



## A new species of *Casearia* (Samydoideae, Salicaceae) from South Africa

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### Abstract

*Casearia austroafricana*, a new species from South Africa, is described, illustrated, mapped, and compared with the two other currently accepted southern African members of the genus, namely *C. gladiiformis* and *C. battiscombei*. The new species belongs to *Casearia* sect. *Casearia*, and is confined to the provinces of KwaZulu-Natal and Eastern Cape. Known for over 100 years by botanists, material of this species has initially been assigned to *C. junodii*, but from about the 1960s to *C. gladiiformis*, for which the former is considered a synonym. *Casearia austroafricana* is readily distinguished by being a tall (up to ca. 30 m) subcanopy or canopy tree associated with temperate or subtropical forest, and in having twigs of young growth usually markedly zigzag, leaves of mature growth with blade relatively thin, principal lateral veins usually 8–10 pairs, margin distinctly serrate-crenate, flowers with the ovary glabrous, and capsules with relatively few seeds (3 or 4). A conservation assessment of “Least Concern” is recommended for this species based on IUCN Red List categories and criteria. Ecological associates are mentioned, including epiphytic ferns, orchids, birds attracted by the arillate seeds, and Lepidoptera (moths) for which it serves as host-plant.

**Keywords:** Afromontane Forest, *Casearia* sect. *Casearia*, Eastern Cape, epiphytes, KwaZulu-Natal, Lepidoptera, Maputaland Centre of Endemism, Maputaland-Pondoland-Albany Hotspot, Pondoland Centre of Endemism, Samydoideae, Scarp Forest, taxonomy, trees

### Introduction

*Casearia* Jacquin (1760: 21) is a pantropical genus comprising about 215 species of shrubs or trees (Mabberley 2017); its centre of diversity is in South America. At family level the genus has traditionally been treated in either Samydoideae, or Flacourtiaceae. In recent phylogenetic systems it is classified in a broadly circumscribed Salicaceae (which now includes the majority of the non-cyanogenic former Flacourtiaceae), more specifically subfamily Samydoideae (Byng 2014; APG IV 2016). Molecular phylogenetic analyses support Samydoideae as monophyletic, but some researchers still prefer to treat it at family level, namely a narrowly circumscribed Samydoideae (Samarakoon 2015). Diagnostic characters for the Samydoideae include loss of petals, presence of partly deciduous theoid (sensu Fernandes *et al.* 2016) leaf teeth, and leaf blades with pellucid punctations and/or lines (Fernandes *et al.* 2018). Based on DNA sequence data, four major clades are well supported, each being recognized at tribal level, with *Casearia* belonging to tribe Samydoideae (Samarakoon 2015).

With only two currently accepted named species, i.e. *Casearia gladiiformis* Masters (1871: 493) and *C. battiscombei* R.E.Fr. in Fries & Fries (1925: 326), *Casearia* is poorly represented in southern Africa (Africa south of the Kunene-Zambezi Rivers). In a regional revision of the genus, Killick (1976) recognised a single species in South Africa, namely *C. gladiiformis*, the type of which is from the lower Zambezi River Valley, central Mozambique. *Casearia junodii* Schinz in Schinz & Junod (1900: 52), based on material from southern Mozambique (Delagoa Bay), and much closer to South Africa, was treated by Killick (1976) as conspecific with *C. gladiiformis*, a species ranging from Kenya southwards, through Tanzania, Malawi and Mozambique, to South Africa. This decision to synonymise *C. junodii* with *C. gladiiformis*, follows the earlier revisions of Wild (1960) and Sleumer (1971).

For South Africa, Sleumer (1971) assigned herbarium specimens from northeastern KwaZulu-Natal (Maputaland) without reservation to *C. gladiiformis*. However, he noted that material from the rest of KwaZulu-Natal and further south in the Eastern Cape are somewhat different in having smaller leaves and, in herbarium specimens, that they are more papery (rather than leathery), with the margins distinctly serrate-crenulate (rather than entire), and in addition the fruits are somewhat smaller. This latter allopatric entity is quite distinct in the field and has for some time now been recognized as a separate species (“*Casearia sp. nov.*”) in the local tree literature (e.g. Von Breitenbach *et al.* 2001; Coates Palgrave 2002; Boon 2010; Van Wyk *et al.* 2011). In the present contribution it is formally described as *C. austroafricana*.

The oldest herbarium specimens of *Casearia austroafricana* seen by us are from a gathering of a relatively small-leaved form of the species made in 1903 by the Durban Botanic Gardens horticulturist, James Wylie [1861–1947], at Nkandla Forest about 75 km SSW of Eshowe, KwaZulu-Natal. These collections were subsequently distributed under the collecting number of the garden’s curator, John Medley Wood [1827–1915] (*Wood 8987* in NH, PRE), although he did not accompany Wylie on this particular collecting trip (Wood 1903). This locality is at the northern limits of the distribution range of the new species. It must have taken some time to establish the identity of this material, because no mention of any members of *Casearia* was made in Wood (1907), the latter being a list of all the plant species known at the time to be indigenous to Natal (the former name for KwaZulu-Natal). Only in 1913 did Wood, in an addendum to his earlier species lists for the province, announce the first record of *C. junodii* for Natal based on the above-mentioned collection from Nkandla (Wood 1913: 49). The next comprehensive plant species list for the province appeared eight years later (Bews 1921: 141), and in it Nkandla Forest is still mentioned as the only known locality for *C. junodii* in Natal.

The first collection of *C. austroafricana* away from Nkandla Forest dates from 1916 and was by the forest botanist Thomas Roberson Sim [1858–1938] in the KwaZulu-Natal midlands at Blinkwater, New Hanover District (*Sim 20415* in PRE). This was followed by collections of flowering and fruiting material made in August 1918 and 1919 by John Spurgeon Henkel [1871–1962] in the Pietermaritzburg Botanical Gardens, now called the KwaZulu-Natal National Botanical Garden (*Henkel s.n., sub PRE 47832, PRE 47842*). Henkel was a forester and field botanist with a special interest in the tree flora of South Africa. The new species is relatively common in mistbelt forest in and around Pietermaritzburg, but Henkel’s herbarium specimens most probably originated from cultivated trees. There are at least two old trees still in the garden today and these may well be the same trees from which the material was obtained. To the collection made in 1918 (*PRE 47832*) is attached a typed letter in which Henkel expressed the view that he believes the tree to be an unnamed species. At the time material was sent to Kew Herbarium for identification. A note on the subsequent collection made in 1919 (*PRE 47842*) indicates that Kew first suspected the material to be that of an introduced species, but later changed their view and reported that it is probably undescribed.

In September 1921 more material of the new species was collected from further south in forests around Port St. Johns, Eastern Cape (e.g. *Miller 1476, sub F.D. Herb 3637* in PRE), and suspected to be from yet another undescribed species. A subsequent annotation on the above-mentioned collection by Miller suggests that the material may represent an undescribed species related to *C. junodii*. However, in his influential book on the woody plants of Natal and Zululand, Henkel (1934) adopted the name *C. junodii* for this taxon first considered by him to be undescribed. Subsequently this name was consistently applied to all the *Casearia* material from South Africa, until the species was placed in synonymy with *C. gladiiformis* by Wild (1960). Despite Sleumer (1971) mentioning that some of the collections from South Africa are not typical for *C. gladiiformis*, Killick (1976) continued to use the name *C. gladiiformis* for all South African material of the genus.

## Materials and methods

Descriptions and observations in the present paper are based on extensive field work to study variation patterns of *Casearia* plants in their natural habitat in KwaZulu-Natal and the Eastern Cape, supplemented by information obtained from the literature. Herbarium material of the genus has been studied in NH, NU, PCE, PRE, PRU and UDW (acronyms according to Thiers 2018). In the section “Additional collections (paratypes)”, locality citations were reproduced as per the specimen labels. In a few cases the spelling of locality names were corrected and are shown in square brackets. The specimens are arranged according to the Degree Reference System proposed by Edwards & Leistner (1971); the quarter degree grid reference is supplied between brackets after each locality cited. A conservation assessment was done following the standard procedure based on IUCN guidelines (IUCN 2012; Raimondo *et al.* 2009).

## Taxonomic treatment

### *Casearia austroafricana* A.E.van Wyk, R.G.C.Boon & Retief, *sp. nov.* (Figs. 1 & 2)

*Casearia austroafricana* resembles *C. gladiiformis*, but is easily distinguished from this species by, amongst others, growing under temperate or subtropical conditions, always in or near forest (*vs.* tropical, and in either open woodland, thicket or forest), with the trees becoming taller (>20 m *vs.* <10 m), in having young twigs usually markedly zigzag (*vs.* straight or weakly zigzag), leaves of mature growth with blade relatively thin (firmly chartaceous *vs.* coriaceous), margin glandular-serrate (*vs.* entire), ovary glabrous (*vs.* hirsute, at least towards the apex), and fewer seeds per capsule (3 or 4 *vs.* ca. 10).

**Type**—SOUTH AFRICA. KwaZulu-Natal: Ndwedwe District, Itafamana Mission, on TMS [Table Mountain sandstone] cliffs, 2500 ft [850 m], 2930DB, 16 July 1966, *E.J. Moll 3290* (holotype PRE!, isotype NU!).

“*Casearia sp. nov.*” in Coates Palgrave (2002: 768); Boon (2010: 368).

Illustrations: Killick (1976: Fig. 30, 1 & a); Boon (2010: 369, bottom three photographs).

Tree, often more than 20 m, occasionally up to about 30 m high. *Trunk* single, rarely multitemmed, up to 0.6 m diameter at breast height; bark pale brown, flaking in old specimens, lenticels prominent; slash cream with vague yellow streaks, pale purple just below last-formed periderm. *Branchlets* more or less drooping, sometimes superficially resembling large pinnately compound leaves; twigs often conspicuously zigzag, especially in young plants, green in older plants, but often silvery white in young plants, becoming pale brown with age, lenticellate, puberulous, soon becoming glabrous. *Leaves* alternate, distichous; blade shiny mid to dark green above, somewhat duller and slightly paler green below, glabrous, with randomly scattered pellucid dots and lines, oblong, lanceolate, oblong-lanceolate, ovate or narrowly elliptic, (35–)80–135(–150) × (15–)30–50(–65) mm, firmly chartaceous, midrib pale green, raised on both surfaces, but more so below, in dried material often narrowly channelled above, principal lateral veins in (5–)8–10(–12) pairs, apex acute or acuminate, often elongated into a drip-tip, base cuneate, usually slightly oblique, margin glandular serrate or glandular serrate-crenate, apical glands (colleters) ca. 0.5 mm long, early deciduous, serrations especially prominent in saplings; petiole (3–)5–8(–10) mm long, shallowly channelled above; stipules early caducous, narrowly triangular, ca. 2 × 0.5 mm, pubescent. *Inflorescence* axillary, sessile, glomerate, up to 13-flowered, produced from a cushion-like structure formed by scale-like bracteoles. *Flowers* faintly scented, ca. 4 mm in diameter; pedicels up to 3 mm long, puberulent. *Sepals* concave, pale green, 5(or 6), suborbicular, puberulent or glabrescent on the back, persistent, apex with translucent margin, margins slightly lacerate, becoming pale brown in fruit. *Petals* 0. *Staminal tube* united for about 0.3–0.5 mm and then dividing into fertile stamens and staminodes. *Stamens* (6–)7 or 8(–10); filaments ca. 1.5 mm long, puberulous; anthers broadly elliptic, becoming ovate after dehiscence, ca. 0.5 mm long, glabrous, pollen whitish; staminodes as many as and alternating with the stamens, as long as or slightly shorter than the filaments, flattened, oblong with apices weakly 3-pointed, greenish yellow, with white hairs towards apices. *Ovary* superior, 1-locular, ovoid, ca. 1.75 × 1 mm, glabrous; style ca. 0.5 mm long, persistent in fruit; stigma capitate. *Fruit* an ovoid to ellipsoid capsule, slightly 3-angular, ca. 15 × 10 mm, smooth, somewhat fleshy, chrome yellow when ripe, dehisces into 3 longitudinal valves. *Seeds* 3 or 4 per capsule, ovoid, ca. 4 × 3 mm, testa pale beige, smooth, enclosed in a soft, membranous, fimbriate, salmon-orange aril.

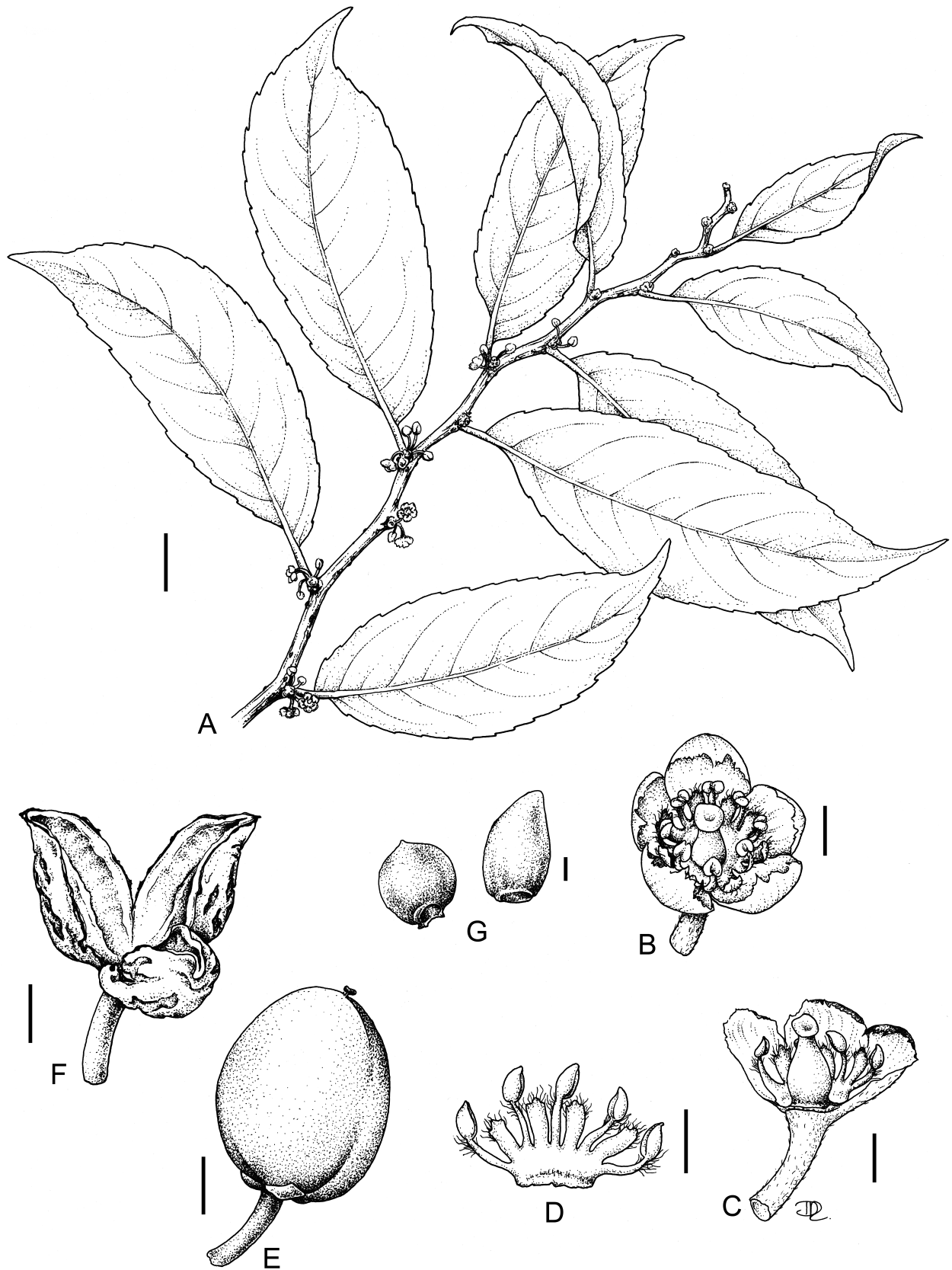
**Phenology**—Flowering has been observed in trees of about 8 m or more in height. Flowers were recorded mainly from January to May. Fruits ripen mostly from June to October.

**Etymology**—The specific epithet is the Latin for “South Africa”, chosen because the new species is the only member of *Casearia* endemic to the country.

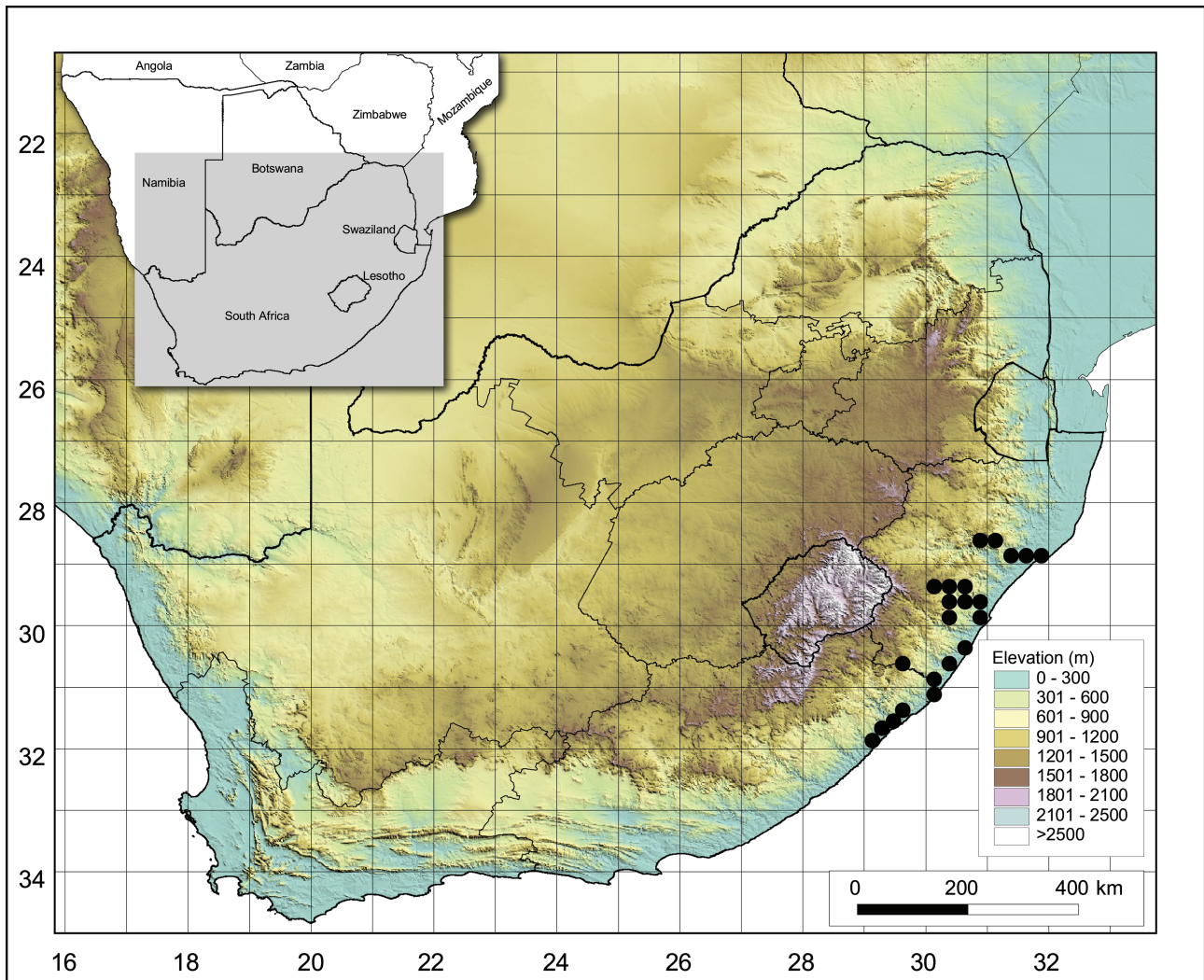
**Distribution and habitat**—Occurs from Nkandla and Qudeni Forests in northern KwaZulu-Natal, southwards through the KwaZulu-Natal midlands and Pondoland to the Manubi Forest near Mazeppa Bay in the Eastern Cape (Fig. 3). Mainly associated with temperate Afromontane (Mist) Forest and subtropical Scarp Forest. Of the former type it seems to prefer Mist Belt Mixed *Podocarpus* Forest (Edwards 1967) of the KwaZulu-Natal midlands, and of the latter type Pondoland Scarp Forest (Mucina *et al.* 2018). Note that the claim by Mucina *et al.* (2018: Table 6.9) that *C. austroafricana* (their “*Casearia sp. nov.*”) is endemic to Pondoland Scarp Forest, is incorrect. The species has a much wider distribution and is an endemic of the Maputaland-Pondoland Region/Hotspot (Van Wyk & Smith 2001; Steenkamp *et al.* 2004). It is, however, absent from more tropical northern coastal forest types in KwaZulu-Natal and from woodland. Typically a constituent of climax forest, but occasionally found on forest margins or on riverbanks in forested river gorges. The species has been recorded on a variety of soils mainly derived from granite, sandstone, shale or dolerite.



**FIGURE 1.** *Casearia austroafricana*. A. Fruiting branchlet placed horizontally; to view original hanging orientation, turn plate 90° clockwise. B. Flowers. C. Ripe and dehiscent fruit. Photographs: R.G.C. Boon.



**FIGURE 2.** *Casearia austroafricana*. A. Flowering branchlet. B. Flower. C. Flower; one sepal and half the staminal tube removed. D. Part of staminal tube opened out. E. Fruit. F. Dehisced fruit; seeds all shed. G. Seeds, both from same capsule and each covered by an aril. Scale bar = 10 mm (A, E & F), or 1 mm (B–D & G). A–D from Luckhoff *s.n.*, sub NH 32946, E & G from Miller 5824 and F from Miller 652. Artist: Daleen Roodt.



**FIGURE 3.** Topographical map showing the known distribution (black dots) of *Casearia austroafricana* based on herbarium collections in NH, NU, PCE, PRE, PRU and UDW. The insert shows a map of southern Africa with names of countries; the grey rectangle indicates the area depicted by the topographical map.

**Ecological associates:**—Although a subcanopy or canopy tree up to about 30 m in some forest types, the ecology and associates of the species are poorly known. Mature trees are host to epiphytes such as the ferns *Pleopeltis macrocarpa* (Bory ex Willdenow 1810: 147) Kaulfuss (1820: 41) and *P. polypodioides* (Linnaeus 1753: 1068) E.G.Andrews & Windham in Windham (1993: 46) subsp. *ecklonii* (Kunze 1836: 249) Roux (2009: 163), the orchids *Polystachya ottoniana* Reichenbach (1855: 249) and *Mystacidium venosum* Harv. ex Rolfe (1912: 79), and many moss and lichen species. The aril-covered seeds are popular with fruit-eating birds, especially Cape White-eyes (*Zosterops capensis virens* Sundevall 1850: 101). As to potential pollinators, only blow flies (Diptera: Calliphoridae) were seen visiting the flowers.

In a comprehensive catalogue of known Lepidoptera host-plants in southern Africa, Kroon (1999) listed no larval associations with members of *Casearia*. One of us (RGCB) has now recorded a greenish yellow caterpillar with brownish black markings feeding on *Casearia austroafricana* in the KwaZulu-Natal National Botanical Garden (Fig. 4A). This larva is that of a moth belonging to the family Geometridae, subfamily Larentiinae. Although its identity can only be certain if reared to adult, it is most likely *Chloroclystis muscosa tumefacta* Prout (1917: 57), a polyphagous larentiine (Staude *et al.* 2016: S79; H.S. Staude, pers. comm.). In what may well be a case of host specificity, another caterpillar was found on *C. austroafricana* by lepidopterologist H.S. Staude (pers. comm.). This particular larva rolls up the leaf and feeds within the shelter (Fig. 4B & C). It was subsequently reared to adult (rearing number 16HSS38) and turned out to be an as yet undescribed moth of the tribe Archipini (Tortricidae).

**Conservation:**—*Casearia austroafricana* is relatively widespread and not uncommon. There are several subpopulations and many of the larger forest patches with which it is associated enjoy some form of protection. As

there are no severe threats to this species, the population is not suspected to be declining and it is categorised as “Least Concern” according to the IUCN Red List Category and Criteria (IUCN 2012).



**FIGURE 4.** Lepidoptera that use *Casearia austroafricana* as host-plant. A. Larva of a moth belonging to the family Geometridae, subfamily Larentiinae; probably *Chlorochystis muscosa tumefacta*. B & C. Larva (B) and adult (C) of an as yet undescribed moth of the tribe Archipini (Tortricidae). Rearing number of B & C: *Staude 16HSS38*. Photographs: R.G.C. Boon (A) and H.S. Staude (B & C).

**Common names:**—Existing names include swordleaf, southern swordleaf, *suidelike bosswaardblaar* (Afrikaans), *smozob* (Zulu?; from *Henkel s.n.*) and *qokama* (Xhosa; from *Acocks 12820*).

**Notes:**—*Casearia austroafricana* belongs to section *Casearia*, the only one of the six proposed sections in the genus represented outside of the New World (Sleumer 1980). With the recognition of *Casearia austroafricana*, the distribution of *C. gladiiformis* in South Africa is confined to that part of KwaZulu-Natal to the east of the Lebombo Mountains and to the north of Richard’s Bay. Known as Maputaland, this rather featureless low lying coastal plain is at the southern end of the tropics in Africa and many plant and animal species reach the southernmost limit of their range here (Van Wyk & Smith 2001). Hence the distribution pattern displayed by *C. gladiiformis* is typically that of a tropical species. *Casearia austroafricana*, on the other hand, favours subtropical to temperate conditions and has not yet been recorded from Maputaland. The two species can therefore be distinguished on climatic preference and geographical distribution alone.

The maximum elevation *Casearia gladiiformis* occurs at locally is about 60 m a.s.l. It grows in swamp forest, coastal forest, sand forest, thicket and woodland and is usually a large shrub or small tree less than 8 m tall. The leaves are very glossy above, leathery, entire and the midrib on the upper surface is often yellowish and up to 2 mm wide. Occasionally specimens may have leaves with a few serrations (notably on sucker shoots), but these are rather indistinct. *Casearia austroafricana*, on the other hand, usually grows at much higher elevations (up to ca. 1600 m a.s.l.) and is a forest tree, usually with a single bole and when mature is more than 20 m tall. It has relatively thin leaves with conspicuously serrate-crenate margins and the midrib above is quite narrow (ca. 0.3 mm) and often narrowly channelled in dried material. Twigs, especially in young growth, are also more pronouncedly zigzag than those of *C. gladiiformis*. Both species, however, are similar in having leaf blades with randomly scattered pellucid dots (secretory cavities) and lines (secretory ducts).

In floral and fruit features these two species are very similar, but the ovaries in *C. austroafricana* are glabrous (*vs.* hairy, at least towards the apex), and the capsules usually contain fewer seeds (less than five, *vs.* about ten). Flowering times, however, are quite different. *Casearia austroafricana* has its peak flowering period from January to May (late summer and autumn) and fruits in spring, whereas *C. gladiiformis* flowers mainly from late September to beginning of October (early spring) and fruits in summer.

*Casearia battiscombei* (Wild 1960: 295, Tab. 52A) resembles *C. austroafricana* in also being a tall (up to 40 m) forest tree, but in southern Africa it is rare and confined to the highlands of eastern Zimbabwe and bordering western Mozambique (otherwise known from Malawi, Tanzania, Kenya and Uganda). We have contrasted *C. austroafricana* mainly with *C. gladiiformis*, the species under which it hitherto has consistently been treated. It may, however, have a closer affinity with *C. battiscombei*, but the latter is comparatively poorly known and descriptive information in the literature is rather scant. *Casearia austroafricana* differs from *C. battiscombei* in having leaves with fewer principal lateral veins (8–10 vs. 14–20 pairs), distinctly and regularly serrate-crenate margins (vs. entire or rarely shallowly and irregularly crenulate), glabrous anthers (vs. minutely pubescent) and smaller seeds (4 × 3 mm vs. 6 × 4.5 mm). Coates Palgrave (2002) described the aril of *C. battiscombei* as “pale whitish”, which is quite different from the salmon-orange state in *C. austroafricana*, or the shades of orange (becoming reddish when exposed to air), which are the prevailing colours in other members of the genus, but this statement is in need of confirmation as it may well be a mistake.

**Additional collections (paratypes):**—SOUTH AFRICA. **KwaZulu-Natal:** Qudeni Forest, 5000 ft [1524 m], (2830DB), 8 October 1941, *Bayer 831* (NU!, PRE!); Nkandla, (2831CA), 4 April 1986, *Jordaan 766* (NH!, PRE!); Nkandla District, Bhoyiza Village, Nkandla Forest Reserve, ca. 1 km from NE boundary of reserve, (2831CA), 16 May 2001, *Ngwenya 2245* (NH!); Nkandla District, lower Nkandla Forest, (2831CA), 18 June 1956, *Edwards 1446* (PRE!); Nkandla District, Nkandla Forest, (2831CA), 29 May 1959, *Schutz 959* (PRE!); Zululand, Nkandhla [Nkandla], (2831CA), 27 March 1903, *Wood 8987* (NH!, PRE!); Eshowe, opposite town hall, (2831CD), 16 July 1937, *Gerstner 2057* (PRE!); Eshowe, Dlinza Forest, (2831CD), 2 August 1949, *Lawn 986* (NH!); Forest near Entumeni Road, 6 miles from Eshowe, (2831CD), February 1950, *Lawn 1621* (NH!); Nkandla, north-west side of Ngoye Forest, (2831DC), 26 February 1970, *Moll 4953* (NH!, PRE!); Nkandla, Ngoye Forest, c. 1000 ft [c. 305 m], (2831DD), 4 June 1972, *Moll & Muller 5673A* (NH!); Karkloof, 5000 ft [1524 m], (2930AC), June 1940, *Bayer 821* (NU!, PRE!); Howick, The Start, 3000 ft [914 m], (2930AD), 20 November 1967, *Cooper 3* (NH!, PRE!); Lions River District, farm The Start, (2930AD), 01 October 1966, *Moll 3366* (PRE!); Lions River District, farm The Start, (2930AD), 22 February 1967, *Moll 3537* (PRE!); New Hanover District, Blinkwater, (2930BC), 1916, *Sim 20415* (PRE!); Pietermaritzburg, Botanic Gardens, (2930CB), 17 August 1946, *Bayer 1421* (NU!); Pietermaritzburg, Kettlefontein Mountain Rise, 200 yards above level crossing, (2930CB), 29 September 1956, *Butcher s.n.* (NH!); Pietermaritzburg, Botanical Gardens, (2930CB), 6 August 1918, *Henkel PRE 47832 & 47842* (PRE!); Pietermaritzburg, Zwakop [Swartkop] Valley, (2930CB), September 1919, *Henkel PRE 47843* (PRE!); Pietermaritzburg, Botanical Gardens, (2930CB), August 1940, *Luckhoff s.n. NH 32946* (PRE!); Pietermaritzburg, Town Hill, c. 3000 ft [c. 914 m], (2930CB), 18 February 1962, *Moll 548* (NU!); Sweetwaters, 2500 ft [762 m], (2930CB), 1916, *Sim 19354* (NU!); Baynesfield, farm of R. Moody, (2930CD), 15 September 1987, *Nichols 972* (NH!); Camperdown, Nagle Dam, in partially cleared forest below west krantz, 2800 ft [853 m], (2930DA), 22 June 1957, *Wells 1495A* (NU!); Gillits, Long Shadows, (2930DD), 14 June 1973, *Moll 5726* (PRE!); Long Shadows, downriver of Acutts Drive, Krantzklouf Nature Reserve, (2930DD), 8 January 2005, *Styles 2167* (NH!); Ngele, forest patch, 1244 m, (3029DA), 20 February 2012, *Grieve 74* (PCE!); Kokstad, Weza State Forest, Lorna Doone, along Hoopoe Trail, (3029DA), 3 October 1983, *Nicholas 1577* (NH!); Mt. Ingeli [Ngeli], (3029DA), 2 January 1969, *Nicholson 760* (PRE!); Weza, Mt. Ngele, Bangeni Forest, (3029DA), 23 November 1994, *Van Wyk 12523* (PRU!); Umzinto District, Vernon Crookes Nature Reserve, streamside in forest near the main gate, 420 m, (3030BC), 20 November 1984, *Balkwill & Cadman 2177* (NU!, PRE!); Mtwalume River, farm Mgai, in kloof, (3030BC), 23 June 1972, *Nicholson 1249* (PRE!); Port Shepstone, river valley just south of Success, 1700 ft [518 m], (3030CB), 19 July 1967, *Moll 3591* (NH!, NU!, PRE!, UDW!); Port Shepstone, Umtamvuna Nature Reserve, Smedmore Forest, under north krans, (3030CC), 24 November 1984, *Abbott 2224* (PCE!, PRU!); Port Shepstone, Burntwood, Paddock, (3030CC), 4 September 1965, *Strey 5995* (NH!, PRE!); Umtamvuna Nature Reserve, Smedmore Forest, (3030CC), 4 September 1994, *Van Wyk BSA 2579* (PRU!); South Coast, Umzumbe, Bonnievale Farm, (3030DA), 16 June 1977, *Nicholson 1778* (PRE!); Umtamvuna Nature Reserve, SE of Rooielsbos, (3130AA), 28 January 1984, *Abbott 1688* (PCE!, PRU!); Umtamvuna River, forest fringe, (3130AA), 16 February 1972, *Nicholson 1173* (PRE!). **Eastern Cape:** Transkei, Kwaka [Icwaka] River, 300 m, (3030CC) *Abbott 2915* (NH!, PCE!, PRU!); Hlolweni River, S of Umtamvuna Nature Reserve, (3030CC), 20 April 1989, *Abbott 4352* (PRU!); Port St. Johns, Egossa Forest, (3129BC), 22 August 1969, *Strey 8870* (NH!, NU!, PRE!, UDW!); Port St. Johns, Caguba, (3129CB), 16 August 2002, *Schuhardt DS03695* (PRE!); Transkei, Qokama Forest, 9 miles from Ngqeleni on road to coast, (3129CC), 28 July 1946, *Acocks 1338* (PRE!); Ngqeleni District, Qokama, (3129CC), 28 July 1946, *Acocks 12820* (PRE!); Port St. Johns, (3129DA), May 1929, *Kotze PRF 7302* (PRE!); Port St. Johns, Siqora Forest, (3129DA), September 1921, *Miller D42* (PRE!); Port St. Johns (3129DA), *Miller FD 7302* (PRE!); Port St. Johns District, Sigovu Forest, (3129DA), September 1921, *Miller 1476 FD 3637* (PRE!); Port St. Johns, Mount Sullivan, Nxolweni Forest, below Devil’s Bite, near Umtweni, (3129DA), 13 April 1990, *Van Wyk 10140* (PRU!); Transkei, Mzamba, iNgwanyama [Engonyama] River, Tributary to



the Mzamba River, (3130AA), 29 August 1994, *Arnell 229* (PRU!); Mzamba, Hlolweni/Icwaka Rivers junction, 260 m, (3130AA), 19 November 1994, *Abbott 6554* (PCE!, PRU!); Transkei, Mzamba, Hlolweni River at junction with Icwaka, (3130AA), 15 December 1994, *Abbott 6629* (PRU!); Transkei, Elliotdale District, Mpame Forest, (3228BB), September 1924, *Miller D278* (PRE!); Kentani District, Manubi Forest, (3228BC), 16 September 1954, *Marais 481* (PRE!); Manubi, in moist forest, (3228BC), 15 October 1988, *Van Daalen 420* (PRE!); Transkei, Mazeppa Bay, Manubi Forest, (3228BC), 30 July 1988, *Van Wyk 8285* (PRU!); Elliotdale District, The Haven, 1 mile SW of Ntlonyana, (3228DB), 13 May 1967, *Gordon Grey 1441* (NU!)

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