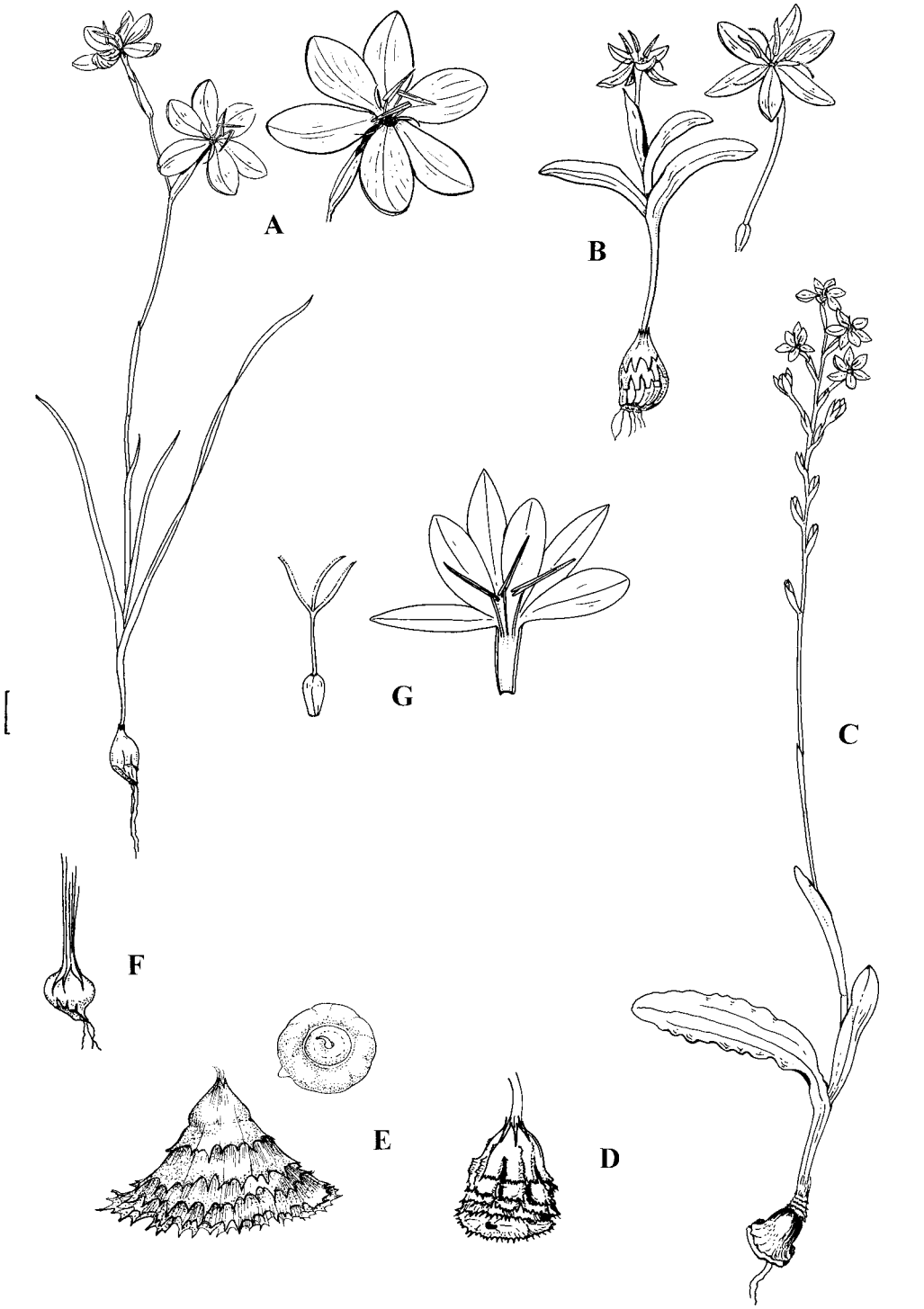

Figure 1. Morphology of *Hesperantha*. —A. *H. acuta* (*Goldblatt 6373*, MO), with small corm with concentric tunics. —B. *H. humilis* (*van Zyl s.n.*, MO), acaulescent habit with imbricate corm tunics. —C. *H. spicata* (*Goldblatt 5774*, MO, NBG), with large, flat-based corm. D–F. Corm detail. —D. *H. radiata* (*Goldblatt 5179A*, MO), corm with tunics. —E. *H. falcata* (*Goldblatt s.n.*, no voucher), intact corm and with the woody tunics removed to show the lateral projection from which roots are produced. —F. *H. fibrosa* (*Goldblatt 6101*, MO), corm with tunics. —G. Flower of *H. pilosa* (*Goldblatt 5810*, MO) with tube opened vertically to show filament insertion and separated gynoecium with inferior ovary, slender style as long as the perianth tube and long style branches. Drawn by Margo Branch from live plants. Scale bar 1 cm; corms D and E much enlarged.

and I continue to recognize this section, restricted to the southern African winter-rainfall zone.

Comparison with the related genera *Romulea* Maratti and *Geissorhiza* Ker Gawl. (which also have asymmetric corms with woody tunics) suggests that the asymmetric corm with concentric tunics (Fig. 1A, F) that fragment into vertical segments, characteristic for *Hesperantha* sect. *Concentrica,* is ancestral. In modification of this type of corm, the tunics split mainly from the base and as a result the older tunics partly overlap the newer ones (Fig. 1B). This corm defined a second section *Imbricata* (Goldblatt, 1982). Sections *Hesperantha* and *Radiata* both have bell-shaped corms with an oblique to horizontal base (Fig. 1C–E). In section *Radiata* the tunics mostly have concave, somewhat scalloped segments. The classification has not proved entirely workable, particularly for the summer-rainfall zone, where corm tunics seldom accumulate over several seasons. Most species there have corm tunics of the concentric type that taper above into prominent, fairly stiff points, but sometimes the accumulated tunics take on the appearance of the imbricate type. Most of the species of the summer-rainfall zone are so morphologically similar to one another in other ways that sectional separation on the basis of minor corm differences does not seem warranted. The distinction between sections *Concentrica* and *Imbricata* thus no longer seems useful, and they have been united under the first name. No infrasectional groups are recognized in this large section of 62 species.

Leaves of *Hesperantha* species are generally plane (Fig. 1A–C) and reflect few taxonomically significant specializations. The leaves of *H. spicata* often have undulate or crisped margins (Fig. 1C). The midribs are usually slightly thickened, and the margins are frequently also slightly raised. *Hesperantha juncifolia* and *H. teretifolia* have centric leaves, round in transverse section, and in the latter the surface is vertically ribbed with the rib edges microscopically ciliate. A few species have pilose (*H. pilosa, H. pseudopilosa, H. pubinervia, H. glabrescens*) or minutely ciliate leaves (*H. ciliolata, H. teretifolia*). Leaf number is often constant in a species and is a useful defining character. Leaf number ranges from several and indeterminate in number in a species to consistently four, or three, often with the lower three or two basal and the remaining one cauline and largely sheathing. A minute scale-like leaf, borne on the stem shortly below the spike, characterizes several species allied to *H. pilosa.*

Flowers are borne on aerial or largely subterranean flowering stems that are usually unbranched, and as in most Crocoideae, are arranged in spikes (Figs. 1A–C, 2, 4, 5). Flowering phenology is constant in a species and, except for minor shifts due to seasonal variation in temperature, timing of critical rainfall, or elevation, flowering occurs at the same time each year. The bracts are green and similar in texture to the leaves, or tend to become dry above. The inner bracts have two main veins, a bifid apex, and often have membranous margins. The perianth always has a well-developed perianth tube, typically ranging in length from about half as long as the tepals to elongate and up to three times as long. In *Hesperantha quadrangula,* however, the perianth tube is ca. 3 mm long, and about one-third to one-quarter as long as the tepals. The perianth tube is straight in most species of sections *Concentrica* and *Hesperantha* except in *H. bachmannii, H. bulbifera,* and *H. grandiflora* where the tube is curved outward near the apex as it is in section *Radiata.*

The tepals typically spread at right angles to the tube, the flower thus being rotate to hypocrateriform (Fig. 1A–C). The tube is narrow with a short, expanded upper portion at the base of which the filaments are inserted (Fig. 1G). The filaments are filiform and erect, and bear linear, longitudinally dehiscent anthers that are twisted at the top of the filaments and face inward. In several species the anthers are articulated on the filaments and lie horizontally. Characteristic of the genus is the style, which divides shortly below the top of the perianth tube into three long, diverging to laxly spreading branches (Fig. 1A, B, G), stigmatic in the upper half or for almost their entire length. Three species of Western Cape Province, South Africa, *Hesperantha cedarmontana, H. elsiae,* and *H. saldanhae,* are unusual in having the style branches and, except in *H. saldanhae,* the stamens included in the perianth tube. The eastern southern African *H. grandiflora* has a zygomorphic flower with the tube curved at the apex, the tepals oriented vertically, and the stamens and style branches unilateral and declinate. In other species with a curved tube, the stamens lie in a drooping, more or less pendent cluster.

Flower color is fairly conservative, and many species of the southern African winter-rainfall zone have white or cream flowers while most eastern southern African species have pink flowers. A few predominantly white-flowered species have populations with a yellow perianth (*Hesperantha acuta, H. falcata*), and some populations of *H. pilosa* have white, blue, or magenta flowers. Flower color is often associated with times of opening and closing of the perianth. In general, colored flowers open during the day (usually only in the morning or after-

noon) and white flowers open in the afternoon or evening and close during the night. White perianths that open in the evening appear derived (Reeves et al., 2001a, 2001b). If this is correct, the eastern southern African species, most of which have pink to mauve flowers open during the day, constitute the ancestral type. White, crepuscular to nocturnal flowers would then be derived and the few winter-rainfall zone species with pink or yellow flowers then represent a reversal to an ancestral condition.

Scent is a common feature of white-flowered species of the winter-rainfall zone of southern Africa and is otherwise rare, although some populations of the mauve-flowered *Hesperantha ciliolata* of the winter-rainfall zone have scented flowers, as do the white- or cream-flowered *H. longicollis* and *H. radiata* (and perhaps *H. ballii*) of summer-rainfall southern Africa. Scent is variable and to the human nose either pleasant and sweet to sweet-spicy, or acrid-musty, or bitter. Scent can be inconsistent within species, and may sometimes be absent in some populations of otherwise scented species, while in widespread species like *H. falcata* scent is variable, ranging from narcissus to frangipani, somewhat musty, or evidently absent. Scent is often weakly developed at anthesis and the intensity reaches a peak only an hour after flowers open in some species; it falls in intensity again before the flower begins to close. Scent is an unreliable character because it varies so much among populations, sometimes even changing under different conditions and times of sampling.

Capsules, and in particular seeds, vary across the genus, although they are seldom recorded. Capsules are usually globose to oblong, but may be cylindric in section *Radiata*. Seeds are primitively globose (sometimes weakly faceted by pressure in the capsule) and have a flattened chalazal end (Goldblatt & Wagner, 1984). Notable variants include *Hesperantha spicata*, which has seeds with a loose, white spongy coat, and *H. pseudopilosa*, which is distinguished from *H. pilosa* partly by its large seeds with a spongy coat (Goldblatt, 1987). Seeds of *H. coccinea*, described in more detail under that species in the systematic account, have a loose coat that contains a much smaller globose seed body, and I assume they are both aerodynamic and dispersed by water, as they are unusually buoyant. In eastern southern Africa several long-tubed species, including *H. grandiflora* and *H. huttonii*, have winged seeds (Hilliard & Burtt, 1986), which provides support for the monophyly of the long-tubed species with this character. Seeds of *H. scopulosa*, which also has long-tubed flowers, are narrowly ovoid-oblong, have a very long persistent, twisted funicle, and have no wing at all.

Seeds of *Hesperantha* species, especially of eastern southern Africa, are not well known, and every effort should be made by collectors to obtain ripe seeds as well as flowering material. Because capsules mature several weeks after flowering in most species, seed collection is seldom possible unless a later visit to the site can be made.

Chromosome number is conservative. Nearly all 30 species counted are diploid with an ancestral base number of $x = 13$ (Goldblatt, 1984, 1987; Goldblatt & Takei, 1997). The tropical African *Hesperantha petitiana* is polyploid, with tetraploid or hexaploid populations (Goldblatt, 1986), and it may have a derived base number of $x = 12$. The only count for *H. baurii* (Goldblatt & Takei, 1997) is also $2n = 24$. Examination of vouchers for earlier counts (Goldblatt, 1971) shows that the reports of $2n = 26$ for *H. baurii* and *H. longituba* are both for *H. brevicaulis*. The basic number of $x = 13$ is uncommon in the Iridaceae but is shared with the largely Cape genus *Geissorhiza*. The base of $x = 12$ is probably secondary in the genus, and an example of dysploid reduction.

Both morphology (Goldblatt, 1985, 1990) and molecular data (Reeves et al., 2001a, 2001b) confirm the close relationship of these two genera. Reeves's analysis of generic relationships using sequences from four plastid DNA regions of the chloroplast genome yields a bootstrap value (BS) of 99% for the clade including the one species of *Geissorhiza* and two of *Hesperantha*. One of the two species of *Hesperantha* in that study was *H. coccinea*, only species of the rhizome-bearing *Schizostylis* Back. & Harv., which was reduced to synonymy in *Hesperantha* by Goldblatt and Manning (1996). A second molecular study using the plastid DNA exon *mat*K confirms the close relationship between *Hesperantha* and *Geissorhiza* (BS 100%) (Goldblatt et al., 2003). Neither the *mat*K, nor the Reeves et al. study have provided any well supported indication of the relationship within Crocoideae of the *Hesperantha–Geissorhiza* clade, which is unresolved.

The basic floral morphology is so constant in *Hesperantha* that species identification often rests on vegetative characters, especially the nature of the corm tunics in the southern African winter-rainfall zone, or on leaf number and color and the relative lengths of the floral parts, especially the perianth tube and the stamens. Flowering time is also constant within a species so that this can safely be used as an aid to identification.

THE SHORT-TUBED SPECIES OF EASTERN SOUTHERN AFRICA

The short-tubed species of *Hesperantha* from eastern southern Africa, most of which have pink flowers, are difficult taxonomically and need further study. Hilliard and Burtt's (1986) account of the genus for KwaZulu-Natal and adjacent areas constituted a major advance in the understanding of these species. Using this treatment, I have identified three species that appear to be new and describe them below. Hilliard and Burtt did not deal in detail with all the species that occur north of the KwaZulu-Natal area, that is, in Swaziland and what are now Mpumalanga and Limpopo Provinces of South Africa. This left *H. brevicaulis* (Baker) G. J. Lewis, *H. rupestris* N. E. Br. ex R. C. Foster, *H. schlechteri* (Baker) R. C. Foster, *H. similis* N. E. Br. ex R. C. Foster, and *Gladiolus inconspicuus* Schlechter not, or incompletely, accounted for and evidently endemic there. All except *H. brevicaulis* appear to be closely allied to the widespread and common *H. baurii.* The fairly robust *H. rupestris* is distinguished by its white flowers with red on the reverse of the outer tepals, tall stature, and four leaves (Hilliard & Burtt, 1986). *Hesperantha schlechteri,* based on one ample collection from Limpopo Province, and *H. similis* appear to represent the same species, which often has branched stems and five leaves. The latter, based on *Wilms 1443* from Devil's Knuckles (Long Tom Pass in Mpumalanga), is readily matched by several collections from this area between Sabie and Lydenburg that usually have five leaves, the lower four basal and with firm, narrow blades 1.5–3 mm wide, a flexuose stem usually looped above the sheath of the uppermost leaf, and large pink flowers, the outer tepals coppery on the outside. *Hesperantha baurii* and *H. glareosa* have four (or three) leaves, only two basal. In *H. baurii* they are often longer and wider than the leaves of *H. schlechteri,* while *H. glareosa* has even narrower leaves. Leaf number and potential for branching are remarkably consistent in most species of *Hesperantha* and may be relied upon as useful taxonomic characters, and thus *H. schlechteri* can usually be distinguished by its unusual leaf number and frequent branching.

The only other species of *Hesperantha* from eastern southern Africa with short-tubed, pink flowers that occasionally have five leaves are *H. brevistyla* and *H. leucantha* (*H. candida* sensu Hilliard & Burtt), both somewhat different plants with pale pink flowers (I have seen no white-flowered plants in the field or herbarium, although Hilliard and Burtt described the latter as sometimes having white flowers). *Hesperantha brevistyla* has small flowers, the tepals ca. 7 mm long, and short style branches reaching only to the lower third of the short white anthers, while *H. leucantha* normally has a relatively long perianth tube, mostly 12–15 mm long. Tepals in this species are 10–17 mm long, and living plants that I have examined have whitish anthers and pollen, the anthers are 5–7 mm long, and the style branches appear exceptionally long, sometimes exceeding the anthers by 2–3 mm.

In contrast, the more common *Hesperantha baurii* has bright yellow anthers and pollen, deep pink to almost magenta tepals, and style branches just barely exceeding the anther apices. *Hesperantha leucantha,* as understood by Hilliard and Burtt, seems to me too loosely delimited and I have redefined it, referring plants with particularly small flowers with a tube 3.5–7 mm long and tepals 6–8 mm long from interior Lesotho to the new *H. exiliflora.* Plants with an erect stem and large, white flowers often fading pink, from Mpumalanga and interior lowland and coastal KwaZulu-Natal are referred to *H. inconspicua,* which may distinguished from *H. hygrophila* by their more or less plane leaves. *Hesperantha hygrophila* in contrast has leaves with the midrib and margins raised and the edges winged, thus arching over the laminar surface, and a prominent pair of secondary veins. These features are difficult to see in dry specimens, especially in *H. inconspicua* in which the leathery leaf blade dries to leave the midrib prominent and the non-vascular part of the leaf partly collapsed. Populations of another white-flowered species from the Long Tom Pass area of Mpumalanga that grow on damp cliffs, have trailing leaves and stems, linear leaf blades, and short anthers represent another new species, *H. saxicola,* a collection of which was included in *H. leucantha* by Hilliard and Burtt.

Among the remaining short-tubed specimens I have examined, spring-flowering plants with pink flowers from the sandstone belt of coastal KwaZulu-Natal and adjacent Transkei correspond closely with *Hesperantha modesta,* described by J. G. Baker in 1892, and tentatively included in *H. baurii* by Hilliard and Burtt. Apart from the difference in flowering time, plants can readily be distinguished from summer-flowering *H. baurii* by having spikes of only two or three (rarely more) flowers and usually three or sometimes four leaves, the lower two basal and with long blades and the remaining one or two largely to entirely sheathing.

BIOGEOGRAPHIC NOTE

Including the novelties described in this account, and *Hesperantha coccinea,* which has been transferred to the genus from *Schizostylis* (Goldblatt & Manning, 1996), *Hesperantha* now includes 79 species, 4 in tropical Africa, 37 in summer-rainfall southern Africa, mostly of the Drakensberg, and 42 in winter-rainfall southern Africa. Most species are fairly narrow endemics, but *H. petitiana* extends from eastern Zimbabwe to Ethiopia, *H. longicollis* from the Vaal River, in Gauteng Province, South Africa, to Malawi, and *H. radiata* (including *H. tysonii,* which was recognized as a separate species by Hilliard & Burtt, 1986) from Namaqualand in the west across the Western and Eastern Cape as far east as Swaziland. The southwestern and southern Cape (from the Bokkeveld Mountains to Port Elizabeth) remains the most species-rich area with 30 species, 18 endemic; the Drakensberg of Eastern Cape, KwaZulu-Natal, and Lesotho has 22 species, 15 endemic; the western (winter-rainfall) Karoo has 20 species, 8 endemic; and Namaqualand–Bushmanland has 10 species, 6 endemic. Diversity decreases northward: southern Africa north of the Vaal River axis has 12 species, 5 endemic, while tropical Africa has 4 species, 2 of which, *H. ballii* and *H. petitiana,* are endemic.

FLORAL BIOLOGY

For a genus of only modest floral variation, *Hesperantha* species show considerable diversity in their pollination systems (Manning & Goldblatt, 1996; Goldblatt & Manning, 2000; Goldblatt et al., in press). In general, the short-tubed pink-, lilac-, or blue-flowered species are pollinated by a range of apid bees, mostly *Apis mellifera* and species of *Anthophora* (in the southern African winter-rainfall zone) or *Amegilla* (in the summer-rainfall zone), sometimes in combination with hopliine beetles, e.g., *H. baurii, H. pauciflora.* White-flowered diurnal flowers are pollinated by the same suite of bees as well as Halictidae, but the white flowers that are crepuscular are pollinated by small night-flying moths, mostly species of Noctuidae and Drepanogynidae that settle on open flowers, and if the flowers open before sunset, also by apid bees. Several long-tubed pink- or purple-flowered species are known to be pollinated by long-proboscid flies. These include the nemestrinids *Prosoeca ganglbaueri* (*H. grandiflora, H. scopulosa, H. woodii*) and *Stenobasipteron wiedmannii* (*H. brevicaulis*) in eastern southern Africa, and *P. peringueyi* and *P.* sp. (*H. latifolia, H. oligantha*) in the winter-rainfall zone (Goldblatt & Manning, 2000; Goldblatt et al., in press). Other species with similar flowers must be assumed to have the same reproductive biology. Most likely, some cream- to yellow-flowered, long-tubed species of the winter-rainfall zone (e.g., *H. muirii, H. pallescens*) will prove to be pollinated by horseflies (Tabanidae) of the genus *Philoliche.* The common red-flowered form of the long-tubed *H. coccinea* is pollinated by a guild of large butterflies of the families Papilionidae (*Papilio* spp.) and Satyridae (*Aeropetes tulbaghia*). The less common pink-flowered form is presumably also pollinated by the long-proboscid fly, *Prosoeca ganglbaurii.* Lastly, the yellow-flowered *H. vaginata* is pollinated by hopliine scarab beetles, and yellow-flowered populations of *H. falcata* and *H. pauciflora* are pollinated by these beetles in combination with apid bees.

Hesperantha Ker Gawl., Ann. Bot. (König & Sims) 1: 225. 1804. TYPE: *Hesperantha falcata* (L. f.) Ker Gawl.

Most recent revisionary accounts: Goldblatt, J. S. African Bot. 50: 123. 1984; Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 436. 1986.

Schizostylis Backh. & Harv., Curtis's Bot. Mag. 90: pl. 5422. 1864. TYPE: *Schizostylis coccinea* Backh. & Harv.

In the account of the species that follows the keys, treatment of species is deliberately inconsistent. As this is a synoptic review, when no new information about species has come to hand I have provided only its name, primary nomenclature, and a reference to the most recent revisionary account, Goldblatt (1984, 1987) for species of the southern African winter rainfall zone, Hilliard and Burtt (1986) for species of KwaZulu-Natal and adjacent areas. When new biological, geographic, or taxonomic information is available, this is presented in narrative form. Only significant range extensions are listed in full at the end of the species entry; new collections made since the appropriate revision was published are only listed if they expand the range of the species. Full descriptions are provided for new species and for those that were incompletely known in the past or are resurrected from synonymy.

Exsiccatae are cited below following the quarter-degree square system in use in southern Africa as outlined by Edwards and Leistner (1971). All of these specimens have been examined unless stated to the contrary.

It serves no useful purpose to provide a single key to the entire genus; thus two keys are provided, one for the winter-rainfall zone and one for tropical

and eastern southern Africa. The species are listed in the account that follows in taxonomic order within sections in a sequence that reflects as far as possible my current understanding of their relationships. Appendix 1 provides a list of the species in alphabetical order, together with their corresponding number in this article.

Keys to the Species of *Hesperantha*

Note: For leaf number include the entirely sheathing leaves on the upper part of the stem and examine more than one plant since the character is, to a limited extent, variable. Measure leaf width near the middle of one of the lower leaves.

key 1. species of the southern african winter-rainfall zone (namaqualand, the western karoo, and the southwestern and southern cape as far east as port elizabeth)

1a. Flowers with the perianth tube curved at the apex and thus facing to the side or nodding; outer floral bracts with the margins united around the axis in the lower part (sometimes only near the base); corm bell-shaped with a flat or oblique base, the tunics often forming scalloped, concave segments (sect. *Radiata*).
- 2a. Flowers deep pink; stamens and style branches included in the perianth tube ..... 78. *H. elsiae*
- 2b. Flowers white to cream or pale pink; stamens and style branches exserted.
  - 3a. Bract margins united only basally; perianth tube 6–8 mm long ..... 71. *H. brevifolia*
  - 3b. Bract margins united for at least 2 mm.
    - 4a. Flowers large with tepals 16–25 mm long and tube 15–25 mm long; perianth pale pink with darker veins ..... 79. *H. muirii*
    - 4b. Flowers smaller with tepals 10–17 mm long and tube 5–12 mm long; perianth white or cream.
      - 5a. Leaves terete ..... 72. *H. juncifolia*
      - 5b. Leaves ± plane, often somewhat thicker in the middle and occasionally weakly cross-shaped.
        - 7a. Bracts usually united around stem for 6–10 mm, i.e., about half their length; spike straight with the bracts parallel to the axis; plants mostly 20–60 cm high with (1–)5 to 15 flowers per spike ..... 75. *H. radiata*
        - 7b. Bracts usually united around stem for about one third their length; spike flexuose with the bracts diverging from the axis; plants short, mostly 5–10 cm high, with 1 to 5 flowers per spike.
          - 8a. Corm base with prominent horizontal spines; bracts united around the axis for up to 3 mm ..... 73. *H. marlothii*
          - 8b. Corm base without spines; bracts united around the axis for 3–5 mm ..... 74. *H. decipiens*

1b. Flowers with the perianth tube straight, rarely curved at the apex and secund or half nodding; outer floral bracts with the margins free to the base, corm tunics asymmetric or symmetric and with a round or flat base, but never with the tunic layers forming scalloped sections (sects. *Concentrica* and *Hesperantha*).
- 9a. Plants acaulescent or stem extending barely above the ground but sheathed by the leaf bases.
  - 10a. Flowers small, tepals 8–10(–12) mm long ..... 23. *H. hantamensis*
  - 10b. Flowers larger, tepals 13–25 mm long.
    - 11a. Perianth tube elongate, 30–45 mm long; tepals with dark blotches toward the base ..... 68. *H. luticola*
    - 11b. Perianth tube less than 30 mm long (mostly 18–28 mm); tepals uniformly colored within.
      - 12a. Flowers yellow, closed during the day and opening at sunset ..... 25. *H. flava*
      - 12b. Flowers pink to red-purple, open during the day, closing at night.
        - 13a. Corm with a rounded base; leaves falcate, obtuse or subobtuse, leathery and with slightly thickened margins ..... 24. *H. humilis*
        - 13b. Corm with a flat base; leaves sword-shaped, acute, fairly soft-textured with the margins not or barely thickened ..... 67. *H. latifolia*
- 9b. Plants with an aerial stem.
  - 14a. Leaves pilose to scabrid ciliate, sometimes visible only microscopically.
    - 15a. Leaves hollow or ± solid and with narrow longitudinal grooves; finely scabrid ciliate along the groove edges.
      - 16a. Leaves ± round in cross section; flowers white to cream, nocturnal, opening in the late afternoon and closing during the night ..... 13. *H. teretifolia*
      - 16b. Leaves oval in cross section; flowers pink, mauve, or purple, open in the day and closing in the early afternoon ..... 12. *H. ciliolata*
    - 15b. Leaf blade flat or the margins and midrib somewhat raised; pilose along the sheath and blade margins and veins.
      - 17a. Leaves sword-shaped to oblong; scale-like leaf below the spike mostly 12–20 mm long, often pilose ..... 10. *H. pseudopilosa*
      - 17b. Leaves linear to narrowly sword-shaped; scale-like leaf below the spike 3–5(–10) mm long, usually glabrous.

18a. Plants dwarf, to 5 cm high with spikes 1-flowered; flowers magenta; leaves sparsely hairy (rarely evidently glabrous) ..... 11. *H. glabrescens*
18b. Plants mostly at least 10 cm high, with spikes rarely with less than 2 flowers; flowers white, blue, magenta, or mauve; leaf blades and sheath of the third leaf sparsely to densely hairy.
19a. Leaf blades usually conspicuously hairy; leaf tips usually acute (plants of open sandy slopes and flats) ..... 9. *H. pilosa*
19b. Leaf blades sparsely hairy (often visible only under the microscope); leaf tips obtuse (plants of rocky cliffs) ..... 8. *H. malvina*

14b. Leaves and stems smooth.
20a. Perianth tube curved outward near the top, flowers half nodding ..... 32. *H. bachmannii*
20b. Perianth tube straight throughout, flowers facing upward.
21a. Corms triangular to bell-shaped in outline, with a horizontal or oblique flat base.
22a. Corm base usually with prominent radiating spines or the margins toothed; flowers mostly pink to reddish purple, rarely yellow.
23a. Perianth tube 6–11 mm long ..... 66. *H. pauciflora*
23b. Perianth tube 15–25 mm long ..... 67. *H. latifolia*
22b. Corm base with small teeth or scarcely serrated, but without prominent spines; flowers white, cream, or yellow.
24a. Style dividing at or below the middle of the perianth tube; style branches and sometimes the anthers partly or completely included in the perianth tube.
25a. Flowers 20–25 mm diam. with tepals 10–12 mm long; stamens and style branches fully included in the perianth tube ..... 65. *H. cedarmontana*
25b. Flowers ca. 18 mm diam. with tepals 9–10 mm long; anthers exserted but style branches reaching only to the mouth of the tube ..... 70. *H. saldanhae*
24b. Style dividing just below the mouth of the perianth tube; anthers and style branches fully exserted and filaments usually at least partly exserted from the perianth tube.
26a. Flowers small, and secund on a straight spike; perianth tube slightly curved, 4–6 mm long; tepals 4–7 mm long; leaves either plane and sometimes with crisped margins, or terete to ovoid in cross section and hollow; seeds with sharp angles (minute wings) and seed coat with whitish spongy cells ..... 69. *H. spicata*
26b. Flowers medium to large, not obviously secund, on a straight or flexuose spike; perianth tube straight, (5–)7–14 mm long; tepals 6–18 mm long; leaves plane with straight margins; seeds globose or the sides slightly flattened by pressure, seed coat dark brown.
27a. Plants with 3 basal leaves only; perianth tube 12–16 mm long; tepals 7–9(–10) mm long, always shorter than the tube; flowers pale yellow ..... 64. *H. sufflava*
27b. Plants with 2 or more basal leaves and usually 1 subbasal or cauline and largely sheathing; perianth tube 5–9 mm long; tepals (9–)12–18 mm long, usually longer than the tube; flowers white, cream, or yellow.
28a. Bracts green, rounded to truncate and often with a reddish margin; leaves usually at least four; flowers usually remote from the leaves, borne on the upper third of the stem ..... 63. *H. falcata*: typical form
28b. Bracts green or becoming membranous and dry above, and then ± acute; leaves often only 3; flowers usually borne close to the leaves and from about the middle of the stem ..... 63. *H. falcata*: *pentheri* and *trifolia* forms
21b. Corms rounded, often ± asymmetric, often with one side somewhat flattened.
29a. Flowers shades of pink, mauve, or purple.
30a. Perianth tube elongate, 20–35 mm long, exceeding the tepals.
31a. Leaves linear, 2–3 mm wide; tube 25–30 mm long and filaments ca. 8–10 mm long ..... 5. *H. oligantha*
31b. Leaves sword-shaped, 7–10 mm wide; tube ca. 20 mm long and filaments ca. 2 mm long ..... 20. *H. purpurea*
30b. Perianth tube 7–12 mm long, usually shorter than to about as long as the tepals.
32a. Basal leaves sword-shaped to linear, 40–100 × 2–4 mm; leaf margins and often the midrib much thickened; stem lacking a scale-like leaf in the upper part of the stem ..... 17. *H. fibrosa*

32b. Basal leaves ovate, 12–20 × 4–8 mm, margins and midrib hardly thickened; stem with a short, scale-like leaf in the upper part of the stem ..... 19. *H. truncatula*

29b. Flowers white, cream, or yellow.

33a. Perianth tube mostly 16–20 mm long, as long as to slightly longer than the tepals ..... 34. *H. pallescens*

33b. Perianth tube 3–12(–17) mm long, shorter than to rarely about as long as the tepals.

34a. Plants consistently with two basal leaves and a third entirely sheathing leaf enclosing the lower half of the stem.

35a. Plants tiny, mostly 4–5 cm high; tepals 5–10 mm long; leaves linear, 1–2 mm wide.

36a. Tepals 5–6 mm long; leaves linear-filiform, less than 1 mm wide ..... 16. *H. minima*

36b. Tepals ca. 10 mm long; leaves linear, 1.4–3.5 mm wide ..... 4. *H. rupicola*

35b. Plants moderate in size, usually at least 10–20 cm high; tepals 8–13 mm long; leaves linear to lanceolate and 1–7 mm wide.

37a. Sheathing leaf inflated and quadrangular in cross section; perianth tube 2–3 mm long; anthers 3–4 mm long ..... 14. *H. quadrangula*

37b. Sheathing leaf not inflated or noticeably quadrangular in cross section; perianth tube 5–10 mm long; anthers 4.5–6 mm long ..... 15. *H. flexuosa*

34b. Plants mostly with four leaves, sometimes the uppermost ± scale-like.

38a. Flowers bright yellow.

39a. Tepals 10–17 mm long; anthers ca. 7 mm long 3. *H. acuta*

39b. Tepals 20–35 mm long; anthers 9–15 mm long.

40a. Plants up to 6 cm tall, almost acaulescent; flowers moderate in size, the tepals ca. 20 mm long, uniformly yellow ..... 22. *H. karooica*

40b. Plants 12–18 cm tall, with a well developed aerial stem; flowers large with tepals 25–35 cm long, usually but not invariably marked with dark chocolate brown ..... 21. *H. vaginata*

38b. Flowers white, rarely cream.

41a. Leaves elliptic in cross section and hollow, without a thickened midrib ..... 7. *H. rivulicola*

41b. Leaves ± parallel-sided in cross section, not hollow, and with midrib slightly thickened.

42a. Corm tunics ± imbricate or concentric but corms relatively large, mostly 10–14 mm diam.

43a. Perianth tube 6–9 mm long ..... 18. *H. cucullata*

43b. Perianth tube 13–17 mm long ..... 2. *H. namaquana*

42b. Corm tunics concentric and corms fairly small, mostly 3–8 mm diam.

44a. Stem with a short, sheathing leaf in the upper half ..... 3. *H. acuta*

44b. Stem without a short, sheathing leaf in the upper half.

45a. Leaves (3–)4 to 5, the lower 3 basal, linear to sword-shaped and acute, always erect; perianth tube 8–10 mm long; flowers cream, occasionally white (plants of the Cape West Coast, mostly on granite rocks) ..... 1. *H. erecta*

45b. Leaves (3–)4, the lower 2 basal, oblong and obtuse, normally prostrate; perianth tube ca. 12 mm long; flowers white (plants of mountain habitats growing in rocky sandstone soil) ..... 6. *H. montigena*

KEY 2. SPECIES OF TROPICAL AND EASTERN SOUTHERN AFRICA (THE SUMMER-RAINFALL PART OF THE SUBCONTINENT WITH A PROLONGED DRY SEASON IN THE WINTER AND SPRING MONTHS—EXTENDING FROM THE EASTERN CAPE PROVINCE, SOUTH AFRICA, EAST OF PORT ELIZABETH TO ETHIOPIA AND CAMEROON)

1a. Flowers white to cream, the outer tepals usually brown on the outside; perianth tube curved just below the apex and flowers nodding.
- 2a. Bract margins free to the base ..... 33. *H. bulbifera*
- 2b. Bract margins united around the spike axis for up to half their length.
  - 3a. Perianth tube 18–30 mm long; plants flowering in spring (plants of Free State, northern provinces of South Africa, Zimbabwe, Zambia, and Malawi) ..... 77. *H. longicollis*
  - 3b. Perianth tube 8–15 mm long; plants flowering in the early to mid summer, November to January.
    - 4a. Spike with 1 or 2 flowers; bract margins united for ca. 3 mm (plants of eastern Zimbabwe) ..... 76. *H. ballii*
    - 4b. Spike mostly with 5 to 10 flowers; bract margins united around the axis in the lower half (plants of South Africa, Lesotho, and Swaziland) ..... 75. *H. radiata*

1b. Flowers variously pink to mauve, red, or white to creamy yellow, sometimes the outer tepals darker on the outside; perianth tube mostly straight, weakly curved in two species but flowers not nodding.
- 5a. Flowers produced in the spring (dry season) when foliage leaves are absent or partly emergent; leaves one or two, fully developed after flowering and produced on separate shoots (occasionally old, partly to completely dry foliage leaves still attached to the flowering stem at flowering time).
  - 6a. Flowers borne close to ground level, raised above ground by the perianth tube 9–14 mm long; tepals short, 6–7 mm long ..... 31. *H. crocopsis*
  - 6b. Flowers borne above ground on a short flowering stem, the perianth tube short or long; tepals fairly long, 14–22 mm long.
    - 7a. Perianth tube 6–10 mm long; tepals white or pale pink inside, the outer tepals slightly to strongly marked purple to brownish on the outside; leaves two or more, ± terete ..... 29. *H. schelpeana*
    - 7b. Perianth tube 20–27 mm long; tepals uniformly whitish cream; leaf solitary, falcate, plane ..... 30. *H. altimontana*
- 5b. Flowers produced in the spring, summer, or autumn (dry or rainy season) but always bearing fully developed foliage leaves on the flowering stem.
  - 8a. Perianth tube (14–)18–60 mm long, perianth tube sometimes curved near the apex; seeds (where known) often with a prominent wing or threadlike appendage at one or both ends.
    - 9a. Perianth tube strongly curved near the apex and tepals vertically oriented; stamens and style branches unilateral and declinate; anthers 8–13 mm long, dark brown ..... 57. *H. grandiflora*
    - 9b. Perianth tube straight or weakly curved above, the tepals spreading horizontally or weakly ascending; stamens ascending to erect, and style branches spreading but not unilateral; anthers 3–9 mm long, yellow to whitish, or dark brown to black in two species.
      - 10a. Leaves and often the stem weak and trailing; plants of cliffs and rock outcrops.
        - 11a. Plants with cormlets in the lower leaf axils (sometimes lost when handled); leaves 4 to 6 (plants of the Eastern Cape) ..... 58. *H. huttonii*
        - 11b. Plants not bearing cormlets in the lower leaf axils; leaves 4 or sometimes 3.
          - 12a. Flowers mauve pink; perianth tube mostly 18–30 mm long; anthers 6–10 mm long (plants of Mpumalanga and Limpopo Province) ..... 60. *H. brevicaulis*
          - 12b. Flowers deep pinkish purple; perianth tube 18–42 mm long; anthers 3–6 mm long (plants of KwaZulu-Natal and nearby).
            - 13a. Perianth tube 18–25 mm long; anthers 3–4 mm long ..... 61. *H. curvula*
            - 13b. Perianth tube mostly 30–42 mm long; anthers mostly 5–6 mm long ..... 62. *H. scopulosa*
      - 10b. Stem erect and leaves usually firm and upright; plants of grassland, open slopes, or streams and marshes.
        - 14a. Filaments 6–12 mm long.
          - 15a. Plants of streams, growing in water; rootstock a rhizome or vestigial, but reproducing from slender underground rhizomes and sometimes from axillary cormlets produced in the aerial nodes; flowers pink or red, tepals spreading horizontally ..... 56. *H. coccinea*
          - 15b. Plants of grassland, rocky slopes, or grassy marshes; rootstock a corm with woody tunics and stems lacking axillary cormlets; flowers shades of pink to mauve-pink ..... 54. *H. woodii*
        - 14b. Filaments 3–6 mm long.
          - 16a. Leaves scabrid-pubescent; stamens erect and style branches evidently remaining suberect and noticeably shorter than the anthers ..... 52. *H. pubinervia*
          - 16b. Leaves glabrous; stamens and style branches ascending to spreading, the style branches as long as or longer than the stamens.
            - 17a. Plants flowering in the spring, August to October; flowers white ..... 28. *H. longituba*

17b. Plants flowering in the summer and autumn, December to April; flowers pink.
18a. Perianth tube mostly 45–60 mm long; anthers blackish ..... 55. *H. stenosiphon*
18b. Perianth tube mostly 14–21 mm long; anthers yellow.
19a. Spike with 5 to 11 flowers; leaves 3–5.5 mm wide; perianth tube 14–20 mm long ..... 53. *H. pulchra*
19b. Spike with 1 to 3 flowers; leaves 1.5–2 mm wide; perianth tube 16–23 mm long ..... 59. *H. hutchingsiae*

8b. Perianth tube 3–15(–22) mm long, always straight; seeds (where known) globose or slightly angled, sometimes ridged on the angles but never winged.
20a. Plants of southern Africa, flowering in the spring, August–October, before the main rainy season; flowers pale pink or white.
21a. Perianth tube mostly 14–22 mm long; flowers white, opening in the later afternoon and closing after dark ..... 28. *H. longituba*
21b. Perianth tube mostly 4–12 mm long; flowers white or pink to mauve-pink, the outer tepals often flushed or feathered pink to mauve outside, open during the day, closing in the later afternoon.
22a. Leaves usually 3 (rarely 4), the lower 2 basal and with long, linear blades 2–3 mm wide, the upper 1(or 2) largely or entirely sheathing; spike usually 2–3-flowered (plants of coastal KwaZulu-Natal and Transkei) ..... 49. *H. modesta*
22b. Leaves usually 4, 2 basal, 1 subbasal and partly sheathing and a short, sheathing leaf in the upper part of the stem, the basal leaves linear to oblong-lanceolate, 1–6 mm wide; spike mostly 1–6-flowered; perianth tube (7–)9–12 mm long (plants of interior southern Africa, from southern Mpumalanga to Grahamstown in the south).
23a. Leaves oblong-lanceolate, 2–6 mm wide; spike mostly 2–6-flowered; perianth tube (7–)9–12 mm long ..... 26. *H. candida*
23b. Leaves linear, 1–2 mm wide; spike 1–2-flowered; perianth tube 4–6 mm long ..... 27. *H. debilis*
20b. Plants of southern or tropical Africa, flowering in the wet season, summer and autumn (in southern Africa mainly December to April, rarely in November); flowers mostly pink to mauve or white to cream.
24a. Plants growing in rock outcrops, often on cliffs, stem weak and drooping; leaves ± linear.
25a. Flowers pink, mauve, or white; perianth tube 6–8 mm long; anthers 6–7.5 mm long (plants of KwaZulu-Natal) ..... 51. *H. gracilis*
25b. Flowers white, sometimes flushed pale pink on fading; perianth tube 7–11 mm long; anthers ca. 4 mm long (plants of Mpumalanga) ..... 46. *H. saxicola*
24b. Plants not hanging from cliffs, stem erect.
26a. Leaf blades with thickened margins, secondary veins, and midrib, the marginal and midrib thickenings flattened rather than rounded and arching over the blade surface ..... 47. *H. hygrophila*
26b. Leaf blades with or without thickened margins and midrib, but secondary veins not or hardly thickened and midrib and marginal thickenings rounded, not obviously flattened in outline nor arching over the blade surface.
27a. Flowers white to cream or palest yellow entirely or pink or red only on the reverse of the outer tepals.
28a. Outer tepals speckled or uniformly bright red on the reverse.
29a. Stem usually 7–12 cm high (taller in cultivated plants); tepals 9.5–15 mm long; anthers 3–4 mm long (plants of KwaZulu-Natal) ..... 41. *H. alborosea*
29b. Stem usually 30–45 cm high; tepals 12–15 mm long; anthers 6–7 mm long (plants of Mpumalanga) ..... 48. *H. rupestris*
28b. Tepals uniformly white to cream, or sometimes faintly pink on the reverse of the outer tepals, especially on fading.
30a. Flowers tiny, the tepals ca. 5–6 mm long, perianth tube ca. 4–5 mm long, and anthers ca. 2–3 mm long; leaves soft-textured ..... 50. *H. umbricola*
30b. Flowers medium to large, the tepals 12–20(–23) mm long, perianth tube (5–)6–8.5 mm long, and anthers 5–8 mm long, leaves firm, with thickened margins and midrib.
31b. Tepals uniformly cream to pale yellow, remaining cream on fading, 14–20(–23) mm long; filaments 3–4 mm long;

anthers mostly golden-brown, dark when dry, 5–7(–8) mm long ..... 44. *H. lactea*

31b. Tepals uniformly white to cream or faintly flushed pink on the reverse of the outer tepals especially on fading, 12–16 mm long; filaments 2.5–3 mm long; anthers cream, not darker on fading, mostly 6.5–8 mm long ..... 45. *H. inconspicua*

27b. Flowers pink to mauve entirely.

32a. Perianth tube 3–6 mm long.

33a. Leaves 5.5–7 mm wide, falcate; spike with 1 or 2 flowers; tepals 10–12 mm long ..... 43. *H. ingeliensis*

33b. Leaves mostly 0.7–2 mm wide, linear.

34a. Stem slender and evidently soft, with 1 to 3 flowers widely spaced; tepals 6–8 mm long ..... 40. *H. exiliflora*

34b. Stem slender but firm and wiry, mostly with 3 to 8 flowers; tepals 10–14 mm long.

35a. Leaves usually 5 (unless plants depauperate), mostly 2–4 mm wide; tepals 13–16 mm long; anthers 4–4.5 mm long ..... 38. *H. schlechteri*

35b. Leaves usually 4, mostly 1–2 mm wide; tepals 10–12 mm long; anthers 4.5–5 mm long ..... 37. *H. glareosa*

32b. Perianth tube mostly 6–13(–15) mm long.

36a. Leaves 4 or 5, the lower 3 basal, often about as long as the stem or slightly longer; anthers 2.3–5.5 mm long, pollen white; perianth tube 7–12(–15) mm long.

37a. Tepals 7–8 mm long; perianth tube 7–9 mm long; anthers 2.5–4 mm long; style branches unusually short, suberect, reaching to between the base and the middle of the anthers; reverse of the outer tepals pale greenish toward the base and with darker green longitudinal veins ..... 42. *H. brevistyla*

37b. Tepals 12–16 mm long; perianth tube 5–14 mm long; anthers 4–6 mm long; style branches 10–12 mm long, exceeding the anthers in the closed flower; reverse of the outer tepals not pale green with dark veins, ± uniformly colored outside.

38a. Perianth tube 12–14(–15) mm long; anthers 4.5–5.5 mm long; perianth pale pink; stem and leaves weak and trailing ..... 39. *H. leucantha*

38b. Perianth tube to 10 mm long; anthers 4–6 mm long; perianth middle to deep pink; stem and leaves ± erect ..... 38. *H. schlechteri*

36b. Leaves normally 4, sometimes 3, with the lower 2 basal, usually about half to two-thirds as long as the stem; anthers mostly 3–7 mm long, pollen yellow or white; perianth tube (4.5–)6–12 mm long.

39a. Flowers mauve-pink or almost white; anthers 3–4.8 mm long; capsules usually 8–14 mm long, often exceeding the bracts; seeds usually angular, 1.0–1.2 mm diam. (plants of tropical Africa: Zimbabwe to Ethiopia and Cameroon) ..... 36. *H. petitiana*

39b. Flowers mostly bright pink; anthers 5–9 mm long, pollen yellow; capsules usually 6–9 mm long and enclosed by the bracts; seeds usually uniformly globose, 0.9–1.0 mm diam. (plants of eastern southern Africa).

40a. Outer tepals darker pink to reddish on the outside, ca. 16 × 9 mm; leaves often 3, the lower 2 basal, leathery, the midrib and margins not raised above the fleshy surface (when alive); spike mostly with 2 to 4 flowers ..... 35. *H. baurii* subsp. *formosa*

40b. Outer tepals not or barely darker than the outside, ca. 12–15 × 5–6.5 mm; leaves 4, the lower 3 basal or subbasal; firm to leathery, the midrib and margins often slightly thickened and raised above the surface; spike mostly with 5 to 12 flowers ..... 35. *H. baurii* subsp. *baurii*

I. Hesperantha sect. **Concentrica** Goldblatt, Ann. Missouri Bot. Gard. 69: 375. 1982. TYPE: *Hesperantha pilosa* (L. f.) Ker Gawl.

Hesperantha sect. *Imbricata* Goldblatt, Ann. Missouri Bot. Gard. 69: 376. 1982. Syn. nov. TYPE: *Hesperantha humilis* Baker.

Plants with small to large asymmetrical corms, ± rounded at the base, usually with a flattened lateral ridge; older corm tunics splitting from the base into vertical segments. Spike with floral outer bract margins free to the base. Flowers variously colored, usually with a straight perianth tube (curved near the apex in *H. bachmannii*, *H. bulbifera,* and *H. grandiflora*).

Species 1–62. Occurring across the entire range of the species from Western Cape Province, South Africa, to Ethiopia.

1. Hesperantha erecta (Baker) Benth. ex Baker, Handbk. Irideae 150. 1892. *Geissorhiza erecta* Baker, J. Bot. 14: 238. 1876. TYPE: South Africa. Western Cape: Olifants River, July–Aug. 1830, *J. F. Drège 8468* (lectotype, designated by Foster (1948: 11), K!; isotypes, K!, L!, P!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 45. 1984.

2. Hesperantha namaquana Goldblatt, J. S. African Bot. 50: 47. 1984. TYPE: South Africa. Northern Cape: Bitterfontein, Kareebergen, 24 July 1896, *R. Schlechter 8304/5* (holotype, K!; isotypes, B!, BOL!, PRE!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 47. 1984.

Restricted to southern Namaqualand in Western Cape Province, South Africa, *Hesperantha namaquana* was re-collected in 1999, along the banks of a seasonal stream northeast of Bitterfontein. This seems to be the habitat for the species, and until now has not been reported. This specialized habitat, in a largely arid landscape, may explain why it is so seldom seen.

Additional specimens. SOUTH AFRICA. **Western Cape:** 30.18 (Kamiesberg) NE of Bitterfontein on road to Kliprand, along seasonal stream (CD), 7 Aug. 1999, *Goldblatt & Manning 11681* (MO, NBG).

3. Hesperantha acuta (Licht. ex Roem. & Schult.) Ker Gawl., Gen. Irid. 91. 1827. *Ixia acuta* Licht. ex Roem. & Schult., Syst. Veg. 1: 383. 1817. TYPE: South Africa. Northern Cape: foot of the Roggeveld Mts., Aug. 1805, *M. H. C. Lichtenstein s.n.* (holotype, B!). Figure 1A.

Last revisionary account: Goldblatt, J. S. African Bot. 50: 48. 1984.

As circumscribed by Goldblatt (1984), *Hesperantha acuta* included both white- and yellow-flowered populations, the latter referred to *H. tugwelliae* by R. C. Foster. No information has become available to suggest this treatment was incorrect. Both *H. acuta* and *H. falcata* have populations of plants with either white or yellow flowers. In *H. falcata* the unscented yellow-flowered plants open during the day and close at night, the opposite phenology to the sweetly fragrant white-flowered plants. This is not the case in yellow-flowered populations of *H. acuta* from the Swartberg Mountains and Prince Albert (*Goldblatt & Porter 11859*, 9 Sep. 2001, MO, NBG; *Goldblatt & Porter 12191*, 10 Sep. 2002, MO, NBG). Flowers of these plants opened at sunset when they produced a sweet scent, and closed again at sunrise, the same pattern as in white-flowered plants. Corms of *H. acuta* seem unusually varied and in some populations conform closely to the section *Concentrica* type with a rounded base and oblique lateral ridge, while others have an oblique but flat base, approaching the corms of section *Hesperantha*, which are bell-shaped with a broad flat base. Too few collections of the species have corms for me to detect a pattern associated with either geography or some other factor. This calls for future investigation.

4. Hesperantha rupicola Goldblatt, sp. nov. TYPE: South Africa. Northern Cape: Bushmanland, Farm Naab, E of Springbok, S-facing quartzite rocks, 14 Aug. 2000, *P. Desmet 3009* (holotype, NBG!).

Plantae 3–5 cm altae eramosae, cormo globoso, foliis 3 omnibus basalibus, laminis plus minusve linearibus 1.4–3.5 mm latis marginibus costaque vix incrassatis, spica 1-(vel 2–3-)flora, floribus albis tepalis exterioribus extus leviter malvinotinctis, tubo perianthii ca. 10 mm longo, tepalis ca. 10 × 3–4 mm, filamentis ca. 4 mm longis, antheris ca. 5 mm longis, styli ramis ca. 3.5 mm longis.

Plants 3–5 cm high, unbranched. *Corm* globose with an obliquely flattened side, 9–11 mm diam., tunics dark brown, the layers ± imbricate. *Leaves* 3, all basal, spreading or drooping, as long to twice as long as the stem and up to 9 cm long, the blades ± linear to falcate, 1.4–3.5 mm wide, soft-textured, the midrib and margins barely thickened. *Stem* erect, unbranched. *Spike* 1-, occasionally 2- or 3-flowered; bracts 9–10 mm long, soft-textured, pale green or becoming membranous above, the inner slightly shorter than the outer, membranous with 2 green keels. *Flowers* white, the outer tepals slightly flushed mauve on the outside; *perianth tube* funnel-

shaped, ca. 10 mm long; *tepals* spreading, ovate, ca. 10 × 3–4 mm, obtuse. *Filaments* ascending, ca. 4 mm long, inserted at the mouth of the tube; *anthers* ca. 5 mm long, shortly tailed, pale yellow, pollen whitish. *Ovary* ovoid, ca. 3 mm long; *style* dividing near the mouth of the tube, the branches spreading over the tepals, reaching nearly to the anther tips in the closed flower. *Capsules* and *seeds* unknown.

Flowering. August.

Distribution. South Africa, Northern Cape, in shade on south-facing slopes on cliffs and among boulders, in quartzite or granite rocks, interior Namaqualand and western Bushmanland.

Hesperantha rupicola was evidently first collected in 1977, by E. G. H. Oliver, H. Tölken, and F. Venter, on Aggenys Mountain near Soutkloof, in Bushmanland in central Northern Cape Province. It was subsequently brought to my attention in 1999 by Philip Desmet and members of the University of Cape Town's Institute for Plant Conservation Expedition to Namaqualand. Only a few plants have ever been found in flower, and corms can only be extracted with difficulty from the rock crevices in which they usually grow. Philip Desmet reports that the species occurs on several more hills in Bushmanland. In 2001 a small population was discovered southeast of Kliprand, extending the range of the species some 150 km to the south. Rather than wait until more adequate material can be obtained, I have decided to describe the species here, hoping that by publishing the incomplete description others may be encouraged to seek additional plants, including capsules and seeds.

The material available suggests that *Hesperantha rupicola* may be distinguished by the short stature, 1- to 3-flowered spike, moderate-sized white flowers, and soft-textured, spreading to drooping leaves. The corms are relatively large, have an oblique flat side, and more or less concentric tunics. Similar corms are found in *H. acuta,* and this suggests a relationship with this interior southern Cape and Karoo species. The similarity in the size of the flowers to those of the Namaqualand species, *H. flexuosa,* may be convergent for the latter species has small corms with a rounded base and spikes of several flowers.

Paratypes. SOUTH AFRICA. **Northern Cape:** 29.18 (Aggenys) Aggenys Mountain, Soutkloof WSW of Aggenys farm, shady rock crevices (BB), 24 Aug. 1977, *Oliver, Tölken & Venter 54* (PRE); Aggenys, Rosynebos, S-facing cliffs on Witberg, Aug. 1999, *Desmet et al.* in IPC Expedition *364* (NBG). 3018 (Kamieskroon) 13 km toward Loeriesfontein from Kliprand–Vanrhynsdorp road, low granite hill (DB), 7 Aug. 2001, *Goldblatt & Manning 11690* (MO, NBG).

Figure 2. Morphology of *H. oligantha.* Scale bar 1 cm. Single flower much enlarged. Drawn by Margo Branch from live plants (*Thomas & van Jaarsveld 8967,* NBG).

5. Hesperantha oligantha (Diels) Goldblatt, J. S. African Bot. 50: 87. 1984. *Lapeirousia oligantha* Diels, Bot. Jahrb. Syst. 44: 117. 1910. TYPE: South Africa. Northern Cape: Hantam Mts., Oct. 1900, *F. L. E. Diels 725* (holotype, B!; isotype, MO!). Figure 2.

Last revisionary account: Goldblatt, J. S. African Bot. 50: 87. 1984.

Known only from the type collection when the genus was revised for the southern African winter-rainfall zone (Goldblatt, 1984), *Hesperantha oligantha* was rediscovered in 1986 on the summit plateau of the Hantamsberg above Calvinia in the western Karoo (*Thomas & van Jaarsveld 8967,* NBG), and was then re-collected in 1994 (*Goldblatt & Manning 10043,* MO) in the course of research on the pollination biology of long-tubed, purple-flowered Iridaceae pollinated by long-proboscid flies (Goldblatt et al., 1995; Manning & Goldblatt, 1996). These new collections confirm the narrow range and unusual morphology of *H. oligantha* (Fig. 2) and show that it is a species of seasonal streams, seeps, and shallow pools. The corms of the new collections cast doubt on the relationships of *H. oligantha* for they appear to have concentric rather

than imbricate tunics (Goldblatt, 1984), although this is by no means certain owing to the limited material available. *Hesperantha oligantha* is, however, now placed among species with similar concentric corm tunics in the taxonomic sequence.

6. Hesperantha montigena Goldblatt, J. S. African Bot. 50: 51. 1984. TYPE: South Africa. Western Cape: Hex River Mts., 11 Oct. 1980, *E. E. Esterhuysen 35528* (holotype, BOL!; isotypes, K!, MO!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 51. 1984.

7. Hesperantha rivulicola Goldblatt, J. S. African Bot. 50: 60. 1984. TYPE: South Africa. Northern Cape: Calvinia district, stream beds below the Hantamsberg, 16 Sep. 1980, *P. Goldblatt 5807* (holotype, MO!; isotypes, B!, BOL!, E!, K!, NBG!, PRE!, S!, US!, WAG!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 60. 1984.

When described by me in 1984, *Hesperantha rivulicola* was known from two records, one from the slopes of the Hantamsberg at Calvinia and the other from "van Wyk's farm" near Nieuwoudtville, an uncertain locality, there being several farms in the area with owners of that name. *Hesperantha rivulicola* has since been found in streams on the farms Oorlogskloof and Matjiesfontein (*Goldblatt & Manning 9466*), both located south of Nieuwoudtville, the latter owned by the van Wyk family. The flowers are pollinated by large anthophorine bees when they open after 16:00H and after dark by a range of moths that settle on the flowers (Goldblatt et al., in press).

8. Hesperantha malvina Goldblatt, sp. nov. TYPE: South Africa. Western Cape: Anysberg, farm Tapfontein, W of Matjiesgoedkop, ledges on cliff face, 3 Sep. 1987, *J. W. Lloyd 1120* (holotype, NBG!).

Plantae 10–27 cm altae eramosae, cormo ovoideo ca. 6 mm diam., tunicis lignosis concentricis, foliis 4 sparse villosis vel glabrescentibus, inferioribus duobus basalibus, linearibus ca. 2 mm latis, summo omnino vaginante marginibus leviter incrassatis, spica 1- ad 3-flora, floribus malvinis, tubo perianthii 8–9 mm longo, tepalis 13–14 × 4–5 mm, filamentis ca. 3 mm longis, antheris 5.5–6.0 mm longis, styli ramis ca. 7 mm longis.

Plants 10–27 cm high, stem unbranched. *Corm* ovoid, ca. 6 mm diam., tunics woody, concentric. *Leaves* 4, the lower 2 basal, linear-oblong, the third largely sheathing and with a short free apex, the uppermost entirely sheathing, partly membranous, 8–22 mm long, inserted a short distance below the spike, blades ca. 2 mm wide, the margins and midrib slightly thickened and sparsely long-hairy in the lower half. *Spike* 1- to 3-flowered; *bracts* ca. 10–14 mm long, green or flushed purplish, the margins and apex membranous. *Flowers* mauve, open during the day; *perianth tube* cylindric below, expanded near the apex, 8–9 mm long; *tepals* subequal, elliptic, 13–14 × 4–5 mm, spreading at right angles to the tube. *Filaments* ca. 3 mm long; *anthers* 5.5–6 mm long, yellow, pollen yellow. *Ovary* ovoid, ca. 3 mm long; *style branches* ca. 7 mm long, reaching the upper third of the anthers in bud, spreading when mature. *Capsules* and *seeds* unknown.

Flowering. Late September to early October.

Distribution. South Africa, Western Cape, Little Karoo, Anysberg, on damp, south-facing sandstone cliffs and rocks.

Assigned to *Hesperantha pilosa* when first named in the herbarium, owing to the sparsely hairy leaves, *H. malvina* actually bears little further resemblance to that species. The flowers are in general larger, with the broadly elliptic tepals up to 14 mm long and 4–5 mm wide, while the leaves are linear-oblong and somewhat obtuse at the tips. In *H. pilosa* the tepals are seldom as long as 14 mm, are rarely more than 3 mm wide, and the leaves are usually linear or linear-lanceolate and acute. The habitat, rocky sandstone cliffs, is quite different from that of *H. pilosa,* which grows on granitic or sandy flats or lower slopes. *Hesperantha malvina* is evidently restricted to the Anysberg in the western Little Karoo of Western Cape Province. To date it is known only from the holotype, and must be assumed to be rare and very local in distribution.

9. Hesperantha pilosa (L. f.) Ker Gawl., Ann. Bot. (König & Sims) 1: 225. 1804. *Ixia pilosa* L. f., Suppl. Pl. 92. 1782. TYPE: South Africa. Western Cape: hills around Cape Town, Sep., *C. P. Thunberg s.n.* (lectotype, designated by Goldblatt (1984: 54), Herb. Thunberg 979, UPS!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 54. 1984.

Since the treatment of *Hesperantha pilosa* in my 1984 account of the genus, subspecies *latifolia* has been raised to species rank as *H. pseudopilosa* (Goldblatt, 1987). Nevertheless, this relatively common Western Cape and western Karoo species remains a fairly variable series of populations in both vegetative and floral morphology. Plants have small

corms with concentric tunics, three basal leaves, the uppermost largely sheathing and enveloping the stem for over half its length. The stem may be smooth or sparsely villous and always bears a bract-like scale a short distance below the spike. The leaf blades are linear or narrowly sword-shaped with slightly thickened margins and midrib, and the margins, midrib, and a pair of secondary veins bear long, usually spreading hairs. The spike is straight to slightly flexuose, and mature, healthy plants bear several flowers, either in a loose spiral or in secund arrangement.

The flowers are unremarkable in the genus and are usually white, occasionally blue, mauve, or purple, with the outer tepals flushed dull red to brown on the outside, but white-flowered plants have the anthers held more or less horizontally and parallel to the spreading tepals and short style branches, seldom reaching to the middle of the anthers in the closed flower (when the stamens and style branches are aligned). Most populations in the Bokkeveld Mountains and in the Roggeveld have blue to mauve flowers, but otherwise seem identical except that the anthers are ascending to suberect and the style branches are sometimes longer, often reaching to the anther apices in bud. White flowers typically open shortly before sunset and close again during the night, whereas blue or mauve flowers open in the morning and close in the early afternoon. It would be preferable to recognize the populations of plants with colored flowers as a separate species (for which the name *H. puberula* is available). However, there is doubt as to whether the populations with colored flowers represent a single clade or multiple origins of a colored perianth. Moreover, there is little apart from perianth color to reliably distinguish these plants.

A remarkable collection of what appears to be *Hesperantha pilosa* from the Hex River Mountains (*Esterhuysen 36196A,* BOL), flowering in December, consists of plants with only two foliage leaves. The lower leaf is linear-lorate and 4 mm wide, with an obtuse apex, and the second leaf sheaths the lower two-thirds of the stem. The margins, midrib, and secondary veins all bear the long hairs that are diagnostic for *H. pilosa,* but these seem unusual in being slightly reflexed. The plants are taller than usual for *H. pilosa,* and the spikes bear only one or two flowers. The style branches appear longer than those of any other white-flowered *H. pilosa* and in the closed flower reach the top of the anthers. The habitat, cool shaded slopes below a waterfall, is unusual for *H. pilosa,* which normally grows in light bush on exposed slopes and flowers in September and October. It seems unlikely that the habitat is responsible for the unusual morphology and late flowering time of the Esterhuysen collection. These plants more likely represent a distinct species. Additional material is needed before an informed decision can be made about these plants.

10. Hesperantha pseudopilosa Goldblatt, S. African J. Bot. 53: 461. 1987. Replaced name: *Hesperantha pilosa* subsp. *latifolia* Goldblatt, J. S. African Bot. 50: 56. 1984. Non *Hesperantha latifolia* (Klatt) de Vos. 1974. TYPE: South Africa. Northern Cape: Roggeveld, slopes of Sneeukrans, 22 Sep. 1981, *P. Goldblatt 6339* (holotype, MO!; isotypes, K!, NBG!).

When first raised from subspecies rank as subspecies *latifolia* of *Hesperantha pilosa* in 1987, *H. pseudopilosa* was known from isolated sites on the Bokkeveld Plateau (west of Nieuwoudtville), Sneeukrans on the Roggeveld Escarpment, and the northern foothills of the Kleinswartberg (Goldblatt, 1987). Additional populations (see specimens listed below) have since been found at several more sites on the Bokkeveld Plateau and along the Roggeveld Escarpment, as well as north of Matjiesfontein in the southern Karoo, which substantially fills in what seemed to be an erratic distribution pattern. The species now appears to have a nearly continuous range along the interior edge of the southern African winter-rainfall zone from the Bokkeveld Escarpment in the north to the northern slopes of the Klein Swartberg.

The white flowers open relatively late in the day, mostly after 18:00H, and then produce a strong sweet scent. They are visited by a range of settling moths, mostly of the family Noctuidae (Goldblatt et al., in press).

Additional specimens. SOUTH AFRICA. **Northern Cape:** 31.19 (Calvinia) Nieuwoudtville trekpath (AC), 27 Aug. 1999, *Goldblatt 11108* (MO); Nieuwoudtville Wildflower Reserve, 25 July 1983, *Perry & Snijman 2155* (NBG). 3120 (Williston) farm Knechtsbank W of Middelpos (CC), *Oliver 8917* (NBG). 32.20 (Sutherland) S of Sutherland, farm Verlatekloof (DA), 26 Aug. 1986, *Cloete & Haselau 47* (NBG); 2 km N of the top of Komsberg Pass (DB), 31 Aug. 1993, *Goldblatt & Manning 9677* (MO, NBG). **Western Cape:** 33.20 (Sutherland) hills between Verlatekloof and Matjesfontein (DC), 3 Aug. 1998, *Goldblatt & Manning 10951* (MO). 33.20 (Montagu) hill ca. 2 km W of Tweedside Station, 1200 m (AB), 12 Aug. 1988, *Vlok 1988* (MO).

11. Hesperantha glabrescens Goldblatt, sp. nov. TYPE: South Africa. Northern Cape: farm Hottentotskloof, ca. 15 km SW of Sutherland on Bo–Visrivier road, 2 Oct. 1999, *P. Goldblatt & I. Nänni 11190* (holotype, NBG!; isotypes, K!, MO!).

Plantae 3–5 cm altae eramosae, cormo ovoideo 4–6 mm diam., tunicis lignosis concentricis, foliis 3, inferioribus duobus falcatis summo vaginante laminis 1.0–1.3 mm latis marginibus incrassatis sparse villosis, spica uniflora (vel biflora), flore magenteo, tubo perianthii ca. 3.5 mm longo, tepalis ca. 8 × 2 mm, filamentis ca. 2 mm longis, antheris ca. 3 mm longis, styli ramis ca. 3.5 mm longis, purpureis.

Plants 3–5 cm high, stem unbranched, bearing a bract-like scale a short distance below the spike. *Corm* ovoid, 4–6 mm diam., tunics woody, concentric. *Leaves* 3, the lower 2 falcate, the upper suberect, largely sheathing, the blades 1–1.3 mm wide, the margins and midrib slightly thickened, the margins and veins sparsely hairy. *Spike* 1(or 2)-flowered; *bracts* ca. 6 mm long, purplish, becoming dry and brown above. *Flowers* magenta, open in the morning and closing in early afternoon; *perianth tube* cylindric, expanded near the apex, ca. 3.5 mm long; *tepals* subequal, elliptic, 8 × 2 mm, spreading at right angles to the tube. *Filaments* ca. 2 mm long; *anthers* 3 mm long, yellow, pollen yellow. *Ovary* ovoid, ca. 2 mm long; *style branches* ca. 3.5 mm long, purple, spreading. *Capsules* and *seeds* unknown.

Flowering. Late September and early October.

Distribution. South Africa, Northern Cape, Roggeveld Escarpment southwest of Sutherland, on moist clay flats along watercourses.

Closely related to, and initially appearing to be a depauperate form of, the widespread Western Cape *Hesperantha pilosa, H. glabrescens* was first collected in 1998 by the Cape Town botanist Nick Helme. It can be distinguished from its ally in several features. The leaves are sparsely hairy, unlike the fairly densely hairy or even downy leaves of *H. pilosa,* and the spikes are mostly 1-, or rarely 2-flowered, whereas *H. pilosa* typically has several, sometimes up to 10 flowers per spike. More unusual is the small size of the plants, only 3–5 cm high, shorter than any *H. pilosa.* The flowers are magenta in color, and quite small, with a perianth tube ca. 3.5 mm long and tepals about 8 mm long. Flowers of *H. pilosa* are often larger, usually white, although sometimes blue or magenta, have a perianth tube 6–10 mm long, and tepals (8–)12–15 mm long. The decision to recognize *H. glabrescens* was made in part because of the consistent morphology and because plants of what I consider true *H. pilosa* grew nearby (*Goldblatt & Nänni 11191*), always in the shade of shrubs, and always taller with the spikes up to 12 cm high, and with 2 to 4 flowers. These plants had plane, densely pilose leaf blades, a stark contrast to those of *H. glabrescens.* The flowers of the two species were virtually identical in size and pigmentation at the type locality.

Paratypes. SOUTH AFRICA. **Northern Cape:** 32.20 (Sutherland) 15 km SW of Sutherland on Bo–Visrivier road (BC), 25 Sep. 1998, *N. Helme 1554A* (NBG).

12. Hesperantha ciliolata Goldblatt, J. S. African Bot. 50: 59. 1984. TYPE: South Africa. Northern Cape: Roggeveld Escarpment, farm Geelhoek, 21 Sep. 1953, *J. P. H. Acocks 17176* (holotype, PRE!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 59. 1984.

Described in 1984 from a single collection from the farm Geelhoek in the center of the Roggeveld Escarpment, *Hesperantha ciliolata* is distinguished mainly by its straight, ribbed leaves, oval to terete in transverse section, with fine scabrid cilia on the rib edges. The type population had violet flowers according to the collection information. A second population was found in about 1995, some 50 km to the north, on the farm Botuin, west of Middelpos, and these plants, which flowered in cultivation in 1998, have mauve-pink flowers that are open in the morning and close in the early afternoon. The flowers of the Botuin collection have an unusual acrid-sweet odor, characteristic of the orchid genera *Corycium* Sw. and *Pterygodium* Sw. The scent is so unusual and distinctive that I wonder whether it may attract the same bees that pollinate those orchids, species of *Rediviva* (Melittidae), females of which visit the orchids to collect floral oils for nest provisioning (Steiner, 1989). A third collection from south of Sutherland (*Goldblatt & Nänni 11189*) consists of plants with pale blue-mauve to light purple flowers, also opening in the morning and closing at ca. 14:00H. The flowers of this population are evidently unscented.

Plants from the Voetpadsberg east of Touwsrivier (*Goldblatt & Nänni 11200,* in fruit; *Goldblatt & Porter 11877,* in flower) have the same overall appearance as *Hesperantha ciliolata* except that the leaves mostly have only two grooves, or sometimes a pair of secondary ones strongly raised, but the edges of the raised parts are ciliate-scabrid, as are the edges of the ribs of the sheathing, upper leaf. The flowers closely resemble those of *Goldblatt & Nänni 11189* in their bluish color but have a light, musky acrid scent. These plants must be regarded as a minor variant of this otherwise Roggeveld Escarpment species and represent a new record for the Cape Floral Region. The seeds of the Voetpadsberg plants are wedge-shaped, thus strongly angular with flat faces, the edges of which are slightly winged. The seeds of Roggeveld populations of *H. ciliolata* are unknown.

Additional specimens. SOUTH AFRICA. **Northern Cape:** 32.20 (Sutherland) S of Sutherland (AC), 2 Oct. 1999, *Goldblatt & Nänni 11189* (MO, NBG). **Western Cape:** 33.20 (Montagu) foot of the Voetpadsberg, 21.5 km E of Touwsrivier, foot of sandstone slope (AC), 3 Oct. 1999 (fr), *Goldblatt & Nänni 11200* (K, MO, NBG, PRE), 11 Sep. 2001, *Goldblatt & Porter 11877* (K, MO, NBG, PRE, WAG).

13. Hesperantha teretifolia Goldblatt, S. African J. Bot. 53: 460. 1987. TYPE: South Africa. Northern Cape: Roggeveld Escarpment between Middelpos and Calvinia, 13 Oct. 1983, *P. Goldblatt 7090* (holotype, NBG!; isotypes, K!, MO!, PRE!, S!, STE!, WAG!).

Described in 1987 from plants from the Roggeveld Escarpment near the farm Botuin west of Middelpos, *Hesperantha teretifolia* is unusual in having centric, more or less terete, minutely grooved, hollow leaves. A feature not noted in the protologue is that the leaf surface between the grooves is densely covered by minute papillae (or extremely short, cilia-like hairs) visible only under the microscope at 10× magnification. Specimens collected 10 years later, in September 1997, close to the type locality, growing in rocky sites among low bushes, clearly show this unusual epidermal feature, which is rare in the genus. A third population was discovered in 1998 at Uitkyk Farm, some 60 km south of the type locality, by N. A. Helme. Like the northern population, these plants have white flowers that open late in the afternoon, mostly after 16:30H, and are then sweetly scented. The leaves differ slightly in having the papillate hairs mostly confined to edges of the grooves, and the ridged areas between the grooves in the upper part of the leaf sometimes have a transparent center. *Hesperantha teretifolia* may be less rare than available records indicate, and exploration of the more rugged and remote parts of the Roggeveld Escarpment will likely yield additional populations.

Additional specimens. SOUTH AFRICA. **Northern Cape:** 31.19 (Calvinia) between Calvinia and Middelpos, Farm Botuin, 16 Sep. 1997, *Goldblatt & Manning 10747* (MO, NBG); 32.20 (Sutherland) SW of Sutherland on the road to Calvinia, Farm Uitkyk (AA), 26 Sep. 1998, *Helme 1556* (NBG).

14. Hesperantha quadrangula Goldblatt, J. S. African Bot. 50: 62. 1984. TYPE: South Africa. Northern Cape: Hantamsberg, slopes below the summit cliffs, 16 Sep. 1980, *P. Goldblatt 5795* (holotype, MO!; isotype, NBG!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 62. 1984.

Known from only two collections from the Hantamsberg at Calvinia in Northern Cape Province when described, *Hesperantha quadrangula* was found on the Roggeveld Escarpment west of Middelpos in 1999 (*Goldblatt & Nänni 11157*), a range extension of some 60 km. The stony habitat of the Roggeveld population is similar to that on the Hantamsberg, although the ground is only slightly sloping, unlike the steep flanks of the Hantamsberg where the earlier collections were made. The white flowers open at 16:00–16:30H and then produce a sweet, rose-like fragrance. Surprisingly for a white-flowered species, the tepals close again at nightfall, and the flowers are completely closed by 19:30H. The flowers are visited by a range of bees including *Anthophora diversipes* and *Apis mellifera* and by the occasional hopliine scarab beetle (Goldblatt et al., in press). The species is remarkable for the particularly short perianth tube, ca. 3 mm long, and may reliably be identified by this feature alone or in combination with the brown cataphyll, two basal foliage leaves, and sheathing upper leaf, which is quadrangular in cross section.

Additional specimens. SOUTH AFRICA. **Northern Cape:** 31.20 (Williston) road to Middelpos 55 km SE of Calvinia, farm Knechtsbank (CC), 19 Sep. 1999, *Goldblatt & Nänni 11157* (MO, NBG, PRE).

15. Hesperantha flexuosa Klatt, Abh. Nat. Ges. Halle 15: 394. 1882. TYPE: South Africa. Northern Cape: Namaqualand, Kamiesberg, Elboogfontein, Aug.–Sep. 1830, *J. F. Drège 2639* (holotype, B ["Herb. Lubeck"]!; isotypes, G!, P!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 63. 1984.

16. Hesperantha minima (Baker) R. C. Foster, Contr. Gray Herb. 135: 77. 1941. *Geissorhiza minima* Baker, J. Bot. (London) 5: 239. 1876. TYPE: South Africa. Northern Cape: Namaqualand, Kamiesberg "Modderfonteinsberg," Oct. 1830, *J. F. Drège 2632* (lectotype, designated by Foster (1941: 77), K!; isotypes, B!, G!, K!, L!, MO!, P!, S!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 65. 1984.

The diminutive *Hesperantha minima* was described by J. G. Baker for a dwarf species from Namaqualand collected in about 1830 by the notable collector J. F. Drège, and then referred to the related genus *Geissorhiza.* R. C. Foster correctly transferred the species to *Hesperantha* in 1941. When the genus was revised in 1984, the plant was still known from this single collection, one so well

represented in the world's herbaria that there was no doubt that it represented a good species. The locality was also quite clear. Drège's collection is from "Modderfonteinsberg," i.e., the mountain on the farm Modderfontein, where he also collected the plants later to be described as *Xenoscapa uliginosa* Goldblatt & J. C. Manning (Goldblatt & Manning, 1995). That species was rediscovered in 1990 by John Rourke and E. C. Nelson while exploring Sneeuberg, the second highest mountain in Namaqualand, reaching 1591 m, and located partly on the farm Modderfontein. When I visited the site in 1991 to collect more material of the *Xenoscapa,* plants resembling *H. minima* were seen in leaf, growing in moss on thin soil on wet granite domes. Subsequently, flowering plants were located and their identity confirmed as *H. minima* (*Goldblatt 9246,* MO). Both *H. minima* and *X. uliginosa* are known from only this one locality, presumably the very site discovered by Drège over 170 years ago.

17. Hesperantha fibrosa Baker, Handbk. Irideae 149. 1892. TYPE: South Africa. Western Cape: Kleinrivier Mts., Aug., *C. L. Zeyher 3960* (lectotype, designated by Goldblatt (1984: 66), K!; isotypes, B!, G!, K!, S!, SAM!, W!, Z!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 66. 1984.

Collections of *Hesperantha fibrosa* from "Elandskloof" (*Esterhuysen 3160,* BOL) suggested that the species occurs in the Cold Bokkeveld as well as to the south in the Caledon and Bredasdorp Districts of Western Cape Province where it was once common (Goldblatt, 1984). More likely the Elandskloof of the Esterhuysen plants is the less well known place of that name in the Bredasdorp Mountains near Napier, which lies within the expected range of the species. Unless the species is re-collected at Elandskloof in the Cold Bokkeveld, it must be assumed that *H. fibrosa* does not occur there and that it has a coherent distribution range in the southern Cape.

18. Hesperantha cucullata Klatt, Abh. Naturf. Ges. Halle 15: 393. 1882. TYPE: South Africa. Northern Cape: Hantam Mts., Aug., *H. Meyer 9* (lectotype, designated by Goldblatt (1984: 72), B!; possible isotypes, S!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 72. 1984.

19. Hesperantha truncatula Goldblatt, S. African J. Bot. 53: 461. 1987. TYPE: South Africa. Western Cape: northern foothills of the Kleinswartberg, farm Vleiland, 10 Sep. 1983, *J. H. J. Vlok 662* (holotype, NBG!; isotypes, MO!, PRE!).

20. Hesperantha purpurea Goldblatt, J. S. African Bot. 50: 85. 1984. TYPE: South Africa. Northern Cape: farm Perdekraal, NW of Calvinia, 12 Sep. 1981, *P. Goldblatt 6246* (holotype, MO!; isotypes, K!, NBG!, PRE!, S!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 85. 1984.

21. Hesperantha vaginata (Sweet) Goldblatt, J. S. African Bot. 36: 298. 1970. *Geissorhiza vaginata* Sweet, British Fl. Gard. 2: pl. 138. 1836. TYPE: South Africa. Without precise locality, British Fl. Gard. 2: pl. 138. 1836.

Last revisionary account: Goldblatt, J. S. African Bot. 50: 72. 1984.

Hesperantha vaginata is the only species of the genus known to be pollinated exclusively by hopliine scarab beetles, Scarabaeidae: Hopliini (Goldblatt et al., in press). The unscented, yellow flowers, in most populations conspicuously patterned with chocolate-brown, are visited by numerous *Clania glenyonensis* individuals on warm days after the tepals unfold after 14:30H. The beetles use the flowers as sites for assembly, mate selection, and copulation, but they also consume pollen, which appears not to affect the fitness of the species, which reproduces well (Goldblatt et al., in press).

22. Hesperantha karooica Goldblatt, J. S. African Bot. 50: 79. 1984. TYPE: South Africa. Northern Cape: Calvinia, foot of the Hantamsberg, 25 Aug. 1968, *F. J. Stayner s.n.* (holotype, NBG 87606!; isotype, STE!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 79. 1984.

Although so closely resembling *Hesperantha vaginata* that there remains doubt about the status of *H. karooica,* no plants resembling either species have been re-collected at Calvinia, the type locality, or elsewhere that match the small flowers and diminutive size of the type plants. In the absence of intermediates the species must continue to be recognized.

23. Hesperantha hantamensis Schltr. ex R. C. Foster, Contr. Gray Herb. 166: 15. 1948. TYPE: South Africa. Northern Cape: Calvinia, dolerite hills, Aug. 1921, *R. Marloth 10262* (holotype, B!; isotypes, PRE!, STE!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 84. 1984.

24. Hesperantha humilis Baker, J. Bot. 14: 239. 1876. TYPE: South Africa. Northern Cape: Roggeveld near Jakkalsfontein, 7 Aug. 1811, *W. J. Burchell 1320* (holotype, K!). Figure 1B.

Last revisionary account: Goldblatt, J. S. African Bot. 50: 84. 1984.

Hesperantha humilis is readily recognized by the more or less acaulescent habit and 1- to 3-flowered spike of deep pink flowers with an elongate perianth tube. As in other species of the genus with a similarly colored perianth, the flowers open during the day and close in the mid afternoon. The perianth tube, 17–24 mm long, seems to indicate that the flowers are pollinated by a long-tongued insect. However, the tube is narrow and the walls tightly envelop the style, leaving no room for an insect's tongue. The little nectar produced is forced into the top of the tube and is accessible to insects with mouth parts no more than 5 mm long.

25. Hesperantha flava G. J. Lewis, S. African Gard. 23: 255. 1933. TYPE: South Africa. Western Cape: Whitehill, 31 July 1937, *R. H. Compton 4276* (lectotype, designated by Goldblatt (1984: 82), BOL!; isotype, K!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 82. 1984.

When described in 1933, the acaulescent, yellow-flowered *Hesperantha flava* was known from a single population near Whitehill in the southwestern Karoo of Western Cape Province. Even in 1984 when the genus was revised for the winter-rainfall zone (Goldblatt, 1984), it was known to me from only two more populations, one near Steinkopf in northern Namaqualand in Northern Cape Province, and the other from Matjesfontein, near Whitehill, a disjunction of some 500 km. Such disjunctions are not common in the southern African flora and were thus suspect. Two more populations are now known from the area between these two stations, one from near Kliprand in southwestern Namaqualand (*Oliver 9846A,* NBG), and the other between Middelpos and Calvinia (*Manning s.n.,* NBG) in the western Karoo. The range now forms a coherent pattern, and *H. flava* may be assumed to extend more or less continuously in suitable habitats along the interior edge of the winter-rainfall zone from Steinkopf in northern Namaqualand to Matjesfontein and Whitehill. Its flowering time, early winter, often in May or June, largely explains why it is so poorly known, for little collecting is done at this time of the year.

26. Hesperantha candida Baker, Handbk. Irideae 151. 1892. TYPE: South Africa. Free State, 1861, *K. H. Cooper 746* (holotype, K!; isotypes, E!, NH!, PRE!).

Hesperantha vernalis Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 423. 1986. Syn. nov. TYPE: South Africa. KwaZulu-Natal: Estcourt, S side of Kamberg, 9 Sep. 1973, *F. B. Wright 1530* (holotype, E not seen; isotypes, MO!, NU!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 423. 1986, as *Hesperantha vernalis.*

Although I believed *Hesperantha candida* to be conspecific with *H. longituba* (Goldblatt, 1984), Hilliard and Burtt (1986) argued convincingly that these were two separate species, *H. candida* called by them *H. vernalis.* The two differ mainly in floral features, especially the length of the perianth tube, timing of flower opening, and sometimes perianth color. One of just a few eastern southern African species of the genus that flower in the spring, *H. candida* may be recognized by the moderate-sized to fairly large flowers, the tepals mostly 15–20 mm long, usually pink to mauve-pink but occasionally white, with a perianth tube (5–)7–12(–14) mm long, and anthers 5–7.5 mm long. Plants bear leaves when in flower, although the leaf tips may be dry, or in exceptional cases are lacking, having been grazed or burnt off before the flowering stem has emerged. Vegetatively similar, even apparently identical, *H. longituba* consistently has white flowers with a longer perianth tube, usually at least 14 mm and up to 22 mm long. I admit to sometimes finding it difficult to distinguish herbarium specimens of *H. candida* from *H. longituba,* for the range in the length of the perianth tube in the two species overlaps and the perianth of *H. candida* is also sometimes white, although then usually the outer tepals are flushed or feathered with pink, whereas flowers of *H. longituba* are, as far as I know, uniformly white.

Leaves of *Hesperantha candida* are typically sword-shaped or nearly linear with a raised midrib and margins and an otherwise plane surface. A few collections from the Eastern Cape (e.g., *Bester 850* and *866,* PRU) consist of plants with oblong to nearly ovate leaves that appear to lack thickened margins. Other collections, among these *Bester 830*

(PRU), are intermediate, having the lowermost leaf sword-shaped and the other basal leaves oblong, leaving no doubt that the broader-leaved plants belong to the same species, *H. candida.* Whatever the shape of the leaves, the leaf surface between the margins and midrib is always plane and smooth, with secondary veins not thickened and seldom visible.

Hesperantha candida was called *H. vernalis* by Hilliard and Burtt (1986) because they associated the type (*Cooper 746*) with what I consider a second species, *H. leucantha.* This is a fairly slender, pale pink- to mauve-flowered species of the Drakensberg and nearby that flowers from December to February. Like *H. candida* the flowers open during the day but they seem generally smaller, with tepals 12–15 × 3–5 mm long and anthers 4.5–5.5 mm long, whereas those of *H. candida* have tepals mostly 15–20 × 6–9 mm, and anthers 5–7.5 mm long. Leaves of the two species also differ, for those of *H. candida* usually have a prominently thickened midrib and margins, are usually fairly broad (2–5 mm wide in the type, but on most other collections 3–6 mm wide), and the leaf tips are often dry and sometimes broken at anthesis. In contrast, the leaves of *H. leucantha* are usually quite slender, mostly 1.5–2.5 mm wide, have only slightly thickened midribs and margins, and are rarely dry at the tips. Flowering time, which would be useful additional information for the interpretation of *H. candida,* is unknown. Cooper made the type collection in 1861, and according to records (Gunn & Codd, 1981) he crossed the Lesotho frontier at Ficksburg, reaching Harrismith on 25 September where he remained until 10 October. He may well have collected the type of *H. candida* at this time. Unfortunately, the details of his subsequent travels are incomplete. Records indicate that he was in Pietermaritzburg in July of the following year, having reached there via Ladysmith. Whether he was still in the Free State that summer is evidently unknown so that the month of his collection of *H. candida* cannot be determined with any confidence. After re-examining the lectotype (which is duplicated at E, G, PRE, and Z), I remain convinced that *H. candida* is the spring-flowering species allied to *H. longituba.*

Hesperantha candida has a fairly wide distribution, plants extending not only from the Witteberg in the Eastern Cape to Harrismith in the Free State, but farther north into southern Mpumalanga, if I have correctly placed *Rogers 21282* (BOL, K, PRE), from Carolina. Plants of this gathering have flowers with a tube 11–14 mm long, tepals ca. 18 mm long, and anthers ca. 6 mm long. Collections provisionally assigned here also extend the range southward as far as the Hogsback in the Amatola Mountains (*Giffen s.n.,* GRA, PRE), Grahamstown (*Britten 2800,* GRA; *Jacot Guillarmod 8575,* GRA; *Schönland 775,* PRE; *Snijman 464,* NBG), and Alexandria (*Archibald 5977,* PRE). The plants from Grahamstown, at the southwestern extremity of the range, have the smallest flowers, the tepals ca. 12 × 6 mm, found in the species. Some specimens also have more flowers per spike than has been recorded elsewhere. They have 4 to 6 flowers per spike versus the more usual 1 to 3 in populations further north. These plants are puzzling, but it is more likely that they represent a southern and lower elevational form of *H. candida* than an undescribed species. Sometimes identified as *H. falcata,* they do not have the bell-shaped corm of this southern and western Cape species.

27. Hesperantha debilis Goldblatt, sp. nov. TYPE: South Africa. Eastern Cape: Grahamstown Nature Reserve, W of Dassie Krantz, Oct. 1951, *A. R. H. Martin s.n.* (holotype, RUH 9554!).

Plantae 10–15 cm altae plerumque pauciramosae, cormo ovoideo 4–5 mm diam., tunicis lignosis concentricis, foliis 4, inferioribus duobus basalibus, linearibus 1–2 mm latis summo vaginante marginibus costaque leviter incrassatis, spica 1- vel 2-flora, floribus albis, tubo perianthii 4–6 mm longo, tepalis 12–14 × ca. 5 mm, filamentis 2.5–3.0 mm longis, antheris ca. 5 mm longis, styli ramis ca. 10 mm longis antheras excedentibus.

Plants 10–15 cm high, stem usually branched. *Corm* ovoid, 4–5 mm diam., tunics woody, concentric. *Leaves* 4, the lower 2 basal, linear, the third partly sheathing, free in the upper half, the uppermost largely sheathing, 15–20 mm long, inserted in the upper third of the stem, blades 1–2 mm wide, the margins and midrib slightly thickened. *Stem* erect, slender, usually branched at the uppermost node and sometimes at the second node. *Spike* 1- or 2-flowered; *bracts* 8–11 mm long, green or flushed purplish, the margins and apex membranous. *Flowers* white, the outer tepals flushed red on the outside; *perianth tube* cylindric below, expanded near the apex, 4–6 mm long; *tepals* subequal, elliptic, 12–14 × ca. 5 mm, spreading. *Filaments* 2.5–3 mm long; *anthers* ca. 5 mm long, ?yellow, pollen ?yellow. *Ovary* ovoid, ca. 3 mm long; *style branches* ca. 10 mm long, overtopping the anthers by up to 2 mm in the closed flower, spreading in the open flower. *Capsules* globose, ca. 3 mm long; *seeds* unknown.

Flowering. October.

Distribution. South Africa, Eastern Cape, near Grahamstown and the Suurberg, on sandy slopes.

Plants first collected in the 19th century in the Grahamstown district of Eastern Cape Province and still poorly known, match no known species of *Hesperantha* although they are not particularly distinctive. Described here as *H. debilis* the species may be recognized partly by the small corms 4–5 mm in diameter, lax, linear leaves 1–2 mm wide, and a slender, branched stem bearing one or two flowers on each branch. It may be most closely allied to the eastern southern African *H. candida,* a more robust plant, the stems of which are rarely branched. The bracts of *H. debilis* are soft in texture and have broad membranous margins.

Paratypes. SOUTH AFRICA. **Eastern Cape:** 33.26 (Grahamstown) New Years River, Albany (AC–AD), without date, *Barber 255* (K); near Grahamstown (BC), without date, *Bolton s.n.* (K).

28. Hesperantha longituba (Klatt) Baker, Gard. Chron. 7: 652. 1877. *Geissorhiza longituba* Klatt, Linnaea 35: 383. 1867–1868. TYPE: South Africa. Eastern Cape: Somerset East, date unknown, *J. H. Bowker s.n.* (lectotype, designated by Goldblatt (1984: 69), K!; isotypes, K!, S!).

Hesperantha candida var. *bicolor* Baker, Fl. Cap. 6: 63. 1896. *Hesperantha bicolor* (Baker) R. C. Foster, Contr. Gray Herb. 166: 5. 1948. TYPE: South Africa. Somerset East, Boschberg, *P. MacOwan s.n.* (lectotype, designated by Foster (1948: 5), K!; isotypes, BOL!, G!, GRA!, M!, WU!, Z!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 69. 1984.

Largely a species of the southern Karoo and adjacent dry mountains of the Eastern Cape, *Hesperantha longituba* flowers in the spring when the veld is usually dry. The white flowers open in the late afternoon, according to Hilliard and Burtt (1986), and close after dark. The species may be recognized by the relatively large flowers with tepals 15–22 mm long and a perianth tube usually 16–22 mm long, and by the broad, leathery leaves with prominent margins and midrib. Unlike most species of eastern southern Africa, the corms are large and have overlapping tunic layers notched into segments below, like those of several western Karoo species, e.g., *H. cucullata, H. vaginata,* included in section *Imbricata* (now sect. *Concentrica*) by Goldblatt (1984). Most other eastern southern African species have corms with concentric tunics that fragment along vertical fracture lines into discrete segments and appear to be a fundamentally different type. The relationships of *H. longituba* presumably lie with this predominantly winter-rainfall group of species.

Among the spring-flowering species of the eastern southern African summer-flowering zone, *Hesperantha candida* is the only one that may be confused with *H. longituba.* That species (called *H. vernalis* by Hilliard & Burtt, 1986) differs mainly in the length of the perianth tube, mostly 14–22 mm long (and associated bracts), and its flowering phenology. The latter feature cannot be determined from most herbarium specimens, but Hilliard and Burtt have determined that flowers of the shorter-tubed species (tube mostly 7–12 mm long) are diurnal (confirmed by notes on some herbarium collections) and those of the longer-tubed species are crepuscular. This provides additional evidence for regarding them as separate species. Plants from the Aliwal North and Stutterheim areas are intermediate in tube length and make the distinction between the two sometimes seem arbitrary. Collections from further west, at Cradock (*Marloth 2152,* PRE), Somerset East (*van der Walt 186,* PRE), and Graaf Reinett (*Linger 2106,* PRE), always have a longer perianth tube, sometimes up to or even exceeding 22 mm. As indicated in the key, *H. longituba* may be distinguished by having a perianth tube mostly 16–22 mm long and white flowers that open in the later afternoon and remain open at night. In contrast, *H. candida* has a perianth tube mostly 7–12 mm long and white or pale pink flowers that are open during the day and closed at night. *Hesperantha candida* was included in *H. longituba* by Goldblatt (1984), but Hilliard and Burtt (1986) argued convincingly that they are separate, albeit allied, species.

29. Hesperantha schelpeana Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 37: 302. 1979. TYPE: Lesotho. Black Mts. between Sani and Mokhotlong, 5 Nov. 1973, *O. M. Hilliard & B. L. Burtt 7075* (holotype, E not seen; isotype, NU!). Figure 3A.

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 434. 1986.

Collections made since *Hesperantha schelpeana* was described in 1979 make it necessary to amplify the circumscription of the species. Plants may have one or two flowers (*Bester 3098, Strever 433,* PRU), or even three (*Bester 2961,* PRU) or more (*Hilliard & Burtt 13117,* NU), and although described as leafless when in flower, plants usually bear two sheathing leaves (the cataphylls of Hilliard & Burtt's description) as well as a basal cataphyll that

Figure 3. Morphology of *H. schelpeana* (A) and *H. altimontana* (B), full size. Drawn by John Manning from pressed plants and accompanying photographs (*H. schelpeana: Cubitt s.n*, NBG; *H. altimontana: Cubitt s.n.*, NBG (flowering plant), and *Goldblatt 11239*, NBG (leaf)). Scale bar 1 cm.

is colorless, and occasionally the sheathing leaves overlap and may even have a short, unifacial tip. Collections from Naude's Nek (*Strever 433*, PRU), Lapa Munnik Pass (*Bester 3098*, PRU), and Saalboom Nek (*Hilliard & Burtt 13117*, NU) show that plants occasionally bear one long basal leaf and sometimes a second shorter one at flowering. These longer leaves are often dry or dying back at flowering time, but are evidently occasionally still at least partly green. The leaves are about 2 mm wide, and it appears from the way they dry that they are oval in section when alive. As they dry the soft internal tissue shrinks, leaving each surface with two or more narrow but irregular, longitudinal grooves, making it appear as if the living leaf had thickened veins and thinner intercostal areas. Evidently new leaves are normally produced on a separate shoot after flowering, but sometimes the fully developed leaves of the past season persist until next flowering.

The occasional presence of leaves at flowering time makes it possible to confuse *Hesperantha schelpeana* with *H. candida*, which flowers at the same time of year and normally has leaves present on the flowering stem (unless destroyed by fire or grazing). Properly developed plants of *H. candida* have four leaves, two basal, a third subbasal and partly sheathing, and a short, sheathing leaf in the upper part of the stem. *Hesperantha schelpeana*, however, never has more than three leaves, the lowermost slender and exceeding the stem (when still present at flowering), the second much shorter, often largely sheathing, and a third, short, sheathing leaf usually present on the upper part of the stem. The leaf blades also differ, and *H. candida* can be distinguished by the fairly broad leaves with clearly thickened and raised margins and midrib and the surface plane and smooth elsewhere. Several specimens assigned in herbaria to *H. candida* (or its synonym *H. vernalis*) seem to me to be *H. schelpeana* in which the foliage leaves have persisted later in the year than usual, and then the two species can only be separated by examination of leaf number, size, and shape of the blade.

The flowers of *Hesperantha schelpeana* were described by Hilliard and Burtt as whitish or pale pink with the outer tepals feathered red-purple outside. Plants from The Sentinel on the Free State–KwaZulu-Natal border in the Drakensberg Mts., at the northern limit of the species (*Cubitt s.n.*, NBG), have pink flowers, shading darker at the tips of the tepals, with the throat dark brown, providing a stark contrast to the deep yellow anthers and pollen. The reverse of the outer tepals is so strongly feathered with brown as to appear nearly uniformly pigmented. Some plants from the southern end of its range (e.g., *Bester 2961*, *3018*, PRU) have white flowers with the outer tepals barely tinged with mauve near the tips.

30. Hesperantha altimontana Goldblatt, sp. nov. TYPE: South Africa. Free State: Drakensberg Mts., The Sentinel, ca. 2500 m, 10 Oct. 1979, *G. Cubitt s.n.* (holotype, NBG!). Figure 3B.

Plantae 10–12 cm altae eramosae, cormo ovoideo, 8–12 mm diam., foliis caulis florentis 2 omnino vaginantibus 2.5–3.5 cm longis, foliis post anthesis productis solitariis falcatis 6–8 cm × 3–4 mm, spica 1-flora, flore cremeo-albo, tubo perianthii 20–27 mm longo, tepalis 20–23 × 9–10 mm, filamentis ca. 3 mm longis, antheris ca. 10 mm longis, styli ramis ca. 10 mm longis.

Plants 10–12 cm high, erect, unbranched, flowering without the leaves. *Corm* ovoid, 8–12 mm diam., with relatively soft, imbricate tunics. *Leaves* (of the flowering stem) 2, entirely sheathing, 2.5–3.5 cm long; foliage leaves produced later in the season, solitary, falcate, to 6–8 cm long, 3–4 mm wide, leathery, the midrib hyaline but not raised when alive. *Spike* 1-flowered; *bracts* ca. 20 mm long, green, flushed with purple, the inner slightly shorter than the outer. *Flowers* uniformly creamy white, shading to pale yellow both inside and outside the tube; *perianth tube* 20–27 mm long, cylindrical, expanded near the mouth; *tepals* spreading, elliptic-ovate, 20–23 × 9–10 mm, subacute. *Filaments* erect, ca. 3 mm long, inserted in the mouth of the tube; *anthers* diverging, ca. 10 mm long, yellow, pollen yellow. *Ovary* oblong, ca. 5 mm long; *style* dividing in the mouth of the tube, the branches reaching to the upper third of the anthers in bud, ca. 10 mm long, laxly spreading above. *Capsules* and *seeds* unknown.

Flowering. October.

Distribution. Lesotho and South Africa in Free State and KwaZulu-Natal Provinces, stony, open ground in the high Drakensberg.

Hesperantha altimontana is presumably allied to the two other southern African Drakensberg species that flower early in the season and without their foliage leaves, *H. crocopsis* and *H. schelpeana*. Of the two, it is most like *H. schelpeana* in its fairly large flowers, but it differs in having a perianth tube 20–27 mm long and uniformly creamy white perianth, whereas *H. schelpeana*, with a perianth tube 5–10 mm long, has whitish or pale pink flowers with the outer tepals flushed with darker pink to purple on the outside (Fig. 3A). *Hesperantha crocopsis* has much smaller flowers than *H. altimon-*

tana, the tepals only 6–7 mm long, but a perianth tube 9–14 mm long, and like *H. schelpeana* the outer tepals are red to purple on the outside. Illustrations of *H. schelpeana* (Hilliard & Burtt, 1979) and *H. altimontana* (Trauseld, 1969: 41, number 670, as *Hesperantha* species) show the difference between the flowers of the two species.

This plant was known to Hilliard and Burtt who discussed the few available specimens under *Hesperantha schelpeana,* concluding that they probably represented a new species. *Hesperantha altimontana* is thus the third species of the genus, all of the high Drakensberg, in which the foliage leaves are produced after flowering on new shoots on the corm near the base of the flowering stem. Foliage leaves are lacking on flowering specimens, but plants from ridges west of Thaba Ntlenyana in Lesotho (*Goldblatt 11239,* NBG) that appear to be *H. altimontana* have a distinctive, falcate leaf with a plane blade like no other known member of the genus. This collection is assumed to be vegetative *H. altimontana.* The illustration of *H. altimontana* (Fig. 3B) is based on the collection and photographs made by the photographer Gerald Cubitt and vegetative specimens from Thaba Ntlenyana.

Paratypes. LESOTHO. 29.29 (Underberg) top of Black Mountain Pass on slopes W of Thaba Ntlenyana, 3200 m (CA), 5 Feb. 2000 (fr), *Goldblatt 11239* (NBG). SOUTH AFRICA. **KwaZulu-Natal:** 29.29 (Underberg) Giants Castle Game Reserve, The Gable (BC), 25 Oct. 1966, *Trauseld 670* (NU, PRE), date unknown, *Trauseld 1104* (PRE not seen).

31. Hesperantha crocopsis Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 37: 302. 1979. TYPE: Lesotho. Mokhotlong District, above Mashai Pass, 7 Nov. 1977, *O. M. Hilliard & B. L. Burtt 10489* (holotype, E not seen; isotype, NU!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 435. 1986.

32. Hesperantha bachmannii Baker, Bull. Herb. Boissier ser. 2, 1: 863. 1901. TYPE: South Africa. Western Cape: near Hopefield, date unknown, *F. E. Bachmann 1177* (lectotype, designated by Foster (1948: 4), G!; isotypes, B!, Z!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 90. 1984.

33. Hesperantha bulbifera Baker, J. Bot. 14: 183. 1876. TYPE: South Africa. Eastern Cape: Somerset East, Boschberg, Nov. 1876, *P. MacOwan 2215* (lectotype, designated by Goldblatt (1984: 95), K!; isotypes, BOL!, G!, K!, PRE!, WU!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 95. 1984.

Hesperantha bulbifera remains a puzzling species, for although readily recognized by the white flower with a curved perianth tube and soft-textured leaves, it has an unusually scattered distribution across the southern African summer-rainfall zone. Populations extend from Somerset East in Eastern Cape Province in the south to Limpopo Province and Sabie in Mpumalanga in the east, always in wet habitats such as wet cliffs and within the spray of waterfalls. It is poorly distinguished from the related *H. bachmannii* by larger size, a characteristic cormlet in the lower leaf axils, and sometimes a longer perianth tube, but for the present it seems advisable to continue to recognize the species. Although mostly flowering in the summer months, the type collection, from Somerset East, was in bloom when collected in September. The collection from the Soutpansberg, *Venter 6205* (PRE, July, 1981) and another from Iron Crown in the Wolkberg (*Venter s.n.,* PRE, 15 Oct. 1985), extends the range of the species substantially to the north of its next nearest sites at Thabazimbi (*Venter 1936,* PRE) and Sabie (*Cunliffe sub Moss 4311,* K, Z) (Goldblatt, 1984).

34. Hesperantha pallescens Goldblatt, J. S. African Bot. 50: 88. 1984. TYPE: South Africa. Western Cape: below Piekenierskloof Pass, 3 Sep. 1980, *P. Goldblatt 5645* (holotype, MO!; isotypes, B!, BOL!, C!, K!, M!, NBG!, P!, PRE!, S!, US!, WAG!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 88. 1984.

My field studies at the only known site for the species indicate that this narrow endemic is seriously threatened. Plants grow at the edges of cultivated fields at the foot of Piekenierskloof Pass, north of Piketberg. The long-tubed, pale yellow flowers open in the morning and close at sunset and are unscented. Perianth tube length, 18–22 mm, and self-compatibility (Goldblatt, 1984) suggest the species may have a specialized pollinator, probably a long-proboscid fly (Goldblatt et al., in press).

35. Hesperantha baurii Baker, J. Bot. 14: 182. 1876. TYPE: South Africa. Eastern Cape: Transkei, Baziya Mountain, Mar., *L. R. Baur 628* (holotype, K!; isotype, BOL!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 426. 1986.

35a. Hesperantha baurii subsp. **baurii**

See Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 426. 1986.

35b. Hesperantha baurii subsp. **formosa** Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 430. 1986. TYPE: Lesotho. Sani top, W of border post, 9500 ft., 16 Jan. 1976, *O. M. Hilliard & B. L. Burtt 8829* (holotype, NU!; isotypes, E not seen, MO!).

By far the most common species of *Hesperantha* in eastern southern Africa, *H. baurii* extends from Satana's Nek near Engcobo in the Eastern Cape in the south through KwaZulu-Natal, Lesotho, the eastern Free State to Mpumalanga Province. Frequent in grassland from 500 to 2000 m, it favors relatively well-watered grassy slopes and may occasionally even be found in seasonal seeps or rocky pavement, where it flowers from mid to late summer, December to March. Flowers are bright pink with large deep yellow anthers and pollen and when open from mid morning to about 16:00H they can make a striking display. In combination with these features, *H. baurii* can be recognized by the relatively short perianth tube, mostly 7–10 mm long, tepals 12–18 mm long, and a remarkably consistent vegetative morphology, with four leaves, the lower two largest and basal, the third leaf sheathing in the lower half, and the uppermost leaf usually short, inserted in the middle of the stem and entirely sheathing. Plants are erect, and only the most robust individuals may have a single branch. The spike ranges from weakly to markedly flexuose and bears up to 12 flowers, occasionally more, and spikes with as many as 18 flowers have been reported (Hilliard & Burtt, 1986). My circumscription of *H. baurii* largely agrees with that of Hilliard and Burtt except that I regard the late winter- to spring-flowering plants from coastal Transkei and KwaZulu-Natal included by them in the species as the separate *H. modesta*, which with its presumed synonym *H. subexserta* are here removed from *H. baurii*. Apart from the spring flowering time, *H. modesta* may be recognized by the fewer-flowered spikes, mostly bearing 2 or 3 flowers, and the presence of only 3, or occasionally 4 leaves, of unusually soft texture.

Subspecies *formosa* of *Hesperantha baurii*, described by Hilliard and Burtt (1986) for plants with few-flowered spikes (usually with 2–4(–6) flowers), normally only 2 basal and 1 sheathing, cauline leaf, and somewhat larger flowers, with tepals 15–21 mm long versus 12–16(–18) mm in subspecies *baurii*, from the higher parts of the KwaZulu-Natal Drakensberg and adjacent Lesotho, remains somewhat puzzling. It is usually easy to distinguish this subspecies from more typical *H. baurii*, but plants from slightly lower altitudes appear to be intermediate between the two taxa. I have not seen enough plants in the field to make any change to Hilliard and Burtt's taxonomy. Their record of the co-occurrence at Sani Pass of subspecies *formosa* in fruit when subspecies *baurii* was in flower suggests that this plant deserves at least subspecies rank (or should even be recognized as a separate species). In the key to the genus (p. 402), I have included both subspecies, but care should be taken in identifying intermediate plants, which may not be accommodated in the key.

A collection from damp sites in the Ngeli Forest (*Balkwill & Cadman 2886*, NU), flowering in late January, must be mentioned here. Plants bear 4 leaves, the lower 3 basal and the uppermost inserted in the middle part of the stem. All the leaves have long blades, reaching almost to the base of the spike and 1 mm wide or less, narrower than any recorded in *Hesperantha baurii*. Despite the narrow blade, the midrib appears in the dry state to be strongly thickened and perhaps winged, with the wings reaching over the blade surface. The slender stem bears only 4 flowers, themselves relatively small: the tube 5–6 mm long, the tepals 9–10 × ca. 3 mm, and the anthers ca. 4 mm long. These dimensions are all smaller than any encountered in plants that can be confidently placed in *H. baurii*. From the scanty material available it is impossible to say if this plant represents a new species or a depauperate form of *H. baurii* growing in shady conditions.

36. Hesperantha petitiana (A. Rich.) Baker, J. Linn. Soc. 16: 96. 1877. *Ixia petitiana* A. Rich., Tent. Fl. Abyssinia 2: 309. 1850. TYPE: Ethiopia. Tigre, near Mai Gouagoua, *L. R. Quartin-Dillon & A. Petit s.n.* (lectotype, designated by Goldblatt (1986: 138), P!).

Last revisionary account: Goldblatt, Ann. Missouri Bot. Gard. 73: 138. 1986.

Unspecialized in general aspect, pale pink- or white-flowered *Hesperantha petitiana* seems hardly to differ from the common southern African *H. bau-*

rii (Goldblatt, 1986). Although Hilliard and Burtt (1986) suggested that *H. petitiana* could readily be distinguished from *H. baurii* by the smaller anthers, 4–4.8 mm long versus 5–9 mm in *H. baurii,* material I have examined of *H. petitiana* has anthers 3–5 mm long. This tropical African species may also be distinguished in fruit from similar, short-tubed eastern southern African species by the larger capsules, (7–)10–15 mm long and often slightly exceeding the bracts. In *H. baurii* the capsules are mostly 6–9 mm long, thus shorter than the bracts that subtend them (Goldblatt, 1993). The two species also appear to have different seeds, those of *H. petitiana* often being angular and slightly larger, 1.0–1.2 mm diam., compared with those of *H. baurii* and its immediate allies, which typically have more or less uniformly rounded and small seeds, 0.8–1.0 mm in diameter. Spikes of *H. petitiana* often bear only 2 to 4 flowers on nearly straight spikes, but sometimes up to 10 flowers, whereas flexuose spikes of 8 to 12 flowers or more are more common in *H. baurii.*

37. Hesperantha glareosa Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 424. 1986. TYPE: South Africa. KwaZulu-Natal: Underberg, headwaters of Mlahlangubo River, 23 Jan. 1982, *O. M. Hilliard & B. L. Burtt 15367* (holotype, NU!; isotype, E not seen).

Last revisionary account: Hilliard & Burtt, Notes. Roy. Bot. Gard. Edinburgh 43: 424. 1986.

Although *Hesperantha glareosa* is largely a species of the Drakensberg Mountains of KwaZulu-Natal, specimens cited by Hilliard and Burtt (1986) from Mpumalanga (then the Transvaal) are similar to some depauperate specimens of *H. glareosa* and may be this species. It is impossible to say if these slender, one- or two-flowered plants (e.g., *Galpin 14329,* BOL, PRE; *Jacobsen 4780,* PRE) are depauperate, four-leaved *H. schlechteri,* or truly *H. glareosa* as Hilliard and Burtt (1986) believed. The flowers are moderate in size, the tepals 10–14.5 mm long, but the perianth tube length given by Hilliard and Burtt for the species, (3–)5–15 mm, must be a typographic error, for all plants I have seen, including most of those examined by Hilliard and Burtt, have a perianth tube 5–7 mm long. Their key is correct in placing *H. glareosa* under those species with anthers 3–5.5 mm long, but specimens I have examined have anthers mostly 4.5–5.5 mm long. Depauperate and/or poorly pressed, and apparently small-flowered plants from Lesotho cited under *H. glareosa* by Hilliard and Burtt are probably *H. exiliflora* of which they had no adequate material in 1986. *Dieterlen 1095* (PRE, SAM) and *Werger 1662* (PRE), which they cited, are probably that species. Differences between *H. glareosa* and *H. exiliflora* are discussed under *H. exiliflora,* species number 40 below.

38. Hesperantha schlechteri (Baker) R. C. Foster, Contr. Gray Herb. 114: 64. 1936. *Geissorhiza schlechteri* Baker, Bull. Herb. Boissier, ser. 2, 1: 863. 1901. TYPE: South Africa. Limpopo Province: Woodbush, 27 Mar. 1894, *R. Schlechter 4701* (syntypes, BOL!, G!, K!, P!).

Hesperantha similis N. E. Br. ex R. C. Foster, Contr. Gray Herb. 166: 24. 1948. Syn. nov. TYPE: South Africa. Mpumalanga: Sabie District, Devil's Knuckles, Apr. 1887, *F. Wilms 1446* (holotype, K!; isotypes, B!, Z!).

Because of the confusion over the identity of *Hesperantha schlechteri* and *H. similis,* both based only on their respective types (Foster, 1941), I include an extended description of the species as circumscribed here. Neither species was treated in the revision of the genus for part of eastern southern Africa (Hilliard & Burtt, 1986), and thus no modern account of the species exists. Likewise, I cite all specimens that I have seen in support of my circumscription of *H. schlechteri.*

Plants 18–30 cm high, stem usually unbranched, flexuose and often looped above the sheaths of the upper leaves. *Corm* ovoid, 8–12 mm diam., tunics woody, concentric. *Leaves* mostly 5, occasionally 4, usually the lower 4 (or 3) basal or subbasal and largest, the uppermost one or two inserted in the middle of the stem and sometimes entirely sheathing or with short free unifacial tip, linear, 2–4 mm wide, the margins and midrib not, or barely thickened when alive. *Spike* mostly 4- to 8-flowered, flexuose; *bracts* mostly 9–12 mm long, green, the inner about two thirds as long as the outer. *Flowers* pale to deep pink, the outer tepals with a coppery brown flush; *perianth tube* slender below, widening near the top, 5–7(–10) mm long; *tepals* subequal, lanceolate-ovate, 13–16 × 5–6.5 mm, spreading ± at right angles to the tube when fully open in the morning. *Filaments* 2–3 mm long; *anthers* 4–4.5 (–6) mm long. *Ovary* ovoid, ca. 2.5 mm long; *style* branches 10–12 mm long, laxly spreading, exceeding the anthers by ca. 2 mm in the closed flower. *Capsules* oblong-obovoid, 7–9 × ca. 3 mm; *seeds* subglobose or the sides flattened by pressure, ca. 0.6 mm long.

Flowering. January to mid March.

Distribution. South Africa, Limpopo Province and Mpumalanga, along the Drakensberg escarp-

ment from Woodbush in the north to Long Tom Pass in the south, on rocks and thin soil on sandstone pavement.

Although first collected in 1887 near Lydenburg in Mpumalanga Province, South Africa, by the German apothecary Friedrich Wilms, *Hesperantha schlechteri* was described in 1901 by J. G. Baker from a later gathering made by Rudolf Schlechter in 1894 in what is now Limpopo Province of South Africa. Baker referred the species to the related genus, *Geissorhiza,* and it was only in 1936 that *G. schlechteri* was transferred to *Hesperantha* by the American botanist R. C. Foster. The Wilms collection formed the basis for a second species, *H. similis,* described by Foster in 1948. Then known from relatively few collections, the two species remained poorly understood, and some specimens from Mpumalanga that closely match the type of *H. similis* fairly closely were referred to "*H. sp.* (= *Codd 9481,* PRE)" by Hilliard and Burtt (1986: 429), who also identified a few specimens in herbaria as *H. glareosa,* a species otherwise largely restricted to Lesotho and the KwaZulu-Natal Drakensberg. I here include *H. similis* in *H. schlechteri,* which is easily distinguished from all the similar short-tubed, pink-flowered species of *Hesperantha* in eastern southern Africa, including *H. glareosa,* by normally having 5 narrow leaves with blades 2–4 mm wide and a flexuose stem, often with a pronounced loop above the sheaths of the uppermost leaves. The pink flowers have a relatively short perianth tube, 5–7(–10) mm long, and anthers are mostly 4–4.5 mm long. *Hesperantha glareosa* has flowers with a perianth tube of similar length, anthers 4.5–5.5 mm long, and consistently only 4 leaves, the blades mostly 1–2 mm wide.

Hesperantha schlechteri appears to have a fairly narrow distribution, occurring in the Woodbush and Wolkberg of Limpopo Province and the higher parts of the Mpumalanga Escarpment, which extends a short distance to the north and south of Long Tom Pass. Plants cited below from Mariepskop have four or five leaves, the blades only about 1 mm wide, and may not be correctly placed in *H. schlechteri.*

The collection *Codd 9481* (PRE), mentioned above, from near MacMac Falls, is puzzling, for the plants have five leaves, the blades of the lower ones 4–6 mm wide, unusually broad for any species of *Hesperantha* in Mpumalanga. The flowers are quite small, with tepals ca. 7 mm long and a tube ca. 5 mm long, and the anthers 4 mm long. It may be an unusual form of *H. schlechteri* or an undescribed species. I have visited the MacMac Falls area in Mpumalanga several times and failed to locate any *Hesperantha* there. A few more collections, including *Goldblatt & Manning 9814* (MO, NBG) from Dullstroom, also represent this form.

Additional specimens. SOUTH AFRICA. **Limpopo:** 23.30 (Tzaneen) Wolkberg, rocky grassland on approach to Serala Peak (CC), 23 Feb. 2002, *Goldblatt & Porter 11954* (MO, NBG). **Mpumalanga:** 24.30 (Pilgrims Rest) summit of Black Hill, Pilgrims Rest (DC), 1 Mar. 1937, *Galpin 14329* (BOL, K); Mariepskop (DB), 10 Apr. 1958, *van der Schijff 4382* (K, PRE). 25.30 (Lydenburg) Dullstroom, farm Verlorenvalei (AC), 27 Mar. 1985, *Krynauw 265* (LYD, PRE); Mauchsberg (BA), 22 Dec. 1932, *Smuts & Gillett 2286* (PRE); summit of Mt. Anderson, Mar. 1933, *Galpin 22486* (BOL); summit plateau, Mt. Anderson, Mar. 1933, *Galpin 21485* (BOL), *Galpin 13779* (PRE); top of Long Tom Pass, Feb. 1972, *Goldblatt 611* (BOL), 6 Feb. 1994 (fr), *Goldblatt & Manning 9835* (MO, NBG), 6 Feb. 1994, *Goldblatt & Manning 9836* (MO, NBG), 12 Mar. 1996, *Goldblatt & Manning 10480* (MO, NBG); Long Tom Pass, Whisky Spruit, 11 Feb. 1986, *Krynauw 1032* (LYD); Mokobu Nature Reserve, 20 Jan. 1953, *Marais 43* (PRE).

39. Hesperantha leucantha Baker, Handbk. Irideae 150. 1892. TYPE: South Africa. KwaZulu-Natal, Oliviershoek Pass, 14 Jan. 1886, *J. M. Wood 3437* (holotype, K!).

Geissorhiza macra Baker, Bull. Herb. Boissier ser. 2, 4, 1005. 1904. TYPE: Lesotho. Mt. Machache, without date, *H. Jacottet 1937* (holotype, G!).

As outlined above under *Hesperantha longituba,* I regard *H. leucantha* as the correct name for the species called *H. candida* by Hilliard and Burtt (1986). The type of *H. candida,* described by J. G. Baker in 1892, is the spring-flowering species that Hilliard and Burtt called *H. vernalis. Hesperantha leucantha* can be recognized by the fairly straight stem, few-flowered spike, and pale pink to pale lilac flowers with a relatively long perianth tube compared to the narrow tepals. In the plants I have seen from the Witzieshoek area of Free State, not far from the type locality of *H. leucantha,* the anthers and pollen are always white and the horizontally spreading style branches are unusually long in relation to the tepals, ca. 15 mm long. Although Hilliard and Burtt described the flowers as white or pale pink to lilac-mauve, white-flowered plants are unusual, and probably not part of the normal pattern of variation. Among the ample material at K, MO, NBG, and PRE there are no white-flowered plants that appear to match the distinctive appearance of *H. leucantha.* The specific epithet *leucantha* (white flower) is therefore misleading, but I suspect that Baker assumed that the flowers were white. The species is distinctive in having very pale pink flowers, white anthers and pollen, and particularly long, spreading style branches, which in the closed flower usually exceed the anthers by 3–4

mm. The weak, often inclined to drooping stem, and drooping leaves are also a notable feature of *H. leucantha.*

Hesperantha leucantha is sometimes confused with *H. glareosa,* a species with deep pink flowers with a much shorter perianth tube, mostly 4–6 mm long, while the tepals are 10–14.5 mm long. *Hesperantha glareosa* also has four leaves, the lower three basal and with firm, narrow blades, mostly 1–2 mm wide. In *H. leucantha* the perianth tube is usually 12–15 mm long, and exserted from the bracts unless these are unusually long, and the tepals are 9–12(–15) mm long across its main range in interior Lesotho, eastern Free State, and northern KwaZulu-Natal. The erect stem and flexuose spike of *H. glareosa* also help prevent confusion between these two species, for *H. leucantha* typically has a more or less inclined to drooping stem and straight spike, and fairly soft-textured leaves, weakly trailing over rocks.

Plants from north of the Vaal River, in Gauteng and Northwest Province, included (as *Hesperantha candida*) in *H. leucantha* by Hilliard and Burtt, are somewhat atypical in their greater height and slender habit, but for the present it seems best to include them here. Sheets at K and PRE of a collection from Milner Park, Johannesburg (*Moss 18285*) are annotated *H. mossii* by N. E. Brown. The specimens referred to *H. leucantha* from Mt. Anderson (*Galpin 13781,* BOL, PRE), in what is now Mpumalanga, are here assigned to the new species *H. saxicola,* as they have relatively large white flowers, exceptional for *H. leucantha* in both size (tepals 15 × 7 mm and small anthers only ca. 4 mm long) and the white perianth, and they occur in what would otherwise be outside its recorded range.

Geissorhiza macra from Mt. Machache, and thought to come from the Transvaal by J. G. Baker, who described the species in 1904, matches closely collections of *Hesperantha leucantha* from northern Lesotho and southern Free State. The two plants of its type collection have spikes of one or two pink flowers, soft-textured leaves about 2 mm wide, and the perianth tube ca. 13 mm long. Until now the type has not been matched with any *Hesperantha* species, although it was known to belong to the genus by Foster (1948). Mt. Machache is actually in eastern Lesotho some 32 km from Maseru where Jacottet collected (Gunn & Codd, 1981), thus well within the expected range of *H. leucantha.*

40. Hesperantha exiliflora Goldblatt, sp. nov. TYPE: Lesotho. 3 km from New Oxbow Inn on road to Moteng Pass, subalpine grassland, 2550 m, 3 Feb. 1987, *D. J. B. Killick 4477* (holotype, PRE!; isotype, MO!).

Plantae 12–25(–30) cm altae eramosae, cormo conico prope basem ca. 8 mm diam., tunicis lignosis, foliis usitate 4, 3 inferioribus falcatis summo pro maxima parte vaginante, laminis inferioribus 1.2–2.3 mm latis marginibus costaque leviter incrassatis, spica plerumque 1- ad 3-flora, floribus roseis in ore tubi flavis, tubo perianthii 3.5–5.0 mm longo, tepalis 6–8 × ca. 2.5 mm, filamentis ca. 2.5 mm longis, antheris 2.5–3.3 mm longis, styli ramis 3.0–3.5 mm longis.

Plants mainly 12–25(–30) cm high. *Corm* conic, ca. 8 mm diam. near the base, with woody tunics soon breaking into elliptic segments tapering above into short points. *Leaves* normally 4, the lower 2 basal and longest, reaching to between the upper third of the stem and the top of the spike, the third leaf inserted shortly above the ground and largely sheathing, the uppermost leaf entirely sheathing and bract-like, 12–32 mm long, inserted in the middle to upper third of the stem, the blades of the lower leaves ± linear, 1.2–2.3 mm wide, firm and erect, the midrib and margins slightly raised, hyaline at least when dry. *Stem* erect, unbranched. *Spike* mostly 1- to 3-flowered, lax and ± straight; *bracts* 6–8(–9.5) mm long, green, the upper margin transparent, the inner bract slightly shorter than the outer, ± membranous with 2 green keels, 2-lobed at the tip. *Flowers* pink, pale yellow in the mouth of the tube; *perianth tube* funnel-shaped, 3.5–5 mm long; *tepals* spreading, elliptic, 6–8 × ca. 2.5 mm, acute. *Filaments* ascending, ca. 2.5 mm long; *anthers* ascending, 2.5–3.3 mm long, shortly tailed, yellow, pollen yellow. *Ovary* oblong, 3–4 mm long; *style* dividing below the mouth of the tube, the branches 3–3.5 mm long, diverging above, reaching to between the middle of the anthers to just beyond the apices in the closed flower. *Capsules* and *seeds* unknown.

Flowering. January and February.

Distribution. Lesotho, Drakensberg plateau in subalpine grassland, often in damp sites.

Although collections of *Hesperantha exiliflora* were at first associated with the Drakensberg Mountain species *H. glareosa* in both herbaria and the literature, I can see no particular reason to consider them closely related, beyond their common occurrence. Plants of the few known populations of *H. exiliflora* have remarkably small flowers, the perianth tube 3.5–5 mm long and the tepals 6–8 mm long. The only other species of pink-flowered *Hesperantha* from eastern southern Africa with comparably small flowers, *H. ingeliensis* is rather different for it has tepals 10–12 mm long and broader, falcate leaves, 5.5–7 mm wide. This is quite unlike the straight, slender leaves of *H. exiliflora,* which are only up to 2.3 mm wide and appear to have a

fairly soft texture. The straight stem and seemingly consistently few-flowered spikes of *H. exiliflora* are unlike the rather wiry, flexuose spikes of *H. glareosa,* which has larger flowers with a tube 5–6 mm long and tepals 10–12 mm long.

Hesperantha exiliflora seems most closely allied to a second new species, *H. brevistyla,* of the northern high Drakensberg, which has pale pink flowers with a tube 7–9 mm long, tepals ca. 7 × 3.5 mm, short white anthers 2.5–3.5 mm long, and short style branches, ca. 6 mm long, that reach to about the lower third of the anthers at most. The flowers of *H. exiliflora* dry a dark purple color, while those of *H. brevistyla* dry pale pink. In contrast, the anthers of *H. exiliflora* are yellow and the style branches are 3–3.5 mm long, reaching to between the middle of the anthers to just beyond their tips in the closed flower.

Paratypes. LESOTHO. 29.28 (Marakabei) 1 km E of Tiping village, above the dip tank, ca. 5 km E of Ha Lejone (AA/AB), 3 Feb. 2000, *Trinder-Smith 195* (BOL); Mountain Road, 32.5 km E of Thaba Putsoa, 1500 m (AC), 20 Mar. 1983, *Halliwell 5060* (PRE). 29.29 (Underberg) top of Sani Pass, marshy turf (BA), 20 Feb. 1985, *Manning 550* (NU).

41. Hesperantha alborosea Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 421. 1986. TYPE: South Africa. KwaZulu-Natal: Underberg, Cobham, Upper Polela Cave area, 13 Feb. 1979, *O. M. Hilliard & B. L. Burtt 15367* (holotype, E not seen; isotype, NU!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 421. 1986.

42. Hesperantha brevistyla Goldblatt, sp. nov. TYPE: South Africa: Free State, Sentinel trail, rocky pavement below sheer basalt cliffs on trail to the chain ladders, 5 Mar. 2002, *P. Goldblatt & L. J. Porter 11989* (holotype, NBG!; isotypes, MO!, PRE!). Figure 4.

Plantae 4–10(–16) cm altae eramosae, cormo conico prope basem ca. 3 mm diam., tunicis lignosis, foliis 4 vel 5, 3 vel 4 inferioribus falcatis summo pro maxima parte vaginante, laminis inferioribus 2–4(–5) mm latis marginibus costaque leviter incrassatis, spica 1–4(–5)-flora, floribus pallide roseis in ore tubi cremeis, tubo perianthii 7–9 mm longo, tepalis 7–8 × ca. 3.5 mm, filamentis 1.8–2 mm longis, antheris 2.5–4 mm longis, styli ramis ca. 6 mm longis.

Plants 4–10(–16) cm high. *Corm* conic, ca. 3 mm diam. near the base, with woody tunics soon breaking into elliptic segments tapering above into short points. *Leaves* 4 or 5, the lower 3 or 4 basal and longest, about as long as the spike, uppermost leaf inserted between ground level and the middle of the stem, and partly or rarely entirely sheathing, the blades of the basal leaves falcate to suberect, firm textured, 2–4(–5) mm wide, the midrib and margins slightly raised, hyaline when dry. *Stem* erect, unbranched. *Spike* 1–4(–5)-flowered, ± straight; *bracts* 9–13 mm long, green, the inner bract slightly shorter than the outer, 2-lobed at the tip. *Flowers* pale pink, cream in the mouth of the tube, outer tepals pale greenish with darker green veins; *perianth tube* funnel-shaped, 7–9 mm long, expanded in the upper 2 mm; *tepals* spreading horizontally, elliptic, 7–8 × ca. 3.5 mm, acute. *Filaments* ascending, 1.8–2 mm long; *anthers* ascending, 2.5–4 mm long, white, pollen white. *Ovary* oblong, ca. 3 mm long, enlarging rapidly after pollination; *style* dividing at the base of the upper part of the tube, the branches suberect, reaching to between the base and middle of the anthers, ca. 6 mm long. *Capsules* oblong, 8–12 mm long; *seed*s angular, ± prismatic, reddish brown, ca. 1.3 × 1 mm, the edges forming membranous ridges.

Flowering. February to mid March.

Distribution. South Africa, in the northern Drakensberg of Free State and KwaZulu-Natal, and probably also in Lesotho, on basalt slopes and rocky pavement in shallow damp soil.

The earliest collection of *Hesperantha brevistyla* appears to have been made by Hilliard and Burtt in 1984 on the trail from Royal Natal National Park to The Sentinel at Basuto Gate. The collection was referred by them to *H. leucantha* (as *H. candida*) without comment (Hilliard & Burtt, 1986). Plants collected nearby on the trail to The Sentinel in 1999 (*Goldblatt & Manning 11053,* MO, NBG) represent the same species, which I reluctantly identified as *H. leucantha* following Hilliard and Burtt. The following year, 2000, I found growing nearby, however, but at lower elevation on Cave Sandstone slopes, quite typical *H. leucantha* (e.g., *Goldblatt & Nänni 11232,* MO, NBG; *Goldblatt & Porter 11991,* MO, NBG), which has larger flowers with longer anthers and particularly long, spreading style branches. This population made it clear that the smaller plants growing on basalt are not this species, but represent a separate taxon that is readily characterized by small, pale pink flowers with the outer tepals pale greenish pink on the outside and veined dark green, and unusually small white anthers, 2.2–4 mm long. Perhaps the most distinctive feature of the species, which I am calling *H. brevistyla,* are the remarkably short, suberect style branches that reach to the base or lower third of the anthers. In most other species of the genus, the

Figure 4. Morphology and floral details of *Hesperantha brevistyla*. Scale bar 1 cm; single flower and seed much enlarged. Drawn by John Manning from photographs and pressed plants (*Goldblatt & Porter 11989*, MO, NBG, PRE).

laxly spreading style branches reach at least to the anther apices in the closed flower and in *H. leucantha* usually exceed the anthers by 3–4 mm.

Comparison of *Hesperantha brevistyla* with *H. leucantha* now seems inappropriate for there is no reason to regard the two species as particularly closely allied, despite the shared pale pink color of the flowers and the whitish anthers. *Hesperantha brevistyla* may, instead, be most closely allied to a second small-flowered Drakensberg species, *H. exiliflora*, which has pink flowers with a tube 3.5–5 mm long, tepals 6–8 × ca. 2.5 mm, yellow anthers 2.5–3.3 mm long, and style branches 3–3.5 mm long, reaching to between the middle of the anthers to just beyond their tips in the closed flower. This contrasts with *H. brevistyla*, which has a tube 7–9 mm long, tepals ca. 7 × 3.5 mm, white anthers 2.5–4 mm long, and style branches ca. 6 mm long, reaching to the lower third of the anthers at most.

Paratypes. SOUTH AFRICA. **Free State:** 28.28 (Bethlehem) Drakensberg Mountains, trail to The Sentinel, among rocks in wet ground (DB), 15 Feb. 1999, *Goldblatt & Manning 11053* (MO, NBG); Sentinel trail, slopes of The Pudding, in shallow wet ground, 6 Mar. 2002, *Goldblatt & Porter 11989* (MO, NBG). **KwaZulu-Natal:** 28.28 (Bethlehem) Royal Natal National Park, near Basuto Gate, ca. 7200 ft. (DB), 18 Feb. 1984, *Hilliard & Burtt 17689* (E, MO, NU); Drakensberg plateau near Mont-aux-Sources, damp flats along trail from the chain ladders to Tugela Falls, 5 Mar. 2002 (in fruit), *Goldblatt & Porter 11977* (MO, NBG, PRE).

43. Hesperantha ingeliensis Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 424. 1986. TYPE: South Africa. KwaZulu-Natal: Alfred District, Ngeli Mountain, 4 Jan. 1969, *O. M. Hilliard & B. L. Burtt 5838* (holotype, NU!; isotype, E not seen).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 421. 1986.

44. Hesperantha lactea Baker, Handbk. Irideae 151. 1892. TYPE: South Africa. KwaZulu-Natal: Verulam, Nov., *J. M. Wood 1118* (lectotype, designated by Hilliard & Burtt (1986: 431), K!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 431. 1986.

Readily identified by its creamy, sometimes palest yellow flowers with a tube 6–8.5 mm long, spreading tepals 14–20(–23) mm long, and prominent anthers up to 8 mm long, *Hesperantha lactea* is well known from coastal and near interior KwaZulu-Natal, but is actually recorded from as far south as the Transkei and from Hlobane in the Vryheid District in northern KwaZulu-Natal (Hilliard & Burtt, 1986). Like other white- or cream-flowered *Hesperantha* species of eastern southern Africa the flowers are open during the day (opening 11:45–12:30H and closing 4:40–5:15H at Inchanga, near Durban). This contrasts sharply with most white-flowered species of the genus from the southern African winter-rainfall zone, the flowers of which open in the mid to late afternoon and close long after dark, and sometimes only after midnight (Goldblatt, 1984; Goldblatt et al., in press).

45. Hesperantha inconspicua (Baker) Goldblatt, comb. nov. Basionym: *Gladiolus inconspicuus* Baker, Bull. Herb. Boissier ser. 2, 4: 1005. 1904. TYPE: South Africa, as "Transvaal, Donkerhoek, 4 Jan. 1894," but both locality and collection number, and perhaps date, are incorrect, *R. Schlechter 4188* (holotype, G!).

Plants 25–45 cm high. *Leaves* mostly 4, the lower 3 basal or subbasal, the uppermost inserted in the middle of the stem, partly to entirely sheathing, blade reaching to about the base of the spike, leathery, narrowly sword-shaped-linear, mostly 3–4.5 mm wide, the midrib and margins slightly thickened, the midrib rounded. *Stem* ± erect, often branched from the axil of the third leaf. *Spike* mostly 6–12-flowered; *bracts* green or purplish at the tips, 10–15 mm long, the inner slightly smaller than the outer. *Flowers* white, sometimes faintly flushed pink on the reverse of the outer tepals, often only on fading, unscented; *perianth tube* slender, expanded near the tip, 7–8.5 mm long; *tepals* subequal, spreading at right angles to the tube, 12–16(–18) × 6–8 mm. *Filaments* 2.5–3 mm long; *anthers* 6.5–8 mm long, cream, pollen yellow. Ovary ovoid, 2–3 mm long, style branches reaching to apex of the anthers in the closed flower. *Capsules* subglobose, 4–7 mm long; *seeds* angular-prismatic to ± ovoid, 1.5–1.8 × 1.2 mm.

Flowering. December to mid March.

Distribution. South Africa, from the Blyde River hills and Lydenburg in Mpumalanga to the Umtamvuna Gorge in southern KwaZulu-Natal.

Although known since the 1890s when it was first collected in the Transvaal by Rudolf Schlechter, *Hesperantha inconspicua* has largely been overlooked. The species was described by J. G. Baker in 1904 who referred it to *Gladiolus*. The locality and collector's number on the type are confusing, for Schlechter was not at the purported type locality, Donkerhoek, east of Pretoria, at that date but

at Hammanskraal to the north. A collection bearing the same number as the type of *Gladiolus inconspicuus* is *Dicoma gerrardii* Harv. ex F. C. Wilson. Since *H. inconspicua* is not known from the vicinity of Donkerhoek or Hammanskraal and the collection number is evidently incorrect, Schlechter may be assumed to have collected the type in December 1893, when he was in the Dullstroom–Lydenburg area of Mpumalanga Province, or less likely in March 1894, when he traveled in the mountains of Limpopo Province (where the species has not been recorded). Subsequently the collection must have been mislabeled.

A later collection made by Ernest Galpin in the 1930s in the Little Berg in KwaZulu-Natal was immediately recognized as being a species of *Hesperantha* but it was not associated with Schlechter's plants. The Galpin collection from the Little Berg and a few more specimens of the species were included in *H. hygrophila* by Hilliard and Burtt (1986). *Hesperantha hygrophila* is largely a species of the KwaZulu-Natal Drakensberg, where plants grow on wet rocks or in marshes. Its leaves are distinctive among the eastern southern African species, being pale green, without the common gray bloom of most *Hesperantha* species, and the blades have thickened margins, prominent secondary veins and a raised midrib, which is flattened rather than rounded in outline and the edges of the thickened part form wings that extend outward over the laminar surface.

The vegetative aspect and flowers of *Hesperantha inconspicua* are unexceptional among the eastern southern African species of the genus except that the perianth is white, sometimes faintly flushed pink on the reverse of the outer tepals, especially on fading. That the type has not until now been associated with any species of *Hesperantha* is not surprising. Only the holotype is known, at the Geneva Herbarium, and consists of a plant mostly in bud. The single mature flower was boiled up by G. J. Lewis who at once realized it belonged in *Hesperantha.* She annotated the sheet as *H. baurii* but did not publish her conclusion. Hilliard and Burtt thought the plant might be *H. rupestris,* which has somewhat smaller white flowers, with the outer tepals usually red on the outside. Among the few other white or cream-flowered species of eastern southern Africa, *H. inconspicua* may also be confused with the coastal KwaZulu-Natal species, *H. lactea,* which has creamy-yellow flowers and dull yellow to brownish anthers and pollen. The leaves of the two species are virtually identical, both having thickened margins, a slightly raised, rounded midrib, and the other veins obscure and not visible when alive. Plants are typically fairly tall, mostly 40–60 cm high, but collections from southern KwaZulu-Natal are often smaller, sometimes no more than 15 cm high. They may be a separate taxon. One collection from Icwaka River Gorge near Port Shepstone (*van Wyk 7197,* PRU) has particularly small flowers and soft-textured leaves, and these plants are reminiscent of the Swaziland endemic *H. umbricola,* which has the tepals ca. 5 mm long, a perianth tube ca. 4 mm long, and anthers ca. 2 mm. The resemblance is probably due to convergence.

The related *Hesperantha saxicola,* which also has white flowers, often fading pink, stands out both in its shorter stature and unusual habitat, rocky outcrops and cliffs. These plants have drooping leaves and stems that are 10–18 cm long and have flexuose spikes of up to five large flowers with tepals mostly 15–16 × 7 mm and anthers ca. 4 mm long. *Hesperantha inconspicua* often has smaller flowers with tepals 12–15 mm long, but longer anthers, 6.5–8 mm long, and more flowers per spike.

Additional specimens. SOUTH AFRICA. **Mpumalanga:** 24.30 (Pilgrims Rest) 2 km from Graskop on road to Blyde River Canyon (DD), 14 Mar. 1981, *Hilliard & Burtt 14334* (NU). 25.30 (Lydenburg) marshy grassland S of Dullstroom (AC), 8 Feb. 1997, *Goldblatt 10867* (MO, NGB, PRE); vlei on farm Wanhoop, 20 Feb. 1985, *Carser s.n.* (LYD). 26.30 (Carolina) Ermelo, ½ mi. W of Vossman's Beacon (BA), 20 Feb. 1951, *Codd 6384* (PRE). **KwaZulu-Natal:** 27.30 (Vryheid) near Vryheid (DD), Jan. 1936, *Pole-Evans 3897* (PRE). 29.29 (Underberg) Cathkin Park, top of the Little Berg, under rocks (AB), 7 Mar. 1932, *Galpin 11884* (PRE); Highmoor Forest Station, in vlei (BB), *Killick & Vahrmeijer 3582* (PRE); Coleford, S of Nature reserve above Endewana River, 25 12 1976, *Hilliard & Burtt 9565* (NU). 29.30 (Pietermaritzburg) Karkloof, Mbona mountain, rocky seep (AC), Feb. 2000, *Goldblatt & Nänni 11245* (MO, NBG), 30 Dec. 2000, *Nänni 153* (NBG); 8 mi. N of Pietermaritzburg, marshy ground (CB), Nov. 1939, *Thomas 9* (NBG). 30.30 (Port Shepstone) Umtamvuna Nature Reserve, NE face of Iron Crown, damp rocks (CC), 23 Dec. 1983, *Abbott 1583* (PRU); Icwaka River Gorge, seep in shallow soil, 24 Jan. 1986, *van Wyk 7179* (PRU). 31.30 (Port Edward) Umtamvuna Waterfall (AA), 25 Oct. 1962, *Strey 4468* (PRE).

46. Hesperantha saxicola Goldblatt, sp. nov. TYPE: South Africa. Mpumalanga: rocks at the top of Mt. Anderson, Mar. 1933, *E. E. Galpin 13781* (holotype, PRE!; isotypes, BOL!, K!).

Plantae 10–25 cm altae ex scopulis trahentes, foliis usitate 4 plus minusve linearibus 1.5–2.2 mm latis, caule eramoso, spica 2- ad 4-flora, bracteis 10–15 mm longis, floribus albis, tubo perianthii (7–)11 mm longis, tepalis subaequalibus patentibus (11–)15–16 × 5.5–7.0 mm, filamentis 2.5–3.0 mm longis, antheris ca. 4 mm longis, ramis styli antheras excedentibus.

Plants 10–25 cm high, trailing from cliffs, simple

or branched, corm with the tunics extended above as a neck of fibers. *Leaves* mostly 4, the lower 3 basal or subbasal, the uppermost inserted in the middle of the stem and partly to entirely sheathing, shorter than the basal, blades of the basal leaves reaching to about the base of the spike, soft-textured, ± linear, mostly 1.5–2.2 mm wide, the midrib and margins hardly thickened. *Stem* weak and arching toward the ground, unbranched. *Spike* 2- to 4-flowered; *bracts* green, often drying at the tips, 10–15 mm long, the inner two-thirds as long to about as long as the outer. *Flowers* white, probably unscented; *perianth tube* funnel-shaped, expanded in the upper half, (7–)11 mm long; *tepals* subequal, spreading at right angles to the tube, (11–)15–16 × 5.5–7 mm. *Filaments* 2.5–3 mm long; *anthers* ca. 4 mm long, cream, pollen yellow. Ovary ovoid, 1.5–2 mm long, *style branches* exceeding the anthers by ca. 1.8 mm in the closed flower. *Capsules* and *seeds* unknown.

Flowering. March–April.

Distribution. South Africa, in Mpumalanga, and possibly Limpopo Provinces, on wet cliffs and rock seeps.

Known to Hilliard and Burtt (1986) from a single collection (*Galpin 13781*) made in 1933, on Mt. Anderson in Mpumalanga, the species was referred by them to *Hesperantha leucantha* (which they called *H. candida*) in their study of the genus in KwaZulu-Natal and surrounding areas. That species, centered in the KwaZulu-Natal and Lesotho highlands, is generally less robust and has smaller, pale pink flowers, and except for the Mpumalanga collection they cited, does not occur along the Mpumalanga escarpment. *Hesperantha saxicola* is confined to cliffs and damp rocks and grows in rock crevices, often associated with moss. Plants have trailing stems 10–25 cm long, long linear leaves up to 2.2 mm wide, and spikes of 2 to 5 fairly large flowers. The tepals are 11–16 mm long and either uniformly white or faintly flushed with pink or mauve on the outside, while the anthers stand out in their relatively small size, ca. 4 mm long. Two more recent collections from nearby, close to the top of Long Tom Pass, *Krynauw 335* (LYD) and *Linder 3203* (PRE), closely match the Galpin plants. A collection from Mt. Sheba, a short distance to the north of Long Tom Pass, appears to belong here, but the flowers have tepals slightly flushed with purple on the outside, leaves less than 1 mm wide, and flowers with a perianth tube ca. 7 mm long and tepals ca. 11 mm long, somewhat smaller than in the populations to the south. Similar small-flowered plants with a white perianth from God's Window (*Lötter 324,* NBG) may also be this species.

A recent collection made in mid February on Formosa Mt. east of Lydenburg (*Burrows 7296*) is included here with reservation. The plants appear to have white flowers (possibly fading pale mauve) but the collection notes describe the flowers as pink-mauve. Two of the three plants of the collection have branched stems and the spikes have up to five flowers, whereas other specimens of *Hesperantha saxicola* that I have seen have unbranched stems and spikes with at most four flowers. The flowers do, however, have the distinctive short stamens with anthers only about 4 mm long. A feature not noted in other collections of *H. saxicola* is the corm, which has the tunics extended upward as a neck of fibers.

Specimens examined. SOUTH AFRICA. **Mpumalanga:** 24.30 (Pilgrims Rest) Mt. Sheba Nature Reserve (DC), Apr. 1972, *Goodman s.n.* (J). 25.30 (Lydenburg) rocks at the top of Mt. Anderson (BA), Mar. 1933, *Galpin 13781* (BOL, K, PRE); Long Tom Pass, farm De Kuilen, on low cliffs, 13 Mar. 1985, *Krynauw 335* (LYD); between the summit of Long Tom Pass and Mt. Anderson, shady cliffs, 20 Mar. 1982, *Linder 3203* (PRE); Formosa Mt., SE of look-out tower, cool SE-facing slopes in rock cracks at 2100 m, 18 Feb. 2001, *Burrows 7296* (BKH, NBG).

47. Hesperantha hygrophila Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 40: 278. 1982; 43: 433. 1986. TYPE: South Africa. KwaZulu-Natal: Alfred District, Ngeli Mountain, 2 Jan. 1969, *O. M. Hilliard & B. L. Burtt 5762* (holotype, E not seen; isotypes, NH!, NU!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 433. 1986.

As described by Hilliard and Burtt (1986), *Hesperantha hygrophila* has unremarkable white flowers fading pink with age and distinctive leaves, pale green in color, with the midrib, margins, and a secondary pair of veins quite clearly thickened. The midrib is flattened and the edges of the flattened ridge arch slightly over the laminar surface. Plants with this leaf type are restricted to the KwaZulu-Natal–Lesotho Drakensberg and the Ngeli range to the south. White-flowered plants from the KwaZulu-Natal Midlands and Little Berg (e.g., *Galpin 11884,* PRE, referred to *H. hygrophila*) have leaves quite typical of most other eastern southern African *Hesperantha* in their slightly raised midrib, rounded in outline, and slightly thickened margins. These plants represent another species, the earliest name for which is *Gladiolus inconspicuus,* now transferred to *Hesperantha,* the identity of which has long been

uncertain. G. J. Lewis examined the type in preparation for her revision of *Gladiolus* in South Africa and referred the specimen to *H. baurii.* Apart from the leaf differences, *H. inconspicua* is generally more robust than *H. hygrophila,* has many flowers per spike (up to 16 in plants from *Goldblatt & Nänni 11245,* MO, NBG), and sometimes has the stem branched in the axil of the third leaf.

This narrower definition of *Hesperantha hygrophila* leaves the species fairly uniform as regards vegetative morphology. The flowers are usually white, but specimens collected at Highmoor (*Goldblatt & Nänni 11248*) have pale pink flowers, otherwise identical to typical *H. hygrophila* both vegetatively and florally. The flowers of this population open between 8:30 and 9:00H and close again by 12:30H.

Hesperantha hygrophila may also be confused with the cream(or pale yellow)-flowered *H. lactea,* which grows in drier, well-drained grassland at altitudes of up to 800 m, rather than on wet rocks and scree in mountains mostly above 2000 m (Hilliard & Burtt, 1986). In *H. lactea* the anthers are deep yellow to light brown and tend to dry a brownish color, a feature that conveniently separates it from *H. hygrophila* in which the pale cream anthers remain pale when dry. The differences in leaf venation also separate the two, but this feature is not always easy to see in dried specimens.

48. Hesperantha rupestris N. E. Br. ex R. C. Foster, Contr. Gray Herb. 166: 23. 1948. TYPE: South Africa. Mpumalanga: Waterval Boven, among rocks, 29 Mar. 1929, *C. E. Moss 17314* (syntypes, K!, PRE!).

A fairly robust species, plants sometimes standing 45–50 cm high, *Hesperantha rupestris* is distinguished from the closely allied *H. baurii* in having white flowers, the outer tepals flushed dark pink to red on the outside, as well as in the height of the stem. It is restricted to rocky habitats in the central Mpumalanga highlands. As in most other eastern southern African *Hesperantha* species in which the timing of flower opening is known, the flowers of *H. rupestris* are diurnal, being open in the morning, according to information on some herbarium sheets.

49. Hesperantha modesta Baker, Handbk. Irideae 150. 1892. TYPE: South Africa. KwaZulu-Natal: Umlaas Location [or Bevaan River on the type at K, evidently in error], 17 July 1885, *J. M. Wood 3201* (holotype, K!; isotype, NH not seen).

Plants mainly 15–25 cm high, erect, unbranched. *Corm* conic, 7–9 mm diam. near the base, with woody tunics soon breaking into elliptic segments tapering above into short points. *Leaves* 3, occasionally 4, the lower 2 basal and longest, reaching to about the middle of the stem, the upper one (or two) leaves smaller, 4.5–6 mm long, inserted in the lower third to middle of the stem, sheathing for most of their length, with a short free tip, the blades ± linear, 2–3 mm wide, firm and erect, the midrib and margins slightly raised. *Spike* lax, mostly 2–3-flowered; *bracts* 12–15 mm long, green, the inner bracts about two-thirds as long as the outer, translucent with 2 green keels, shortly forked at the tip. *Flowers* bright mauve-pink, pale yellow in the mouth of the tube; *perianth tube* 6–9 mm long, cylindrical, expanded near the mouth; *tepals* spreading, elliptic, 10–15 × 3.5–5 mm, acute. *Filaments* erect, ca. 3 mm, inserted on the tepals above the mouth of the tube, decurrent; *anthers* diverging, ca. 5 mm long, shortly tailed, yellow, pollen yellow. *Ovary* oblong, ca. 2.5 mm long; *style* branches reaching to the anther apices in bud, ca. 10 mm long, laxly spreading in the open flower. *Capsules* and *seeds* unknown.

Flowering. August to October.

Distribution. South Africa, KwaZulu-Natal and coastal Transkei in the sandstone belt from Durban to Port St. Johns, possibly also in Zululand near Eshowe, in marshy grassland, vlei edges, and stream banks.

A full description of *Hesperantha modesta* is presented here because it was included in *H. baurii* by Hilliard and Burtt (1986) and no complete description is available. It is difficult to assess the immediate relationships of this spring-flowering species for its unremarkable morphology suggests no particular affinity, except a general one to the *H. baurii* complex of eastern southern African grassland species. It can, however, readily be recognized by the presence of just three or sometimes four leaves, the lower two basal and with long blades, and the upper one or two inserted on the stem and short and largely sheathing. The leaf blades have a fairly soft texture and slightly thickened margins and midrib. Plants flower in late winter and spring. Other species in the *H. baurii* alliance flower in the summer and typically have four, or sometimes five leaves, usually three of them basal or subbasal. An exception, *H. baurii* subsp. *formosa,* has either three or four leaves, but this is a high Drakensberg plant that flowers in January and February and has a large, deep pink perianth. The flowers of *H. modesta* are relatively large, in the middle of the range found in *H. baurii,* but judging

from the available specimens it appears unusual in having only two to four flowers per spike. So few flowers per spike, even when associated with a relatively robust plant body, the unusual leaf number, and late winter to spring flowering make it clear that these plants should be recognized as a separate species, when the criteria for distinguishing species in *Hesperantha* are followed.

There is confusion about the type locality of *Hesperantha modesta* for the isotype at the KwaZulu-Natal Herbarium has the locality, Umlaas location, whereas the sheet at K with the same number and date is purportedly from the Bevaan river. The latter, in the interior in the Vryheid District, seems unlikely for any spring-flowering *Hesperantha* bearing foliage leaves at flowering time. The discrepancy was noted by Hilliard and Burtt, who were not able to resolve this conflict after examining Wood's collecting registers. *Hesperantha modesta* was provisionally included in *H. baurii* by Hilliard and Burtt, although they discussed it and a few collections of like plants separately.

I concur with Hilliard and Burtt's observation that *Hesperantha subexserta* (Baker, 1896), based on a Medley Wood collection from Botha's Hill in the sandstone hills between Pietermaritzburg and Durban, flowering in October, may also belong here. These plants have two basal leaves, and one or two cauline, sheathing leaves of the soft texture typical of *H. modesta,* but the spike of one of the plants of the type collection has up to eight flowers and a short lateral branch. Other specimens of *H. modesta* have two or three, or at most four flowers per spike. Plants resembling *H. subexserta* should be sought again at the type locality, no great distance from Umlaas Location where the type collection of *H. modesta* was most likely made.

A collection from Eshowe, Zululand (*Lawn 1179,* NH), well to the north of the recorded range of *Hesperantha modesta,* is provisionally included here. The rather poor condition and crowded mounting of the specimens makes them difficult to identify for certain, but the flowering time, October, and marshy habitat, suggest this species.

Additional specimens. SOUTH AFRICA. **KwaZulu-Natal:** 28.31 (Nkandhla) Reservoir Marsh, Eshowe (CD), 3 Oct. 1949, *Lawn 1179* (NH). 31.30 (Port Edward) Mtamvuna Nature Reserve, marsh at Etheldale (AA), 11 Oct. 1986, *Goldblatt 7897* (E, MO). **Eastern Cape**: 31.29 (Port St. Johns) Ntsubane Forest Station, near Fraser falls, seepage area in peaty sand (AC), 22 Aug. 1976, *Venter & Vorster 39* (K, PRE); near Magwa, junction of Magwa Falls–Mbotyi roads (BC), 23 Aug. 1984, *Balkwill, Manning & Gettliffe Norris 1914* (NU); 3 mi. inland from Port Grosvenor, in a bog (BD), 23 Aug. 1969, *Strey 8894* (PRE).

50. Hesperantha umbricola Goldblatt, S. African J. Bot. 53: 459. 1987. TYPE: Swaziland. Near Mbabane, among rocks, 21 Feb. 1982, *P. Goldblatt 6610* (holotype, MO!; isotypes, E!, K!, NBG!, NU!, PRE!, S!).

The tiny white flowers of *Hesperantha umbricola,* only ca. 11 mm long, with a perianth tube ca. 4–5 mm long, tepals 5–6 mm long, and anthers 2–3 mm long, make the species unmistakable in the genus. Like other white-flowered species of *Hesperantha* in eastern southern Africa, flowering is diurnal. There appear to be no records of the species other than the type collection. I suspect that *H. umbricola* is allied to the white-flowered *H. inconspicua,* but its much smaller flowers that do not fade pink, and narrow, soft-textured leaves seem to confirm that it is indeed a separate species.

51. Hesperantha gracilis Baker, Handbk. Irideae 149. 1892. TYPE: South Africa. KwaZulu-Natal: base of perpendicular rocks at Isangwaan, Apr., *J. M. Wood 923* (holotype, K!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 422. 1986.

52. Hesperantha pubinervia Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 419. 1986. TYPE: South Africa: KwaZulu-Natal, Royal Natal National Park, Mont-aux-Sources, Feb. 1927, *Prescott-Decie s.n.* (holotype, BOL!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 419. 1986.

Plants 12–30 cm high, erect, unbranched. *Corm* conic, 7–9 mm diam. near the base, with woody tunics soon breaking into elliptic segments tapering above into short points. *Leaves* 4, the lower 2 basal, the upper smaller and partly to entirely sheathing, the blade ± linear, 2.5–3.5 mm wide, ± erect, with scabrid hairs on the margins, midrib, and secondary veins, the midrib prominently thickened, the margins less so. *Spike* 1–3(–4)-flowered; *bracts* 20–24 mm long, green. *Flowers* dull salmon pink, pale yellow-green in the mouth of the tube edged in darker salmon; *perianth tube* 20–25 mm long, unusually slender, the hollow interior filled by the style and without nectar; *tepals* spreading at right angles to the tube, 14–18 × 3.5 mm, subacute. *Filaments* erect, ca. 5 mm long; *anthers* erect and ± contiguous, ca. 4.5 mm long, pollen yellow. *Ovary* narrowly ovoid, ca. 4 mm long; *style branches* remaining suberect in the open flower, ca. 6 mm long, reaching to about the upper third of the an-

thers and emerging between them. *Capsules* oblong, (10–)12–14 mm long; *seeds* angular-prismatic, ca. 1.2 × 1.0, the edges forming membranous ridges.

Flowering. February and March.

Distribution. South Africa and probably Lesotho, in the high northern Drakensberg on the slopes below The Sentinel and on the Mont-aux-Sources plateau, in rocky grassland.

Growing along a well-used path to The Sentinel and Mont-aux-Sources in eastern Free State and adjacent KwaZulu-Natal, *Hesperantha pubinervia* nevertheless seems to have been overlooked there, which makes it appear that this area of the Drakensberg is poorly collected. My observations in general confirm the original description made from just one gathering. However, one feature, the length of the style branches, is not consistent with the protologue, for plants on the slopes of The Sentinel have ascending style branches shorter than the stamens and about 6 mm long, less than the 11 mm length recorded by Hilliard and Burtt. The style branches reach to the upper third of the anthers and in one flower, perhaps not fully developed, only to the anther bases. The tepals are an unusual salmon pink, unique in the genus. The color contrasts markedly with the deep pink to magenta flowers of sympatric and co-blooming *H. baurii* and *H. scopulosa*, and with the pale pink flowers of *H. brevistyla*.

The capsules, not previously described, are oblong and about as long as the bracts, mostly 12–14 mm long. The numerous seeds are angular (prismatic) and about 1 mm long. The specimens on which the amplified description are based are cited below.

Additional specimens. SOUTH AFRICA. **Free State:** 28.28 (Bethlehem) Drakensberg, slopes of The Sentinel (DB), 15 Feb. 1999, *Goldblatt & Manning 11052* (MO, NBG, PRE), 29 Jan. 2000, *Goldblatt & Nänni 11227A* (NBG). **KwaZulu-Natal:** rocky slopes on plateau along trail from the chain ladders to Tugela Falls, 5 Mar. 2002 (fr), *Goldblatt & Porter 11977* (MO, NBG, PRE).

53. Hesperantha pulchra Baker, Handbk. Irideae 150. 1892. TYPE: South Africa. Eastern Cape: Transkei, Baziya Mountain, Apr., *L. R. Baur 159* (holotype, K!; isotype, B!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 413. 1986.

Extending from the Amatola Mountains of the Eastern Cape north through the Transkei to Naude's Nek, the late-flowering *Hesperantha pulchra* has until now seemed fairly well understood. It is readily recognized by the bright pink flowers, relatively short filaments, 3–6 mm long, and perianth tube of intermediate length, 15–20 mm long (14–28 mm, according to Hilliard & Burtt, 1986). Plants from KwaZulu-Natal, north of the Tugela River, which Hilliard and Burtt mentioned as like *H. pulchra* but with a tube ca. 15 mm long (*Gerstner 6713,* PRE) and ca. 12 mm (*Fakude 3,* NH), fit uncomfortably in this otherwise Eastern Cape species. We need to know more about the Zululand plants, which could perhaps be accommodated in *H. baurii* equally well except for the late flowering, in April and May. I hesitate to treat these populations as representing an undescribed taxon given our current knowledge about *H. pulchra*.

An interesting collection from Mt. Thomas, near Stutterheim in the Amatola Mountains (*McMaster s.n.*, NBG), collected in later flower on 11 February, with ripe capsules at the base of the spike, resembles *Hesperantha pulchra* except for the early flowering. Plants have narrowly elliptic capsules 25 mm long that contain large seeds, up to 4 mm long with the wings at either end ca. 1 mm long and the seed body ca. 2 mm long. Capsules of *H. pulchra* are described by Hilliard and Burtt as 10–17 mm long with seeds ca. 1.25 mm in diameter, with weakly or strongly developed wings. The Mt. Thomas plants may represent a novelty.

Echoing Hilliard and Burtt's remark regarding *Hesperantha pulchra*, we need to know more about both the Zululand and Mt. Thomas plants. Additional collections, especially in fruit, will be helpful in understanding the range of variation in this species.

54. Hesperantha woodii Baker, Handbk. Irideae 150. 1892. TYPE: South Africa. KwaZulu-Natal: Richmond district, Peak of Byrne, Apr. or May 1883, *J. M. Wood 1868* (isotypes, K!, NH!). Figure 5A.

Hesperantha galpinii R. C. Foster, Contr. Gray Herb. 166: 13. 1948. Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 426. 1986, pro syn. *H. grandiflora.* TYPE: South Africa. Lesotho, valley above Buffalo River falls, 14 Mar. 1904, *E. E. Galpin 6856* (lectotype, designated here, BOL!; isotypes, B!, GRA not seen, K!, NH not seen, PRE!, SAM!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 413. 1986.

Plants 20–45 cm high, erect, unbranched. *Corm* conic, 8–10 mm diam. near the base, with woody tunics soon breaking into triangular segments tapering above into short points. *Leaves* usually 4, the lower 2 basal, longest, reaching to between the middle of the stem and the apex of the spike, the upper smaller and partly to entirely sheathing, the

Figure 5. —A. Flowers of *Hesperantha woodii* (*Goldblatt & Manning 11054,* MO, NBG, from Naude's Nek). —B. Flowers of *H. grandiflora* (*Goldblatt & Porter 11976,* MO, NBG, from The Sentinel). Compare suberect flowers with barely curved perianth tube and large, pale-colored anthers of *H. woodii* with the secund flower with strongly curved perianth tube and darkly colored anthers of *H. grandiflora.*

blades ± linear, 2–3 mm wide, firm and erect, the midrib prominently raised, the margins slightly thickened. *Spike* mostly 2–4-flowered; bracts 22–30 mm long, green, becoming dry and brownish above. *Flowers* bright mauve-pink, pale yellow in the mouth of the tube; *perianth tube* (18–)22–38 mm long, cylindrical, slightly curving toward the apex, expanded near the mouth, with nectar in the base; *tepals* weakly ascending, elliptic, 23–27 × 6–7.5 mm, acute. *Filaments* ascending, 6–8 mm long; *anthers* diverging, 9–10 mm long, tailed in the lower 2 mm, yellow, pollen yellow. *Ovary* ellipsoid, 6–8 mm long; *style branches* 18–20 mm long, longer than the stamens, laxly spreading. *Capsules* oblong, 16–18 mm long; *seeds* unknown.

Flowering. February and March.

Distribution. Southern Lesotho and South Africa in KwaZulu-Natal and the Eastern Cape, on stony slopes and rocks often near streams and in montane habitats.

Living plants of a long-tubed *Hesperantha* (Fig. 5A) in the southern Drakensberg near Naude's Nek in Eastern Cape Province proved difficult to identify using Hilliard and Burtt's (1986) key, which led me first to *H. grandiflora,* a species with a curved, elongate perianth tube (26–)33–55 mm long, and zygomorphic flowers with unilateral stamens and style branches. The Naude's Nek plants, however, had actinomorphic flowers with symmetrically disposed stamens and style branches, but a weakly curved perianth tube. They seemed to closely match *H. galpinii,* a species regarded as a synonym of *H. grandiflora* by Hilliard and Burtt, and careful examination of the type material shows that *H. galpinii* probably does not have a zygomorphic flower and nor do a few similar specimens cited under *H. grandiflora.* The type locality of *H. galpinii* cannot easily be revisited to examine plants there, and the question of stamen and style branch orientation cannot be readily resolved.

Subsequent comparison of several collections matching *Hesperantha galpinii* led me to *H. woodii.* It became clear that specimens such as *McClean 763* (PRE), which have flowers with a perianth tube 26–32 mm long, assigned by Hilliard and Burtt to

H. woodii, closely match *H. galpinii* and that this species should be regarded as a synonym of *H. woodii* rather than *H. grandiflora* to which it was referred by Hilliard and Burtt. Although the dimensions of the perianth tube in *H. woodii* are 14–28 mm according to Hilliard and Burtt's circumscription of the species, the majority of specimens they cited have a tube exceeding 20 mm and I have seen none with a tube less than 18 mm long. Perianth tube length in the type collection is ca. 20 mm. The addition of *H. galpinii* and some longer-tubed plants from Naude's Nek to *H. woodii* thus leaves the definition of that species little changed, although the upper extreme of the perianth tube becomes 38 mm. *Hesperantha woodii* can be distinguished from *H. grandiflora* by tepal, stamen, and style branch orientation, rather than by perianth tube length, which overlaps too much to be useful in comparing the two species (Fig. 5). *Hesperantha grandiflora* has a perianth tube (26–)33–55 mm long, strongly curved at the apex, vertically oriented tepals, and unilateral, declinate stamens and style branches.

The geographic range of *Hesperantha grandiflora* extends from The Sentinel in the north through the Drakensberg to Mt. Currie (the type locality) in the south, and to Naude's Nek and Barkly Pass in the west. Thus both *H. grandiflora* and *H. woodii* occur in the Naude's Nek area and in the mountains above Kokstad. The transfer of specimens matching *H. galpinii* to *H. woodii* extends the geographical range of the species very little, for *H. woodii* has already been recorded at Mhlahlane, near Umtata in the Eastern Cape, although not from southern Lesotho.

Examination of collections at the herbaria at Kew and Zurich has revealed an interesting historical record for *Hesperantha woodii, Drège 4540,* which must have been gathered in 1832 when J. F. Drège traveled overland from Grahamstown to Port Natal (Gunn & Codd, 1981). Thus, Drège may be credited with the discovery of the species, although Wood's specimens, gathered in 1883, are the type and he is commemorated in the name of the species.

Additional specimens. LESOTHO. 28.30 (Matatiele) summit slopes of Maquaba peak, near Quacha's Nek (BA),13 Mar. 1936, *Galpin 14247* (K). SOUTH AFRICA. **KwaZulu-Natal:** 29.29 (Underberg) Cobham Forest Station, Sipongweni Caves (CC), 13 Apr. 1972, *Hilliard 5509* (K, NU); river banks, Underberg, Mar. 1938, *McClean 753* (K, PRE); Polela, Glengarif, Marwaqa, 26 Mar. 1977, *Rennie 815* (NU); Sunset Farm, Polela District, 17 Feb. 1979, *Rennie 1006* (NU). **Eastern Cape:** 30.28 (Matatiele) 1–2 km W of Naude's Nek, Feb. 1999, *Goldblatt & Manning 11054* (K, MO, NBG, PRE).

55. Hesperantha stenosiphon Goldblatt, sp. nov. TYPE: South Africa. Eastern Cape: Stutterheim district, Moonstone farm, steep grassy slope, 1120 m, 20 Mar. 2001, *C. McMaster s.n.* (holotype, NBG!; isotypes, MO!, PRE!). Figure 6.

Plantae 25–50 cm altae eramosae, cormo globoso ca. 12 mm diam., foliis 4 inferioribus duabus basalibus, ensiformibus 2–3 mm latis, spica (2–)4–8(–12)-flora, bracteis 18–24 mm longis, floribus roseis albescentibus prope orem tubi, perianthii tubo 45–60 mm longo recto, tepalis 18–21 × 7–8 mm, filamentis ca. 3 mm longis, antheris 9–10 mm longis, ramis styli ca. 8.5 mm longis.

Plants 25–50 cm high, erect, unbranched. *Corm* globose, ca. 12 mm diam., with woody tunics soon breaking into segments tapering above into short points. *Leaves* usually 4, the lower 2 basal, longest, reaching to between the middle of the stem and the apex of the spike, the upper smaller and partly to entirely sheathing, the blades ± linear, 2–3 mm wide, firm and erect, the midrib and margins slightly thickened. *Spike* (2–)4–8(–12)-flowered; bracts 18–24 mm long, green, becoming dry and brownish near the tips. *Flowers* bright pink, whitish in the mouth of the tube; *perianth tube* 45–60 mm long, cylindrical, slightly curved or straight, barely expanded near the mouth; *tepals* ascending, elliptic, 18–21 × 7–8 mm, subacute. *Filaments* suberect, ca. 3 mm long; *anthers* diverging, 9–10 mm long, dark brown to blackish, pollen yellow. *Ovary* ovoid, ca. 3.5 mm long; *style branches* ca. 8.5 mm long, in the closed flower reaching to just below the anther apices. *Capsules* and *seeds* unknown.

Flowering. March and April.

Distribution. Eastern Cape, Cathcart district, among rocks partly shaded by bush and small trees or in rocky grassland on hill tops.

Evidently unknown until 2000, the striking, long-tubed *Hesperantha stenosiphon* was discovered by the naturalist, Cameron McMaster, in the Cathcart area of Eastern Cape Province, South Africa. The plant is probably most closely allied to the long-tubed *H. grandiflora* and *H. woodii* and shares with them the linear leaves with slightly to moderately thickened margins and midribs as well as the pink perianth with an elongate tube, usually more than 20 mm long. *Hesperantha stenosiphon* is readily recognized by the symmetrically arranged stamens with unusually short filaments, only about 3 mm long, long blackish anthers, and spike of (2 to)4 to 9 flowers. *Hesperantha grandiflora* has flowers that face to the side with vertically oriented tepals and unilateral, downcurving stamens and style branches, filaments 8–14 mm long, and brown anthers and pollen, while *H. woodii* has similarly

Figure 6. Morphology and floral details of *Hesperantha stenosiphon*. Scale bar 1 cm. Drawn by John Manning from photographs and pressed plants (*Goldblatt & Porter 12005* (K, NBG, MO, PRE).

large, but nearly upright flowers, symmetrically disposed stamens with filaments 6–8 mm long, and yellow anthers and pollen. The two latter species have flowers with a perianth tube (18–)22–55 mm long, whereas *H. stenosiphon* has a tube 45–60 mm long. The elongate perianth tube suggests that the flowers are pollinated by the long-proboscid fly, *Prosoeca ganglbaurii,* which also pollinates *H. grandiflora* and *H. woodii* (Goldblatt & Manning, 2000; Goldblatt et al., in press). At the Bombazi locality where plants were common and in full bloom, however, I found no long-proboscid flies, but flowers were instead visited by honey bees, which collected pollen after failing to reach the nectar contained in the lower part of the perianth tube, well beyond the reach of their tongues.

Common at the two sites where it is recorded, *Hesperantha stenosiphon* is nevertheless rare, and appears to be restricted to the hills east of the main Amatola range that extend toward the valley of the Great Kei river. Plants are mostly confined to dolerite outcrops on the upper slopes and summits of these hills where they seem to prefer partly shaded situations close to shrubs and small trees.

Paratypes. SOUTH AFRICA. **Eastern Cape:** 33.26 (Stutterheim) Cathcart district, ca. 50 km NE of Stutterheim, Bombazi farm, Mar. 2001, *McMaster s.n.* (NBG), 8 Mar. 2002, *Goldblatt & Porter 12005* (K, NBG, MO, PRE); Bolo district, Moonstone farm, on steep grassy slopes, 1076 m, 27 Feb. 2002, *McMaster s.n.* (MO).

56. Hesperantha coccinea (Backh. & Harv.) Goldblatt & J. C. Manning, Novon 6: 263. 1996. *Schizostylis coccinea* Backh. & Harv., Curtis's Bot. Mag. 90: pl. 5422. 1864. TYPE: South Africa. Eastern Cape: without precise locality, Curtis's Bot. Mag. 90: pl. 5422. 1864.

With a flower structure exactly like that of any *Hesperantha* species, and virtually identical, except in the red color, to that of long-tubed species like *H. woodii, H. coccinea* seems well placed in the genus to which it was transferred in 1996 (Goldblatt & Manning, 1996). *Hesperantha coccinea* was long regarded as the sole species of a separate genus, *Schizostylis,* distinguished in subfamily Crocoideae by its rhizomatous rootstock. A plant of stream banks and marshes, *H. coccinea* is believed to have lost its corm because this xeromorphic feature is not adaptive in such mesic conditions. Curiously, the aerial leaf axils of some populations produce a small corm of the asymmetrical shape typical of *Hesperantha.* There are two color morphs of *H. coccinea,* the typical, and more widespread red form, which extends from the Amatola Mountains in Eastern Cape Province, South Africa, to Zimbabwe, and a pink form local in the northern Drakensberg and Witwatersrand in Gauteng Province. The name *Schizostylis pauciflora* has been applied to plants from Witpoortjie in the western Witwatersrand that are depauperate and have spikes of few flowers. Unusual for *Hesperantha,* the common red-flowered form of *H. coccinea* is pollinated by a guild of large butterflies of the families Papilionidae (*Papilio* spp.) and Satyridae (*Aeropetes tulbaghia*) (Goldblatt et al., in press).

Seeds of *Hesperantha coccinea,* not previously described, are unusual in the genus. Approximately 2×1.2 mm, the more or less prismatic (segmental) seeds have a loose, translucent, light brown seed coat with a smooth outline, but with slightly developed ridges on the angles of the segments. Within the translucent coat a small, more or less spherical seed body, ca. 1 mm in diameter, is evident. The surface cells of the seed coat are aligned in straight files and have a domed (colliculate) outer wall and appear empty. This seed is somewhat aerodynamic and will float for some time before becoming waterlogged. The seed is evidently adapted for dispersal by water, a not unexpected adaptation in this semi-aquatic plant. Other species of *Hesperantha* have a seed coat that closely envelops the seed body, but other features conform to the pattern described for the genus (Goldblatt & Wagner, 1984).

57. Hesperantha grandiflora G. J. Lewis, J. S. African Bot. 7: 30. 1941. *Acidanthera tysonii* Baker, Handbk. Irideae 187. 1892, non *H. tysonii* Baker (1892), = *H. radiata* (Jacq.) Ker Gawl. TYPE: South Africa. KwaZulu-Natal: waterfall near Mt. Currie, Apr. 1883, *W. Tyson 1151* (= Herb. Norm. Austro-Afr. 895) (holotype, K!; isotypes, BOL!, NBG!, PRE!). Figure 5B.

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 410. 1986.

One of the most distinctive of the species of pink-(or red-)flowered *Hesperantha* of eastern southern Africa that have flowers with an elongate perianth tube at least 15 mm long, the high Drakensberg *H. grandiflora* is easily recognized by its flowers with a perianth tube (26–)33–55 mm long, curved outward near the apex and tepals held more or less vertically (Fig. 5B). It also has unilateral stamens and style branches that are declinate, thus arching downward above the lower (abaxial or anterior) tepal. A feature of *H. grandiflora* not recorded in the literature is that it has reddish brown anthers and pollen, whereas most other species have yellow or cream to whitish pollen. The darkly

colored pollen is still evident in the type collection after more than 100 years, and I have confirmed this feature in living plants seen at Sani Pass, Giants Castle Pass, on The Sentinel trail on the Free State–KwaZulu-Natal border, and at Barkly Pass in Eastern Cape Province (Fig. 5B). Plants from the latter two localities constitute range extensions to the north and west of the range of *H. grandiflora* and represent the first record of the species from the Free State. Seeds of this population conform to the description given by Hilliard and Burtt (1986): they are 1.5–2 mm long and have a small wing at opposite ends of the globose seed body ca. 0.8 mm long (the seed is described as 1–1.5 mm diam. by Hilliard & Burtt).

Examination of living plants collected in the southern Drakensberg near Naude's Nek Pass has shown that *Hesperantha grandiflora* as circumscribed by Hilliard and Burtt included plants with more or less upright flowers, a weakly curved tube and symmetrically disposed, ascending stamens, quite different from *H. grandiflora.* As explained above, these plants are better referred to *H. woodii* as is *H. galpinii,* which was treated as a synonym of *H. grandiflora* by Hilliard and Burtt.

A collection at the Kew Herbarium made by J. F. Drège in 1832 is almost certainly this species, and represents the earliest record of *Hesperantha grandiflora.* The specimen is identified as "*Gladiolus spilanthus,*" a later synonym for the Western Cape *G. gracilis,* but has no specific locality information and it does not appear to be listed in the report of Drège's travels (Meyer, 1843).

Additional specimens. SOUTH AFRICA: **Free State–KwaZulu-Natal:** 28.28 (Bethlehem) grassy slope on road to The Sentinel trail along Free State–KwaZulu-Natal border (DB), 4 Mar. 2002, *Goldblatt & Porter 11976* (MO, NBG). **Eastern Cape:** 31.27 (Lady Frere) Barkly Pass, moist gully on Cave Sandstone slope near top of pass (BB), 6 Mar. 2002, *Goldblatt & Porter 11995B* (MO, NBG).

58. Hesperantha huttonii (Baker) Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 40: 278. 1982. *Acidanthera huttonii* Baker, J. Bot. 14: 339. 1876. TYPE: South Africa. Eastern Cape: Stockenstrom Division, Katberg, date unknown, *H. Hutton s.n.* (holotype, K!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 415. 1986.

A species of shady rock outcrops and forest margins, *Hesperantha huttonii* has long been thought to be restricted to the Amatola Mountains between Stutterheim and Adelaide in Eastern Cape Province, South Africa. Apart from the long-tubed, pale pink flowers with large yellow anthers, 7–10 mm long, it can be recognized by the fairly broad, flaccid, drooping leaves, suberect to drooping stem, and the presence of a cormlet in the axils of the lower leaves (Hilliard & Burtt, 1986). Plants from coastal Transkei (*Flanagan 2514,* PRE; *Cloete 1661,* NH), some 250 km to the east, best match the species. However, the Flanagan collection appears to lack axillary cormlets and has a perianth tube ca. 23 mm long, while the Cloete collection has flowers with a tube 15–17 mm long. *Hesperantha huttonii* typically has a tube 30–39 mm long with a lower limit 21 mm. Provisionally, the Transkei plants must be included in *H. huttonii* until more information becomes available.

The seeds of this species are distinctive. Borne in capsules 12–20 mm long, they are approximately 2.5–3.5 mm long and ca. 1.25 mm wide, and have a membranous wing at either end, the wings each about half as long as the seed body, which is about 1.2–1.5 × 1 mm (*Goldblatt & Porter 12011,* MO, NBG, from the Kologha Forest, near Stutterheim). Slightly smaller seed dimensions, ca. 1.5 × 1.25 mm, provided by Hilliard and Burtt (1986), probably indicate variation in seed size across populations of the species. The seeds recall those of *Gladiolus,* which have a broad circumferential wing (Goldblatt & Manning, 1998).

The long-tubed flowers of *Hesperantha huttonii* are pollinated by the long-proboscid nemestrinid fly, *Stenobasipteron wiedmannii,* which has been recorded visiting the species in the Kologha Forest (Goldblatt et al., in press). This fly has a proboscis 19–23 mm long, thus well suited to acquire pollen loads on its thorax as it probes the perianth tubes of *H. huttonii,* which are 23–35 mm long at this site and contain nectar at the base. Indirect evidence for the pollination of *H. huttonii* by the same fly has been recorded by Potgieter and Edwards (pers. comm.) who found pollen of *H. huttonii* on a fly caught visiting *Plectranthus ciliatus* E. Mey. ex Benth. as well as *Plectranthus* pollen on *Hesperantha* anthers, presumably carried there by *Stenobasipteron,* an important pollinator of *Plectranthus* species.

Additional specimens. SOUTH AFRICA. **Eastern Cape:** 31.29 (Port St. Johns) Lusikisiki, Lupatana, sandstone cliff face above the river, ca. 15 m, in mats of moss (BD), 20 Dec. 1991, *Cloete 1661* (NH); Port St. Johns, *Flanagan 2514* (PRE).

59. Hesperantha hutchingsiae Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 414. 1986. TYPE: South Africa. Eastern Cape: Transkei, Mhlahlane Forest Station, Mjika, 21 Mar. 1985, *A. Hutchings & Plumstead 1621* (holotype, E not seen).

When first described by Hilliard and Burtt (1986), *Hesperantha hutchingsiae* was known only from the type collection from a marsh at Mhlahlane near Umtata. A second collection has come to hand from near Naude's Nek some distance to the east. This collection, *Strever 755,* has three flowers per spike, and the flowers have a perianth tube 23 mm long. In the type collection the spike has only two flowers and the perianth tube is 21 mm long. The new record slightly expands the range of variation in the species. Notes on the Strever collection indicate that the anthers are dark purple, an unusual character in the genus, but recorded in *H. grandiflora* and *H. stenosiphon,* both of which have large flowers with a substantially longer perianth tube, (26–)33–55 mm long in *H. grandiflora* and 45–60 mm long in *H. stenosiphon.*

Additional specimens. SOUTH AFRICA. **Eastern Cape:** 30.28 (Matatiele) valley of Lehana's Pass, Naude's Nek, moist area on S slope below dolerite rocks (CA), 17 Mar. 1988, *Strever 755* (NU).

60. Hesperantha brevicaulis (Baker) G. J. Lewis, J. S. African Bot. 6: 30. 1941. *Acidanthera brevicaulis* Baker, Fl. Capensis 6: 132. 1896. TYPE: South Africa. Barberton, Devil's Bridge, Makwonga Range, Mar. 1891, *E. E. Galpin 1252* (holotype, K!).

Plants 10–25 cm high, the stem drooping, unbranched. *Corm* conic, 7–9 mm diam. near the base, tunics unknown. *Leaves* 4, occasionally 5, ± linear, 2–4 mm wide, the lower with fairly soft-textured blades trailing distally, the midrib slightly raised, the uppermost leaf largely to entirely sheathing. *Spike* mostly 2–3(–4)-flowered; *bracts* green, soft-textured, the outer 20–28 mm long. *Flowers* dull mauve-pink, pale yellow in the mouth of the tube; *perianth tube* (18–)22–35 mm long, cylindrical, slightly curving toward the apex and expanded near the mouth, with nectar in the base; *tepals* spreading ± at right angles to the tube, 20–25 × 7–8 mm, subobtuse. *Filaments* ascending, 5–8 mm long; *anthers* diverging, 6–10 mm long, pollen yellow. *Ovary* 4–5 mm long; *style branches* laxly spreading, 12–15(–20) mm long, alternating with the stamens and exceeding them in the closed flower. *Capsules* narrowly ovoid, 15–20 mm long; *seeds* unknown.

Flowering. March to May, sometimes in February.

Distribution. South Africa, Mpumalanga and Limpopo Provinces, along the eastern escarpment on steep rocks and cliffs, the corms growing in damp moss and in rock crevices.

Although the type collection of *Hesperantha brevicaulis* is from the mountains near Barberton in Mpumalanga Province, and has somewhat longer stamens than more recent collections from the Sabie–Graskop part of the Escarpment some 90 km to the north, there seems no difficulty in regarding all these collections as a single species, the only long-tubed, pink-flowered member of the genus from the northern provinces of South Africa. Hilliard and Burtt (1986) concluded that it differed from all of the long-tubed species treated in their account of the KwaZulu-Natal, Lesotho, and Eastern Cape species of the genus, but Retief and Herman (1997) did not include *H. brevicaulis* in their flora of the northern provinces of South Africa. *Hesperantha brevicaulis* flowers relatively late in the season and is seldom seen before the last week of March. Like other species of the genus with similar, long-tubed flowers, it appears to be adapted for pollination by long-proboscid flies. The nemestrinid fly *Stenobasipteron wiedmannii* has been recorded visiting the species at God's Window near Graskop (Goldblatt & Manning, 2000).

Plants from the Wolkberg in Limpopo Province (*Davidson 3153,* J; *Goldblatt & Porter 11953,* MO, NBG) seem at first to represent this species, but they flower earlier in the season, beginning to bloom as early as the middle of February. They also have flowers with a somewhat shorter perianth tube, 13–16 mm, compared with (18–)22–28 mm for the Sabie–Graskop populations and ca. 35 mm in the type, from Barberton. Provisionally I include the Wolkberg populations in *Hesperantha brevicaulis.* Plants from Serala have the following features that seem to differ significantly from populations to the south: bracts (11–)15–18 mm long, the inner about two thirds as long; flowers with a perianth tube 13–16 mm long; tepals 20–22 × 7–9 mm; filaments (4–)5–6 mm; anthers 5–6.5 mm long; ovary ca. 3 mm long; style branches 15–18 mm long. The shorter perianth tube (and associated shorter bracts) suggests a less specialized pollination system, perhaps including bees and nemestrinid flies with somewhat shorter probosces than *Stenobasipteron wiedmannii,* the proboscis of which is up to 25 mm long.

Equally puzzling is a recent collection from Mt. Prospect, near Lydenburg (*Burrows 7309,* BKH), collected in early flower in mid February. This plant has long-tubed mauve flowers with a tube 30–32 mm long, tepals ca. 18 mm long, short filaments ca. 3 mm long, and anthers ca. 6 mm long. The four leaves have well developed blades and there is no sign of a largely sheathing upper leaf. The blades have a firm texture, an apparently dropping

flowering stem, and a spike of five flowers. The plant thus fits poorly in *Hesperantha brevicaulis* because of the firm leaves, absence of a sheathing upper leaf, spike with more than four flowers, short filaments, and relatively short anthers. Additional material is needed before a decision can be made on its status.

Additional specimens. SOUTH AFRICA. **Limpopo:** 23.30 (Tzaneen) Wolkberg Mountain, below cliffs (CC), 9 Apr., *Davidson 3154* (J); Wolkberg, damp cliffs below Serala Peak, 23 Feb. 2002, *Goldblatt & Porter 11953* (K, MO, NBG, PRE). **Mpumalanga:** 24.30 (Pilgrim's Rest) MacMac Falls, in grass on sheer cliffs (DD), 14 Mar. 1959, *Germishuizen 116/50* (PRE); God's Window and The Pinnacle, 20 Apr. 1969, *MacNeil s.n.* (PRE); rock outcrops near God's Window, 25 Apr. 1966, *Goldblatt 72* (J), 27 Apr. 1967, *Goldblatt 73* (J), *Kluge 2505* (NBG, PRE), *Venter 7783* (MPU, PRE). 25.30 (Lydenburg) Mt. Prospect, rocky shale slopes above stream, 2010 m, 18 Feb. 2001, *Burrows 7309* (BKH); Buffelskloof Nature Reserve, crevices in cliffs (BC), 2 May 1988, *Burrows 4070* (BKH, J).

61. Hesperantha curvula Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 416. 1986. TYPE: South Africa. KwaZulu-Natal: Underberg, Bushman's Nek, Thamathu Pass, 5 Feb. 1976, *O. M. Hilliard & B. L. Burtt 8981* (holotype, NU!; isotypes, E not seen, MO!).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 416. 1986.

62. Hesperantha scopulosa Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 417. 1986. TYPE: South Africa. KwaZulu-Natal: Underberg, Bamboo Mountain, 8 Mar. 1977, *O. M. Hilliard & B. L. Burtt 10074* (holotype, NU!; isotype, E not seen).

Last revisionary account: Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 417. 1986.

Fairly common on wet basalt cliffs and rocks along the approach to The Sentinel in Free State Province, and known from several localities on basalt and sandstone in KwaZulu-Natal, *Hesperantha scopulosa* belongs to a guild of plant species with long-tubed pink flowers that are pollinated by the long-proboscid fly, *Prosoeca ganglbaurii* (Goldblatt & Manning, 1999, 2000). Interestingly, although flowers with a long perianth tube usually secrete ample amounts of nectar, which is retained in the tube, *H. scopulosa* seems to be deceptive. The tube is very narrow, and I have not been able to detect any nectar in the tube in two populations I examined. Successful pollination of these flowers must depend on their similarity to those of nectar-producing species growing nearby, among them *Gladiolus microcarpus* G. J. Lewis, *Hesperantha grandiflora,* and *Zaluzianskya microsiphon* (Kuntze) K. Schum. (Scrophulariaceae).

Seeds of *Hesperantha scopulosa,* collected on The Pudding below The Sentinel (*Goldblatt & Manning 9856,* NBG), are narrowly ovoid-oblong, ca. 1.3 × 0.4 mm, and have a long, irregularly twisted persistent funicle several times longer than the seed body. The chalazal end is flattened and has a small membranous flap of tissue, perhaps a vestigial wing. These seeds conform to the description of Hilliard and Burtt (1986) who called them oblong-elliptic in shape, 1.25 × 0.5 mm, with a narrow wing on one end, and with a long pale funicle. The only other comparable seeds in the genus may be those of *H. gracilis,* which Hilliard and Burtt described as narrowly obovoid and with a long slender funicle.

II. **Hesperantha** sect. **Hesperantha**

Plants with relatively large symmetrical, bell-shaped corms with a flat, horizontal or oblique base; older corm tunics remaining entire, not splitting from the base. Spike with floral outer bract margins free to the base. Flowers variously colored, with a straight perianth tube.

Species 63–70. Restricted to the southern African winter-rainfall zone.

63. Hesperantha falcata (L. f.) Ker Gawl., Ann. Bot. (König & Sims) 1: 225. 1804. *Ixia falcata* L. f., Suppl. pl. 92. 1782. TYPE: South Africa. Western Cape: hills around Cape Town, without date, *C. P. Thunberg s.n.* (holotype, Herb. Thunberg 9052B, UPS!).

Hesperantha pentheri Baker, Kew Bull. 1906: 26. 1906. TYPE: South Africa. Western Cape: Olifants River valley, Clanwilliam, Sep. 1894, *A. Penther 686* (lectotype, designated by Foster (1948: 21), K!).

Hesperantha trifolia R. C. Foster, Contr. Gray Herb. 166: 26. 1948. TYPE: South Africa. Western Cape: Bulshoek, 2 Aug. 1896, *R. Schlechter 8378* (holotype, B!; isotypes, BOL!, G!, K!, MO!, P!, PH!, PRE!, US!, Z!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 97. 1984.

Although both *H. pentheri* and *H. trifolia* were recognized by R. C. Foster (1948) in his preliminary account of *Hesperantha,* they were included in *H. falcata* in the 1984 revision of the genus for the winter-rainfall zone (Goldblatt, 1984). They undoubtedly represent distinct geographical races and an argument can be made for their recognition as separate species or subspecies; they are treated as separate entities in my key to the winter-rainfall spe-

cies. Plants matching *H. trifolia* almost always have only three leaves, and whether dwarfed by poor growing conditions or robust, they have relatively large white flowers, often only two or three per spike, always evenly spaced along the stem, and a pink to light reddish pigmentation on the reverse of the outer tepals, rather different from *H. falcata,* in which the flowers are somewhat crowded at the tip of the spike. The bracts of *H. pentheri* and *H. trifolia* are soft-textured or even membranous, thus unlike the firm green bracts of typical *H. falcata,* which have prominent veins, a reddish margin, and obtuse apex. Plants matching *H. pentheri* have deep cream to light yellow flowers, the outer tepals often flushed dull red to purple on the outside. Both flower relatively early, mostly in August (typical *H. falcata* flowers in September or October), and are confined to the northwest Cape, in the Olifants River valley and surrounding mountains where typical *H. falcata* does not occur. The most northerly record of plants matching *H. pentheri* is from the Kobee Valley, northeast of Vanrhynsdorp (*Goldblatt & Porter 11794,* MO, NBG), not far from the southernmost populations of *H. pauciflora,* which also have pale yellow flowers. The two can readily be distinguished by their different corms, those of *H. pauciflora* having spines radiating from the base.

64. Hesperantha sufflava Goldblatt, sp. nov. TYPE: South Africa. Western Cape: Malmesbury, sandy gravel slopes in renosterveld, 14 Aug. 1999, *P. Goldblatt & I. Nänni 11087* (holotype, NBG!; isotypes, K!, MO!, PRE!, WAG!). Figure 7.

Plantae 8–15 cm altae prope basem saepe ramosae, cormo campanulato basi plano tunicis lignosis marginibus leviter denticulatis 10–18 mm diam., foliis 3 omnibus basalibus vel summo subbasali, lanceolatis vel falcatis 2–7 mm latis, spica (2-vel)3-ad 7-flora flexuosa, floribus pallide flavis tepalis externis abaxialiter pallide brunneis, tubo perianthii 12–14(–16) mm longo recto, tepalis 7–9 (–10) × 4–5 mm, filamentis ca. 2 mm longis, antheris ca. 4 mm longis, ramis styli ca. 12 mm longis, in medio tubi perianthii divisis, apices antherarum non attingentibus.

Plants mostly 8–15 cm high, often branching from near the base in the axil of the uppermost leaf. *Corm* bell-shaped with a flat base, 10–18 mm diam., tunics woody, the margins denticulate. *Leaves* 3, all basal or the uppermost subbasal, lanceolate to falcate, the upper leaf partly sheathing, with a short free unifacial tip, 2–7 mm wide, slightly fleshy, the midrib not visibly thickened. *Spike* slightly flexuose, (2–)3–7-flowered; *bracts* 10–14 mm long, green, often red along the upper margins, diverging from the stem, the outer about as long as or slightly shorter than the stem. *Flowers* pale yellow, the outer tepals flushed light brown on the outside; *perianth tube* slender, straight, 12–14(–16) mm long; *tepals* subequal, ovate, slightly spooned, 7–9(–10) × 4–5 mm, spreading ± at right angles to the tube when fully open after 15:00H. *Filaments* ca. 2 mm long, inserted at the base of the tepals; *anthers* ca. 4 mm long, erect, yellow. *Ovary* oblong, ca. 2.5 mm long; *style* branches ca. 12 mm long, dividing in the middle of the tube, exserted for ca. 7 mm and then weakly diverging, reaching to about the upper third of the anthers in bud. *Capsules* oblong, (6–)7–9 × ca. 4 mm; *seeds* ± globose or weakly angled by pressure, ca. 1.3 mm long.

Flowering. Late July and August.

Distribution. South Africa, Western Cape, local in the Malmesbury District in renosterveld on sandy gravel.

A member of section *Hesperantha, H. sufflava* at first appears to be intermediate between the common, usually white-flowered *H. falcata* and the much rarer *H. spicata.* At the type locality *H. spicata* grows together with *H. sufflava* and is obviously quite different in its secund spike of small, pure white flowers, distinctive in the slightly curved perianth tube 4–6 mm long and tiny tepals 4–7 mm long. Moreover, flowers of *H. spicata* open at about 18:30H when they release a strong, sweet, narcissus-like scent with a strong clove component. Flowers of *H. sufflava* are pale yellow and open at about 15:00H, and they have a quite different, slightly acrid, pyrethrum-like odor. Particularly unusual are the style branches, which divide in the middle of the perianth tube, and only the upper 7 mm are exserted. In nearly all *Hesperantha* species the style divides at the throat of the perianth tube and not within the narrow part of the tube.

Superficially *Hesperantha sufflava* is not much like *H. falcata* for the flowers seem much smaller. The tepals, 7–10 mm long, are smaller than in most populations of *H. falcata,* but the perianth tube is substantially longer, usually 12–16 mm long, and is always longer than the tepals (Fig. 5). In *H. falcata* the tepals are usually 12–18 mm long, exceptionally only 9–11 mm in southern Cape coastal populations, and the perianth tube is 4–9 mm long, thus usually shorter than the tepals. Apart from the flowers, *H. sufflava* is distinctive in always having only three leaves, all basal or the uppermost one subbasal, and the stem often has a branch produced from the axil of the upper leaf. Most populations of both *H. spicata* and *H. falcata* have three (or more) basal leaves and one, largely or entirely sheathing cauline leaf.

Paratypes. SOUTH AFRICA. **Western Cape:** 33.18 (Cape Town) Malmesbury, sandy gravel slopes in renosterveld 1.7 km from town center on road to Tulbagh (DB), 12 Aug. 2000, *Goldblatt & Nänni 11383* (K, MO, NBG, PRE, WAG).

65. Hesperantha cedarmontana Goldblatt, J. S. African Bot. 50: 106. 1984. TYPE: South Africa. Western Cape: Pakhuis Mts. W of Leipoldt's Grave, 27 Sep. 1981, *P. Goldblatt 6403* (holotype, MO!; isotypes, K!, NBG!, PRE!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 106. 1984.

66. Hesperantha pauciflora (Baker) G. J. Lewis, Fl. Pl. Africa 18: pl. 682. 1938. *Tritonia pauciflora* Baker, Handbk. Irideae 193. 1892. TYPE: South Africa. Northern Cape: Namaqualand, near Naries, Sep. 1883, *H. Bolus 6622* (lectotype, designated by Goldblatt (1984: 108), BOL!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 108. 1984.

The typically pink- to purple-flowered *Hesperantha pauciflora* extends from northern Namaqualand to the Bokkeveld Escarpment at the northern edge of the Cape Floristic Region of South Africa and is locally common at the southern end of its geographic range. Plants with pale yellow flowers from the extreme south of its range at Papkuilsfontein, south of Nieuwoudtville (e.g., *Goldblatt 11102,* MO), are included here, expanding the range of variation in *H. pauciflora.* They appear to differ in no other significant way from the pink-flowered populations and have identical bell-shaped corms with prominent radiating spines, spikes of only 2 to 4 flowers, and submembranous bracts, dry near the tips. The flowers also have the same daily opening and closing pattern. On warm days the tepals unfold after 13:00H and close again after 17:00H (Goldblatt et al., in press). The flowers are visited by a variety of bees and by hopliine beetles, both of which appear to be legitimate pollinators of the species.

There are also significant differences between the Namaqualand and Bokkeveld Escarpment populations. Plants from Namaqualand have dark pink to purplish flowers with a white throat (Goldblatt, 1984: fig. 4), stamens with relatively long filaments, 4–8 mm long, anthers 6.5–9 mm long, and the style branches reach the anther apices or exceed them by up to 2 mm. On the Bokkeveld Escarpment, about 100 km south of the nearest Namaqualand populations, the flowers are either uniformly pale to deep pink, or often have darker pigmentation at the base of the tepals and in the throat (or they are uniformly pale yellow). The stamens in these populations have filaments only 2–3 mm long while the anthers are 7–9 mm long, and the style branches barely reach the anther tips or up to 2 mm below them. These differences appear to reflect population divergence due to isolation, and perhaps signify a pollinator shift, which remains to be studied.

67. Hesperantha latifolia (Klatt) M. P. de Vos, J. S. African Bot. 40: 252. 1974. *Syringodea latifolia* Klatt, Abh. Naturf. Ges. Halle 15: 403. 1882. TYPE: South Africa. Northern Cape: Kamiesberg, Ellenboogsfontein, Sep. 1830, *J. F. Drège 2633* (lectotype, designated by de Vos (1974: 252), B!; isotypes, P!, S!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 111. 1984.

Restricted to higher elevations in the Kamiesberg Mountains of central Namaqualand, this winter-rainfall zone species is relatively common in shallow soils overlying granite pavement. Plants are typically short, usually less than 5 cm high, but robust plants growing in rock crevices or through low bushes may reach 15 cm. The dark red-purple flowers with a perianth tube 15–25 mm long are now known to be pollinated by the long-proboscid fly, *Prosoeca peringueyi,* which also pollinated several other long-tubed species with similarly colored flowers in Namaqualand, among them *Babiana dregei* Bak., *Lapeirousia silenoides* (Jacq.) Ker Gawl. (Iridaceae), and *Pelargonium incrassatum* (Andr.) Sims (Geraniaceae) (Goldblatt et al., 1995; Goldblatt & Manning, 2000).

68. Hesperantha luticola Goldblatt, J. S. African Bot. 50: 113. 1984. TYPE: South Africa. Northern Cape: between Midddelpos and Calvinia, Farm Knechtsbank, 21 Aug. 1974, *M. F. Thompson 2529* (holotype, STE!; isotype, PRE!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 113. 1984.

An aspect of the acaulescent *Hesperantha luticola* not known when the species was described is the fact that the perianth tube is virtually closed. The tube, 30–45 mm long, might be expected to be hollow and to contain nectar as it does in many other long-tubed species of the genus. The walls of the tube are, however, thick, and they closely envelop the style leaving no internal cavity. The small amount of nectar produced by the flowers is forced into the upper, slightly wider part of the tube where it is accessible to insects with relatively short probosces. The perianth tube thus appears to serve as

Figure 7. Morphology and floral and capsule and seed details of *H. sufflava.* Drawn by John Manning from live plants (*Goldblatt & Nänni 11087,* MO, NBG). Scale bar 1 cm; single flowers and seed much enlarged.

a pseudopedicel, raising the tepals, stamens, and style branches above the basal cluster of leaves. The ovary remains close to or below ground level, and is thus protected from damage during its maturation. The ripe capsules are borne a short distance above the ground.

69. Hesperantha spicata (Burm. f.) N. E. Br., Kew Bull. 1929: 136. 1929. *Ixia spicata* Burm. f., Prod. Pl. Cap. 1. 1768. TYPE: South Africa. Without precise locality or date, probably cultivated in Holland, *N. L. Burman s.n.* (holotype, herb. Burman, G!). Figure 1C.

Last revisionary account: Goldblatt, J. S. African Bot. 50: 114. 1984.

In my 1984 account of *Hesperantha* in the southern African winter-rainfall zone I treated *Hesperantha spicata* as comprising three subspecies: subsp. *spicata,* with falcate basal leaves with crisped margins, subsp. *graminifolia* (Sweet) Goldblatt, with narrow, erect leaves with plane margins, and subsp. *fistulosa* (Baker) Goldblatt, with terete leaves. While the two former subspecies seem satisfactorily defined, a new record of subspecies *fistulosa* from the farm Joostenbergkloof, west of Paarl, expands our understanding of this plant, previously reported only from wet flats in the Porterville district, well to the north of Paarl. Plants at the Joostenbergkloof site grew in a wet seep and were in full flower (though closed during the day time) in mid September while nearby in well drained, stony sand, plants of subspecies *spicata* were in fruit. Despite the similarity of the flowers of subspecies *spicata* and subspecies *fistulosa,* the two subspecies seem well separated from one another not only in leaf morphology and habitat, but in flowering time. Alternative treatment of the latter as a separate species for subspecies *fistulosa* seems equally acceptable.

70. Hesperantha saldanhae Goldblatt, J. S. African Bot. 50: 119. 1984. TYPE: South Africa. Western Cape: granite rocks at Vredenburg, 8 Aug. 1962, *G. J. Lewis 5977* (holotype, NBG!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 119. 1984.

Hesperantha saldanhae remains known only from the type collection made by G. J. Lewis in August 1964. Plants were collected on granite rocks at Vredenburg. Repeated visits to the presumed type locality, a prominent cluster of exposed granite rocks at the edge of the town, have failed to reveal any sign of the species. Only moderate disturbance at the site makes it seem unlikely that the species is extinct due to human activity. Nevertheless, *H. saldanhae* must be considered seriously endangered, and possibly extinct.

III. Hesperantha sect. **Radiata** Goldblatt, Ann. Missouri Bot. Gard. 69: 377. 1982. TYPE: *Hesperantha radiata* (Jacq.) Ker Gawl.

Plants with relatively large symmetrical, bell-shaped corms with a flat, horizontal or oblique base; tunics often scalloped below and fringed at the lower margins, older corm tunics not splitting from the base into segments but often the tunics forming scalloped, concave segments. Spike with floral outer bract margins united around the spike axis for up to half their length. Flowers variously colored, most species with a strongly curved perianth tube, nearly straight in *H. juncifolia* and *H. elsiae.*

Species 71–79. Mainly in the southern African winter-rainfall zone, but *H. radiata* extends from Namaqualand, South Africa, in the west to Swaziland in the east, *H. longicollis* is eastern southern African, and *H. ballii* is endemic to Zimbabwe in tropical Africa.

71. Hesperantha brevifolia Goldblatt, J. S. African Bot. 50: 121. 1984. TYPE: South Africa. Western Cape: Piketberg, Zebrakop, 16 Dec. 1971, *E. E. Esterhuysen 35320* (holotype, MO!; isotypes, B!, BOL!, BR!, C!, E!, K!, M!, NBG!, P!, PRE!, S!, US!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 121. 1984.

Known since 1800 when plants were collected by British botanist John Roxburgh near Tulbagh in Western Cape Province (*Roxburgh s.n.,* G), this species of section *Radiata* is rare and has not often been recorded. It was only described in 1984, by which time populations were known from Piketberg, the Cold Bokkeveld, and the mountains north of Bainskloof (Goldblatt, 1984) as well as Tulbagh. It has only become evident recently that *Hesperantha brevifolia* extends to the north as far as the slopes of the Nardouwsberg between Clanwilliam and Klawer, some 80 km from the next closest station (*Goldblatt & Manning 10720B,* MO, NBG; *Maguire 1032,* NBG). The flexuose stem, bract margins united around the axis only at the base, and short leaf blades make it relatively easy to recognize *H. brevifolia* within section *Radiata.*

72. Hesperantha juncifolia Goldblatt, J. S. African Bot. 50: 135. 1984. TYPE: South Africa. Western Cape: Bredasdorp, Ratelrivier, limestone flats, 29 Sep. 1970, *P. Goldblatt 403* (holotype, BOL!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 135. 1984.

Known only from the type collection when first described, *Hesperantha juncifolia* has since been re-collected twice (*Esterhuysen 36425,* BOL, MO, *Esterhuysen 36371,* BOL, MO) at Brandfontein along the west coast of Cape Agulhas, a short distance from the type locality (Goldblatt, 1987). The new collections confirm that the species is a local endemic of wet depressions on coastal limestone flats and distinguished from the related *H. radiata*

by the terete leaf blades, outer bract sheathing the stem only in the lower third, and the straight perianth tube 5–6 mm long. Flat-leaved *H. radiata* has flowers with a curved perianth tube mostly 7–15 mm long, and the outer bract sheathing the stem for about half its length. Additional biological notes were recorded by Goldblatt (1987), including the fact that the white flowers open early in the morning and close at about 16:00H, unusual for white-flowered species of section *Radiata*.

73. Hesperantha marlothii R. C. Foster, Contr. Gray Herb. 166: 20. 1948. TYPE: South Africa. Northern Cape: Sutherland District, near Waterkloof, Sep. 1921, *Marloth 10412* (holotype, B!; isotypes, PRE!, STE!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 130. 1984.

74. Hesperantha decipiens Goldblatt, sp. nov. TYPE: South Africa. Northern Cape: Kamiesberg, northern slopes of Rooiberg, 19 Sep. 1991, *P. Goldblatt 9258* (holotype, NBG!; isotypes, K!, MO!, PRE!). Figure 8.

Plantae 10–15 cm altae plerumque eramosae, cormo campanulato basi obliqua plana 8–12 mm diam., tunicis lignosis concentricis, foliis 4 linearibus vel falcatis 1.2–2.0 mm latis, in medio incrassatis, spica plerumque 3- ad 6-flora flexuosa, floribus albis vel cremeis odoratis tepalis externis abaxialiter ex rufis brunneis, tubo perianthii 10–13 mm longo ad apicem curvato, tepalis 12–14 × 2.5–3.5 mm, filamentis ca. 4 mm longis, antheris ca. 5 mm longis, ramis styli antheras parum excedentibus.

Plants 10–15 cm high, stem usually unbranched. *Corm* ovoid with an oblique flat base, 8–12 mm diam., tunics woody, concentric, somewhat scalloped into concave segments with fringed edges. *Leaves* 4, the lower 3 basal and largest, the uppermost inserted in the middle of the stems and sometimes entirely sheathing or with a short free unifacial tip, linear, 1.2–2 mm wide, slightly fleshy, slightly thickened in the midline. *Spike* mostly 3–6-flowered, flexuose; *bracts* 10–15 mm long, green, becoming dry above, the outer with margins united around the stem for 3–5 mm, the inner about as long as the outer. *Flowers* white to cream, the outer tepals pale pink to reddish or brown on the outside, strongly scented of stocks when open after dark; *perianth tube* slender, recurving above, 10–13 mm long; *tepals* subequal, lanceolate, 12–14 × 2.5–3.5 mm, spreading ± at right angles to the tube when fully open in the later afternoon. *Filaments* ca. 4 mm long; *anthers* 5–7 mm long. *Ovary* oblong, ca. 3 mm long; *style* branches ca. 12 mm long, weakly spreading, slightly shorter or slightly longer than the anthers. *Capsules* oblong-obovoid, 6–8 × ca. 3.5 mm; *seeds* angular, the edges ± winged, ca. 1 mm long.

Figure 8. Morphology of *H. decipiens*, full size. Drawn by Yevonn Wilson-Ramsay from pressed specimens (*Goldblatt 9258*, K, MO, NBG). Scale bar 1 cm.

Flowering. August and September.

Distribution. South Africa, Northern Cape, extending from near Springbok in the north through the Kamiesberg to the northern Knersvlakte, on thin, sandy gravel on granite pavement.

Evidently first collected in 1897 by Rudolf Schlechter and only occasionally since then, *Hesperantha decipiens* is still relatively poorly recorded. Confused with either the widespread *H. radiata*

or its relative from the Roggeveld and Bokkeveld Mountains, *H. marlothii, H. decipiens* has the outer bract margins united around the spike axis and flat-based corms that define section *Radiata.* Superficially it seems to merely represent a northern series of populations of *H. marlothii.* That species is, however, defined by a few-flowered, flexuose spike, outer bract margins united only near the base, and corms with prominent lateral spines. *Hesperantha decipiens* has the flexuose, few(or several)-flowered spike of *H. marlothii,* but the outer bract margins are united for up to 5 mm, about a third of their length, and more significantly, the corms lack lateral spines. Instead the corms closely resemble those of *H. radiata* in their scalloped, slightly fringed lobes. Close examination of the flowers shows that the style branches of *H. decipiens* usually exceed the anthers by 1–2 mm and the anthers are 5–7 mm long. Robust specimens of *H. marlothii* have anthers 6–8 mm long and the style branches reach only to about the middle of the anthers. Less robust specimens have anthers 4.5–6 mm long, but the style branches are still slightly short of the anther apices. *Hesperantha decipiens* can be distinguished from *H. radiata* because that species has the outer bract margins united for at least half their length and a straight spike typically bearing more than 8 flowers. The capsules of *H. decipiens* are slightly shorter than the bracts and 6–8 mm long, whereas those of *H. radiata* are usually slightly longer than the bracts and 8–10 mm long. Mature capsules are seldom collected so that it is uncertain that this distinction holds for all populations of both species.

Paratypes. SOUTH AFRICA. **Northern Cape:** 29.17 (Springbok) near Wildepaardehoek Pass, damp sand on granite (DC), 9 Sep. 1980, *Goldblatt 5751* (MO). 30.17 (Hondeklipbaai) hills at Rietkloof (BD), 11 Sep. 1897, *Schlechter 11202* (B, GRA, K, Z). 3018 (Kamiesberg) Kamiesberg 2 km S of Leliefontein, 17 Sep. 2002, *Goldblatt & Porter 12226* (MO, NBG); farm Welkom, lower eastern slopes of Rooiberg (AC), 9 Sep. 1980, *Goldblatt 5768* (M, MO, PRE); Damsland Kloof, northern approach to Rooiberg peak, 19 Sep. 1991, *Goldblatt 9258* (MO, NBG, PRE); N of FM tower at Leliefontein, 20 Sep. 1991, *Goldblatt & Manning 10008* (MO, NBG). **Western Cape:** 3118 (Vanrhynsdorp) Knersvlakte, near gypsum mine N of the Sishen rail-line (BC), 21 Aug. 1983, *Bean 1272* (BOL).

75. Hesperantha radiata (Jacq.) Ker Gawl., Ann. Bot. (König & Sims) 1: 225. 1804. *Ixia radiata* Jacq., Icones Pl. Rar. 2: pl. 280. 1782. TYPE: South Africa. Without precise locality, Jacq., Icones Pl. Rar. 2: pl. 280. 1782.

Hesperantha tysonii Baker, Handbk. Irideae 151. 1892. TYPE: South Africa. KwaZulu-Natal: streambanks near Kokstad, Oct. 1883, *W. Tyson* 1585 (holotype, K!; isotypes, B not seen, GRA not seen, NH!, SAM!).

Hesperantha radiata var. γ *caricina* Ker Gawl., Curtis's Bot. Mag. 21: pl. 790. 1804. TYPE: South Africa. Without precise locality, Curtis's Bot. Mag. 21: pl. 790. 1804.

Hesperantha tenuifolia Salisb., Trans. Hort. Soc. 1: 321. 1812, as a new name for *H. radiata* var. γ *caricina* Ker Gawl., Curtis's Bot. Mag. 21: pl. 790. 1804. *Hesperantha caricina* (Ker Gawl.) Klatt, Abh. Naturf. Ges. Halle 15: 395 (Erganz. 61). 1882, nom. illeg. superfl. pro *H. tenuifolia* (based on the same type).

Last revisionary accounts: Goldblatt, J. S. African Bot. 50: 123. 1984. Hilliard & Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 436. 1986 (as *H. tysonii*).

The circumscription of *Hesperantha radiata* has been unsettled since Hilliard and Burtt (1986) maintained that the eastern southern African plants included in *H. radiata* by Goldblatt (1984) represent a separate species, *H. tysonii.* Clearly populations in eastern southern Africa are more uniform than in the winter-rainfall zone, favor moist habitats, and flower mostly in November or December (although the type collection of *H. tysonii* was made in October). These authors do not, however, list any morphological features in which the eastern plants differ from the western apart from having less woody corm tunics (in the few specimens available that have corms). If these are separate species I fail to see how to distinguish them or to determine what the populations from the area between KwaZulu-Natal–Lesotho and the southwestern Cape (the eastern Cape and Karoo mountains) should be called since they cannot be distinguished from many collections from either the summer- or winter-rainfall zone. As a matter of practicality, if nothing more, *H. tysonii* must be regarded as conspecific with *H. radiata.* The two can only be keyed out if distribution and flowering time are invoked.

In an effort to distinguish eastern populations from those in the winter-rainfall zone I have reexamined a selection of specimens of *Hesperantha radiata* from its entire range. Plants from the winter-rainfall zone differ slightly in having anthers (4–) 5.5–7 mm long and a perianth tube (6–)8–12 mm long, and thus mostly slightly smaller flowers than eastern populations in which anthers are 7–8 mm long and the perianth tube is 9–14 mm long (Hilliard & Burtt provided dimensions of 5.5–9 mm long for anthers and 7–13 mm for the perianth tube based on plants they examined from eastern southern Africa). These overlapping dimensions reflect a surprising consistency in flower size from Namaqualand and the western Karoo in the winter-rain-

fall zone west to the northeasternmost populations in Swaziland and Dullstroom in Mpumalanga in the summer-rainfall part of the subcontinent. The Dullstroom population is a particularly distinctive form (*Drews 188,* NBG) in which the flowers are uniformly cream and the tepals large, ca. 17 × 5 mm, the anthers 8.5 mm long, but the perianth tube, ca. 10 mm long, is well within the expected range. All that remains is a possibly weak distinction in the corm tunics. Paucity of material with corms makes comparison difficult, but corms of a collection from Lesotho (*Dieterlen s.n.,* SAM 2408) differ not at all from some specimens from the Western Cape (e.g., *Lewis 5988,* NBG). I suggest that *H. radiata* must be considered one of a relatively small number of species that occur across southern Africa bridging the opposed climate regimes of the subcontinent.

More puzzling to me are collections of small-flowered plants of *Hesperantha radiata* from the Cape Peninsula and hills around Stellenbosch and Somerset West in the extreme southwest of the southern African winter-rainfall zone. These plants have many-flowered, unusually crowded spikes in which the bracts slightly overlap one another and the uppermost leaf is always entirely sheathing and reaches almost to the base of the spike. The flowers have tepals 7–9.5 mm long, a tube 6–7 mm long, and anthers 4–5 mm long. The stems also have a weakly developed neck of fine fibers around the base. Including these plants in *H. radiata* makes winter-rainfall *H. radiata* appear even more variable than do the dimensions mentioned above. Particularly notable is the fact that the small-flowered plants bloom later than the typical ones, and they may be sympatric, as for example, *Oliver 4332,* NBG (21 August), and *4756,* NBG (17 October), both collected in 1973 in the hills at Langverwacht near Stellenbosch. The August-flowering plants are typical *H. radiata* and the October-flowering ones the small-flowered form with crowded spikes. Specimens of the latter, collected by C. F. Ecklon and C. L. Zeyher in the early 19th century, are annotated *H. setacea* Eckl. (e.g., *Ecklon & Zeyher Irid. 233*—89.9) (Ecklon, 1827), while some sheets at the Kew Herbarium are annotated *H. tenuifolia.* This is R. A. Salisbury's (1812) name for *H. radiata* var. γ *caricina* of Curtis's Bot. Mag. pl. 790 (Ker-Gawler, 1804). The epithet alludes to the characteristic narrow leaves, also, however, found in some populations of larger-flowered plants that correspond to the type of *H. radiata.*

76. Hesperantha ballii Wild, Kirkia 4: 136. 1963. TYPE: Zimbabwe. Chimanimani Mts., Point 71, July 1961, *Ball 948* (holotype, SRGH!).

Last revisionary account: Goldblatt, Ann. Missouri Bot. Gard. 73: 135. 1986.

77. Hesperantha longicollis Baker, Bull. Herb. Boissier ser. 2, 4: 1004. 1904. TYPE: South Africa. Gauteng (as Transvaal), Modderfontein, 11 Sep. 1898, *P. Conrath 600* (syntype, K!).

Last revisionary account: Obermeyer, Fl. Pl. Africa 46: pl. 1810. 1980.

78. Hesperantha elsiae Goldblatt, J. S. African Bot. 50: 136. 1984. TYPE: South Africa. Western Cape: Cedarberg, Krom River Kloof, above Disa Pool, 11 Nov. 1979, *P. Goldblatt 5331* (holotype, MO!; isotypes, K!, NBG!, PRE!, S!, US!, WAG!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 136. 1984.

79. Hesperantha muirii (L. Bolus) G. J. Lewis, J. S. African Bot. 7: 32. 1941. *Acidanthera muirii* L. Bolus, Ann. Bolus Herb. 1: 195. 1915. TYPE: South Africa. Western Cape: Riversdale District, Farm Plattekop, Oct. 1931, *J. Muir 1087* (holotype, BOL!).

Last revisionary account: Goldblatt, J. S. African Bot. 50: 133. 1984.

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Appendix 1

List of species with numbering as presented within the article

Geissorhiza macra see *H. leucantha*
Hesperantha acuta 3
H. alborosea 41
H. altimontana 30
H. bachmannii 32
H. ballii 76
H. baurii 35
H. brevicaulis 60
H. brevifolia 71
H. brevistyla 42
H. bulbifera 33
H. candida 26
H. candida var. *bicolor* see *H. longituba*
H. cedarmontana 65
H. ciliolata 12
H. coccinea 56
H. crocopsis 31
H. cucullata 18
H. curvula 61
H. debilis 27
H. decipiens 74
H. elsiae 78
H. erecta 1
H. exiliflora 40
H. falcata 63
H. fibrosa 17
H. flava 25
H. flexuosa 15
H. galpinii, see *H. woodii*
H. glabrescens 11
H. glareosa 37
H. gracilis 51
H. grandiflora 57
H. hantamensis 23
H. humilis 24
H. hutchingsiae 59
H. huttonii 58
H. hygrophila 47
H. inconspicua 45
H. ingeliensis 43
H. juncifolia 72