

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES  
OF WILD FAUNA AND FLORA



Fourteenth meeting of the Conference of the Parties  
The Hague (Netherlands), 3-15 June 2007

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

To amend the annotation to *Euphorbia* spp. included in Appendix II to read as follows:

Succulent, *non pencil-stemmed, non-coralliform, non-candelabriform* species only, with shapes and dimensions as indicated, except the species included in Appendix I:

- a) **pencil-stemmed** succulent *Euphorbia* spp.: whole plants with spineless, erect stems of up to 1 cm diameter and a length of more than 25 cm, unbranched or predominantly branching from near the base, leafless or with small leaves;
- b) **coralliform** succulent *Euphorbia* spp.: whole plants with spineless, multiply branched, occasionally sharply pointed stems with a diameter of up to 3 cm and more than 50 cm length, leafless or with inconspicuous or ephemeral leaves; and
- c) **candelabriform** succulent *Euphorbia* spp.: whole plants with angled or winged stems and paired spines, confined to the edges, at least 3 cm diameter and more than 50 cm length, unbranched or branching.

B. Proponent

Switzerland.

C. Supporting statement

1. Taxonomy

1.1 Class: Magnoliopsida

1.2 Order: Euphorbiales

1.3 Family: Euphorbiaceae

1.4 Genus, species or subspecies, including author and year: *Euphorbia* Linné 1753.

1.5 Scientific synonyms: (only names relevant for succulent *Euphorbia* taxa) *Tithymalos* Haworth (nom. illeg.), *Tithymalos* Gärtner 1790, *Dactylanthes* Haworth 1812, *Medusea* Haworth 1812, *Treisia* Haworth 1812, *Tirucallia* Rafinesque 1836, *Lacanthis* Rafinesque 1837, *Anthacantha* Lemaire 1857, *Arthrothamnus* Klotzsch & Garcke 1859 (nom. illeg.), *Sterigmanthe* Klotzsch & Garcke 1859, *Lyciopsis* (Boissier) Schweinfurth 1867.

1.6 Common names: English: spurge  
French: euphorbe  
Spanish: euforbia

1.7 Code numbers: ---

## 2. Overview

### 2.1 Background

Most Parties to the Convention, including the proponent, are range States of *Euphorbia* spp. The genus *Euphorbia* contains nearly 2,000 species, the majority being herbaceous with a worldwide distribution in temperate and tropical zones. The arborescent, shrubby and succulent species are found almost exclusively in the tropics and subtropics, with the true succulents, numbering over 500, occurring primarily in the drier regions of Africa and Madagascar where their growth-habit ranges from small tufted perennials to shrubs and large trees (Carter in Egli, ed., 2002). No completely satisfactory infrageneric classification of this unwieldy genus, on a worldwide basis, has yet been proposed and the *Illustrated Handbook of Succulent Plants* (Carter in Egli, ed., 2002) adopts a very broad artificial concept, based on morphological characters, such as growth forms, to divide the succulent *Euphorbia* spp. into five partly artificial groups with a number of sub-groups.

The listing of *Euphorbia* spp. in Appendix II came into effect on 1 July 1975. It is annotated with #1 [Designates all parts and derivatives, except: a) seeds, spores and pollen (including pollinia); b) seedling or tissue cultures obtained *in vitro*, in solid or liquid media, transported in sterile containers; and c) cut flowers of artificially propagated plants]. Non-succulent species were excluded with effect from 18 September 1997 and it is exceptional in the CITES listings for plants to be the object of a split-listing on the basis of morphological rather than taxonomical characteristics. The criterion of succulence is without further precision and this allows for interpretations and inconsistent enforcement. Therefore, the *CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae)*, 2nd edition (Carter & Egli, 2003) was established as a reference; it contains references to ca. 900 names of accepted taxa of *Euphorbia* spp. that are succulents, including subspecific taxa. Ten species from Madagascar were listed in Appendix I with effect on 18 January 1990, and 16 February 1995 in one case. They are all dwarf collector items, traded for horticulture, with underground tubers and mostly succulent leaves. The Plants Committee included them in the list of taxa for the periodical review of the Appendices at its 15th meeting (Geneva, May 2005). A number of cultivars were specifically excluded from CITES: *E. trigona* Miller 1768 (18/09/97), *E. lactea* Haworth 1812 with certain characteristics (12/01/2005) and *E. 'Miliii'* with certain characteristics (12/01/2005). This reflects efforts to reduce the burden on Management Authorities of licensing and reporting on specimens that originate from artificial propagation and are internationally traded in large quantities.

International trade in succulent *Euphorbia* spp. was analysed in a specific review, with emphasis on artificially propagated live specimens. Key taxa and key countries were identified. According to CITES trade data, 328 species are recorded in international trade. The report concludes with a number of recommendations; including the downlisting or delisting of 249 *Euphorbia* species, but excluding all taxa from Madagascar (Taylor 2001).

Issuing permits for, and reporting on imports and exports of predominantly and increasingly artificially propagated plants puts a burden on Parties without yielding an obvious benefit for conservation, while CITES resources should be allocated in the first place to action with a positive impact on conservation. It would therefore be useful to restrict CITES listings to actually or potentially threatened species that are harvested from the wild and could benefit from monitoring and restricting international trade. Apart from reviewing the species listed in Appendix I, the Plants Committee, since its 15th meeting, has therefore been seeking ways to reduce the number of succulent *Euphorbia* spp. listed in Appendix II.

## 2.2 Rationale

If certain succulent species were to be specifically exempted, or certain species specifically listed in Appendix II, there could be considerable problems with identification of exempted and included species. This can be avoided by further refining the morphological definition of 'succulent', i.e. by addressing groups that share a common growth form and minimum dimensions (see illustrations in Annex 1). Minimum dimensions can prevent confusion of seedlings and young specimens, e.g. false declaration of globose or dwarf species as seedlings of pencil-stemmed, coralliform or candelabriform species.

Succulent *Euphorbia* spp. that are of actual or possible conservation concern, such as the species listed in Appendix I (see Annex 3, English only), or growth forms favoured by collectors and containing dwarf, rare and endemic species, such as globular, tuberculate-stemmed, medusoid, strongly spiny as well as (near-)geophytic forms with tuberous roots are not affected by this proposal.

## 3. Species characteristics

### 3.1 Distribution

The genus *Euphorbia* is distributed worldwide in temperate and tropical zones. Succulent *Euphorbia* spp. are concentrated in the Old World (Carter 1997).

### 3.2 Habitat

*Euphorbia* spp. are found in a wide range of habitats, from aquatic to semi-arid. Succulent *Euphorbia* spp. predominantly grow in semi-arid habitats.

### 3.3 Biological characteristics

*Euphorbia* spp. are annual to perennial herbs, shrubs and trees. Succulent *Euphorbia* spp. range from small tufted perennials to shrubs and large trees.

### 3.4 Morphological characteristics

*Euphorbia* spp. are characterized by a specialized inflorescence termed a 'cyathium', consisting of a cup-like involucre enclosing numerous male flowers surrounding a solitary female flower; the male flowers are reduced to single stamens, and the female flower to an ovary with the perianth reduced to a rim, occasionally lobed. The cyathia are further arranged in usually dichotomous cymes. Milky latex, which is often extremely caustic, is always present (Carter 1997). Succulent *Euphorbia* spp. show specialized, water-storing tissue, mostly in stems, but also in leaves and in roots in certain taxa. This is linked with thickened stems and leaves and tuberous roots respectively. In certain stem-succulents, leaves are short-lived and/or reduced in size and certain taxa are geophytic or nearly so from underground tubers. Furthermore, branches, inflorescences or stipules are often transformed into spines.

### 3.5 Role of the species in its ecosystem

Manifold. Rather exceptionally consumed by large herbivores, due to the milky latex, but for example *E. dregeana* E. Meyer ex Boissier 1862 is eaten by rhinoceroses in southern Africa. Predation by insects is manifold.

## 4. Status and trends

### 4.1 Habitat trends

Habitats of *Euphorbia* spp. are under pressure worldwide. This is especially true for semi-arid habitats of succulent *Euphorbia* spp. that are converted into sisal or eucalyptus plantations, e.g. in Madagascar (Supthut & Landolt 1997), farmland, cleared for charcoal production, e.g. in Madagascar (Supthut & Landolt 1997), annually burned for enhancing new growth of grass,

e.g. in Madagascar (Supthut & Landolt 1997), or overgrazed, e.g. in Somalia (Carter 1997). Mining operations and road constructions are mentioned as major factors in South Africa (Carter 1997).

#### 4.2 Population size

Very varied. Some *Euphorbia* spp. are classified in the IUCN Red List as critically rare (CR) for many reasons, but many species are very common and widespread.

#### 4.3 Population structure

Very varied.

#### 4.4 Population trends

Very varied.

#### 4.5 Geographic trends

Not applicable.

### 5. Threats

Throughout tropical regions, the greatest danger to the survival of succulent *Euphorbia* spp. lies in habitat destruction for spreading agriculture, charcoal burning, etc. Over-collecting is apparently not a hazard in most of the relevant areas (Carter 1997).

The IUCN Red List actually contains assessments for 171 species of *Euphorbia*, 30 of which are classified as endangered (EN). Twenty-three of the latter are succulent *Euphorbia* spp. that are identified at the species level in the *Checklist of CITES species*, 18 are native to Madagascar and three are listed in Appendix I.

All species listed in Appendix I are very clearly outside the scope of this proposal, as they show very different growth forms and are of much smaller size (see Annex 3). The globose and tuberculate-stemmed species are confined almost entirely to southern Africa in Cape Province, with a high incidence of endemism (Carter 1997). They range in form from tall, leafy stems to dwarf and much-branched plants forming domed cushions, to solitary or sparsely branched individuals with very thick stems sometimes reduced to a globose body and were some of the first succulents to be introduced into cultivation, including *E. obesa* Hooker fil. 1903, *E. meloformis* Aiton 1789, and *E. bupleurifolia* Jacquin 1797. They are all strongly represented in horticulture, but partly limited in distribution and endangered in the wild. The international market is supplied by plants from artificial propagation and this group would clearly remain included in Appendix II. This is also true for the dwarf, globose species of Ethiopia (*E. gymnocalycioides* M. G. Gilbert & S. Carter 1984, *E. piscidermis* M. G. Gilbert 1973) and Somalia (*Euphorbia turbiniformis* Chiovenda 1929) that could be of conservation concern. Furthermore the group of small, succulent-stemmed herbs with large, fleshy or tuberous roots, which occur from the rift Valley to the Horn of Africa, contains a great number of endemics with limited distribution, some of which could become collector items, and is not affected by this proposal.

Groups affected by the amended circumscription of succulent *Euphorbia* spp. are easily propagated from cuttings and are among the most frequently traded artificially propagated succulent *Euphorbia* spp., e.g. *E. tirucalli* Linné 1753 (coralliform) and *E. abyssinica* Gmelin 1791 (candelabriform) (see illustrations in Annex 2).

Targeted harvest for international trade is known for a number of species from Madagascar and to a much lesser extent from South Africa. Growth forms and minimum dimensions clearly exclude these taxa from the scope of this proposal.

## 6. Utilization and trade

### 6.1 National utilization

Very varied. *E. antisiphilitica* Zuccarini 1832 for example is used as a medicinal plant by local people in northern Mexico. *E. tirucalli* is extensively used for hedging purposes in tropical Africa (Carter 1997), but also for example in Brazil, where it was introduced. *E. millii* Des Moulins 1826 is used for hedging purposes in Madagascar. Medicinal use of many species is reported in many regions. Use as ornamental plants is manifold and widespread. The species that is most widely used as an ornamental plant is the non-succulent *E. pulcherrima* Willd. ex Klotzsch 1834 (Poinsettia, Mexican flame leaf, Christmas star, Noche Buena or Pascua), native to southern Mexico and Central America and today used world-wide. It is followed by a number of succulent and non-succulent ornamental *Euphorbia* spp.

### 6.2 Legal trade

According to CITES trade data, 328 species of succulent *Euphorbia* are recorded in international trade.

Reported trade in wild-collected, live succulent *Euphorbia* spp. are primarily from Madagascar to France (around 70,000 specimens 1995-1999). Trade figures for wild-collected specimens between other countries range from a few specimens to several hundred specimens for the same period (Taylor 2001).

Key taxa (Taylor 2001)

Reported trade shows high numbers of internationally traded live plants (nearly 6.5 million 1995-1999). The level of trade in artificially propagated plants is much higher than in wild-collected plants (nearly 6.3 million 1995-1999). This trade is dominated by very few species, *inter alia* *E. abyssinica* (250,761, see the illustration in Annex 2), *E. lactea* Haworth 1812 (1,060,779), *E. millii* (153,270), *E. tirucalli* (26,694, see the illustration in Annex 2), *E. trigona* Miller 1768 (228,126). Trade in *E. lactea*, *E. tirucalli* and *E. abyssinica* has considerably increased in recent time. *E. lactea*, *E. millii* and *E. trigona* are exempted from CITES, if specimens and shipments meet certain criteria. The report identifies more than 200 species that were exclusively reported from artificial propagation 1995-1999 and concludes that these should be reviewed and could be considered for down listing or delisting.

Export and import of plants that are reported to originate from the wild is considerable and concerns nearly exclusively species from Madagascar that are listed in Appendix II. Reported exports are much higher than reported imports. Reported exports are dominated by *E. lophogona* Lamarck 1788 (32,019), *E. millii* (8,152), *E. viguieri* Denis 1921 (6,581) and *E. geroldii* Rauh 1994 (6,509), reported imports by *E. gottlebei* Rauh 1992 (650), *E. horombensis* Ursch & Léandri 1955 (450) and *E. primulifolia* Baker 1881 (261). Significant discrepancies between reported exports and imports are very obvious.

Key countries (Taylor 2001)

As mentioned above, Madagascar shows by far the highest level of export of wild-collected succulent *Euphorbia* spp. (key exporter) and France shows the highest level of import (key importer).

The main exporting countries (1995-1999) of artificially propagated and wild-collected succulent *Euphorbia* spp. are the Dominican Republic (6,140,841 specimens), Madagascar (414,917), the United States of America (315,847), Canada (202,680) and Denmark (160,935), and the main importing countries are the United States (6,162,231), France (277,874), Germany (229,536), the Netherlands (194,377) and Canada (143,786).

### 6.3 Parts and derivatives in trade

Candelilla wax, produced from *E. antisyphilitica* in northern Mexico, is internationally traded under CITES. A survey is conducted in Mexico by CONABIO [see document PC15 Doc. 5.5 (Rev. 1)]. The species is currently included in a list of taxa for the periodical review of plants included in the Appendices by the Plants Committee, up to CoP15. Parts and derivatives are outside the scope of this proposal.

### 6.4 Illegal trade

*E. bupleurifolia* is possibly partly traded without CITES documents, along with other wild-collected succulent plants of South Africa that are currently in international trade to some extent [e.g. *Tylecodon* spp. (non-CITES), *Avonia* spp., *Pachypodium bispinosum* (L.f.) A. DC. (both in Appendix II)]. Possibly some cryptic, globular and partly relatively newly-described species of Ethiopia and Somalia (see section 5 above) have been traded illegally to a very limited extent, but these are now available from artificial propagation and collection from the wild is very difficult and not likely to be profitable. High levels of export of wild-collected succulent *Euphorbia* spp. from Madagascar (to France) suggest that illegal trade could possibly occur along with legal trade.

Growth forms and minimum dimensions clearly exclude all these taxa from the scope of this proposal.

### 6.5 Actual or potential trade impacts

The bulk of the trade is in a few very common species and predominantly originates from artificial propagation. There seems to be no reports on impact on populations of species that are harvested from the wild for international trade, especially in Madagascar. Furthermore there are apparently no publicly available or accessible non-detriment findings of exporting countries.

## 7. Legal instruments

### 7.1 National

Not investigated.

### 7.2 International

The listing of *Euphorbia* spp. in Appendix II came into effect on 1 July 1975. Non-succulent species were excluded with effect on 18 September 1997. The listing includes parts and derivatives (Annotation #1). Ten species of *Euphorbia* are listed in Appendix I (CITES ID Manual 2006).

## 8. Species management

### 8.1 Management measures

Not known.

### 8.2 Population monitoring

Not known.

### 8.3 Control measures

#### 8.3.1 International

International trade is monitored through CITES.

### 8.3.2 Domestic

Not investigated.

### 8.4 Artificial propagation

A few species of succulent *Euphorbia* spp. are propagated on an industrial scale for international trade as indoor ornamental plants, e.g. *E. trigona*, *E. tirucallii* (see illustration in Annex 2), *E. abyssinica* (see illustration in Annex 2), *E. 'Mili'* and *E. lactea*. Many other species are propagated on a much smaller scale for the general public and for retail sale in garden centres and flower shops. The international market for certain species that qualify for collector items is very limited and supplied by a small number of specialized nurseries, e.g. in Germany and in the United States.

### 8.5 Habitat conservation

Not investigated.

### 8.6 Safeguards

If this proposal should be adopted, two draft decisions are proposed that provide the Parties and the Plants Committee with a mandate to monitor the implementation of the new annotation, with an emphasis on the possible illegal trade in wild-collected plants and, for the latter, an instruction to report at CoP15 (see document CoP14 Doc. 31).

## 9. Information on similar species

The CITES ID Manual (2006) covers all *Euphorbia* spp. of Appendix I and thus facilitates their identification.

Generally, live specimens of *Euphorbia* can be checked easily in a first approach due to the abundant milky latex that immediately flows out of even minor injuries. However, the listing of part of the genus *Euphorbia* according to morphological criteria is quite a challenge. Succulence is not a phenomenon that can clearly be delimited, it is rather gradual. Therefore, a CITES checklist was adopted as a reference.

It does not represent a fundamentally new step to introduce additional morphological characteristics beside succulence. Furthermore, the additional specifications, as proposed here, accompanied by minimum dimensions, are much more clear than the criterion of succulence.

Growth forms that are most relevant for conservation, such as globular, tuberculate-stemmed, medusoid, strongly spiny as well as (near-)geophytic forms with tuberous roots are not affected. Minimum dimensions prevent confusion of seedlings and young specimens, e.g. false declaration of globose or dwarf species as seedlings of pencil-stemmed, coralliform or candelabriform species.

## 10. Consultations

This proposal was developed after the deadline of 8 July 2006 for submission of proposals to the Secretariat and consultation with range States through a Notification to the Parties. Resolution Conf. 8.21 recommends this procedure, where prior consultation with range States will not take place. However consultation with range States is not feasible in cases of taxa with a nearly worldwide distribution, as is the case for the genus *Euphorbia*.

It is therefore suggested that the proposal be discussed in a working group of interested range States at the present meeting.

## 11. Additional remarks

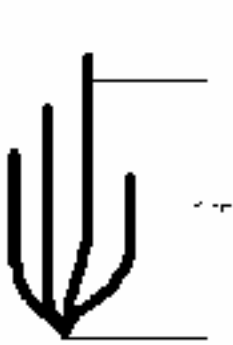
If this proposal should be adopted, the new annotation for *Euphorbia* spp. included in Appendix II should be incorporated into the next edition of the *Checklist of CITES species*.

## 12. References

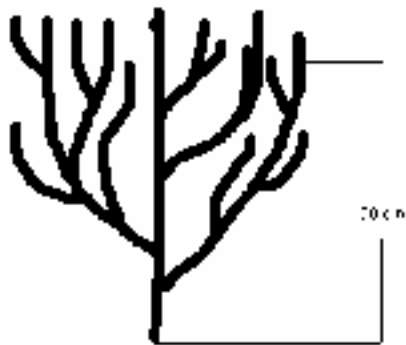
- Carter, S. (1997): Euphorbiaceae. In S. Oldfield, ed., Status Survey and Conservation Action Plan. Cactus and Succulent Plants. IUCN/SSC Cactus and Succulent Plant Specialist Group. Gland, Switzerland and Cambridge, UK.
- Carter, S. (2002): *Euphorbia*. In Egli, U., ed., Illustrated handbook of succulent plants. Springer, Berlin.
- Carter, S. & U. Egli (2003): The CITES Checklist of Succulent *Euphorbia* Taxa (Euphorbiaceae), 2<sup>nd</sup> edition. Federal Agency for Nature Conservation of Germany, Bonn – Bad Godesberg.
- Lüthy, J. (2006): CITES Identification Manual. CITES Succulents. The Aloes and Euphorbias of CITES Appendix I & the Genus *Pachypodium*. Federal veterinary office (CITES Management Authority), Bern, Switzerland.
- Supthut, D. & R. Landolt (1997): Madagascar 96, Rapport de Mission (3ème partie du projet CITES S-52). Zürich and Birmensdorf.
- Taylor, K. (2001): Review of Trade in Artificially Propagated Plants. Royal Botanic Gardens, Kew.



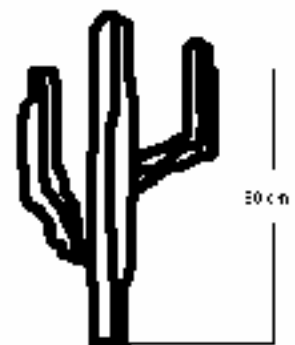
ILLUSTRATIONS OF PENCIL-STEMMED, CORALLIFORM AND  
CANDELABRIFORM GROWTH FORMS, AND MINIMUM DIMENSIONS.



**pencil stemmed**  
stem Ø 1 cm



**coralliform**  
stem Ø 3 cm



**candelabriform**  
stem Ø 3 cm

ILLUSTRATIONS OF FREQUENTLY TRADED SUCCULENT *EUPHORBIA* SPP.  
ORIGINATING FROM ARTIFICIAL PROPAGATION (PROVIDED BY KI PLANTS)



**candelabriform:** *Euphorbia abyssinica*



**coralliform:** *Euphorbia tirucalli*

CITES IDENTIFICATION MANUAL:  
THE EUPHORBIAS OF CITES APPENDIX I



***Euphorbia ambovombensis***

***Euphorbia capsaintemariensis***

***Euphorbia cremersii*** (Includes the *forma viridifolia* and the var. *rakotozafyi*)

***Euphorbia cylindrifolia*** (Includes the spp. *tuberifera*)

***Euphorbia decaryi*** (Includes the vars. *ampanihyensis*, *robinsonii* and *spirosticha*)

***Euphorbia francoisii***

***Euphorbia moratii*** (Includes the vars. *antsingiensis*, *bemarahensis* and *multiflora*)

***Euphorbia parvicyathophora***

***Euphorbia quartziticola***

***Euphorbia tulearensis***



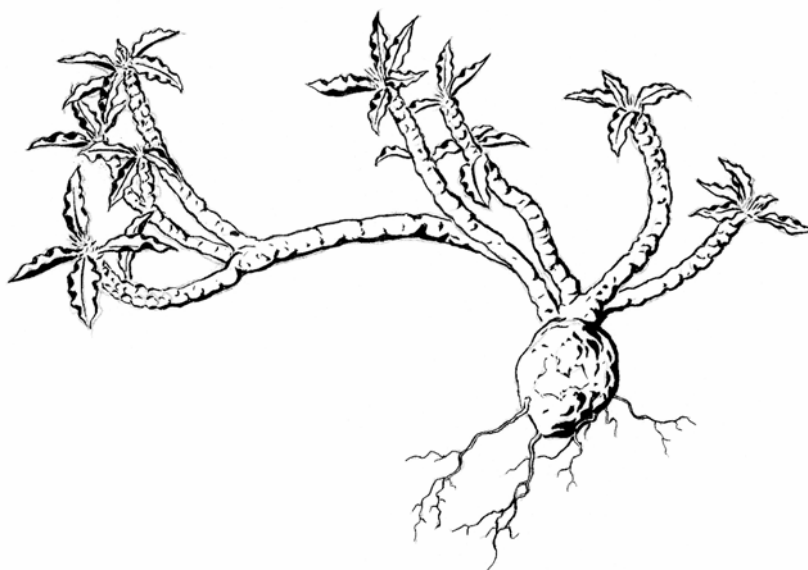


# Euphorbia ambovombensis

**Common names:** None reported.

**Scientific synonyms:** None.

**CITES category:** Appendix I since 18.01.1990



bar = 1 cm

- Characteristics:** Dwarf shrublet branching from the base, with a tuberous root; branches with reticulately arranged stipular spines, succulent leaves with undulate margin.
- Roots:** Tuberous, c. 4 x 1 cm.
- Stem:** Branching from the base. Individual branches 10-20 cm long, c. 5 mm Ø, sparsely rebranched, surface covered with stipular spines, arranged in quite a regular, reticulate pattern, around the sunken leaf-scars.
- Leaves:** Arranged in a terminal rosette, lanceolate, to 5 x 1.5 cm, fleshy, dark green with contrasting, light green, reticulate venation above, often with a purplish hue, with strongly undulate margin and tip curved upwards. Stipular spines dissected into short bristles.
- Inflorescence:** Cymes few, 2-3-forked on long peduncles; cyathophylls rounded, 3 x 5 mm, pale buff, nodding; cyathium c. 5 mm Ø; nectar glands yellow; ovary obtusely lobed, sessile.
- Distribution:** S Madagascar, region of Ambovombe



**Trade:** UNEP-WCMC reported trade shows a considerable number of shipments 1989-2004, containing up to 430 plants. All specimens are declared to originate from artificial propagation in various countries. The species is moderately represented in collections; it is surely not a beginners plant in cultivation, as the tuber is sensitive to over-watering. IUCN red list: VU D2.

**Similar species:** *E. ambovombensis*, *E. capsaintemariensis* Rauh, *E. cylindrifolia* Marnier-Lapostolle & Rauh, *E. decaryi* Guillaumin, *E. parvicyathophora* Rauh and *E. tulearensis* (Rauh) Rauh, all originating from the coastal region of southernmost Madagascar, show similar features of thin, bulgy or finely prickly stems from a subterranean tuber and terminal rosettes of very small, strongly succulent, canaliculated leaves, mostly with undulate margins. Size and shape of leaves may depend quite strongly on growing conditions and the taxonomic value of quantitative characters within this group should be thoroughly assessed. Even flower characters are partly very similar in a way that their status of separate species can be seriously doubted in some cases. Mislabelled specimens within this group are therefore not uncommon. However, as they are all listed in App. I, this problem is a taxonomical one and doesn't affect enforcement very much. A revision however would be useful. *E. cylindrifolia* is the most outstanding of them for it's very narrow, nearly terete-sulcate leaves. *E. decaryi* is characterized by spines arranged in longitudinal spirals near stem apices. The western *E. parvicyathophora* and *E. tulearensis* have rather long, acicular spines; the latter has much smaller leaves. The eastern *E. ambovombensis* and *E. capsaintemariensis* have rather papery spines; they can be differentiated by slightly spinier stems with spines forming a reticulate pattern and bigger leaves of the former. *E. suzannae-marnierae* Rauh & Petignat, described in 1996 from Toliara, Mandrare Valley (Ambovombe region), also belongs to this group with stems 10 x 1 cm, leaves 4 x 1 cm with strongly crisped margins, at least towards tips and bristly stipular spines. It is listed in CITES App. II and this leads to a serious look-alike- and enforcement problem. Finally, *E. francoisii* Léandri from south-eastern Madagascar is sometimes compared with the above species-group; it has the same general growth form, but distinctively bigger and very colourful leaves and quite different flowers.

**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.

Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.

Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.

Sajeva, M. & M. Constanzo (1997): Succulents. The illustrated dictionary. Timber Press Portland, Oregon.



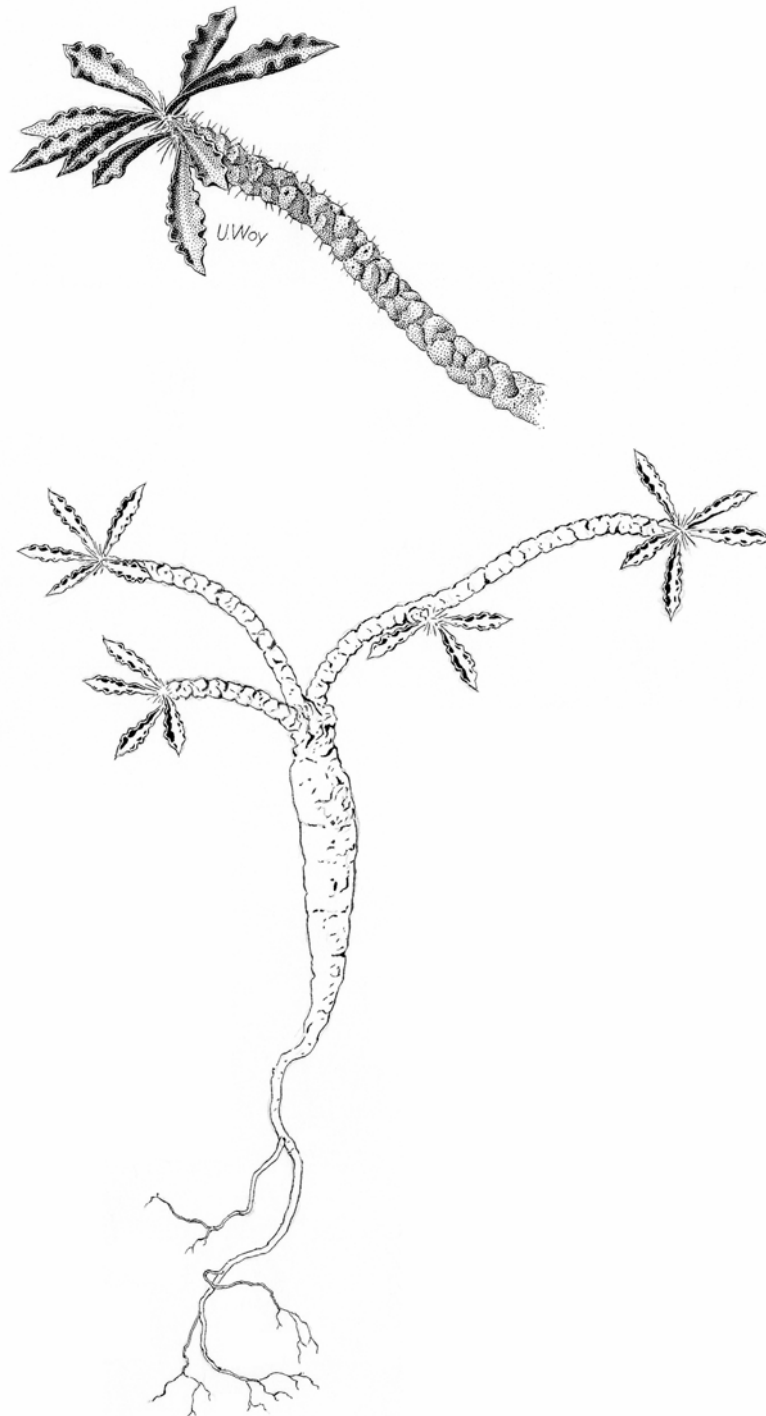
# Euphorbia capsaintemariensis

Rauh 1970

**Common names:** None reported

**Scientific synonyms:** *E. decaryi* var. *capsaintemariensis* (Rauh) Cremers 1984 (homotypic)

**CITES category:** Appendix I since 18.01.1990



bar = 1 cm



- Characteristics:** Dwarf shrublet branching from the base, with a tuberous root. Strongly succulent, canaliculated leaves with undulate margin.
- Roots:** Tuberous, 5-10 cm Ø.
- Stem:** Branching from the base. Individual branches to 10 cm long, 5-10 mm Ø, decumbent, forming a dense, irregular cluster, silvery, surface bulgy from elevated leaf-bases (podaria), separated by lines arranged in a reticulate pattern, roughened due to leaf-scars and rudimentary stipular spines.
- Leaves:** Arranged in a terminal rosette, lanceolate, to 2.5 x 0.8 cm, strongly fleshy, channelled above, reddish green, with undulate margin; without obvious lateral veins, subsessile. Stipular spines bristly, papery, deciduous.
- Inflorescence:** Cymes subterminal, 1-2-forked, erect on c. 5 mm long peduncles; cyathophylls spreading, ovate-acute, 3 x 5 mm, greenish-pink with red margins; cyathium c. 5 mm Ø, subsessile; nectar glands elliptic, orange.
- Special features:** Branches root easily to produce new plants, but allegedly do not form a tuber.
- Distribution:** S Madagascar; Cap Sainte Marie to Lavanono, calcareous soils, 100 m.



**Trade:** There is no UNEP-WCMC reported trade. The species is moderately represented in collections; it is surely not a beginners plant in cultivation, as the tuber is sensitive to over-watering. The species is common (Lavrano pers. comm.).

**Similar species:** *E. ambovombensis* Rauh & Razafindratsira, *E. capsaintemariensis*, *E. cylindrifolia* Marnier-Lapostolle & Rauh, *E. decaryi* Guillaumin, *E. parvicyathophora* Rauh and *E. tulearensis* (Rauh) Rauh, all originating from the coastal region of southernmost Madagascar, show similar features of thin, bulgy or finely prickly stems from a subterranean tuber and terminal rosettes of very small, strongly succulent, canaliculated leaves, mostly with undulate margins. Size and shape of leaves may depend quite strongly on growing conditions and the taxonomic value of quantitative characters within this group should be thoroughly assessed. Even flower characters are partly very similar in a way that their status of separate species can be seriously doubted in some cases. Mislabelled specimens within this group are therefore not uncommon. However, as they are all listed in App. I, this problem is a taxonomical one and doesn't affect enforcement very much. A revision however would be useful. *E. cylindrifolia* is the most outstanding of them for it's very narrow, nearly terete-sulcate leaves. *E. decaryi* is characterized by spines arranged in longitudinal spirals near stem apices. The western *E. parvicyathophora* and *E. tulearensis* have rather long, acicular spines; the latter has much smaller leaves. The eastern *E. ambovombensis* and *E. capsaintemariensis* have rather papery spines; they can be differentiated by slightly spinier stems with spines forming a reticulate pattern and bigger leaves of the former. *E. suzannae-marnierae* Rauh & Petignat, described in 1996 from Toliara, Mandrare Valley (Ambovombe region), also belongs to this group with stems 10 x 1 cm, leaves 4 x 1 cm with strongly crisped margins, at least towards tips and bristly stipular spines. It is listed in CITES App. II and this leads to a serious look-alike- and enforcement problem. Finally, *E. francoisii* Léandri from south-eastern Madagascar is sometimes compared with the above species-group; it has the same general growth form, but distinctively bigger and very colourful leaves and quite different flowers.

**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.

Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.

Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.

Sajeva, M. & M. Constanzo (1997): Succulents. The illustrated dictionary. Timber Press Portland, Oregon.

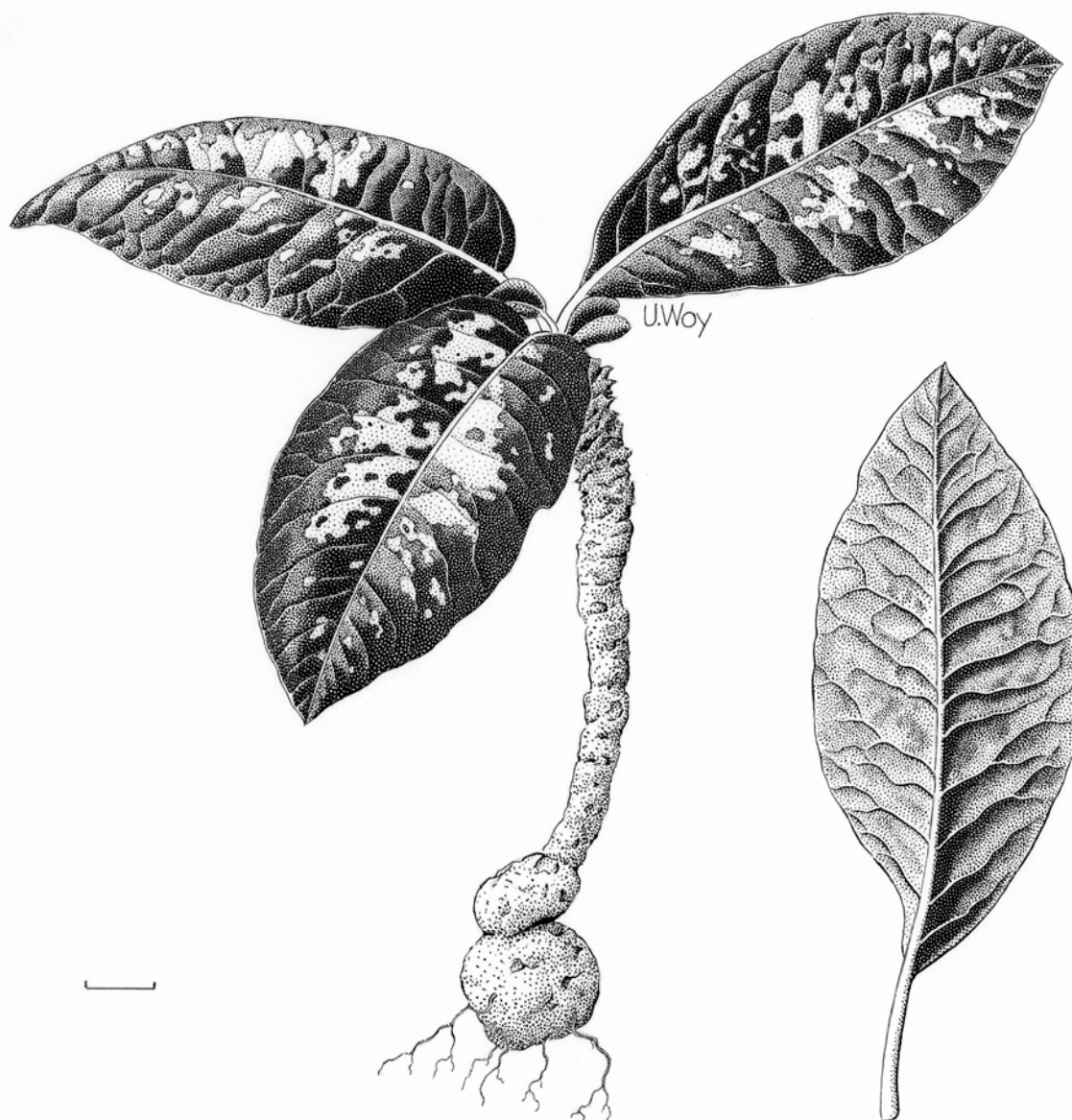


# Euphorbia cremersii

**Common names:** None reported

**Scientific synonyms:** *E. cremersii* forma *viridiflora* Rauh 1991 (heterotypic); possibly synonymous with the following *E. cremersii* var. *rakotozafyi* (Cremers) Rauh 1995 (heterotypic) = *E. francoisii* var. *rakotozafyi* Cremers 1984 (basionym)

**CITES category:** Appendix I since 16.02.1995



bar = 1 cm

**Characteristics:** Dwarf geophyte with tuberous root and short stems, branching at ground-level; leaves broad, dark green with silvery spots and crisped margins.

**Roots:** Globose, 2-5 cm Ø, merging into stem.

**Stem:** Branching at ground-level. Individual branches to 10-15 cm long, 10 mm Ø, slightly club-shaped, surface roughened, covered with stipular spines near branch tips.

**Leaves:** Non-succulent, coriaceous, deciduous, arranged in a terminal rosette, lanceolate, to 8 x 3 cm, base ± cordate, dull green with silvery spots above, reddish beneath, margins crisped, red, petiole to 1 cm. Stipular spines 3 mm, bristly, irregularly curled, deciduous.

**Inflorescence:** Cymes subterminal, nutant, 1-2-forked on c. 2 cm long peduncles; cyathophylls rounded, to 7 x 13 mm, pale brown, overlapping and covering, but not enclosing the cyathium; cyathium ± 4 mm Ø; nectar glands pale yellow.

**Distribution:** NW Madagascar, S of Maevatanana, forest of Ankarafantsika, also reported from Bongolava on sandy soils in shady places of dry forest and possibly more to the west, from Bemarivo (var. *rakotozafyi*).



**Trade:** Export of wild-collected plants prior to App. I-listing: 1991: 310, 1992: 258 (according to national sources). UNEP-WCMC reported trade shows a considerable number of shipments 1989-2004, including many shipments of wild-collected plants 1992-1995, i. E. prior to App. I-listing, containing up to 100 specimens. Notwithstanding, the species is moderately represented in collections today; cultivation is not quite easy. IUCN red list: VU D2.

**Similar species:** The species is hard to tell apart from *E. moratii* Rauh, if not in flower. Both show the same general appearance with a globose subterranean tuber and a short stem with a terminal rosette of quite soft, caducous leaves. Inflorescences of *E. cremersii* show distinctive, nutant cymes with larger cyathophylls. *E. primulifolia* Baker, *E. quartzicola* Léandri and *E. itremensis* Kimnach & Lavranos are similar dwarf geophytic euphorbias; they however have much shorter, nearly absent stems. There are further species with similar growth-form, but lacking spotted leaves, in continental Africa, e.g. *E. orbiculifolia* S. Carter, *E. tuberosa* Linné and *E. brunellii* Chiovenda.

**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.

Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.

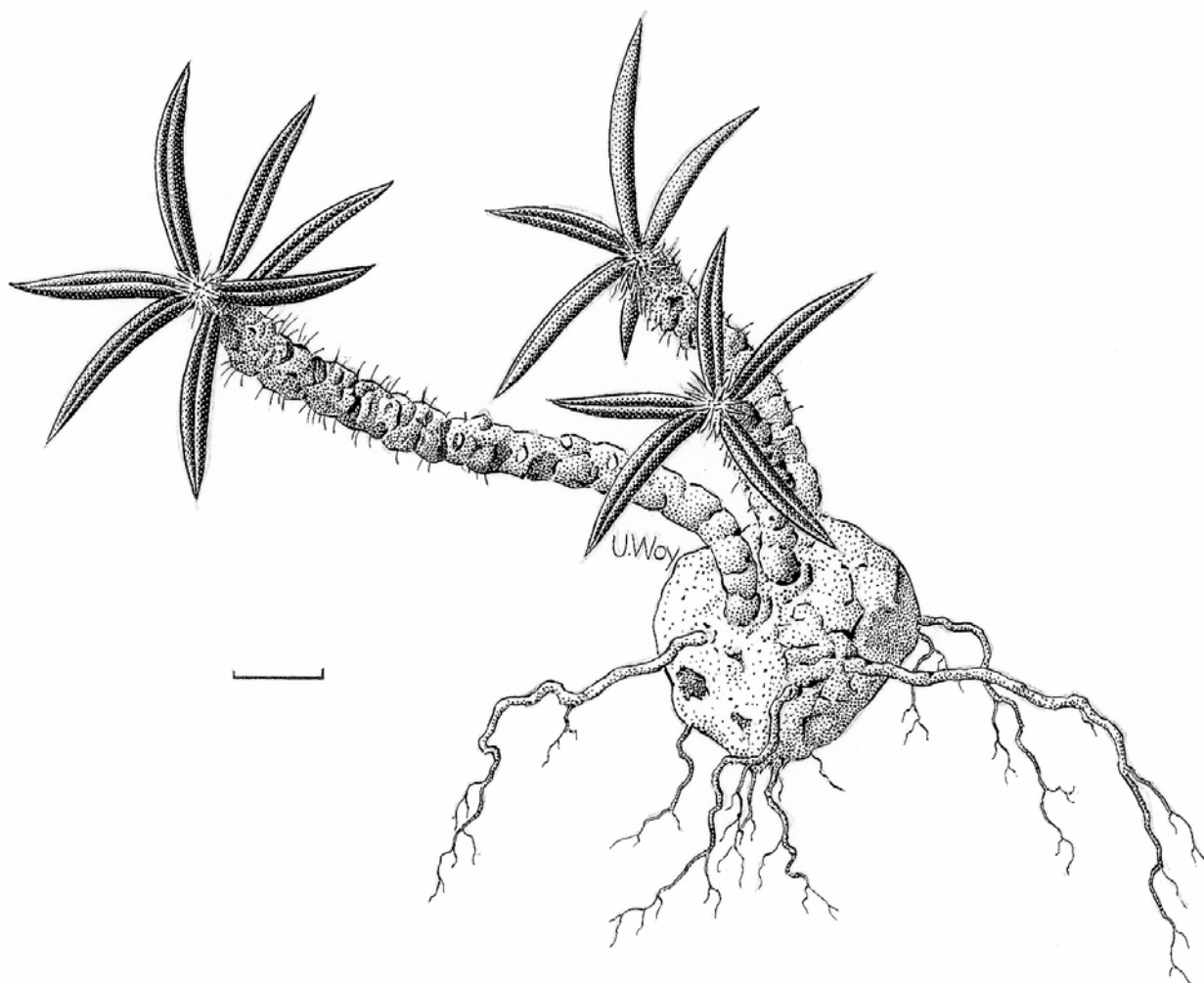
Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.

Sajeva, M. & M. Constanzo (1997): Succulents. The illustrated dictionary. Timber Press Portland, Oregon.



# Euphorbia cylindrifolia

- Common names:** None reported
- Scientific synonyms:** *E. cylindrifolia* ssp. *tuberifera* Rauh 1963 (heterotypic)
- CITES category:** Appendix I since 18.01.1990



bar = 1 cm

- Characteristics:** Dwarf, flat, densely clustering shrublet with tuberous root and short stems; leaves terete.
- Roots:** Tuberous, to 10 cm Ø.
- Stem:** Stoloniferous, rooting below ground. Individual branches prostrate, to 15 cm long,  $\pm 5$  mm Ø, sparsely branched, surface bulgy from elevated leaf-bases (podaria), separated by lines arranged in a reticulate pattern, roughened due to leaf-scars and rudimentary stipular spines.
- Leaves:** At branch tips, directed backwards, fleshy, to 2.5 cm long, terete, 3 mm Ø, deeply channelled above, dark green to purplish; stipular spines minute, arranged in transversal lines below the leaf-scars, eventually deciduous.
- Inflorescence:** Cymes subterminal, simple, on c. 3 cm long peduncles; cyathophylls rounded,  $\pm 7 \times 6$  mm, surrounding the cyathium, yellowish-pink, nodding; cyathium  $\pm 2$  mm Ø; nectar glands elliptic, yellow.

---

**Distribution:** SE Madagascar; widely distributed, E Amboasary to Tsihombe and possibly beyond, dry, thorny woodland.



**Trade:** UNEP-WCMC reported trade shows a very high number of shipments 1981-2004, in comparison with other dwarf Madagascan euphorbias. Most shipments contain low numbers, but there are some shipments with more than a hundred plants and one export from MG in 1986 of 10'000 plants (to DE). All specimens are reported to originate from artificial propagation. The species is moderately represented in collections; cultivation is not quite easy, as the tuber is sensitive to over-watering. IUCN red list: EN B1ab(iii)+2ab(iii). Common in some locations.

**Similar species:** *E. ambovombensis* Rauh & Razafindratsira, *E. capsaintemariensis* Rauh, *E. cylindrifolia*, *E. decaryi* Guillaumin, *E. parvicyathophora* Rauh and *E. tulearensis* (Rauh) Rauh, all originating from the coastal region of southernmost Madagascar, show similar features of thin, bulgy or finely prickly stems from a subterranean tuber and terminal rosettes of very small, strongly succulent, canaliculated leaves, mostly with undulate margins. Size and shape of leaves may depend quite strongly on growing conditions and the taxonomic value of quantitative characters within this group should be thoroughly assessed. Even flower characters are partly very similar in a way that their status of separate species can be seriously doubted in some cases. Mislabelled specimens within this group are therefore not uncommon. However, as they are all listed in App. I, this problem is a taxonomical one and doesn't affect enforcement very much. A revision however would be useful. *E. cylindrifolia* is the most outstanding of them for its very narrow, nearly terete-sulcate leaves. *E. decaryi* is characterized by spines arranged in longitudinal spirals near stem apices. The western *E. parvicyathophora* and *E. tulearensis* have rather long, acicular spines; the latter has much smaller leaves. The eastern *E. ambovombensis* and *E. capsaintemariensis* have rather papery spines; they can be differentiated by slightly spinier stems with spines forming a reticulate pattern and bigger leaves of the former. *E. suzannae-marnierae* Rauh & Petignat, described in 1996 from Toliara, Mandrare Valley (Ambovombe region), also belongs to this group with stems 10 x 1 cm, leaves 4 x 1 cm with strongly crisped margins, at least towards tips and bristly stipular spines. It is listed in CITES App. II and this leads to a serious look-alike- and enforcement problem. Finally, *E. francoisii* Léandri from south-eastern Madagascar is sometimes compared with the above species-group; it has the same general growth form, but distinctively bigger and very colourful leaves and quite different flowers.

**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.  
Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.  
Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.  
Sajeva, M. & M. Constanzo (1997): Succulents. The illustrated dictionary. Timber Press Portland, Oregon.



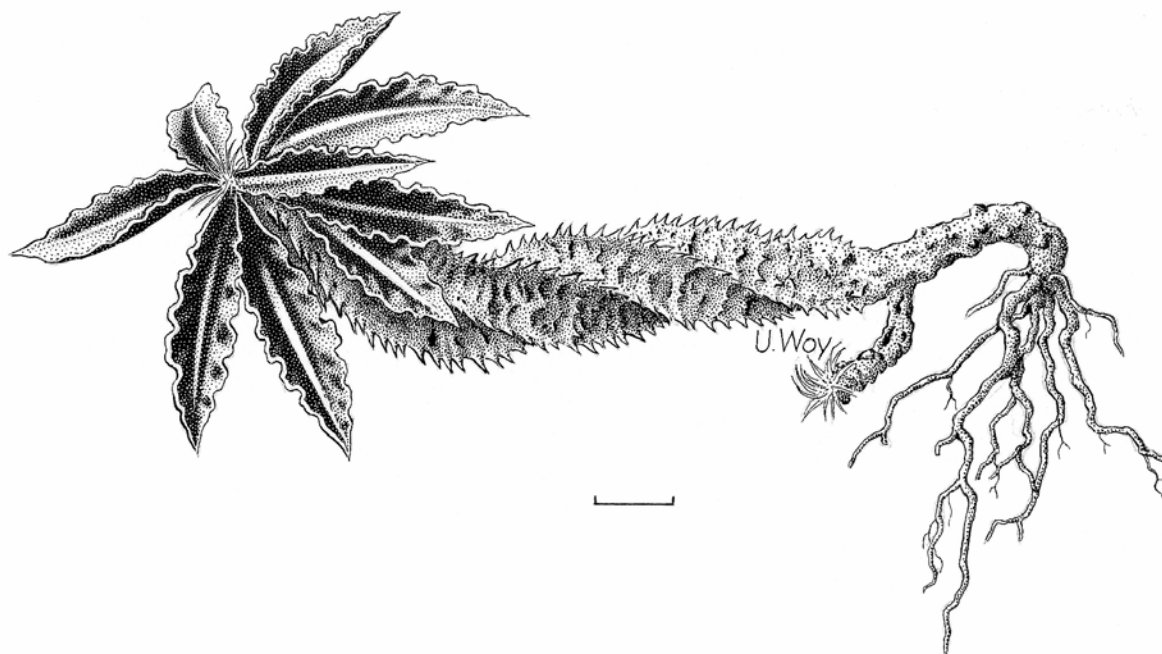
# Euphorbia decaryi

Guillaumin 1934

**Common names:** None reported

**Scientific synonyms:** *E. decaryi* var. *ampanihyensis* Cremers 1984 (heterotypic)  
*E. decaryi* var. *spirosticha* Rauh & Buchloh 1987 (heterotypic)  
(*E. decaryi* var. *robinsonii* Cremers 1984 (heterotypic) is possibly a synonym of *E. capsaintemariensis* var. *tulearensis* Rauh)

**CITES category:** Appendix I since 18.01.1990



bar = 1 cm

- Characteristics:** Dwarf shrublet with tuberous root and short stems, with spirally arranged spines near tips; leaves with undulate margins.
- Roots:** Tuberous, to 10 cm Ø.
- Stem:** Stoloniferous, rooting below ground. Aerial stems erect to curved and decumbent. Individual branches to 15 cm long, ± 5 mm Ø, sparsely branched, surface bulgy through elevated leaf-bases (podaria) with sunken leaf-scars and and roughened with papery stipular spines near branch tips.
- Leaves:** At branch tips, fleshy, dark green to greyish-green or pinkish to purplish, spotted at the base, ovate, canaliculate, to 5 x 1.5 cm, margins of lower leaves straight, in upper leaves strongly undulate, petiole ± 5 mm, red; stipular spines in tight spiral series, ± 4 mm, base expanded around the leaf-scar, simple or divided into bristles, membranous, eventually deciduous.
- Inflorescence:** Cymes simple, on c. 1.5 cm long peduncles; cyathophylls pinkish-yellow, margins red, ± 6 x 4 mm, nodding; cyathium 4 mm Ø; nectar glands elliptic, yellow.

**Distribution:** SE-S Madagascar; disjunct, 30 km S of Ampanihy (var. *ampanihyensis*), near Ampotaka S of Ampanihy (var. *spirosticha*), Tolanaro (Fort Dauphin) area (var. *decaryi*), sandy soils. Var. *robinsonii* from Tulear is possibly a synonym of *E. capsaintemariensis* var. *tulearensis* Rauh.



**Trade:** UNEP-WCMC reported trade shows a very high number of shipments 1980-2004, in comparison with other dwarf Madagascan euphorbias. Most shipments contain low numbers, but there are some shipments with several hundred plants and further two very large exports from MG in 1988 of 4560 plants and in 1989 of 2500 plants of unreported origin, i.e. possibly wild-collected (to DE). Little trade in wild-collected plants is reported; only three shipments containing a few plants 1992-1995, i. e. after App. I-listing. The species is moderately represented in collections; cultivation is not quite easy, as the tuber is sensitive to over-watering. IUCN red list: EN B1ab(iii)+2ab(iii).

**Similar species:** *E. ambovombensis* Rauh & Razafindratsira, *E. capsaintemariensis* Rauh, *E. cylindrifolia* Marnier-Lapostolle & Rauh, *E. decaryi*, *E. parvicyathophora* Rauh and *E. tulearensis* (Rauh) Rauh, all originating from the coastal region of southernmost Madagascar, show similar features of thin, bulgy or finely prickly stems from a subterranean tuber and terminal rosettes of very small, strongly succulent, canaliculated leaves, mostly with undulate margins. Size and shape of leaves may depend quite strongly on growing conditions and the taxonomic value of quantitative characters within this group should be thoroughly assessed. Even flower characters are partly very similar in a way that their status of separate species can be seriously doubted in some cases. Mislabeled specimens within this group are therefore not uncommon. However, as they are all listed in App. I, this problem is a taxonomical one and doesn't affect enforcement very much. A revision however would be useful. *E. cylindrifolia* is the most outstanding of them for its very narrow, nearly teretesulcate leaves. *E. decaryi* is characterized by spines arranged in longitudinal spirals near stem apices. The western *E. parvicyathophora* and *E. tulearensis* have rather long, acicular spines; the latter has much smaller leaves. The eastern *E. ambovombensis* and *E. capsaintemariensis* have rather papery spines; they can be differentiated by slightly spinier stems with spines forming a reticulate pattern and bigger leaves of the former. *E. suzannae-marnierae* Rauh & Petignat, described in 1996 from Toliara, Mandrare Valley (Ambovombe region), also belongs to this group with stems 10 x 1 cm, leaves 4 x 1 cm with strongly crisped margins, at least towards tips and bristly stipular spines. It is listed in CITES App. II and this leads to a serious look-alike- and enforcement problem. Finally, *E. francoisii* Léandri from south-eastern Madagascar is sometimes compared with the above species-group; it has the same general growth form, but distinctively bigger and very colourful leaves and quite different flowers.

**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.  
Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.  
Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.  
Sajeva, M. & M. Constanzo (1997): Succulents. The illustrated dictionary. Timber Press Portland, Oregon.  
Sajeva, M. & M. Constanzo (2000): Succulents II. The illustrated dictionary. Le Lettere, Firenze.



# Euphorbia francoisii

Léandri 1946

**Common names:** None reported.

**Scientific synonyms:** *E. francoisii* var. *crassicaulis* Rauh 1997 (heterotypic)

**CITES category:** Appendix I since 18.01.1990



bar = 1 cm



**Characteristics:** Very attractive, dwarf, compact plant with tuberous root, short, prickly stems and leathery, nicely coloured leaves.

**Roots:** Tuberous.

**Stem:** Erect to curved, branching at the base with age and forming clusters. Individual branches 5-10 cm long, 10-15 mm Ø, surface roughened with densely set stipular spines.

**Leaves:** Arranged in a terminal rosette, quite variable in shape and colour, irregularly oblong, varying from 2 x 0.3 to 6 x 2 cm, fleshy, curved downwards, with weakly undulate margins, light green below, silvery greenish to pink to carmine above, sometimes with dark green spots, mostly dark green around the midrib and towards the base with light green or pink spots, midrib and base of lateral nerves often contrasting in colour; stipular spines to 4 mm, divided into numerous bristles, irregularly curved, arranged around the leaf-scars in a roughly reticulate pattern. Var. *crassicaulis* stated to differ by stems 30 x 2 cm and leaves 10 x 3 cm.

**Inflorescence:** Cymes at branch tips, 1-2-forked, on c. 2 cm long peduncles; cyathophylls rounded, to 7 x 12 mm, pinkish, spreading; cyathium ± 3 mm Ø; nectar glands yellow, ovary subsessile.

**Distribution:** SE Madagascar, Tolanaro (Fort Dauphin) to Amboasary near the coast, in sand dunes, Andrahomana near Ranopiso (var. *crassicaulis*).



**Trade:** UNEP-WCMC reported trade shows a considerable number of shipments 1981-2004, containing up to 365 plants. All specimens are declared to originate from artificial propagation in various countries, with the exception of a single specimen, exported in 1994 (to US) that was declared as wild-collected. For a number of exports from MG 1984-1992 with up to 200 specimens, the origin is not reported. The species is moderately represented in collections; it can be propagated from seeds, but also by rooting cuttings. Common throughout its range. IUCN red list: CR B1ab(iii,v).

**Similar species:** *E. francoisii* from south-eastern Madagascar is sometimes compared with the species-group of *E. ambovombensis* Rauh & Razafindratsira, *E. capsaintemariensis* Rauh, *E. cylindrifolia* Marnier-Lapostolle & Rauh, *E. decaryi* Guillaumin, *E. parvicyathophora* Rauh and *E. tulearensis* (Rauh) Rauh, all originating from the coastal region of southernmost Madagascar. *E. suzannae-marnierae* Rauh & Petignat, described in 1996 from Toliara, Mandrare Valley (Ambovombe region), also belongs to this group of tuberous taxa. It has stems 10 x 1 cm, leaves 4 x 1 cm with strongly crisped margins, at least towards tips and bristly stipular spines. *E. francoisii* has the same general growth form like the before-mentioned species, but bigger and quite distinctive, very colourful leaves; it has rather plane leaf blades with minutely down-curved margins in comparison with the more canaliculate leaves of the other species. Finally, the flowers of *E. francoisii* are quite different.

**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.

Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.

Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.

Sajeva, M. & M. Constanzo (1997): Succulents. The illustrated dictionary. Timber Press Portland, Oregon.

Sajeva, M. & M. Constanzo (2000): Succulents II. The illustrated dictionary. Le Lettere, Firenze.



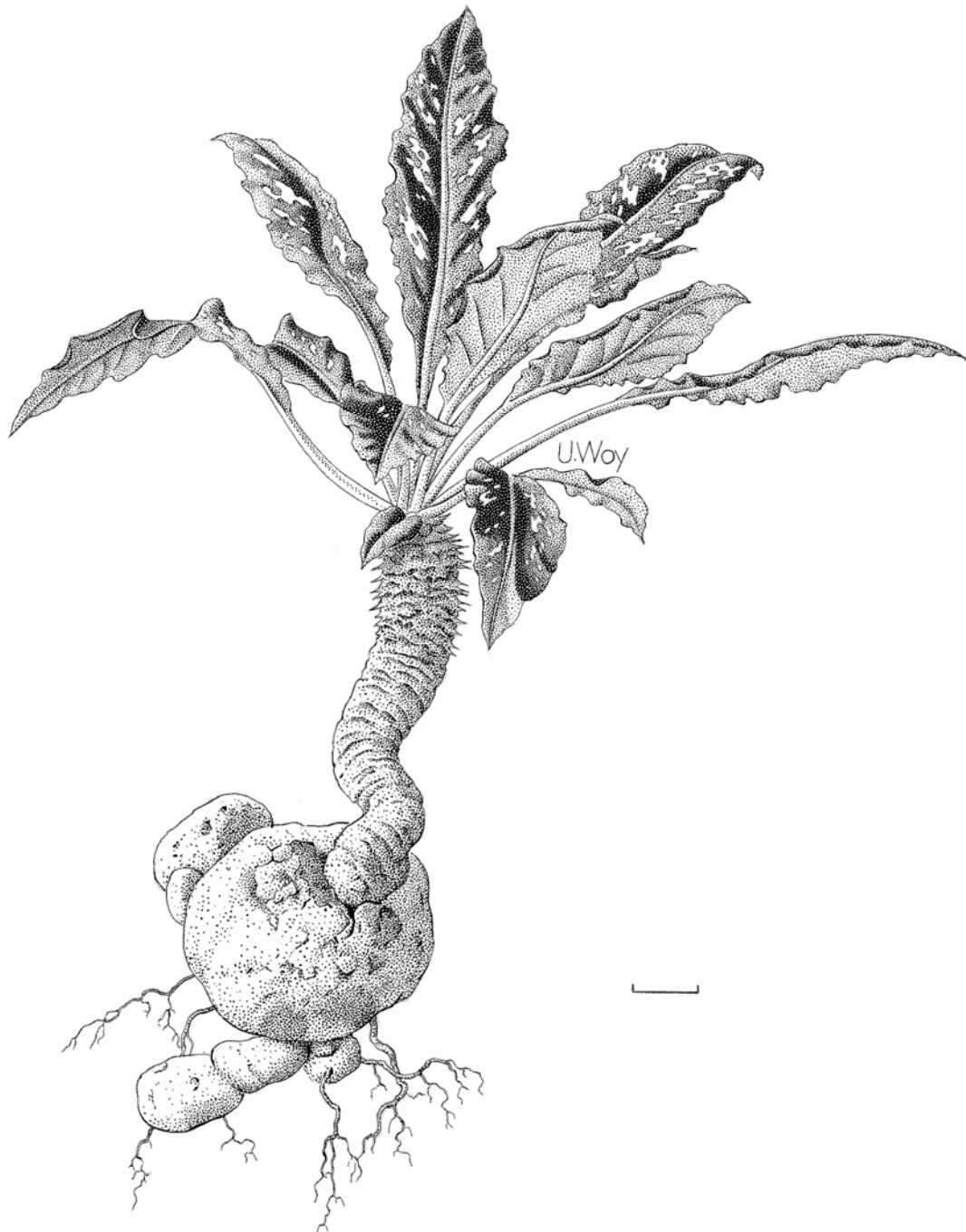
# Euphorbia moratii

Rauh 1970

**Common names:** None reported

**Scientific synonyms:** *E. moratii* var. *antsingiensis* Cremers 1984 (heterotypic)  
*E. moratii* var. *bemarahensis* Cremers 1984 (heterotypic)  
*E. moratii* var. *multiflora* Rauh 1991 (heterotypic)

**CITES category:** Appendix I since 18.01.1990



bar = 1 cm

**Characteristics:** Dwarf geophyte with conspicuous tuberous root, short stem and big, dark green leaves in a rosette. Inflorescences with very long, narrow, spreading cyathophylls.

**Roots:** Tuberous, to 10 x 4.5 cm, subglobose with flattened top.

**Stem:** Below ground, to 5 cm, ± 1.5 cm Ø, Erect to curved.

**Leaves:** Arranged in a terminal rosette, lanceolate, to 9 x 2 cm, dull green, sometimes with light spots, margins reddish, ± undulate, petiole to 1 cm.

**Inflorescence:** Cymes subterminal, simple or 3-5 forked (var. *multiflora*), on ± 1.5 cm long peduncles; cyathophylls triangular, to 5 x 2.5 mm, greyish-brown or pink (var. *bemarahensis*), spreading; cyathium 2.5 mm Ø; nectar glands greenish-brown, ovary acutely lobed, subsessile.

**Distribution:** W Madagascar, Tsingy of Bemaraha (vars. *moratii*, *antsingiensis* and *bemarahensis*) and Maevatanana (var. *multiflora*, i.e. sympatrically with *E. cremersii* Rauh & Razafindratsira?). Also reported from much further south, from the region of Manja (Lavranos pers. comm.).



**Trade:** Export of wild-collected plants prior to App. I-listing: 1991: 310, 1992: 258 (according to national sources). UNEP-WCMC reported trade shows a rather moderate number of shipments 1980-2004, with a single shipment of 10 wild-collected plants 1997 (to CH), i. e. after App. I-listing. For many exports from MG to various countries 1980-1989, containing up to 100 plants, the origin is not reported. The species is moderately represented in collections today; cultivation is not quite easy. IUCN red list: VU D2.

**Similar species:** The species is hard to tell apart from *E. cremersii* Rauh & Razafindratsira, if not in flower. Both show the same general appearance with a globose subterranean tuber and a short stem with a terminal rosette of quite soft, caducous leaves. Inflorescences of *E. cremersii* show distinctive, nutant cymes with larger cyathophylls. *E. primulifolia* Baker, *E. quartzitcola* Léandri and *E. itremensis* Kimnach & Lavranos are similar dwarf geophytic euphorbias; they however have much shorter, nearly absent stems. There are further species with similar growth-form, but lacking spotted leaves, in continental Africa, e.g. *E. orbiculifolia* S. Carter, *E. tuberosa* Linné and *E. brunellii* Chiovenda.

**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.

Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.

Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.

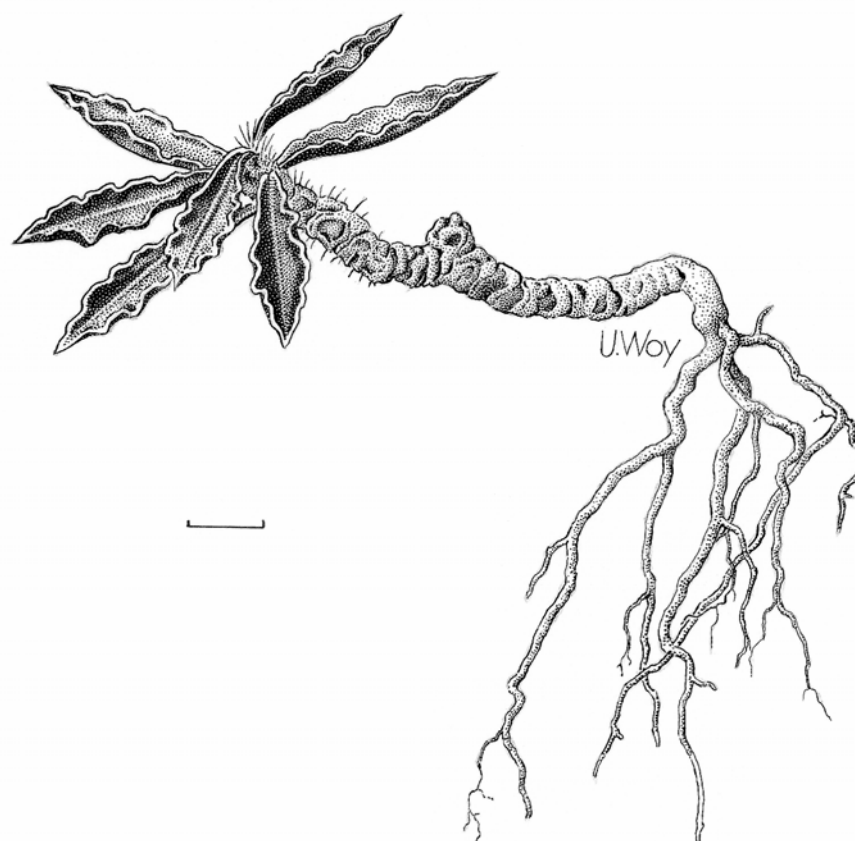
Sajeva, M. & M. Constanzo (1997): Succulents. The illustrated dictionary. Timber Press Portland, Oregon.



# Euphorbia parvicyathophora

Rauh 1986

- Common names:** None reported.
- Scientific synonyms:** None.
- CITES category:** Appendix I since 18.01.1990



bar = 1 cm

- Characteristics:** Dwarf, flat shrublet with light grey, spiny branches and succulent leaves with undulate margins.
- Roots:** Rhizomatous, with small random tubers.
- Stem:** Branching from the base and along whole length of decumbent stems. Branches numerous, to 15 cm,  $\pm 1$  cm  $\varnothing$ , light grey, surface bulgy from elevated, roughly spirally arranged leaf-bases and covered with porrect, bristly, stipular spines.
- Leaves:** Arranged in a terminal rosette, spreading, ovate, to 2.5 x 1.5 cm, fleshy, dark green with contrasting, light green midrib above, often with a purplish hue, with undulate margin. Stipular spines  $\pm 5$  mm, base swollen and divided into cartilaginous fringes.
- Inflorescence:** Cymes subterminal, simple, erect on 5 mm long peduncles; cyathophylls spreading, 3 x 3 mm, brownish-pink; cyathium  $\pm 2.5$  mm  $\varnothing$ ; nectar glands elliptic, greenish-yellow; ovary obtusely lobed.

---

**Distribution:** SE Madagascar, Only known from Anjamala, ca. 40 km NE of Toliara, along the Fiherenana river, limestone cliffs in soil pockets.



**Trade:** There is virtually no UNEP-WCMC reported trade: Only 5 shipments 1988-2003, with a total of 8 specimens, all declared as originating from artificial propagation, 4 specimens originating from MG. The species is little represented in collections; it is quite difficult in cultivation. IUCN red list: CR B1ab(iii)+2ab(iii).

**Similar species:** *E. ambovombensis* Rauh & Razafindratsira, *E. capsaintemariensis* Rauh, *E. cylindrifolia* Marnier-Lapostolle & Rauh, *E. decaryi* Guillaumin, *E. parvicyathophora* and *E. tulearensis* (Rauh) Rauh, all originating from the coastal region of southernmost Madagascar, show similar features of thin, bulgy or finely prickly stems from a subterranean tuber and terminal rosettes of very small, strongly succulent, canaliculated leaves, mostly with undulate margins. Size and shape of leaves may depend quite strongly on growing conditions and the taxonomic value of quantitative characters within this group should be thoroughly assessed. Even flower characters are partly very similar in a way that their status of separate species can be seriously doubted in some cases. Mislabelled specimens within this group are therefore not uncommon. However, as they are all listed in App. I, this problem is a taxonomical one and doesn't affect enforcement very much. A revision however would be useful. *E. cylindrifolia* is the most outstanding of them for its very narrow, nearly teret-sulcate leaves. *E. decaryi* is characterized by spines arranged in longitudinal spirals near stem apices. The western *E. parvicyathophora* and *E. tulearensis* have rather long, acicular spines; the latter has much smaller leaves. The eastern *E. ambovombensis* and *E. capsaintemariensis* have rather papery spines; they can be differentiated by slightly spinier stems with spines forming a reticulate pattern and bigger leaves of the former. *E. suzannae-marnierae* Rauh & Petignat, described in 1996 from Toliara, Mandrare Valley (Ambovombe region), also belongs to this group with stems 10 x 1 cm, leaves 4 x 1 cm with strongly crisped margins, at least towards tips and bristly stipular spines. It is listed in CITES App. II and this leads to a serious look-alike- and enforcement problem. Finally, *E. francoisii* Léandri from south-eastern Madagascar is sometimes compared with the above species-group; it has the same general growth form, but distinctively bigger and very colourful leaves and quite different flowers.

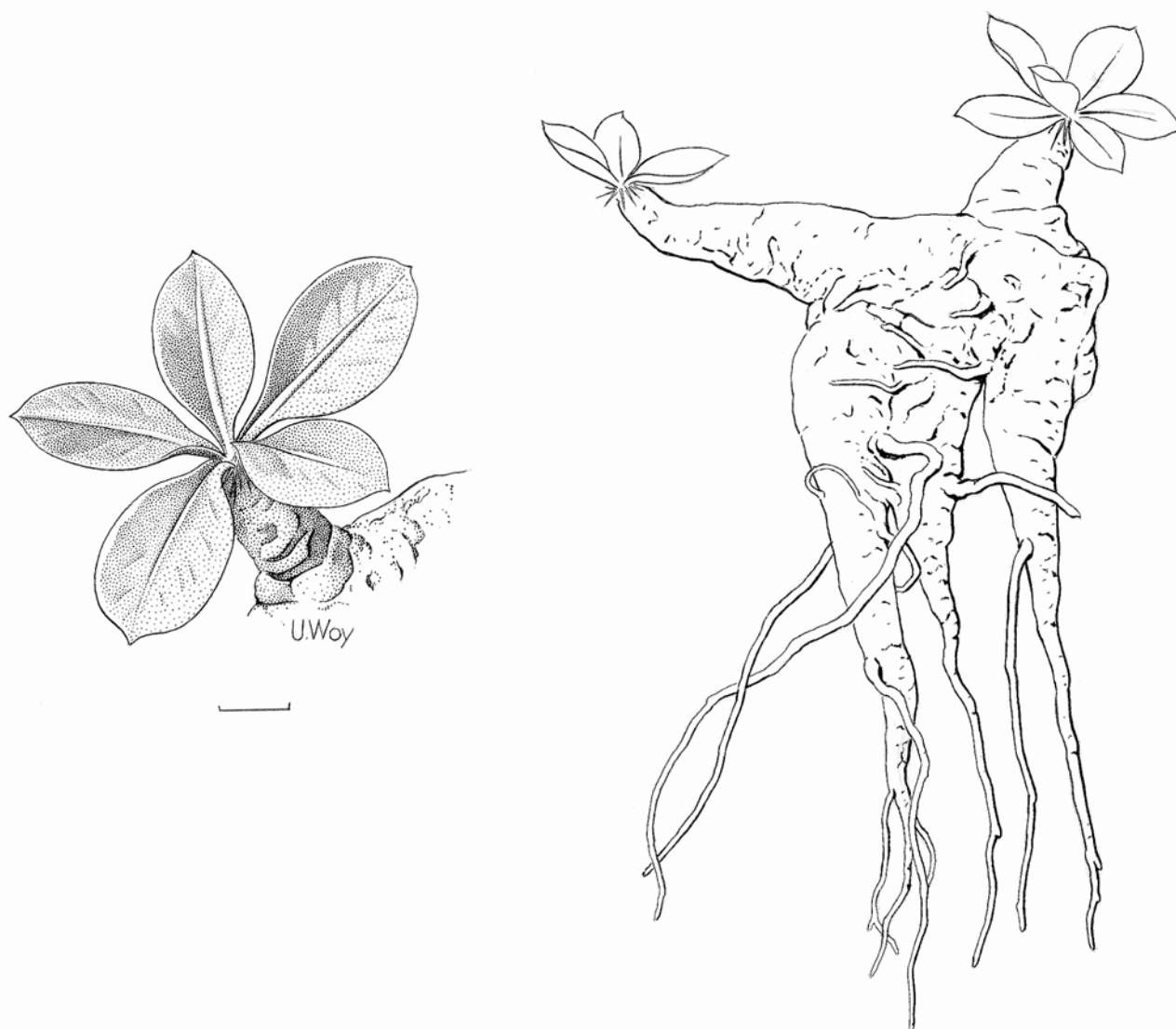
**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.  
Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.  
Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.



# Euphorbia quartzitcola

Léandri 1946

- Common names:** None reported.
- Scientific synonyms:** None.
- CITES category:** Appendix I since 18.01.1990



bar = 1 cm

- Characteristics:** Dwarf geophyte with napiform, branched root and several very short, conical subterranean stems; only stem apices with terminal rosettes of leaves emerging; leaves spreading on soil surface, broad, light green.
- Roots:** Napiform, branched, merging into one or few subterranean stems.
- Stem:** Shortly conical, light grey; surface rather smooth.
- Leaves:** Deciduous, arranged in a terminal rosette, at ground level, ovate, to 5 x 3.5 cm, constricted towards the base, petiole very short to absent, blade slightly undulate, yellowish-green, slightly glossy, shortly pubescent, with a broad midrib; stipules bristly, to 5 mm, deciduous.
- Inflorescence:** Cymes 1-2-forked on short peduncles; cyathophylls spreading, ovate, to 7 x 9 mm, joined at the base, greenish-yellow; cyathium  $\pm$  3 mm  $\varnothing$ , hairy; nectar glands elliptic, yellow; ovary subsessile.

---

**Distribution:** Central Madagascar, on the Itremo plateau W of Ambatofinandrahana, in an area of ca. 60 x 15 km, running from SSE to NNW, in pure white quartzite sand with traces of soil, ± 1400 m.



**Trade:** UNEP-WCMC reported trade shows a considerable number of shipments 1984-1999, containing up to 350 plants. Nearly all shipments constitute exports from Madagascar and most of them lack declaration of the origin of the plants. It seems quite probable that this material was at least partly wild-collected. The species is very little represented in collections; it is difficult in cultivation due to its extreme habitat. Locally abundant, 100'000s of plants (Lavranos, pers. comm.), IUCN red list: EN B1ab(iii)+2ab(iii).

**Similar species:** *E. itremensis* Kimnach & Lavranos 2001 (CITES Appendix II) from Itremo mountains in central Madagascar seems to differ mainly by smaller stipular spines, smaller and narrower leaves, 25-35 x 10-17 mm, that are rather thickish, shiny and less concave, and finally cream to pinkish rather than bright yellow cyathophylls. There seems to be a serious look-alike problem between the two. Further, *E. primulifolia* Baker from W Madagascar (CITES appendix II), is quite similar; it differs by dark glaucous-green leaves 11 x 4 cm, with undulate margin and distinct, reticulate venation. It's flowers appear before the leaves. There are further species with similar growth-form in continental Africa, e.g. *E. tuberosa* Linné, but none with ovate, yellowish leaves.

**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.  
Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.  
Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.  
Kimnach, M. & J. J. Lavranos (2001): A new Madagascan Euphorbia: *E. itremensis*. Cact. Succ. J. (US) 73 (1): 42-47.



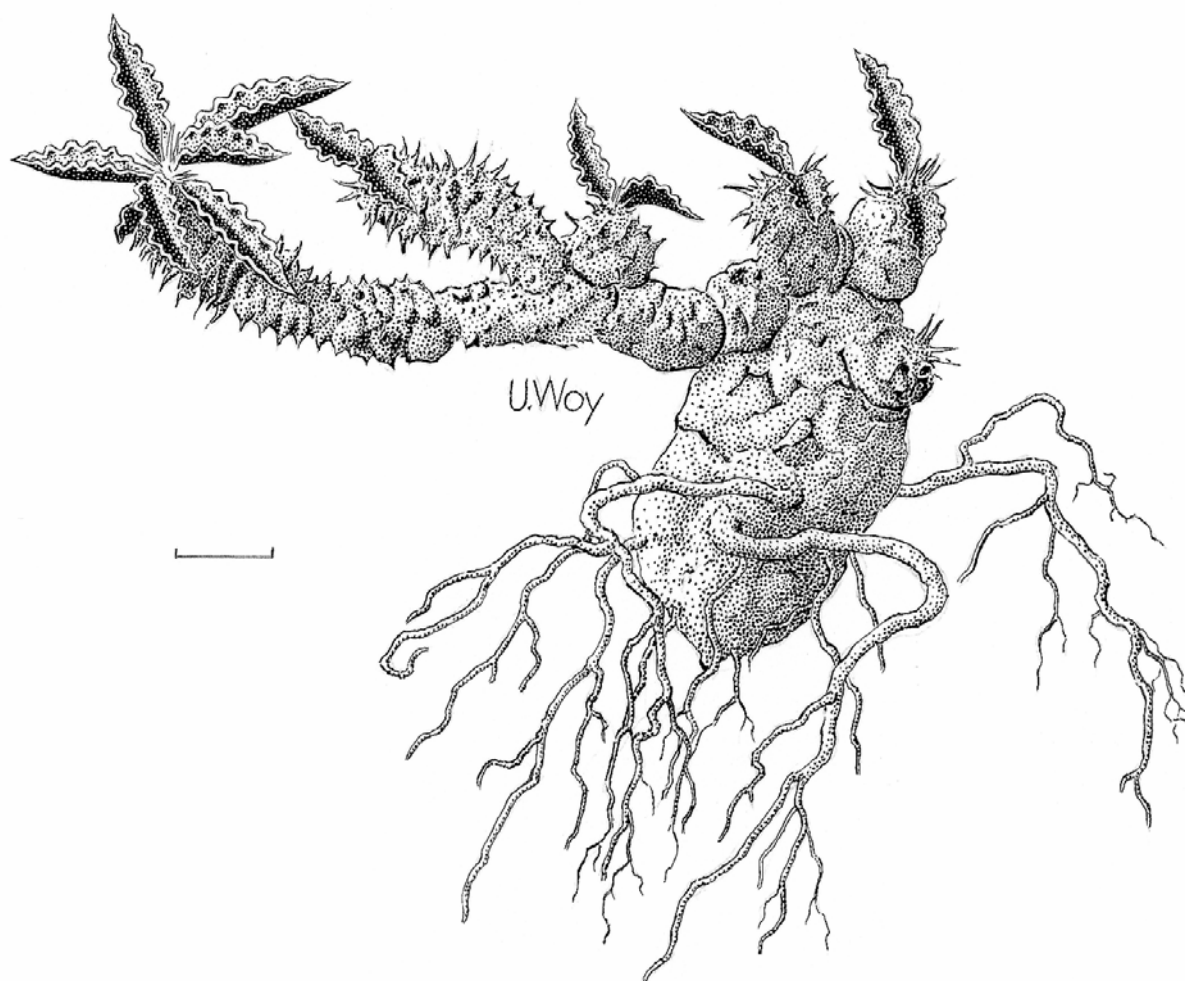
# Euphorbia tulearensis

(Rauh) Rauh 1988

**Common names:** None reported

**Scientific synonyms:** *E. capsaintemariensis* var. *tulearensis* Rauh 1978 (homotypic)

**CITES category:** Appendix I since 18.01.1990



bar = 1 cm

- Characteristics:** Dwarf geophyte (or shrublet in cultivation) with light grey, spiny branches and narrow, strongly succulent leaves with undulate margin, curved upwards.
- Roots:** Tuberous, to  $\pm 10 \times 5$  cm.
- Stem:** Densely branching from the base. Branches to 20 cm, 5-7 mm  $\varnothing$ , light grey, surface bulgy from elevated, roughly spirally arranged leaf-bases and covered with porrect, bristly, stipular spines.
- Leaves:** Arranged in a terminal rosette, spreading, ovate, to 1.5 cm long and a few mm wide, fleshy, canaliculated or deeply folded, variably coloured, dark green to grey-green with contrasting, light grey or green midrib above, often with a purplish hue, with strongly undulate margin, curved upwards and minutely papillate surface. Stipular spines acicular, porrect, to 8 mm, base swollen and divided into cartilaginous fringes.



---

**Inflorescence:** Cymes simple, on 2 cm long peduncles; cyathophylls erect, 3 x 3 mm, reddish; cyathium 5 mm Ø; nectar glands orange.

**Special features:** Rooted branches allegedly do not form a tuber.

**Distribution:** SE Madagascar, Toliara and St. Augustin areas, at the base of La Table mountain, on limestone hills.



**Trade:** UNEP-WCMC reported trade shows a very moderate number of shipments 1987-2002. However in 1988, export of 18'000 specimens in a single shipment (to DE) is reported and the origin of these specimens is not indicated. Considering the fact, that this was the very year of scientific publication of this taxon by the German botanist Prof. Werner Rauh, it is almost certain that this material was wild-collected. 1992-1997, only 4 shipments, containing 1-5 specimens, live and dried, were declared as wild-collected. The species is very little represented in collections; it is difficult in cultivation, as the tuber is very sensitive to over-watering. Locally common throughout its restricted range, IUCN red list: CR B1ab(iii,v)+2ab(iii,v).

**Similar species:** *E. ambovombensis* Rauh & Razafindratsira, *E. capsaintemariensis* Rauh, *E. cylindrifolia* Marnier-Lapostolle & Rauh, *E. decaryi* Guillaumin, *E. parvicyathophora* Rauh and *E. tulearensis*, all originating from the coastal region of southernmost Madagascar, show similar features of thin, bulgy or finely prickly stems from a subterranean tuber and terminal rosettes of very small, strongly succulent, canaliculated leaves, mostly with undulate margins. Size and shape of leaves may depend quite strongly on growing conditions and the taxonomic value of quantitative characters within this group should be thoroughly assessed. Even flower characters are partly very similar in a way that their status of separate species can be seriously doubted in some cases. Mislabelled specimens within this group are therefore not uncommon. However, as they are all listed in App. I, this problem is a taxonomical one and doesn't affect enforcement very much. A revision however would be useful. *E. cylindrifolia* is the most outstanding of them for it's very narrow, nearly terete-sulcate leaves. *E. decaryi* is characterized by spines arranged in longitudinal spirals near stem apices. The western *E. parvicyathophora* and *E. tulearensis* have rather long, acicular spines; the latter has much smaller leaves. The eastern *E. ambovombensis* and *E. capsaintemariensis* have rather papery spines; they can be differentiated by slightly spinier stems with spines forming a reticulate pattern and bigger leaves of the former. *E. suzannae-marnierae* Rauh & Petignat, described in 1996 from Toliara, Mandrare Valley (Ambovombe region), also belongs to this group with stems 10 x 1 cm, leaves 4 x 1 cm with strongly crisped margins, at least towards tips and bristly stipular spines. It is listed in CITES App. II and this leads to a serious look-alike- and enforcement problem. Finally, *E. francoisii* Léandri from south-eastern Madagascar is sometimes compared with the above species-group; it has the same general growth form, but distinctively bigger and very colourful leaves and quite different flowers.

**Bibliography:** Carter, S. & U. Egli (2003): The CITES Checklist of Succulent Euphorbia Taxa (Euphorbiaceae). Second edition. German Federal Agency for Nature Conservation.

Carter, S. (in Egli, ed.) (2002): Illustrated handbook of succulent plants – Euphorbia. Springer-Verlag Berlin, Heidelberg, New York.

Inskipp, T. & H. J. Gillett (Eds.) (2005): Checklist of CITES species and Annotated CITES Appendices and reservations. Compiled by UNEP-WCMC. CITES Secretariat, Geneva, Switzerland and UNEP-WCMC, Cambridge, UK.