

# A synoptic revision of the Malagasy endemic genus *Calantica* Jaub. ex Tul. (Salicaceae)

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## ABSTRACT

### KEY WORDS

*Calantica*,  
Flacourtiaceae,  
Madagascar,  
new species,  
revision,  
Salicaceae,  
new species.

A synoptic revision of the Malagasy endemic genus *Calantica* Jaub. ex Tul. is presented. Ten species are recognized, of which seven are threatened. Three species are newly described: *C. olivacea* Appleg., Phillipson & G. E. Schatz, sp. nov., *C. pseudobiseriata* Appleg., Phillipson & G. E. Schatz, sp. nov., and *C. sphaerocephala* Appleg., Phillipson & G. E. Schatz, sp. nov. An identification key to the species of *Calantica* is provided.

## RÉSUMÉ

*Révision synoptique du genre endémique malgache Calantica (Salicaceae).*

**MOTS CLÉS**  
*Calantica*,  
Flacourtiaceae,  
espèce nouvelle,  
Madagascar,  
révision,  
Salicaceae,  
espèces nouvelles.

Une révision synoptique du genre malgache endémique *Calantica* Jaub. ex Tul. est présentée. Dix espèces sont reconnues, dont sept sont menacées. Trois espèces sont nouvellement décrites : *C. olivacea* Appleg., Phillipson & G. E. Schatz, sp. nov., *C. pseudobiseriata* Appleg., Phillipson & G. E. Schatz, sp. nov., et *C. sphaerocephala* Appleg., Phillipson & G. E. Schatz, sp. nov. Une clé de détermination des espèces de *Calantica* est proposée.

## INTRODUCTION

*Calantica* Jaub. ex Tul. is a small genus endemic to Madagascar. Traditionally placed within Flacourtiaceae, it and many other genera have been transferred to an expanded Salicaceae (Chase *et al.* 2002) on the grounds that the former family was not monophyletic. Species included within *Calantica* are woody plants with alternate, penninerved leaves. The flowers are 4–8-merous, with the sepals and petals usually varying in number within species and even within individuals. The oppositipetalous stamens may be borne singly (i.e. one opposite each petal) or in fascicles or clusters of three to six per petal. There is consistently one stamen or cluster of stamens per petal. There is a single large gland at the base of each sepal and an often broad, often pubescent receptacular disc; at anthesis the perianth parts generally spread so that the stamens, gynoecium and sepal glands are conspicuously displayed. The defining floral morphology is virtually identical to that of the larger and more widespread genus *Homalium* Jacq., except that the ovary of *Calantica* is superior rather than semi-inferior as in *Homalium*.

Tulasne (1857) included two species within *Calantica*, *C. cerasifolia* (Vent.) Tul. and *C. grandiflora* Jaub. ex Tul. Baillon (1886) placed *Bivinia jalbertii* Tul., which occurs in East Africa as well as Madagascar, within *Calantica* as *C. jalbertii* (Tul.) Baill. However, no later author has accepted that placement (Perrier de la Bâthie 1940, 1946; Sleumer 1973); *Bivinia* Jaub. ex Tul. is morphologically distinct, lacking petals and having stamens in fascicles of six to eight and long dense spiciform inflorescences. A third species, *C. lucida* Scott-Elliot, was published by Scott-Elliot (1891). Perrier de la Bâthie (1940, 1946) recognized five species in the Malagasy flora, describing two new species, *C. biseriata* H. Perrier and *C. decaryana* H. Perrier, that represented the first inclusion within the genus of species with three to six stamens per petal. He stated (1940: 284) that there were nine species in the genus, “les autres des autres îles de la région malgache ou de Mozambique,” but it is not clear to what taxa he was referring, as no species of *Calantica* have ever been described from outside Madagascar. The last

revisionary treatment (Sleumer 1973) recognized a total of seven species, including two additional new species, *C. chauvetiae* Sleumer and *C. capuronii* Sleumer. Since that treatment, further material has been made available from formerly poorly collected areas of Madagascar and it has become clear that additional undescribed species are present, motivating the publication of this synoptic revision.

A major question regarding the evolutionary history of *Calantica* is its relationship to *Homalium*. *Homalium* has more diverse inflorescence morphology, with many species having elongated spiciform inflorescences that do not occur in *Calantica*, and sometimes has a strongly accrescent perianth. Like *Calantica*, *Homalium* includes groups of species with one stamen per petal and groups with multiple stamens per petal. If the two genera are monophyletic, then parallel changes in androecial morphology have taken place in both. A possible alternative hypothesis of relationships is that homoplasious changes in ovary position have occurred, in which case one of the two genera as currently recognized, presumably *Calantica*, would be polyphyletic and the other paraphyletic. Perrier de la Bâthie (1940: 286), in publishing the first two multistamened species of *Calantica*, noted that the parallel morphology in *Homalium* “renforce singulièrement les affinités de ces 2 genres et montre nettement le peu de valeur dans ce groupe des caractères basés sur l’adhérence de l’ovaire à la coupe réceptaculaire...”, which seems to suggest that he doubted the two to be natural groups. In the absence of molecular data, given the need to resolve alpha taxonomic issues for conservation purposes, we continue to recognize *Calantica* as it has traditionally been circumscribed.

## MATERIAL AND METHODS

Herbarium specimens at P and MO were examined, as were then-undistributed duplicates for exchange available at those herbaria and images available through the JSTOR Plants database of types held by other institutions. Preliminary evaluation of conservation status according to

IUCN Red List Categories and Criteria (IUCN, 2001) was performed for each taxon recognized by mapping specimen records and thereby calculating the Extent of Occurrence, estimating the Area of Occupancy, and determining the number of locations in relation to threat. As of January 2012, diagnoses of new taxa may be published in either Latin or English. Because we have reason to believe that most Malagasy botanists find English more accessible than Latin, we have chosen to provide diagnoses in English.

## SYSTEMATICS

### Genus *Calantica* Jaub. ex Tul.

*Annales des Sciences naturelles, Botanique*, sér. 4, 8: 74-75 (1857). — Lectotype (designated by Sleumer in *Adansonia*, sér. 2, 12: 539 [1973]): *C. cerasifolia* (Vent.) Tul.

## REMARKS

Ten species of *Calantica* are recognized, including three newly described species. The key to these species emphasizes floral morphology; some species would be difficult to reliably identify from sterile material. Since the fruits are small and the perianth is persistent, most characters of the perianth, and to some extent the androecium, remain observable in fruiting material. Descriptions of floral color, provided for their potential informative value, are derived, for some species, in part from field observations and photographs of live material, and for others, solely from label data. As color of floral structures appears to vary in the better-collected species, both among individuals and over time, these descriptions in poorly known species may not adequately represent the true range of variation and should be used with caution.

### KEY TO THE SPECIES OF *CALANTICA* JAUB. EX TUL.

1. Stamens equal in number to petals; sepal glands often with a corrugated or reticulate surface but not pubescent ..... 2
- Stamens 3 or 5-6 times as many as petals; sepal glands densely short-pubescent on upper surface ..... 6
2. Inflorescences cauliflorous, borne mostly on larger twigs and branches; sepals bearing prominent gland-tipped projections on margins ..... 10. *C. sphaerocephala* Appleq., Phillipson & G. E. Schatz, sp. nov.
- Inflorescences all or mostly lateral, never cauliflorous on large stems; sepals lacking gland-tipped projections on margins ..... 3
3. Flowers (8-)10-15 mm in diameter; abaxial sepal surfaces pilose; ovary sparsely or apically pubescent to glabrate ..... 6. *C. grandiflora* Jaub. ex Tul.
- Flowers (4-)5-7.5(-9) mm in diameter; abaxial sepal surfaces pubescent with very short erect trichomes or sericeous with upward-pointing trichomes; ovary densely pubescent throughout ..... 4
4. Shrub (tree); leaves narrowly elliptical (to elliptical), to 4.2 cm long, the apex acute (to slightly acuminate) with a rounded tip; stipules <0.5(-0.7) mm long; abaxial surface of sepals sericeous, usually densely; near Tolagnaro (extreme SE Madagascar) ..... 7. *C. lucida* Scott-Elliot
- Trees, rarely described as shrubby or lianoid; leaves elliptical to broadly elliptical, oblong, obovate, or oblanceolate, variable in size, the apex cuspidate to acuminate (atypically retuse, emarginate, rounded or acute); stipules >0.7 mm long, sometimes several times longer; abaxial surface of sepals short-pubescent ..... 5

5. Leaves elliptical to oblong, broadly elliptical, obovate, or oblanceolate, (1.5-)4.5-17 cm long, usually drying to light to dark brown (or pale, mottled or discolored green); leaf apex cuspidate (to short-acuminate, retuse, emarginate, rounded or acute); inflorescences usually many-flowered ..... 3. *C. cerasifolia* (Vent.) Tul.  
 — Leaves lanceolate to ovate or narrowly elliptical, 3-10.5 cm long, usually drying to pale olive drab adaxially, pale olive brown abaxially; leaf apex acuminate with a rounded tip; inflorescences (4-)8-20-flowered .....  
 ..... 8. *C. olivacea* Appleq., Phillipson & G. E. Schatz, sp. nov.
6. Stamens in groups of 5-6 per petal ..... 7  
 — Stamens in groups of 3, with 1 internal and 2 external ..... 8
7. Leaves 4-11 × 3-4.5 cm, the apices cuspidate; SE Madagascar ..... 2. *C. capuronii* Sleumer  
 — Leaves 1.2-3.4 × 0.6-1.3 cm, the apices rounded to obtuse; SW Madagascar .....  
 ..... 5. *C. decaryana* H. Perrier
8. Shrub; leaf margins subentire; inflorescences 1-4-flowered; SW Madagascar ..... 4. *C. chawetiae* Sleumer  
 — Tree; leaf margins serrate to crenate-serrate or serrulate; inflorescences mostly >4-flowered; W to NE Madagascar ..... 9
9. Ovary densely white-puberulent, sparsely puberulent in fruit; styles <0.5 mm long; dry forest in W to extreme N Madagascar ..... 1. *C. biseriata* H. Perrier  
 — Ovary dark, sparsely puberulent, becoming glabrate in fruit; styles 1.5-2 mm long; humid forest in NE Madagascar .....  
 ..... 9. *C. pseudobiseriata* Appleq., Phillipson & G. E. Schatz, sp. nov.

1. *Calantica biseriata* H. Perrier

*Mémoires du Muséum national d'Histoire naturelle, Paris*, n.s., 13: 285 (1940). — Type: Madagascar, Prov. Mahajanga, bords rocaillieux et boisés du Kapiloza (Ambonga), II.1905, fl., *Perrier de la Bâthie 1799* (lecto-, designated by Sleumer [*Adansonia*, sér. 2, 12: 543], P!; iso-, L, photo seen).

ADDITIONAL MATERIAL EXAMINED. — **Madagascar.** Prov. Antsiranana, Diego region, Joffreville district, c. 27 km SW of Diego Suarez (Antsiranana) on Diego Suarez-Joffreville road and c. 3.75 km E of Joffreville city center, c. 500 m from road on road to habitation, 12°28'31"S, 49°13'07"E, 660 m, 17.IV.1993, fr., *Harder et al. 1624* (MO).

Prov. Mahajanga, Tsingy de Bemaraha N of the Manambolo river, 19°09'S, 44°49'E, 50 m, 5.XII.1996, fl., *Jongkind et al. 3398* (MO). — Environs rivière Ambodiriana, à l'E d'Ambinda (RN 9, près d'Antsalova), 18°38'S, 44°42'E, 100-200 m, 4.XII.1992, buds, *Labat & Deroin 2294* (MO, P). — Tsingy du Bemarahy [Bemaraha] (9<sup>e</sup> Réserve), Andranoboka, 200-300 m, 27.XI.1932, *Leandri 548* (P×2). — Bemaraha Nord, 20-30.XI.1932, fl., *Leandri 663bis* (P). — Antsingy, vers Ambodiriana (E

d'Antsalova), bord de la piste Tsiandro-Antsalova, 100-150 m, 9.XII.1952, fr., *Leandri 2096* (MO, P×2). — Kay, près Kimadio, environs de Mavetanana [sic], IX.1905, fl., *Perrier de la Bâthie 6730* (P). — R.N. 8 [Namoroka], canton Andranomavo, district Soalala, 8.IV.1952, fl., *Réserves Naturelles 3894* (MO, P). — R.N. IX [Bemaraha], district Antsalova, 7.XII.1952, *Réserves Naturelles 4674* (P). — Forêt de l'Antsingy, clairière d'Ambodiriana (route Antsalova-Tsiandro), 9.XII.1952, fr., *Service Forestier 6806* (MO, P). — Bekorabaka, canton Kandreo, district Maevatanana, bord d'un ruisseau (Bekoratsaka), 27.XII.1957, fr., *Service Forestier 19033* (P×2). — Andrafiarena [River] (affluent du haut Rodo), 8.II.1966, fl., *Service Forestier 24545* (P).

DISTRIBUTION AND ECOLOGY

*Calantica biseriata* is native to forests of western to northern Madagascar, often bordering rivers or streams, on limestone.

REMARKS

*Calantica biseriata* is a tree to 20 m, sometimes multi-trunked, with finely fissured bark. The pet-

als are reddish or reddish-green, while the sepals may be green; the glands and anthers are (at least sometimes) yellowish and the filaments reddish.

#### *Ethnobotany*

The semi-soft wood of *Calantica biseriata* is used for construction (*Service Forestier 19033*).

#### *Vernacular names*

Hazoambo (*Labat & Deroin 2294*); Hazofoty (*Leandri 548*).

#### CONSERVATION STATUS

The preliminary assessment of the conservation status of *Calantica biseriata* is Vulnerable (VU B2ab(iii)). Although the Extent of Occurrence is 91 262 km<sup>2</sup>, the Area of Occupancy is estimated to be less than 2000 km<sup>2</sup>, and fewer than ten locations are known; remaining natural vegetation in most of the known range is experiencing anthropogenic decline in area and quality. It is present in two protected areas, Bemaraha and Namoroka.

### 2. *Calantica capuronii* Sleumer

*Adansonia*, sér. 2, 12: 543-544 (1973). — Type: Madagascar, Prov. Fianarantsoa, Analamarina, Fort-Carnot, 15.X.1955, fl., *Service Forestier 15285* (holo-, Pl; iso-, L, TEF, photos seen).

ADDITIONAL MATERIAL EXAMINED. — Madagascar. Prov Fianarantsoa, Manakara, 17.XI.1952, fl., *Service Forestier 6551* (P). — Mont Vatovavy, à l'W d'Antsanavola (bassin de la Mananjary), 1.II.1964, fl., *Service Forestier 23231* (MO, P×2).

#### DISTRIBUTION AND HABITAT

*Calantica capuronii* is native to a small portion of southeastern Madagascar; it probably occurs in humid forest.

#### REMARKS

The only habit information recorded for *Calantica capuronii* is "arbuste"; since small individuals of other species that are definitely trees are sometimes similarly described, it is possible that *C. capuronii* is actually, at least sometimes, a small tree, as is the usual case in this genus.

#### *Vernacular names*

Fandrianakanga (*Service Forestier 15285*); Vandrikala (*Service Forestier 6551*).

#### CONSERVATION STATUS

The preliminary assessment of the conservation status of *Calantica capuronii* is Endangered (EN B1ab(iii)+2ab(iii)), with an Extent of Occurrence of 1442 km<sup>2</sup>, and an Area of Occupancy of less than 500 km<sup>2</sup>. It is known from three locations relatively close together; remaining natural vegetation in the area is subject to continuing habitat degradation.

### 3. *Calantica cerasifolia* (Vent.) Tul.

*Annales des Sciences Naturelles, Botanique*, série 4, 8: 76-77 (1857). — *Blackwellia cerasifolia* Vent., *Choix de Plantes, Dont la Plupart Sont Cultivées dans le Jardin de Cels*, tab. 56 (1808). — Type: Madagascar, s.l. s.d., fl., *Commerson s.n.* (lecto-, sequentially designated by Sleumer [*Adansonia*, sér. 2, 12: 542. 1973] and here designated, G [No. G00364811], photo seen; isolecto-, P; G [unnumbered sheet], photo seen; BM, FI n.v.).

ADDITIONAL MATERIAL EXAMINED. — Madagascar. Prov. Antananarivo, Imerina, à Ambatovory, IX.1904, fr., *Alleizette s.n.* (P). — Vicinioribus stationis Angavokely, 1550-1700 m, 26.XI.1967, fl., *Bernardi 11601* (P). — Imerina, Hugel von Ifanangoavana, 1.1881, fl., *Hildebrandt 3817* (P). — Bongolava, W de Tsiroanomandidy, 1300 m, XII.1954, fl., *Morat 4753* (MO). — Forêt Ambohitantely, V.1985, fl., *Rakotozafy 2029* (MO). — Angavokely, E de Tananarive, s.d., fl., fr., *Service Forestier 648* (P). — Mandraka, à la sortie des gorges (p.K. 70 de la route de Tananarive à Moramanga), 8.XI.1957, fl., *Service Forestier 18406* (P). — Province du Vakinankaratra, district d'Ambatolampy, près de Tsinjoarivo, 1600-1650 m, 30.XI.1912, fl., fr., *Viguiet & Humbert 1880* (P). Prov. Antsiranana, SAVA, Andapa, Doany, Anjialavahely, 14°20'04"S, 49°28'01"E, 551 m, III.2006, fr., *Antilabimena & Patrio 4791* (MO, P). — Tsaratanana Massif, Mahatsabory Mica, 12 km N Mangindrano, 14°09'09"S, 48°57'21"E, 2050 m, 15.X.2001, fl., *Birkinshaw 924* (MO, P). — Besinkara (14°04'S, 48°17'E), Ambalafary, 500 m au NW du hameau, au bord de l'Andavakeva, coord. précises (Laborde: 599900/1334300, 390 m, 4.IX.1997, fl., *Gautier et al. 3235* (MO, P). — Sous-préfecture de Vohehar, commune rurale de Daraina, fokontany d'Ankijabe, forêt de Binara, camp I (13°15'S, 49°37'E), 1.5 km à l'WSW du camp, 700 m, 8.XI.2001, fl., fr., *Gautier & Ravelonarivo 4121* (MO). — Sous-préfecture de Vohehar, commune rurale de Daraina,

- Daraina, forêt d'Antsahabe (13°13'S, 49°33'E), à 300 m du point coté 1088, au 153°, coord. précises (WGS 84) 13°13.05'S, 49°32.77'E, 990 m, 29.XI.2004, fl., *Gautier 4792* (MO). — Nosi-bé, Seestransd, II.1880, fr., *Hildebrandt 3335* (P). — Bassin supérieur du Sambirano, forêt de Besanatribe, 1200 m, XI-XII.1937, fl., *Humbert 18713* (P, TAN). — SE of Maroantsetra, NW coast of Masoala Peninsula, S of village of Ambanizana, 2-20 m, 17.X.1986, fl., *Lowry et al. 4158* (MO, P). — Rive gauche du Sambirano, V.1909, fr., *Perrier de la Bâthie 3825* (P). — Environs de Zangoa, base du Massif de Manongarive [sic], III.1909, fr., *Perrier de la Bâthie 4604* (P). — Fiv. Ambanja, fir. Ambodimanga-Ramena, fkt. Antahabe, Antsaharatsy, 13°48'35"S, 48°47'36"E, 400 m, 13.IV.2000, fl., *Rabenantoandro et al. 179* (MO, P). — Sommet de Beampoko, Ambohimirahavavy, 14°13'55"S, 49°08'23"E, 2137 m, 21.XI.2005, fl., *Rakotovoao et al. 2564* (MO, P). — Sava, Andapa, Doany, Anjialavahely, forêt d'Ankarongameloka, 14°20'14"S, 49°28'02"E, 513 m, III.2006, fr., *Rakotovoao et al. 2982* (MO, P). — Ambanja, Ambodimanga-Ramena, Antsahabe, Mandrizavona, 13°47'31"S, 48°45'26"E, 460 m, 12.IV.2000, fl., fr., *Ratovoson et al. 206* (G, MO, P). — DIANA, Tsaratanana, 13°57'S, 48°52'E, 11.X.2001, *Razakamalala et al. 173* (MO). — Fokontany Ampitambe, Ambatovy, commune rurale Ambohibary, district Moramanga, SE Bureau Dynatec, 18°51'30"S, 48°19'23"E, 1119 m, 22.II.2005, fr., *Razanatsoa et al. 286* (MO). — R.N. 4, canton Marovato, district Ambanja, VI.1951, fr., *Réserves Naturelles 2845* (MO, P). — Beangona, Ambanja, 12.I.1956, fr., *Réserves Naturelles 7903* (P). — Réserve Intégrale 12, Massif de Marojejy, just N of village of Mandana on edge of reserve, 5 mi N of Manantenina which lies 42 km by road NE of Andapa on Highway 36, 14°27'S, 49°50'E, 100-200 m, 19.IX.1987, fl., *Schatz et al. 1554* (MO).
- Prov. Fianarantsoa, S of Farafangana in Forêt Classée near Manombo Reserve, 23°03'16"S, 47°40'28"E, 100 m, 15.XI.2011, fr., *McPherson & Rabenantoandro 18421* (MO). — Farafangana, forêt classée de Manombo, 23°04'00"S, 47°40'33"E, 42 m, 27.IX.2002, fl., *Rabevohitra et al. 4146* (MO). — Parc National de Ranomafana, Parcelle III, près de la case de recherche (JC 250 m, #949), 21°16'S, 47°25'E, 800-1000 m, 12.XI.1992, fl., *Rakoto 316* (MO, P). — Same loc. (F 1630 m, #835), 900-1100 m, 10.XII.1992, fl., fr., *Rakoto 362* (MO, P). — Isahara, Vangaindrano, 20.I.1950, fr., *Service Forestier 2736* (P). — Ambodisonina, Anosimparihy, Mananjary, 14.I.1952, fr., *Service Forestier 5615* (P). — Fenoarivo, Ilakatra, Vohipeno, 20.XI.1952, fl., *Service Forestier 6441* (P). — Ambinanindrano, Vatomasina, Vohipeno, 13.XII.1952, fl., *Service Forestier 7064* (MO, P). — Analatsihy, Tolongoina, Fort-Carnot, 23.X.1952, fl., *Service Forestier 7139* (P). — Ankarenambe, Ankarambelo, 12.I.1954, fl., *Service Forestier 9484* (P). — Andrambovato, Tolongoina, B-11, 7.I.1954, fl., *Service Forestier 9550* (P). — Marohandry, Marokarina, Mananjary, 20.XII.1954, fr., *Service Forestier 13680* (P). — Ambatofotsy, Ampasinambo, Nosy-Varika, 17.I.1955, fr., *Service Forestier 13714* (MO, P). — Andramba, Kianjavato, Mananjary, 18.XII.1954, fl., *Service Forestier 14402* (P). — Ambalarano, canton Ifanirea, district Fort-Carnot, 24.IV.1960, fl., *Service Forestier 19711* (MO, P). — Restes de forêt au S de Farafangana (route de Manombo, aux P.K. 20-21), 14-17.X.1964, fl., *Service Forestier 23607* (MO, P).
- Prov. Mahajanga, bassin versant de la Bemafo, 14°13'30"S, 49°03'32"E, 1827 m, 27.X.2005, fl., fr., *Buerki et al. 115* (MO, P). — Mangindrano, 14°13'03"S, 49°04'10"E, 1892 m, 20.X.2005, fl., *Callmander et al. 408* (MO, P). — Ankaizina, VIII.1908, fl., *Perrier de la Bâthie 2357* (P). — Ankaizina, 1000 m, IX.1922, fl., *Perrier de la Bâthie 15114* (P). — Fokontany Tsaravilona Amparihy Androva, suivant la ligne de crête au N du camp II vers SE, 14°55'22"S, 49°25'55"E, 1195 m, 24.II.2008, fr., *Ravelonarivo et al. 2986* (MO). — Fokontana Tsaravilona Amparihy Androva, sur le sommet de Volamba et ses alentours, 14°53'30"S, 49°25'01"E, 1288 m, 29.II.2008, fr., *Ravelonarivo et al. 3082* (MO).
- Prov. Toamasina, fiv. Maroantsetra, comm. Ambanizana, fok. Ambanizana, along path between Ambanizana – Andranobe, 15°39'19"S, 49°57'39"E, 11 m, 25.X.2004, fl., *Antilabimena 2964* (MO, P). — Fiv. Maroantsetra, comm. Anjahana, fok. Ambanizana, Amboninandzoka River, 15°38'14"S, 49°57'59"E, 10 m, 14.IV.2002, fl., *Antilabimena & Aridy 994* (MO). — Moramanga, Ambohibary, Ampitambe, Sahaivo forest, 18°50'26"S, 48°17'55"E, 1087 m, 9.XI.2006, fl., *Antilabimena & Edmond 4918* (MO, P). — Alaotra-Mangoro region, fivondronana Moramanga, commune Andasibe, fokontany Berano, Ambatovy forest, 18°48'28"S, 48°18'43"E, 1100 m, 26.I.2005, fl., *Antilabimena et al. 3244* (MO, P). — Same loc., 18°48'27"S, 48°18'40"E, 1145 m, 1.II.2005, fl., *Antilabimena et al. 3257* (MO, P). — Ankaraha, forêt au N de la route de Nickelville partie supérieure vers 1200 m, 29.XII.1954, fr., *Homolle 2130* (P). — Alaotra-Mangoro Region, Préfecture de Moramanga, forêt de Sahamaloto, 19°03'11"S, 48°12'34"E, 1054-1059 m, 12.II.2001, fl., fr., *Hong-Wa 48* (G, MO). — Ambila-Lemaitso, E of Brickaville, Old Station Forestière, c. 5 km S of town, 18°54'S, 49°07'E, 10 m, 17.I.1999, fl., *Lowry & Miller 5132* (MO, P). — Same loc., same date, fl., *Lowry & Miller 5136* (MO, P). — Forêt d'Analamazaotra, 800 m, fl., fr., *Perrier de la Bâthie 6721* (P). — Same loc., possibly X, fl., fr., *Perrier de la Bâthie 6723* (P). — Same loc., fl., *Perrier de la Bâthie 6726* (P, TAN). — Phelps Dodge project site, c. 15 air-km NE of Moramanga, 11 km E of Antanambo, Ambatovy, Antsahalava River E, 18°50'54"S, 48°17'56"E, 1000 m, 1.II.1997, fr., *Rakotomalaza et al. 1086* (MO, P). — Phelps Dodge project site, c. 15 air-km E of Moramanga, 11 km E of Antanambao, Torotorofotsy, 18°53'S, 48°21'E, 950 m, 24.II.1997, fr.,

*Rakotomalaza et al.* 1184 (MO, P). — Ambodisaina, 17°17'25"S, 48°40'30"E, 850 m, 13.I.2002, fl., *Rakotomandrasana* 619 (MO). — District Moramanga, commune Ambohibary, fokontany Ampitambe, Ambatovy, environ 22 km NE de Moramanga, 18°48'55"S, 48°19'35"E, 1109 m, 21.II.2005, fr., *Rakotovao et al.* 1261 (MO, P). — Fiv. Ambatondrazaka, commune Antanandava, fkt. Antanandava, 3 km au SW d'Ankasy, 17°29'07"S, 48°44'02"E, 1157 m, 27.I.2001, fr., *Randrianasolo et al.* 182 (MO). — Zahamena PN, Antoby, 3 km à l'E d'Andranomalaza, 17°38'38"S, 48°38'24"E, 1025 m, 18.I.2003, fl., *Randrianasolo* 354 (MO, P). — Réserve Naturelle Intégrale de Zahamena, Montagne de Randovaly, Commune de Manakambahiny Est, sous-préfecture d'Ambatondrazaka, 17°40'05"S, 48°45'30"E, 1400 m, 4.XI.1994, fl., *Randrianjanaka & Zafy* 258 (MO, P). — Ambatondrazaka, Manakambahiny Est, Nosivola, 3 km NW de Nosivola, 17°41'01"S, 48°32'38"E, 900 m, 3.XI.2001, *Ratovoson et al.* 600 (MO, P). — Fokontany Ampitambe, Ambatovy, commune rurale Ambohibary, district Moramanga, SE Bureau Dynatec, 18°51'30"S, 48°19'23"E, 1119 m, 22.II.2005, fr., *Razanatsoa et al.* 286 (P). — Manambato, Fénérive, 14.XII.1955, fl., *Réserves Naturelles* 7721 (P). — Canton Ambodiriana, district Tamatave, 8.XII.1956, fr., *Réserves Naturelles* 8035 (P). — Masoala Peninsula, c. 3 km NE of Antalavia, along Antalavia River, 15°47'S, 50°02'E, 200-380 m, 13-16. XI.1989, fl., *Schatz et al.* 2825 (MO, P). — Masoala Peninsula, just S of Ambanizana, 15°38'S, 49°58'E, 20 m, 17.XI.1989, fl., *Schatz et al.* 2829 (MO, P). — Masoala Peninsula, Ambanizana, trail along coast, 1-3 km S of Ambanizana, 15°39'S, 49°58'E, 0-10 m, 26.X.1992, fl., *Schatz et al.* 3323 (MO, P). — Analamazaotra, I.[1919?], fl., *Service de Colonisation* 74 (P). — Soanierana-Ivongo, 27.XII.1949, fl., *Service Forestier* 2302 (P). — Manangisy, Brickaville, 1.III.1951, fr., *Service Forestier* 3223 (P). — Bassin de la Rantabe, entre Antsamelaha et Beanana, vers 500 m, 19.II.1954, fr., *Service Forestier* 9046 (MO, P). — Ambavadiala, Andilamena, Ambatondrazaka, 8.I.1956, fr., *Service Forestier* 15716 (P). Prov. Toliara, Fort-Dauphin, s.d., *Cloisel* 131 (P). — NW of Tolanaro, Réserve Naturelle Intégrale #11 (Andohahe-la) parcelle I, NW of Eminiminy, beside River Itrotroky, 24°38'S, 46°46'E, 500-1000 m, 6-13.II.1993, fr., *Malcomber et al.* 2200 (MO, P). — Same loc., same date, *Malcomber et al.* 2201 (MO, P). — Same loc., same date, *Malcomber et al.* 2216 (MO, P). — Anosy Region, commune rurale Mahatalaky, fokontany Tsiagonalna, Tsiagonalna Forêt 1.5 km N du Tsiagonalna, 24°43'01"S, 47°00'39"E, 190 m, 19.XI.2009, post-fl. *Rakotovao et al.* 4605 (G, MO). — Réserve Naturelle Intégrale #11, parcelle 1, à proximité d'Eminiminy, 24°40'S, 46°48'E, 200-700 m, 13-25.I.1993, fr., *Randriamampionona* 18 (MO, P). — Same loc., same date, fl., *Randriamampionona* 70 (MO, P). — Same loc., same date, fl., *Randriamampionona* 71 (MO, P). — Same loc., same date, fr., *Randria-*

*mampionona* 72 (MO, P). — Same loc., same date, fl., *Randriamampionona* 74 (P, MO); Same loc., same date, fr., *Randriamampionona* 75 (MO, P). — Anosy Region, district Fort-Dauphin, commune Bevoay, fokontany Fenoambany, Androranga, 24°29'39"S, 47°05'39"E, 171 m, 18.XI.2009, fl., *Razakamalala & Ramison* 4687 (G, K, MO). — Fort-Dauphin, Iaboko, Antsofso, forêt Ivohibe, 24°33'52"S, 47°11'43"E, 386 m, XI.2005, fr., *Razakamalala et al.* 2537 (MO). — R. N. XI [Andohahe-la], Marosohihy, canton Enanilahy, district Fort-Dauphin, 17.XII.1951, fl., *Réserves Naturelles* 3439 (P). — Amifia dans la R.N. no. XI [Andohahe-la], bord de rivière de Ranohela, 15.XII.1965, fl., *Service Forestier* 25545 (P). Unknown locality or origin, Central Madagascar, 1885, fl., fr., *Baron* 3721 (P). — S.l., s.d., fl., *Bojer s.n.* (P). — S.l., s.d., fl., *Commerson s.n.* (P). — Partie supérieure de la forêt, 1200 m, 29.XII.1944, fr., *Cours* 2130 (P). — Mana[n]tenina, tanety, 450 m, 30.XII.1948, fl., *Cours* 3164 (MO, P). — Route Ampalana, s.d., fr., *Cours* 27681 (P). — Tananarive, Tsimbaza[za] Botanical Garden Arboretum, 1200 m, 19.I.1975, *Croat* 28779 (MO). — Antananarivo, Parc de Tsimbazaza, cultivated, 21.X.1984, fl., *Dorr & Barnett* 3155 (MO, P).

POSSIBLE HYBRIDS (*C. CERASIFOLIA* × *C. GRANDIFLORA*). — **Madagascar.** Prov. Antsiranana, fiv. Vohémar, commune Fanambana, forêt d'Analalava, localité Antsoha, 13°35'37"S, 49°59'11"E, 12.XI.2001, fl., fr., *Randrianaivo et al.* 744 (MO). — Prov. Mahajanga, fiv. Befandriana-Nord, fir. Mantsodaka, fok. Manandriana, forêt d'Analabe, versant W de la Réserve Spéciale d'Anjanaharibe-Sud, 13.5 km SW de Befingotra, Campement 3, 14°47.0'S, 49°26.5'E, 1200 m, 2.XI.1999, fl., *Rakotomalaza et al.* 2080 (MO). — Prov. Toamasina, 6-10 km S of Ambila-Lemaitso, 18°51'S, 49°08'E, 0-20 m, 6.III.1988, fr., *Schatz et al.* 1948 (MO, P).

#### DISTRIBUTION AND ECOLOGY

*Calantica cerasifolia* is widely distributed in humid forests of eastern Madagascar and in littoral forest; it occurs at a wide range of altitudes (from sea level to over 2100 m), on laterite, rocky or siliceous soil, or sandstone, often on streambanks or in streambeds, or on dry hills.

#### REMARKS

*Calantica cerasifolia* is a tree to 25 m and 100 cm dbh with pale bark, described on only one specimen label (probably in error) as lianoid. It is notable for its large inflorescences of numerous small flowers (usually 5-7.5 mm in diameter, rarely to 10 mm). The perianth is pale or yellowish green to whitish (rarely described as yellow-orange), the glands yellow

to orange, the disk pale green or yellow becoming reddish, the filaments white, and the anthers red to brown, yellow, or black. Flowers are often reported to be scented.

As herein circumscribed, *Calantica cerasifolia* is widespread in humid forests and encompasses exceptional morphological variability. The leaves are quite variable in shape and size; in general, they are broadest at or above the middle, frequently with cuspidate apices, convex bases, and crenate to subentire margins. Three regional variants are particularly worth noting. Several specimens from very high altitudes in Antsirana (1827–2137 m) have thickened, often suborbicular, strongly crenate leaves, and a larger group of specimens from moderate-elevation forests (950–1100 m) in Toamasina have small obovate leaves, with apices relatively often rounded to retuse and bases relatively often cuneate. Low-elevation collections from the northeastern Masoala region have unusually large leaves, which tend to be oblong and to have rounded to rounded-truncate rather than convex bases. However, a wide range of variation in leaf morphology is seen within other species in association with altitudinal variation (van Steenis 1957) and the floral morphology is not significantly different in any of these populations.

*Calantica cerasifolia* is likely to be closely related to *C. grandiflora*, which has pilose inflorescences, only sparsely or partly pubescent ovaries, and usually much larger flowers with larger sepal glands that have a less corrugated surface. Three specimens, cited above as possible hybrids, have been identified that have intermediate characteristics, combining pilose pedicels and sepals with more or less densely pubescent ovaries. The flowers of these specimens are 8–10.5 mm in diameter (unusually large for *C. cerasifolia*, unusually small for *C. grandiflora*); the sepal glands are over 1 mm long, which is very rare in *C. cerasifolia*, but sometimes have a densely corrugated surface typical of that species. Leaf morphology in these specimens is variable, as it is in *C. cerasifolia*. Two of these specimens were collected in areas where both species are known; one (Schatz *et al.* 1948) was collected simultaneously with typical *C. grandiflora* (Schatz *et al.* 1947). The third (Rakotomalaza *et al.* 2080)

is problematic because it was collected at 1200 m, while *C. grandiflora* occurs only at low altitudes near the coasts. As *C. cerasifolia* occurs at a complete range of altitudes, we tentatively hypothesize that this specimen results from gene flow following introgression of *C. cerasifolia* genes at a lower altitude. Further investigation of this population would be desirable.

The original material of *Blackwellia cerasifolia* was described by Ventenat (1808: 56) as “originaire de Madagascar; cultivé dans le Jardin Botanique de l’Isle de France, où le Célèbre Naturaliste Riche avoit cueilli l’exemplaire que je fais figurer.” No specimen attributed to Riche exists. A collection by Commerson, of which material at G was designated as “type” by Sleumer (1973), has been generally considered to represent original material (Perrier 1946; Sleumer 1973). There are two sheets at G, one of which is barcoded (G00364811) and the other possibly intended to share the same number (its image was sent as G00364811\_a). The barcoded sheet, which holds a smaller specimen with more surviving flowers, has a handwritten label reading “inconnues de Madagascar, *Homalium*, Commerson”, with a later annotation of “Blackwell. *Cerasifolia* Vent”. The second sheet has a printed “Herbier de Ventenat” label with the handwritten notation of “Commerson”. It is reasonable to assume that Commerson’s collection was original material used by Ventenat (Commerson died in 1773, so his collection would have been available long before Ventenat’s 1808 publication). However, the material provided by Riche for illustration might have been an unrelated original element. Sleumer equated the two by labeling the barcoded sheet at G as “cultivé dans le Jardin Botanique de l’Ile de France, originaire de Madagascar, Commerson legit” and describing it similarly in print (Sleumer 1973), but none of the duplicates at G or P mention the Jardin Botanique nor correspond to Ventenat’s plate (1808: tab. 56). Commerson’s specimen at G is therefore a lectotype, not a holotype. Since only one of the two sheets at G should properly have been designated as lectotype, we herein perform a second-step lectotypification, as permitted by Art. 9.17 of the ICN (McNeill *et al.* 2012), to specify that the barcoded sheet is the lectotype.



*Ethnobotany*

The wood of *Calantica cerasifolia* is used in construction (*Cours 3164, Service Forestier 19711*).

*Vernacular names*

Aretimpony (*Service Forestier 9484*); Aretimpony (*Service Forestier 2736*); Beravy (*Service Forestier 25545*); Elatrangidina (*Hong-Wa 48*); Fandrianakoniga (*Réserves Naturelles 3439*); Hazomalany (*Cours 3164*); Hazomainty (*Service Forestier 13714*); Hazomalany (*Antilahimena & Edmond 4918*); Hazombato (*Perrier de la Bâthie 6726; Réserves Naturelles 8035; Service de Colonisation 74; Service Forestier 5615, 6441, 7064, 9484, 9550, 13680, 14402, 15716, 19711*); Iampivahitra (*Réserves Naturelles 7721*); Janganita (*Réserves Naturelles 2845*); Janganito-joby (*Réserves Naturelles 7903*); Jangrenito (*Antilahimena 2964*); Seta (*Service Forestier 7139*); Taivaropotsy (*Service Forestier 2302*).

## CONSERVATION STATUS

The preliminary assessment of the conservation status of *Calantica cerasifolia* is Least Concern (LC). The species (as currently circumscribed) is widespread (an Extent of Occurrence of 184,573 km<sup>2</sup>) and occurs in a variety of ecological conditions, and recent collections have been made in several areas. It is known from the protected areas of Andohahela, Betampona, Périnet-Analamazaotra, Manombo, Manongarivo, Marojejy, Masoala, Ranomafana, Tsaratanana, and Zahamena.

4. *Calantica chauvetiae* Sleumer

*Adansonia*, sér. 2, 12: 543 (1973). — Type: Madagascar, Prov. Toliara, gorges du Fiherenana, en aval d'Anjama-la, 20.I.1962, fl., fr., *Service Forestier 20854* (holo-, P! [P02141576]; iso-, P×4!, L [photo seen]).

## DISTRIBUTION AND HABITAT

The only existing collection of *Calantica chauvetiae* is from southwestern Madagascar in the region of the Fiherenana River.

## REMARKS

*Calantica chauvetiae* is described as a shrub.

Sleumer incorrectly labelled both one of the type collection's duplicates at P and the duplicate at L as "holotype" with typed labels in 1972. The published protologue (Sleumer 1973: 543) makes it clear that the P duplicate is the holotype and the L duplicate is an isotype.

## CONSERVATION STATUS

The preliminary assessment of the conservation status of *Calantica chauvetiae* is Critically Endangered (CR B2ab(iii)). With an Area of Occupancy of less than 10 km<sup>2</sup>, it is known only from a single location, which is not protected and is subject to continuing habitat degradation.

5. *Calantica decaryana* H. Perrier

*Mémoires du Muséum national d'Histoire naturelle de Paris*, n.s., 13: 285-286 (1940). — Type: Madagascar, Prov. Toliara, district d'Ambovombe, Antanimora, bord de l'Ikonda, 13.V.1925, fl., *Decary 3825* (holo-, P! [P00346107]; iso-, P!, L, photo seen).

ADDITIONAL MATERIAL EXAMINED. — Madagascar. Prov. Toliara, Anosy, Amboasary, Marotsiraka, Antsonjo Analamainty, Fourré au Sud de Betsimalaho, Fourré d'Ambatofoty Masay, au bord de la rivière d'Ankazomanga, 24°18'16"S, 46°08'01"E, 350 m, 11.XI.2008, fl., *Andriamihajarivo et al. 1571* (MO). — Antanimora, XII.1959, fl., *Bosser 13912* (MO, P×2). — Réserve Naturelle 11, Andohahela, parcelle 2, NE of Amboasary, near Hazofotsy, 24°50'S, 46°32'E, 100 m, 27.XI.1991, fl., *Malcomber 1094* (MO). — Anosy, Fort-Dauphin, Ambatoabo, Ankoba, 24°47'56"S, 46°40'24"E, 162 m, 21.II.2009, fl., *Randrianaivo et al. 1733* (MO). — Ravin dans la descente du plateau calcaire, entre la Table (Tuléar) et Ambohimahavelona, I.1962, fl., *Service Forestier 20842* (MO, P). — Imonty (bassin de la Mananara, affluent du Mandrare), 15.I.1963, fl., *Service Forestier 22415* (MO, P×2). — À la base du massif de l'Angavo, à l'E d'Antanimora, 23.I.1963, fr., *Service Forestier 22466* (P).

## DISTRIBUTION AND HABITAT

*Calantica decaryana* is native to subarid bush or subarid *Alluaudia-Euphorbia* forest in southern Madagascar, sometimes on streambanks or in ravines; reported altitudes range from 100 to 350 m.

## REMARKS

*Calantica decaryana* is a shrub or small tree. The perianth is green, fading to reddish or purplish,

and the anthers yellow. The flowers are reported to have a pungent, ammonia-like odor and to be frequented by butterflies (*Malcomber 1094*).

Two duplicates of the type collection are present at P. One of these has a second label with locality data and bears some handwritten notes, while the other has no detailed label or handwritten notes; the former should be treated as the holotype sheet.

#### *Ethnobotany*

The plant is used against yellow fever (*Andriamihajarivo et al. 1571*).

#### *Vernacular name*

Kotika (*Andriamihajarivo et al. 1571*).

#### CONSERVATION STATUS

The preliminary assessment of the conservation status of *Calantica decaryana* is Vulnerable (VU B1ab(iii)+2ab(iii)), with an Extent of Occurrence of 11,317 km<sup>2</sup> and an Area of Occupancy of less than 2000 km<sup>2</sup>. The species is known from only six locations, only one of which is protected (Andohahela), and remaining natural vegetation in the native range is subject to ongoing anthropogenic degradation.

### 6. *Calantica grandiflora* Jaub. ex Tul.

*Annales des Sciences Naturelles, Botanique*, série 4, 8: 75-76 (1857). — Type: Madagascar, Prov. Toamasina, [Ile] Sainte-Marie, 1835, fl., *Bernier 376* (2<sup>nd</sup> envoi) (lecto-, sequentially designated by Sleumer [*Adansonia*, sér. 2, 12: 542. 1973] and here designated, P! [P00346109]; iso-, P!; G, photo seen; fragm., L, photo seen)

ADDITIONAL MATERIAL EXAMINED. — **Madagascar.** Prov. Antsiranana, N d'Ampanavoana, Vinanivao, Antalaha, Parc Masoala, 15°41'S, 50°21'40"E, 0-10 m, 13.III.1996, fl., *Bernard 225* (MO, P). — Forêt littorale Ambodipont, Vinanivao, Antalaha, Parc Masoala, 15°44'45"S, 50°19'25"E, 0-10 m, 3.X.1996, fl., *Bernard 342* (MO, P). — Environs de Sambava (côte NE), 1-5 m, 28.XI-3. XII.1950, fl., *Humbert & Capuron 24380* (P). — Fivondronana Antalaha, canton Ambohitralanana, piste vers Ambodirafia, presqu'île de Masoala, 15°17'S, 50°27'E, 0-60 m, 22.IV.1994, fl., *Rahajaso 288* (MO, P). — Parc National de Masoala, Antanandavahely, 15°18'00"S, 50°19'00"E, 6.X.1994, fl., *Rahajaso et al. 761* (MO,

P). — Fivondronana Vohémar, firaisana Tsarabaria, fokontany Manakana, E du village à Ambondrobe, 13°43'08"S, 50°05'50"E, 13.III.2004, fr., *Razakamalala et al. 1058* (MO). — Fivondronana Vohémar, firaisana Tsarabaria, fokontany Manakana, forêt littorale d'Ambondrobe, 13°42'46"S, 50°05'25"E, 20.V.2004, fr., *Razakamalala & Rabebevitra 1357* (MO). — R.N. 2 [Masoala], canton Ambohitralanana, district Antalaha, 17.II.1954, fl., *Réserves Naturelles 6621* (P). — Ambodivaloha, Ampanavoana, 31.I.1955, fl., *Réserves Naturelles 6950* (P). — Canton Ambohitralanana, district Antalaha, 15.II.1959, fl., fr., *Réserves Naturelles 10079* (P). — Près de l'embouchure de la Bemarivo du NE, 2.XII.1950, fl., *Service Forestier 893* (P). — Ambodisatrana, Sambava, 19.I.1951, fl., *Service Forestier 2771* (MO, P).

Prov. Fianarantsoa, Ankazondratana, Nosy Varika, district Nosy Varika, 30.V.1959, fr., *Service Forestier 19528* (P). Prov. Toamasina, Fiv. Maroantsetra, comm. Vinanibe, fok. Andongona, village Antsahanikandana, 15°26'15"S, 49°29'02"E, 365 m, 28.XI.2003, fl., *Antilabimena 2432*. — Fiv. Maroantsetra, comm. Anjahana, fok. Ambanizana, Amboninandzoka River, 15°38'14"S, 49°57'59"E, 10 m, 14.IV.2002, fl., *Antilabimena & Aridy 992* (MO, P). — [Ile] Ste. Marie, embouchure de la rivière de l'habitation royale, III.1847-IV.1851, fl., *Boivin 1845* (P). — Brickaville, s.d., fl., *Cours 27606* (P). — Baie d'Antongil, environs d'Ambanizana, chemin de la pente forestière au SE du village, 15°30'S, 49°58'E, 100-150 m, 11.V.1988, fl., *Floret 2000* (MO, P×2). — Fénérive-Est, Ampasimaningory, Tanambaon'i Tampolo, Tampolo, Parcelle C4 de la Station Forestière de Tampolo, 17°17'14"S, 49°24'54"E, 57 m, 15.IV.2004, fl., *Lehavana et al. 61* (MO). — Forêt de Mahalevona, 2.II.1924, fl., *Louvel 55* (P). — Ambila-Lemaitso, E of Brickaville, old Station Forestière, c. 5 km S of town, 18°54'S, 49°07'E, 10 m, 17.I.1999, fl., *Lowry & Miller 5134* (MO, P). — Ambila-Lemaitso, E of Brickaville, old Station Forestière, c. 5 km S of town, 18°54'30"S, 49°07'37"E, 5-10 m, 17.I.1999, fl., *Lowry & Miller 5143* (MO, P). — Masoala peninsula, Ambanizana, on beach path leading south, 15°37'S, 49°57'E, 25 m, 12.IV.1987, fr., *Nicoll et al. 515* (MO). — Va[t]omandry, IX.1921, fl., *Perrier de la Bâthie 14129* (P). — Bas de pente d'une colline à 3 km d'Antanambe vers P.K. 5, 27.II.1990, fl., *Raharimalala 498* (MO, P×2). — District Fénérive-Est, Station Forestière de Tampolo, 10 km N de Fénérive-Est, 17°16'52"S, 49°24'44"E, 0-150 m, 24.I.1995, fl., *Raholivo et al. 85* (MO). — Soanierana-Ivongo, Fénérive, s.d., fl., *Réserves Naturelles 1059* (P). — R.N. 1 [Betampona], canton Ambodiriana, district Tamatave, 24.II.1954, fl., *Réserves Naturelles 6176* (P). — Andevoranto-Ambila Lemaitso Road, c. 3-6 km NNE of Andevoranto, 18°53'50"S, 49°07'40"E, 30 m, 2.II.2006, fl., fr., *Rogers & Antilabimena 1011* (MO). — 6-10 km S of Ambila-Lemaitso, 18°51'S, 49°08'E, 0-20 m, 6.III.1988, fr., *Schatz et al. 1947* (MO, P). — Environs of Ambila-Lemaitso, 10 km

E of Brickaville, 1-2 km S of intersection to Hotel Everglades and Ambila-Lemaitso, along road to Andevoranto, approx. 6 km S Ambila-Lemaitso, 18°54'S, 49°08'E, 0-10 m, 26-27.I.1991, fl., *Schatz & Armbruster 3147* (MO, P). — Nosy Mangabe, a 520 hectare island 5 km from Maroantsetra in the Bay of Antongil, 15°30'S, 49°46'E, 0-330 m, 13-23.IV.1988, *Schatz & Gentry 2135* (MO). — Tampolo, Fénérive, 22.XI.1954, fl., *Service Forestier 12579* (MO, P). — Same loc., 1.XII.1955, fl., *Service Forestier 15209* (MO, P). — Same loc., 17.III.1956, fr., *Service Forestier 15614* (MO, P). — J. B. No. 21 Tampolo, village le plus proche Tampolo, canton Ampasina, district Fénérive-Est, 14.I.1958, fl., *Service Forestier 17910* (MO, P). — Forêt Tampina, *Ursch 46* (P). — 10 km N of Fenoarivo, Station Forestière de Tampolo, 17°17'S, 49°25'E, 10 m, 11.V.1991, fl., *Zarucchi et al. 7382* (MO).  
Unknown locality, s.l., s.d., fl., *Chapelier s.n.* (P).

#### DISTRIBUTION AND HABITAT

*Calantica grandiflora* is widely distributed in eastern and northeastern remnants of littoral forest or rarely subcoastal forest on the east coast of Madagascar; it is almost always found near sea level on sand. However, one collection (*Antilahimena 2432*) reports an altitude of 365 m and another (*Réserves Naturelles 6176*) is from Betampona, presumably also in low-elevation humid forest.

#### REMARKS

*Calantica grandiflora* is usually a tree, with height to 20 m and dbh to 40 cm, or rarely a shrub, with gray to blackish bark. The perianth is pale greenish to yellowish, or at least the petals rarely white; the disk may be orange-red, the glands are white becoming yellow or orange-red, and the anthers have been reported as yellow or black. The variation in its leaf morphology overlaps with that of the widespread and variable *C. cerasifolia*, which also sometimes occurs in littoral forests. The inflorescences, pedicels, and abaxial sepal surfaces of *C. grandiflora* are more or less pilose, the inflorescences and pedicels sometimes also bearing more numerous shorter trichomes, whereas those of *C. cerasifolia* are pubescent with short upward-curving or very short erect trichomes. The flowers of *C. grandiflora* are on average about twice as large, and the sepal glands are larger with a less densely ornamented surface, although overlap in these features may be seen due to exceptional individu-

als in both species. The ovary of *C. grandiflora* is at most partially or sparsely pubescent, while that of *C. cerasifolia* is densely pubescent throughout, and the fruits of *C. grandiflora* are relatively large and glabrate. Three specimens with intermediate floral characters suggesting possible hybridization between these species are known (see discussion of *C. cerasifolia*); two of these are from plausible localities, although one (*Rakotomazala et al. 2080*) is found well outside the normal habitat of *C. grandiflora*.

The lectotype of this species was selected from among several syntypes by Sleumer (1973). Two sheets of this collection are held at P, one in good condition with multiple flowers and one in poor condition and lacking flowers. Sleumer presumably would have thought primarily of the former as the lectotype, but did not specify this in print and annotated both sheets as “lectotype.” As permitted by Art. 9.17 of the ICN (McNeill *et al.* 2012), we hereby further designate the better-quality duplicate as the lectotype.

#### Ethnobotany

*Calantica grandiflora* is used for construction (*Service Forestier 17910*) or fencing (*Service Forestier 19528*).

#### Vernacular names

Fonorintina (*Service Forestier 19528* [Betsimisaraka dialect]); Hazou-ambou (*Chapelier s.n.*); Tendrifany (*Louvel 55*); Tandrofo (*Raharimalala 498*); Tandrofoina (*Service Forestier 2771*); Tandrofony (*Bernard 225, 342*; *Lehavana et al. 61*; *Réserves Naturelles 1059, 6176, 6621, 6950, 10079*; *Service Forestier 12579, 15209, 15614, 17910* [Betsimisaraka dialect]).

#### CONSERVATION STATUS

*Calantica grandiflora* has an Extent of Occurrence of 39,710 km<sup>2</sup>, with 17 known locations. However, it is almost entirely restricted to littoral forest with an Area of Occupancy of less than 2000 km<sup>2</sup>, a highly threatened ecosystem of which only fragments remain (Consiglio *et al.* 2006). The degree of fragmentation suggests that *C. grandiflora* should be assigned a preliminary conservation assessment of Near Threatened (NT).

### 7. *Calantica lucida* Scott-Elliott

*Journal of the Linnaean Society, Botany* 29: 20, pl. 5 (1891). — Type: Madagascar, Prov. Toliara, Fort Dauphin, June [no year], fl., *Scott-Elliott 2834* (holo-, K, photo seen; iso-, P!; E, L, photos seen);

ADDITIONAL MATERIAL EXAMINED. — **Madagascar.** Prov. Toliara, above Ankoba village, near E edge of Andohahela National Park, Parcel 1, 24°46'46"S, 46°43'11"E, 600 m, 22.I.2008, fl., *Lowry et al. 6959* (MO, P, TAN). — Anosy Region, Taolagnaro, Mahatalaky, Farafara Vatanibe, W du village de Malama, sommet W, 24°50'25"S, 46°59'28"E, 375 m, 15.XI.2009, fl., *Rakotovo et al. 4538* (MO). — Versant S et plateau sommital du massif granitique du Vohits[i]andriana (au S de Ranopiso), 8.XII.1968, fl., *Service Forestier 28577* (MO, P×2).

#### DISTRIBUTION AND HABITAT

*Calantica lucida* is native to transitional and humid forests in extreme southeastern Madagascar; one collection was made along a creek, and one was presumably on granite.

#### REMARKS

*Calantica lucida* is a shrub or small tree (rarely to 10 m tall). Its flowers are cream white with an orange disk. They resemble those of *C. cerasifolia* and *C. olivacea* sp. nov. in being small with a pale perianth and petals much narrower than sepals, but have usually densely sericeous (rather than sparsely to moderately pubescent) indument on the abaxial sepal surface and longer trichomes on the ovary and disk. *Calantica lucida* is also distinguished from those species by its small, narrowly elliptical (to elliptical), usually rounded-acute leaves. Inflorescences are small and few-flowered, whereas those of *C. cerasifolia* are often quite large. *Rakotovo et al. 4538* is a somewhat anomalous specimen, a 10-meter tree whose flowers are less densely pubescent than other known material.

#### CONSERVATION STATUS

The preliminary assessment of the conservation status of *Calantica lucida* is Endangered (EN B1ab(iii)+B2ab(iii)). It is known from three locations, with the Extent of Occurrence calculated as 221 km<sup>2</sup> and the Area of Occupancy as 158 km<sup>2</sup>; remaining habitat in the area is degraded and is subject to continuing damage. It occurs within the

protected area of Andohahela, but in an area that may experience continuing decline, as the native vegetation is already fragmented and subject to cattle grazing.

### 8. *Calantica olivacea*

Appleq., Phillipson & G. E. Schatz, sp. nov.  
(Fig. 1)

*Differs from C. cerasifolia in lanceolate to ovate, acuminate leaves, drying to a pale unmottled olive green above and pale brown beneath, and smaller inflorescences, up to 3 cm long with (4-)8-20 flowers.*

TYPUS. — **Madagascar.** Prov. Antsiranana, fivondronana Nosy-Be, Lokobe Réserve Intégrale, Lokobe Point (Beach), 13°24'29"S, 48°18'48"E, 0 m, 18.XII.1996, fl., *Antilabimena 348* (holo-, MO!; iso-, G!, P!; TAN, USMS n.v.).

PARATYPI. — **Madagascar.** Prov. Antsiranana, Nossi-Komba (insula parva ad meridiem Nossi-Bé), prope mare, 16.XII.1967, fl., *Bernardi 11911* (MO). — 100 km S of Ambanja on road to Antananarivo, 14°8'45.8"S, 48°5'25.8"E, 140 m, 10.I.2007, fl., *De Block et al. 2140* (MO). — Collines et plateaux calcaires de l'Analamera, 50-400 m, I.1938, fl., *Humbert 19132* (P, TAN). — Same loc., same date, fl., *Humbert 19235* (P). — Sous-préfecture de Vohemar, commune rurale de Daraina, Daraina, forêt d'Ambohitsitondroina, à 1210 m du point coté 396, au 313°, 13°09.05'S, 49°28.06'E, 300 m, 19.I.2006, fl., *Nusbaumer & Ranirison 1960* (MO, P). — Sous-préfecture de Vohemar, commune rurale de Daraina, Daraina, forêt d'Antsahabe (13°13'S, 49°33'E), à 1170 m du point coté 366, au 269°, coord. précises (WGS 84) 13°12.6'S, 49°33.6'E, 500 m, 21.I.2004, fr., *Nusbaumer 1073* (MO). — Bord du Ramena à Antsahabe, 1913, fl., *Perrier de la Bâthie 6700* (P). — Bassin supérieur de la Loky (Nord), XI.1909, fl., *Perrier de la Bâthie 6714* (P). — Anjahakely, Diégo, 19.I.1954, fr., *Service Forestier 8220* (P). — Ankaraniobe, route Maromiandra-Ambanja, 8.X.1954, buds, *Service Forestier 11095* (MO, P). — Antsalova, 29.XI.1959, fl., *Service Forestier 11146* (P). — Contreforts NW de la Montagne d'Ambre, forêt d'Ankorefo (Ankazobe), 19-21.X.1954, fr., *Service Forestier 11351* (P). — Ambodimanga, canton Tsaratanana, district Tsaratanana, 5.XII.1958, fl., fr., *Service Forestier 19457* (P). — Lisière supérieure de la forêt d'Andranomadiro, rebord S du plateau de Sahafary, entre les bassins de la Saharenana et du Rodo, 300 m, 27.XII.1963, fr., *Service Forestier 23070* (P). Prov. Mahajanga, Ampombilava [15°03'S, 48°13'E], 30.XI.1942, fr., *Herb. Jard. Bot. Tananarive 5445* (P). — Tsingy de Bemaraha S of the Manambolo



FIG. 1. — **A-C**, *Calantica olivacea* Appleg., Phillipson & G. E. Schatz, sp. nov., *Antilahimena* 348 (holotype, MO); **A**, flowering branch; **B**, flower from above; **C**, flower from beneath. Drawing Barbara Alongi. Scale bars: A, 2 cm; B, C, 1 mm.

river, 19°09'S, 44°49'E, 50 m, 7.XII.1996, fr., *Jongkind et al.* 3429 (MO). — Same loc., 11.XII.1996, fl., *Jongkind et al.* 3497 (MO). — Boriziny, Port-Bergé, Tsiningia, Marosely, 18 km au S Boriziny,

forêt de Bongolava, 15°38'58"S, 47°35'03"E, 217 m, 16.XI.2004, fl., *Ramananjahary et al.* 109 (G, MO, P, USMS). — R.N. 8 [Namoroka], canton Andranomavo, district Soalala, 13.IX.1953, buds, *Réserves*

*Naturelles 5643* (P). — Antanandava, Maevatanana, 27.XI.1951, *Service Forestier 4282* (P). — Besisika, Port-Bergé, 18.XI.1951, fl., fr., *Service Forestier 5527* (P); Besalampy, 21.XI.1952, fl., *Service Forestier 6266* (P). — Forêt Tsimembo, Antsalova, 21.XII.1953, fr., *Service Forestier 8247* (P). — Forêt Mandanisafa, Maintirano, 27.XI.1954, fl., *Service Forestier 12643* (P). — Ambala[n]janakomby, Maevatanana, 8.I.1951, fl., *Service Forestier 12667* (P). Prov. Toliara, Beraboka, Miandrivazo, 13.XII.1952, fr., *Service Forestier 6305* (P). — F[orêt] Beraboka [19°31'S, 45°28'E], Miandrivazo, 25.X.1954, fr., *Service Forestier 11188* (P). — Forêt Ankaboka [20°28'S, 45°47'E], Malaimbandy, Mahabo, 17.XI.1954, fl., *Service Forestier 12778* (P). — Forêts de Beraboka, district Miandrivazo, 24.X.1957, fl., *Service Forestier 17824* (P). Unknown province, Tsarasaotra, X.1897, fl., *Perrier de la Bâthie 151* (P, TAN). — Same loc., s.d., *Perrier de la Bâthie 151bis* (P).

#### DESCRIPTION

Tree to 20 m tall, dbh 25 cm; bark blackish, ridged; crown almost diamond-shaped; young twigs puberulent to velutinous or glabrate. Leaves green, paler beneath, lanceolate to ovate, elliptical, or narrowly lanceolate, 3-10.5(-13.1) × 1.6-4.2 cm; petiole 3-6 mm long, sparsely puberulent to glabrous or velutinous; stipules caducous, awl-shaped to narrowly deltoid, (0.7-)2-4.4 mm long, sparsely puberulent to glabrate; base convex, often decurrent at extreme base, to rounded; apex acuminate with a rounded tip; margins serrate to serrulate or subentire; abaxial surface glabrate with few trichomes on midrib to glabrous; adaxial surface glabrous; venation pinnate; lateral veins weak and inconspicuous on both surfaces or visible but not prominent abaxially, 6-9(-12) pairs, more or less semicraspedodromous, often festooned. Inflorescences lateral, 1-3 cm, (4-)8-20-flowered, short-pubescent to velutinous; bracts lanceolate to ovate, 0.7-1.4 mm long, sericeous towards apex with upward-pointing trichomes; pedicels 2.6-8 mm long, short-pubescent to velutinous. Flowers 6-7-merous, 4.2-7.5 mm in diameter; sepals pale green to white or yellowish green, lanceolate to narrowly ovate or narrowly oblong, 1.6-2.6 mm long, abaxial surface short-pubescent with appressed trichomes, adaxial surface short-pubescent to densely pubescent with appressed trichomes; sepal glands yellow to orange, broadly deltoid

to ovate-deltoid, 0.7-1.1 mm long, with densely corrugated surface; petals pale green, yellowish green, white, or green and white, oblanceolate to spatulate or oblong-oblanceolate, 1.6-2.1 mm long, abaxial surface short-pubescent to densely pubescent with appressed trichomes, adaxial surface pubescent, often densely pubescent toward the apex or in the middle portion; disk velutinous; stamens 1 per petal; filaments 1.5-2.4 mm long, glabrous; anthers 0.3-0.6 mm long; ovary densely pubescent; styles 3-5, 0.4-0.9 mm long. Capsules 3.5-6(-7) mm high, pubescent; seeds broadly ovoid, 1.4-1.5 mm long, surrounded by curling white trichomes to 4 mm long.

#### DISTRIBUTION AND HABITAT

*Calantica olivacea* sp. nov. occurs mostly in northern Madagascar, with scattered populations in the northwest to middle west; it occurs in dense dry, seasonal forests or on open hills, on limestone, gneiss, or sandstone, sometimes on the edges of streams. Reported altitudes range from near sea level to 500 m.

#### REMARKS

*Calantica olivacea* sp. nov. includes specimens that formerly have been classified within *C. cerasifolia* (Sleumer 1973). The flowers of the two species are very similar, but the vegetative appearance of *C. olivacea* sp. nov. is distinctive. Its leaves are consistently lanceolate to ovate or elliptical with an acuminate apex, while *C. cerasifolia* has leaves of variable shape, broadest at or above the middle, most frequently with a cuspidate apex, and often with longer stipules. Leaves of *C. olivacea* sp. nov. frequently dry a characteristic pale, unmottled olive green adaxially and pale brown abaxially, although this character is not fully consistent and may be affected by specimen processing methods. The inflorescences of *C. olivacea* sp. nov. are smaller and shorter than those of *C. cerasifolia*, 1-3 cm long at maturity and often having as few as 8-12 maturing flowers. The habitat of *C. olivacea* sp. nov. is dry forest or open hills, whereas *C. cerasifolia* is usually found in humid to subhumid forests. Flowers are reported to be scented (*Antilabimena 348*).

*Ethnobotany*

The wood of *Calantica olivacea* sp. nov. is used for construction (*Antilahimena* 348; *Service Forestier* 17824, 19457). Root bark is used for a malady of the eyes: fresh root bark is pulverized with a little water, and the liquid pressed from the resulting paste is filtered, reduced in half by cooking, and a little dripped into the eyes twice a day (*Herb. Jard. Bot.* 5445).

*Vernacular names*

“Fanganito” (*Herb. Jard. Bot.* 5445); Hazomafana (*Service Forestier* 4282); Hazonteva (*Réserves Naturelles* 5643; *Service Forestier* 6266, 6305, 8247, 11146, 11188, 17824 [Sakalava dialect]); Hazontevana (*Service Forestier* 12778, 19457 [Harofoby dialect]); Janganito (*Antilahimena* 348; *Service Forestier* 5527, 19457); Janganitobjoby (*Service Forestier* 11095); Mandravarotra (*Service Forestier* 12667); Manizombo (*Service Forestier* 8220); Taolakena (*Service Forestier* 12643).

## CONSERVATION STATUS

The preliminary assessment of the conservation status of *Calantica olivacea* sp. nov. is Least Concern (LC), as 19 locations are known. Although the species has a large range (an Extent of Occurrence of 207,757 km<sup>2</sup>), the habitat is almost all unprotected and degraded. It is perhaps reason for concern that very few recent collections are known (in contrast to *C. cerasifolia*, which is still collected relatively often), possibly indicating a reduction in numbers. It is present in the protected areas of Analamera, Bemaraha, Lokobe and Namoroka.

9. *Calantica pseudobiseriata*

Appleg., Phillipson & G. E. Schatz, sp. nov.

(Fig. 2)

*Differs from C. biseriata in ovate to elliptical, acuminate to acute leaves, sparsely puberulent ovary, and long (1.5–2 mm) styles.*

TYPUS. — Madagascar. Prov. Toamasina, remnant native vegetation 1–2 km E of Fampanambo, 15°22'35"S, 49°37'46"E, 20 m, 28.I.1999, fl., Schatz *et al.* 3856 (holo-, MO!; iso-, BR!, G!, K!, P!, TEF n.v.).

## DESCRIPTION

Tree to 12 m tall, the young twigs pubescent. Leaves medium green, somewhat fleshy, elliptical to ovate, (3–)6–9.4 × (1.5–)2.5–4.8 cm; petiole 5–10.5 mm long, pubescent; stipules caducous, linear, 2.4–3 mm long, pubescent; base convex; apex acuminate to acute (aberrantly rounded); margins serrate; abaxial surface sparsely pubescent, mostly along large veins; adaxial surface sparsely pubescent on midrib, otherwise glabrate; venation pinnate; lateral veins (5–)7–9 pairs, semicraspedodromous, mostly festooned. Inflorescences lateral on lower portions of defoliated twigs, 2–4.5 cm long, 7–23-flowered, pubescent; bracts deltoid to narrowly deltoid or ovate, 0.5–1 mm long, pubescent; pedicels 6–12 mm long, pubescent. Flowers 6–7-merous, 7.5–9.5 mm in diameter; sepals light green, narrowly ovate, 2.5–3.1 mm long, abaxial surface sparsely pubescent, adaxial surface velutinous near margins, otherwise glabrate; sepal glands transversely elliptical to suborbicular with basal margin rounded and apical margin rounded-truncate, 0.8–1.1 mm long, adaxial surface densely strigose to hispid; petals deep red, narrowly ovate to ovate-elliptical, 2.6–3.2 mm long, abaxial surface velutinous, adaxial surface velutinous to tomentose near margins, otherwise glabrate; disk deep red, sparsely puberulent; stamens in groups of 3 per petal; filaments 2–3.6 mm long, glabrous; anthers *c.* 0.3 mm long; ovary sparsely puberulent; styles 3, 1.5–2 mm long, usually with a prominent basal ridge where the style joins the ovary. Fruit unknown.

## DISTRIBUTION AND HABITAT

The type locality of *Calantica pseudobiseriata* sp. nov. is low-altitude humid forest in northeastern Madagascar.

## REMARKS

*Calantica pseudobiseriata* sp. nov. is a tree that has leaves with serrate margins, reddish flowers, and stamens in groups of 3 opposite each petal. It is quite similar in appearance to *C. biseriata*, to which it is probably most closely related. It may be distinguished from that species by its sparsely puberulent ovary, which is dark-colored



FIG. 2. — **A-C**, *Calantica pseudobiseriata* Appleq., Phillipson & G. E. Schatz, sp. nov., Schatz *et al.* 3856 (holotype, MO), **A**, flowering branch; **B**, flower from above; **C**, flower from beneath. Drawing Barbara Alongi. Scale bars: A, 2 cm; B, C, 2 mm.

in dried material, and long styles (1.5-2 mm long, vs < 0.5 mm long in *C. biseriata*) that usually have a prominent ridge at the juncture with the ovary. The leaves of *C. pseudobiseriata* sp. nov. are ovate to

elliptical with acuminate to acute apices, whereas those of *C. biseriata* are usually broadly elliptical to suborbicular with abruptly cuspidate or very short-acuminate apices, although *C. biseriata* has a





FIG. 3. — **A-C**, *Calantica sphaerocephala* Appleg., Phillipson & G. E. Schatz, sp. nov., Lowry & Rabenantoandro 5196 (holotype, MO); **A**, flowering branch; **B**, flower from above; **C**, flower from beneath. Drawing Barbara Alongi. Scale bars: A, 2 cm; B, C, 5 mm.

range of variation in leaf shape that, at its extreme, could approach that of *C. pseudobiseriata* sp. nov. *Calantica pseudobiseriata* sp. nov. is native to hu-

mid forest in northeastern Madagascar, whereas *C. biseriata* is native to dry forests in western to extreme northern Madagascar.

#### CONSERVATION STATUS

The preliminary assessment of the conservation status of *Calantica pseudobiseriata* sp. nov. is Critically Endangered (CR B2ab(iii)). With an Area of Occupancy of less than 10 km<sup>2</sup>, it is known only from a single location, which is not protected and is subject to continuing habitat degradation. The type locality is relatively close to the large protected area of Masoala National Park, but no specimens from Masoala have been seen, although the area is well collected (over 2500 specimens in MBG's TROPICOS database).

#### 10. *Calantica sphaerocephala*

Appleq., Phillipson & G. E. Schatz, sp. nov.  
(Fig. 3)

*Leaves lanceolate to narrowly elliptical; inflorescences cauliflorous; sepals bearing conspicuous glands on prominent marginal projections; stamens long (6-7.4 mm).*

**TYPUS.** — Madagascar. Prov. Antsiranana, Anjombavola (= Ambatobiribiry), c. 10 air-km N of Sambava, 14°10'55"S, 50°05'14"E, 280 m, 9.V.2000, fl., Lowry & Rabenantoandro 5196 (holo-, MO!; iso-, BR!, G!, K!, P!, WAG!, TEF n.v.).

**PARATYPUS.** — Madagascar. Prov. Antsiranana, forest of low elevation on massif of Tsihomanaomby, 3 km NW of Seranampotaka (2 km W of Route Nationale Sambava to Vohémar), 14°06'03"S, 50°02'52"E, 150 m, 9.V.2000, post-fr., Birkinshaw *et al.* 734 (G, K, MO, P).

#### DESCRIPTION

Tree to 8 m tall, dbh 5 cm, lower portion of trunk unbranched; bark blackish; young twigs glabrous. Leaves lanceolate to narrowly elliptical, (7-)8.5-14.5 × 2.4-6.1 cm; petiole 5-12 mm long, glabrous; stipules caducous, awl-shaped, 0.5-1.5 mm long, glabrate; base convex; apex acute to acuminate; margins serrulate; abaxial and adaxial surfaces glabrous; venation pinnate; lateral veins weak, sometimes visible on either surface but at most slightly raised, numerous, semicraspedodromous, mostly festooned. Inflorescences cauliflorous on upper two-thirds of trunk and on branches, borne singly or clustered, 2.5-5.5(-7) cm long, many-flowered, at anthesis short-branched with flowers in dense irregularly shaped, often roughly subglobose clusters,

short-pubescent with erect trichomes; bracts dark red, narrowly elliptical to oblanceolate, 1.8-3.1 mm long, with gland-bearing marginal projections, sparsely short-pubescent; pedicels 5-7.5 mm long, short-pubescent. Flowers 6-7-merous, 9-11 mm in diameter; sepals pale yellowish green, narrowly ovate to elliptical, 3.5-5 mm long, with prominent gland-bearing projections along the margin, abaxial surface short-pubescent, adaxial surface short-pubescent; sepal glands yellow to dark red, orbicular to broadly ovate, concave with sometimes prominently raised margins, 1.2-1.7 mm long, the surface almost smooth; petals pale yellowish green, narrowly oblong to narrowly oblong-elliptical, 3-4.5 mm long, slightly smaller and narrower than sepals, abaxial surface short-pubescent especially towards apex, adaxial surface short-pubescent; disk short-pubescent to glabrous; stamens 1 per petal; filaments 6-7.4 mm long, pilose; anthers reddish-brown, 0.6-0.8 mm long; ovary short-pubescent; styles 3-4, 1.8-2.2 mm long. Capsules c. 6.5 mm high, short-pubescent; seeds ovoid, c. 2.5 mm long, bearing straight white trichomes about twice as long as seed.

#### DISTRIBUTION AND HABITAT

*Calantica sphaerocephala* sp. nov. is native to a small region of northern Madagascar near Sambava; it occurs in dense, low-elevation (150-280 m) humid forest on sand or basalt.

#### REMARKS

*Calantica sphaerocephala* sp. nov. is a distinctive species, easily recognized by its cauliflorous inflorescences, which are short, usually irregularly subglobose, and dense. The sepals have prominent peg-shaped, gland-tipped marginal projections that are not present in any related species. The sepal glands are nearly smooth-surfaced and tend to be concave with elevated margins. The flowers are relatively large; the filaments are longer than those of any other species (6-7.4 mm), and the styles are unusually long (1.8-2.2 mm). The living plant is described as having horizontal branches, vertical petioles, and horizontal leaf blades (Birkinshaw *et al.* 734). This species does not closely resemble any other, and its affinities are uncertain.

*Calantica sphaerocephala* sp. nov. is native to the same part of northeastern Madagascar as *Homalium cauliflorum* H. Perrier, which also has cauliflorous inflorescences and similarly shaped leaves (Perrier de la Bâthie 1940, 1946). The flowers of *H. cauliflorum* are 8-10-merous and less than half as large (c. 4 mm in diameter), with stamens shorter than the petals, densely hairy sepal glands, 4-6 styles, and a semi-inferior, flattened, pilose ovary.

#### Ethnobotany

The wood of *Calantica sphaerocephala* sp. nov. is said to be hard (Birkinshaw et al. 734).

#### Vernacular name

Piro (Birkinshaw et al. 734).

#### CONSERVATION STATUS

The preliminary assessment of the conservation status of *Calantica sphaerocephala* sp. nov. is Endangered (EN B2ab(iii)). With an Area of Occupancy of only c. 20 km<sup>2</sup>, the species is known only from two locations, neither protected and both subject to continuing habitat degradation.

#### EXCLUDED AND NONEXISTENT NAMES

*Calantica jalbertii* (Tul.) Baill., as “Jauberti”, *Bulletin Mensuel de la Société Linnéenne de Paris* 1: 573 (1886). — *Bivinia jalbertii* Tul., as “jalberti”, *Annales des Sciences Naturelles; Botanique*, sér. 4, 8: 78-79. 1857.

No modern treatment of *Calantica* has followed Baillon (1886) in subsuming the single species of *Bivinia* into *Calantica*. *Bivinia*, which has long spiciform inflorescences and relatively numerous stamens, much more closely resembles some species of *Homalium*. It is distinguished from *Homalium* by its superior ovary and apetalous condition; the latter is undoubtedly derived. Interestingly, *B. jalbertii* is native both to western and southeastern Madagascar and to East Africa from Zimbabwe to Kenya.

#### *Calantica* × *mantinii* Hort.

*Revue horticole* [66]: 134 (1894).

This name is listed as such in the International Plant Names Index, extracted from Index Kewensis. It has appeared to be simply an invalidly published horticultural name, which for that reason had never been addressed in prior revisions of the genus. It is rarely mentioned (usually as “mantini”) in entirely uncritical references such as computerized lists of plant names. However, the cited page reference (Bois 1894: 134) is largely devoted to a list of recently displayed new orchids, and the only similar name on that page is: “encore une série de *Calanthes*: (...) *Mantini*, à labelle rouge et à divisions supérieures blanches, striées de rose.” It appears that a name intended to describe a new hybrid of the orchid genus *Calanthe* R. Br. was accidentally entered into Index Kewensis as *Calantica* and the error was never corrected.

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