New record of *Euphorbia thymifolia* L. (Euphorbiaceae) from the state of Acre, Brazil

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Abstract

*Euphorbia thymifolia* L. (Euphorbiaceae) is a prostrate herb distinguished from similar species by the combination of serrate leaf margin, puberulous ovary and fruit with capitate styles and pedicel not accrescent in fruit and breaching the involucre of the cyathia during maturation. In this paper we present the first record of *E. thymifolia* for the state of Acre, in Alto Juruá region, municipality of Cruzeiro do Sul, in a residential sidewalk crack habitat (07.6161°S, 072.6872°W. We also comment on its habitat and distribution, and include comparisons with commonly misidentified related species.

Keywords

Alto Juruá, flora, prostrate herb, taxonomy

Introduction

Euphorbiaceae is one of the most expressive flora families in the Brazilian Amazon (BFG 2015). Ricardo Secco’s studies of this family have stood out since the eighties (Secco 1987, 1990, Secco et al. 2012; Costa et al. 2018; among others). Such studies found that the Amazon constitutes a diversity center of many genera (Bigio and Secco 2011, 2012; Souza and Secco 2014), some of which are endemic (e.g., *Micrandropsis* W.A. Rodrigues and *Sandwithia* Laj.) and others have few specimens available in herbaria (e.g., *Angostylis* Benth. and *Astrococcus* Benth.). However, most of these studies have prioritized trees and lianas (Souza et al. 2014; Secco and Bigio 2017; Costa et al. 2018; Secco et al. 2019), and little attention has been given to herbaceous plants, even though they are common. Such conduct is also observed in other families in the mentioned bioma (Souza et al. 2020).

For instance, in the state of Amazonas, 54 species and 33 genera of Euphorbiaceae were recorded (Ribeiro et al. 1999), among which only four genera and eight species are herbaceous plants. For the state of Acre, the results were not different. Out of 37 genera and 98 species recorded, four genera and seven species refer to herbs (Daly and Silveira 2008; Medeiros et al. 2014).

In this context, the genus *Euphorbia* L. stands out, as it is the most diverse genus of Euphorbiaceae, with approximately 2,000 species, occurring in tropics and...
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subtropics (Webster 2014). Most of its representatives have herbaceous habits, and its ruderal species are common in the Amazon. However, the local records of such species are rare and old, and many of them have been misidentified (Ribeiro et al. 1999). Such is the case of *Euphorbia thymifolia* L., which has been mistaken for *E. prostrata* Aiton and *E. hyssopifolia* L., among others (Silva et al. 2014).

From Acre state, Daly and Silveira (2008) recorded three species of *Euphorbia* of herbaceous habit, *E. hirta* L., *E. sinclairiana* Benth (name presently accepted for *E. capansa* Ducke) and *E. capitellata* Engelm. Besides the already mentioned names, there are only two more names (*E. lasiocarpa* Klotzsch, *E. hyssopifolia* L.) in Reflora virtual herbarium (Flora do Brasil 2020).

For *E. capitellata*, the collection (M. Urquia 188) referred to by Daly and Silveira (2008) was not found in virtual herbaria. Therefore, it was not possible to examine it. However, we strongly believe that this represents a misidentification, as *E. capitellata* only occurs in the southern USA and in northern Mexico (Yang 2014).

In this paper we present a new record of *Euphorbia* from Acre state. It is *Euphorbia thymifolia*, a ruderal plant of herbaceous habit, collected in the Alto Juruá region in the westernmost area of Brazil.

**Methods**

The botanical material was collected in sidewalk crack, near the residence of the first author, in Formoso, municipality of Cruzeiro do Sul (07°36′58″S, 072°41′14″W, WGS84), as part of the Project Flora do Alto Juruá. The identification of the species was based on the taxonomic treatment of *Euphorbia* for the state of São Paulo (Silva et al. 2014), which includes all ruderal species found in Brazil. The identification was also made by comparison with images and data available via Tropicos.org (2020), SpeciesLink (2020), and Flora do Brasil (2020). The specimens were deposited in the Campus Floresta Herbarium (CFCZS) of the Universidade Federal do Acre according to usual procedures for Plant Systematics (Bridson and Forman 1998). Herbaria acronyms follow the standards of Holmgreen et al. (1990).

Given the common misidentification of specimens of *Euphorbia thymifolia*, the geographical distribution of *Euphorbia thymifolia* in Brazil (Fig. 1) is based on occurrences gathered only from selected herbaria (ALCB, ASE, BHCN, BOTY, CEN, CEPEC, CESJ, CGMS, ESA, HRCB, HUEFS, HUEM, IAC, JPB, MAC, MBM, PEUFR, R, RB, SP, SPF, UB, UEC, UFP, UFRN) visited by the authors of this paper, available in Reflora virtual herbarium (Flora do Brasil 2020) and the SpeciesLink database (SpeciesLink 2020). When coordinates could not be retrieved directly from these databases, we searched for approximate coordinates in Google Maps. We provided a complete list of vouchers included for the distribution map (Table 1).

**Results**

*Euphorbia thymifolia* L.
Sp. Pl.: 454. 1753 (Linnaeus 1753). Lectotype (designated by Wheeler 1941): Locality unknown, *Anonymous s.n.* (LINN 630.10!).

Chamaesyce thymifolia (L.) Millsp., Publ. Field Columb. Mus., Bot. Ser. 2: 412. 1916 (Millsap 1916).

New record. BRAZIL • Acre state, Alto Juruá region, Cruzeiro do Sul, Formoso District (Fig. 1), collected in a sidewalk crack of a residential garden, exposed to sunlight; 07.6161°S, 072.6872°W (WGS84); 30 May 2020, Souza MC 793 leg.; CFCZS 1214 (Fig. 2I, J).

**Identification.** Prostrate herb, branches reaching up to 0.2 m; latex abundant, milky. Stems reddish, glabrous on the lower surface and pubescent on the upper surface. Leaves opposite, subsessile, petioles 0.3–0.8 mm long; stipules foliaceous, interpetiolar; blade sometimes reddish, elliptic to oval, 5–7 × 3–4 mm, base asymmetric, apex rounded, margin serrate, glabrous to sparsely pilose; venation actinodromous. Cyathia axillary, solitary or in pairs; involucral tuberine, 0.8–1 × 0.3–0.5 mm, pubescent on the outer surface; cyathial glands 4, ellipsoid, red, appendages absent or poorly developed, sometimes unequal in size (2 of them slightly larger). Stamine flowers with yellow to pinkish anthers. Pistillate flower lacking a perianth-like whorl; ovary pinkish, puberulous; styles red, bifid, and capitate at the apex. Fruits with pedicel not accrescent (so the fruit splits the involucre during maturation), puberulous; seeds 4-gonous in Figure 1. Geographical distribution of *Euphorbia thymifolia* based on selected occurrences retrieved from Reflora Virtual Herbarium and SpeciesLink databases (red circles). The new record is indicated as an orange star.
Table 1. List of occurrences of *Euphorbia thymifolia* in Brazil, with voucher, locality and latitude and longitude coordinates in decimal degrees.

| Voucher | Locality | Latitude | Longitude |
|---------|----------|----------|-----------|
| M.C. Souza 793 (CFCZS) | Acre, Cruzeiro do Sul (new record) | −07.6161 | −072.6872 |
| R.P. Lyra-Olmos 10701 (MAC) | Alagoas, Delmiro Gouveia | −09.3796 | −058.8067 |
| C.R. Campelo 1802 (UEC) | Alagoas, Maceió | −09.6948 | −055.7552 |
| Chagas-O'Miota 2786 (MAC) | Alagoas, Maceió | −09.6948 | −055.7552 |
| Chagas-O'Miota 2859 (MAC) | Alagoas, Maceió | −09.6948 | −055.7552 |
| R.P. Lyra-Olmos 7638 (MAC) | Alagoas, Maceió | −09.5542 | −055.7554 |
| S.A. Martins s.n. (MAC 26221) | Alagoas, Maceió | −09.5542 | −055.7554 |
| D. Navarro s.n. (MAC 10128) | Alagoas, Maceió | −09.6498 | −055.7089 |
| M.N. Rodrigues 491 (MAC) | Alagoas, Maceió | −09.7095 | −055.8060 |
| A.L. Pinheiro 908 (MAC) | Alagoas, Marechal Deodoro | −09.7095 | −055.8403 |
| Chagas-O'Miota 1733 (MAC) | Alagoas, Marechal Deodoro | −09.6948 | −055.8060 |
| A.L. Pinheiro 462 (MAC) | Alagoas, Murici | −09.3099 | −035.9418 |
| A.L. Pinheiro 522 (MAC) | Alagoas, Murici | −09.3099 | −035.9418 |
| M.N. Rodrigues 284 (MAC) | Alagoas, Olho D'Água do Casado | −09.4229 | −037.8300 |
| R.P. Lyra-Olmos 10275 (MAC) | Alagoas, Pão de Açúcar | −09.7493 | −037.4517 |
| E. Melo 12385 (HUEFS) | Alagoas, Pão de Açúcar | −09.7594 | −037.4108 |
| M.N. Rodrigues 570 (MAC) | Alagoas, Piaçabuçu | −10.4073 | −036.4313 |
| L. Nusbaumer 4543 (MAC) | Alagoas, Quebrangulo | −09.4401 | −036.7157 |
| R.P. Lyra-Olmos 10990 (MAC) | Alagoas, São Luiz do Quitunde | −09.3186 | −035.5608 |
| D.F. Austin 7433 (UEC, RB) | Amapá, Macapá | 00.0335 | −051.0703 |
| M.A.S. Costa 258 (RB) | Amazonas, Amazonas | −02.8830 | −059.9666 |
| F.N. Chagas 197 (UEC, BOTU) | Amazonas, Humaitá | −07.5061 | −063.0208 |
| S.G.A. Sousa s.n. (ESA 33343) | Amazonas, Manaus | −03.1019 | −060.0250 |
| P.L.K. 12023 (RB) | Amazonas, Tefé | −03.3667 | −064.7191 |
| Grupo Pedra do Cavalo 139 (ALCB) | Bahia, Cachoeira | −012.5333 | −039.0833 |
| A.M. A. Amorim 3810 (SPF) | Bahia, Cachoeira | −012.5333 | −039.0833 |
| Pirajá da Silva s.n. (SP 39332) | Bahia, Camamú | −013.9447 | −039.1039 |
| G. Fotius 3969 (HUEFS) | Bahia, Campo Formoso | −10.5074 | −040.3219 |
| G.C.P. Pinto 42323 (ALCB) | Bahia, Cruz das Almas | −12.6666 | −039.1000 |
| G.C.P. Pinto 52-0215 (ALCB) | Bahia, Cruz das Almas | −12.6666 | −039.1000 |
| G. Fotius 3350 (HUEFS) | Bahia, Curaçá | −08.9951 | −039.9026 |
| A.M. Giulietti 1723 (CEPEC) | Bahia, Euclides da Cunha | −10.0327 | −039.1500 |
| J.G. Jardim 3595 (ALCB, CEPEC, HUEFS) | Bahia, Feira da Mata | −14.2511 | −044.3694 |
| N.R.S. Conegundes 3 (HUEFS) | Bahia, Feira de Santana | −12.2027 | −039.9713 |
| L.R. Noblick 12556 (CEPEC) | Bahia, Feira de Santana | −12.4930 | −038.3130 |
| L.R. Noblick 27611 (CEPEC) | Bahia, Feira de Santana | −12.2500 | −039.9666 |
| E. Melo 13254 (HUEFS) | Bahia, Feira de Santana | −12.2350 | −039.0336 |
| F. França 2302 (ESA, MAC) | Bahia, Itacurubim | −12.7672 | −040.2117 |
| J.L. Hage 1747 (CEPEC) | Bahia, Ilhéus | −14.7889 | −039.0494 |
| J.L. Hage 1748 (CEPEC) | Bahia, Ilhéus | −14.7889 | −039.0494 |
| J.L. Hage 1904 (CEPEC, MBM, SP) | Bahia, Ilhéus | −14.7889 | −039.0494 |
| W.W. Thomas 9643 (CEPEC) | Bahia, Juazeiro | −09.4000 | −040.5000 |
| A.L. Costa s.n. (ALCB 2190) | Bahia, Juazeiro | −09.4000 | −040.5000 |
| F. Glausser 1004 (SPSF) | Bahia, Macajuba | −12.1410 | −040.3604 |
| M.L. Guedes 12150 (CEPEC) | Bahia, Monte Santo | −10.4333 | −039.3566 |
| A.M. Carvalho 11324 (CEPEC) | Bahia, Porto Seguro | −16.4946 | −039.0647 |
| M.L. Guedes 17389 (ALCB) | Bahia, Presidente Tancredo Niterói | −13.3836 | −039.3300 |
| A.M. Carvalho 2760 (CEPEC) | Bahia, Riachão do Jacuípe | −11.8069 | −039.3566 |
| G.S. Campos 101 (ALCB) | Bahia, Salvador | −12.9333 | −038.5166 |
| L.R. Noblick 1030 (ALCB) | Bahia, Salvador | −12.9666 | −038.5000 |
| L.R. Noblick 1051 (ALCB) | Bahia, Salvador | −12.9666 | −038.5000 |
| L.R. Noblick 1683 (ALCB) | Bahia, Salvador | −12.9666 | −038.5000 |
| A.L. Costa s.n. (ALCB 2187) | Bahia, Salvador | −12.9666 | −038.5000 |
| A.L. Costa s.n. (ALCB 2188) | Bahia, Salvador | −12.9666 | −038.5000 |
| A.L. Costa s.n. (ALCB 2199) | Bahia, Salvador | −12.9666 | −038.5000 |
| Britto de Azevedo s.n. (ALCB 2206) | Bahia, Santa Cruz Cabrália | −16.2666 | −039.0166 |
| L.M. Pacheco 110 (ALCB) | Bahia, Vera Cruz | −12.9833 | −038.2000 |
| M.V. Moraes 497 (HUEFS) | Bahia, Vera Cruz | −12.9833 | −038.9264 |
| J.E. Leite 765 (RB) | Ceará | −04.2085 | −038.9264 |
| J.E. Leite 770 (RB) | Ceará | −04.2085 | −038.9264 |
| Voucher | Locality | Latitude | Longitude |
|---------|----------|----------|-----------|
| José Eugénio 765 (RB) | Ceará | −04.2085 | −038.9264 |
| José Eugénio 770 (RB) | Ceará | −04.2085 | −038.9264 |
| L. Krieger s.n. (CESI 7606) | Espírito Santo, Guarapari | −020.6580 | −040.5110 |
| D.A. Filol 2354 (CVRD) | Espírito Santo, Linhares | −019.3911 | −040.7222 |
| A.C. Rocha 3237 (CEN) | Goiás, Araneda do Norte | −014.5236 | −046.8375 |
| J.E.C. Júnio 9 (UFG) | Goiás, Mossâmedes | −016.0733 | −050.8884 |
| M. Aparecida da Silva 4326 (SP) | Goiás, Nova Roma | −013.8055 | −046.8472 |
| L.P. Felix 8053 (UEC) | Maranhão, Aldeia | −06.4135 | −044.4781 |
| G. Eiten 10313 (SP) | Maranhão, Barra do Corda | −05.1566 | −045.2500 |
| G. Eiten 4007 (SP) | Maranhão, Loreto | −07.3833 | −045.1166 |
| M.P. Fachini 498 (REUSM) | Mato Grosso do Sul, Batayporã | −022.2953 | −053.2710 |
| E.F. Neunestadt 271 (RB) | Mato Grosso do Sul, Campo Grande | −020.4669 | −054.6200 |
| I.P.P. Araújo 9 (ICMS) | Mato Grosso do Sul, Corumbá | −019.5772 | −057.0666 |
| F. Bao 64 (ICMS) | Mato Grosso do Sul, Corumbá | −019.5027 | −057.0666 |
| A.C. Allem 118 (CEN) | Mato Grosso do Sul, Corumbá | −019.0091 | −057.6333 |
| F.S. Carvalho 119 (ICMS) | Mato Grosso do Sul, Corumbá | −019.6022 | −056.7669 |
| E. Pereira 203 (RB) | Mato Grosso do Sul, Corumbá | −019.0098 | −057.6490 |
| L.C.S. Magalhães 475 (ICMS) | Mato Grosso do Sul, Corumbá | −019.4855 | −057.0666 |
| A.C. Allem 1231 (CEN) | Mato Grosso do Sul, Corumbá | −019.0091 | −057.6333 |
| A.C. Allem 1408 (CEN) | Mato Grosso do Sul, Corumbá | −019.0091 | −057.6333 |
| G. Hatchesbich 60917 (MBM) | Mato Grosso do Sul, Corumbá | −019.0098 | −056.6490 |
| U.M. Resende 324 (ICMS) | Mato Grosso do Sul, Miranda | −020.2406 | −056.3783 |
| J.D.S.P. Bento 51 (ICMS) | Mato Grosso do Sul, Pantanal | −019.2940 | −057.0821 |
| A. Gugleri 1653 (ICMS) | Mato Grosso do Sul, São Luís | −020.7627 | −054.8369 |
| G. Eiten 9710 (SP) | Mato Grosso, Barra do Garças | −015.3106 | −052.7750 |
| A.C. Allem 748 (CEN) | Mato Grosso, Cáceres | −016.0706 | −057.6789 |
| A.C. Allem 752 (SP) | Mato Grosso, Cáceres | −016.0706 | −057.6789 |
| M.A. Caminello 1030 (HRICB) | Mato Grosso, Cáceres | −016.0680 | −057.6632 |
| M.A. Caminello 1031 (HRICB) | Mato Grosso, Cáceres | −016.0680 | −057.6632 |
| M.A. Caminello 1032 (HRICB) | Mato Grosso, Cáceres | −016.0680 | −057.6632 |
| A.C. Allem 2397 (CEN, SP) | Mato Grosso, Cáceres | −016.0706 | −057.6789 |
| G. Hatchesbich 37498 (MBM) | Mato Grosso, Guiaíba | −015.5829 | −056.9001 |
| J.S. Costa 1232 (RB) | Mato Grosso, Mato Grosso | −015.5997 | −060.1666 |
| A.L. Prado 3428 (UEC) | Mato Grosso, Pau Nené | −016.2567 | −056.6227 |
| A.L. Prado 3653 (UEC) | Mato Grosso, Pau Nené | −016.2567 | −056.6227 |
| M.C.M. Amaroza 379 (HRICB) | Mato Grosso, Santo Antônio do Leverger | −015.6565 | −056.0766 |
| J.A. Lombardi 2573 (MBM) | Minas Gerais, Belo Horizonte | −019.9098 | −043.9678 |
| L. Krieger s.n. (CESI 36112) | Minas Gerais, Januária | −015.4881 | −044.3636 |
| R.C. Horta 4026 (HCMB) | Minas Gerais, Jequitai | −044.5627 | −017.0888 |
| M. Almeida s.n. (SP 31834) | Pará, Marabá | −02.8121 | −049.5071 |
| J. Deslandes s.n. (SP, IAC 31084) | Paraíba, Alagoinha | −06.9500 | −035.5449 |
| G.T. Moura 457 (JPB) | Paraíba, Baia da Traição | −06.6883 | −034.9557 |
| A.P. Pantea 463 (IPB) | Paraíba, Cabeço | −06.9111 | −034.8338 |
| V.G. Souza 32587 (ESA) | Paraíba, Mamanguape | −06.8386 | −035.1206 |
| M. Sales 54 (PEUF) | Paraíba, Soledade | −07.0752 | −056.3628 |
| M. Fontana 9036 (RB) | Pernambuco, Cabrobó | −08.4477 | −039.4152 |
| D.G. Oliveira 1129 (RB) | Pernambuco, Floresta | −08.6483 | −038.1544 |
| A. Almeida 50 (UFP) | Pernambuco, Igarapé | −07.3841 | −034.9636 |
| D. Araújo 293 (UFP) | Pernambuco, Igarapé | −07.7802 | −035.0152 |
| D. Araújo 522 (UFP) | Pernambuco, Igarapé | −07.8755 | −035.0027 |
| M.V. Alves 1558 (SP) | Pernambuco, Jaboatão dos Guararapes | −08.1127 | −035.0147 |
| J.C. Morais 1283 (SPSF) | Pernambuco, Nazaré da Mata | −07.7427 | −035.2272 |
| R.M. Marley 5316 (CEPEC) | Pernambuco, Orocó | −09.6666 | −039.7138 |
| E.P. Heringer 510 (RB) | Pernambuco, Ubiratã | −09.5783 | −038.1444 |
| F. Araújo 24 (PEUF) | Pernambuco, Pernambuco | −08.0050 | −039.5783 |
| F. Araújo 144 (PEUF) | Pernambuco, Pernambuco | −08.0050 | −039.5783 |
| A. Silva 9 (MBM) | Pernambuco, Pauloista | −07.9408 | −034.8311 |
| A. Sarmento s.n. (PEUF 103) | Pernambuco, Pauloista | −07.9408 | −034.8311 |
| A. Lima s.n. (PEUF 1416) | Pernambuco, Recife | −08.0538 | −034.8811 |
| J.J. Falcão 796 (RB) | Pernambuco, Rio Formoso | −08.6628 | −035.1398 |
| E.P. Heringer 9 (RB) | Pernambuco, Serra Talhada | −07.9911 | −038.2893 |
cross section, light brown to pinkish, testa with 2–4 regular transversal ridges, ecarunculate.

Additional specimens examined. BRAZIL • Amazônas: Santa Isabel do Rio Negro, Rio Ueri, Makú Indian village, 300 km, above mouth; forest on terra firme; 24 Oct. 1971; France GT 15595 (INPA 33812, US 2708630) • Amazônas: gardens around Jaradá, Rio Cuieiras; 17 Sept. 1973; France GT 18021 (INPA 41325) • Mato Grosso: Cacêres, dirt road; 17 Dec. 1976; Allen A 752 (INPA 270863) • Paraíba: São Raimundo, 300 km, above mouth; f
km SE of Mabaruma; cleared areas; Feb. 1992; Reinders MA 124 (NY542474).

**Discussion**

*Euphorbia thymifolia*, as most ruderal species of *Euphorbia* in Brazil, is within *E.* sect. *Anisophyllum* and, amongst the Brazilian species of this section, it is morphologically similar to *E. adenoptera* Bertol., *E. dioeca* Kunth, *E. prostrata* Aiton, and *E. serpens* Kunth due to the shared prostrate growth form and occurrence in disturbed areas (Fig. 2). Many botanists are led to commonly misidentify these species, but despite their overall great similarity, these species may be distinguished on the basis of a large set of characteristics, such as the indumentum of vegetative and reproductive structures, especially the involucre of cyathial, pistillate flowers, fruits, and cyathial gland appendages (Silva et al. 2014).

Moreover, seeds are useful for the distinction of these species (Silva et al. 2016). It is noteworthy, however, that among all these species, *E. dioeca* Kunth is not commonly found in Brazil. Therefore, specimens of *E. thymifolia* are rarely misidentified as *E. dioeca* and may be distinguished by having leaves lacking a central large dark blot, larger cyathial gland appendages, and styles not capitate at the apex (Table 2).

Among the specimens analyzed, one recorded for the state of Amazonas attracted our attention due to the indication on its label of latex use by the Makú people, in the Uneiuxi Indigenous Land, for the purpose of curing eye infection (US 2708630). The potential of latex from *E. thymifolia* seems to be confirmed, as laboratory tests showed its efficacy against the action of fungi and bacteria (Hussain et al. 2014). There are other indications of the plant in traditional medicine, with reported features like laxative, aromatic, sedation, blood purification, anti-viral, anti-helminthic, anti-inflammatory, anti-spasmodic, and diuretic properties (Kainsa and Singh 2016; Muthumani et al. 2016).

The record of *Euphorbia thymifolia* for the first time for Acre state revealed the need for further collection efforts in the Northern region, not only of such species,
but also of the genus, whose specimens deposited in the reference herbaria are rare and old. Before this record, *E. thymifolia* was only known from the states of Amapá, Amazonas, and Pará (Lima et al. 1995; Ribeiro et al. 1999; Silva et al. 2014; Flora do Brasil 2020). This new record enhances the knowledge of the local flora and confirms gaps concerning ruderal species.

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Authors’ Contributions

MCS collected, identified, and wrote the original version of the manuscript. OLMS confirmed the species ID and also wrote part of the manuscript.

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Table 2. Morphological comparison among the most commonly found prostrate ruderal species of *Euphorbia* in Brazil.

| Species            | Leaf margin       | Leaf indumentum       | Shape of the involucre of the cyathium | Cyathial gland appendages | Perianth-like whorl in pistillate flower | Ovary/fruit indumentum | Styles | Pedicel on fruit | Notes |
|--------------------|-------------------|-----------------------|---------------------------------------|----------------------------|----------------------------------------|------------------------|--------|-----------------|-------|
| *E. adenoptera*    | Serrate to inconspicuously serrate | Glabrous or with a few sparse hairs | Turbinate | Conspicuous, unequal in size (one pair larger than the other) | Absent | Puberulous | Slender | Not accrescent, with the fruit exposed through an aperture in the involucre | Appendages usually pinkish | Leaves usually with bluish tones |
| *E. dioeca*        | Serrate           | Glabrous or with a few sparse hairs along the margin | Turbinate | Inconspicuous, equal in size (one pair larger than the other) | Absent | Puberulous | Serrate | Not accrescent, with fruit exposed through an aperture in the involucre | Appendages usually white, leaves with a central large dark blot | Frequently with rooting at nodes |
| *E. prostrata*     | Entire to inconspicuously serrate towards the apex | Glabrous or with a few sparse hairs along the margin | Turbinate | Inconspicuous, equal in size | Absent or, if present, inconspicuous and unequal in size | Campanulate | Accrescent | Not accrescent, with fruit exposing through an aperture | Leaves usually with reddish tones |
| *E. serpens*       | Entire            | Glabrous               | Turbinate | Not accrescent, with the fruit exposed through an aperture in the involucre | Absent or, if present, lacerate | Absent | Accrescent | Not accrescent, with fruit exposing through an aperture | Leaves usually with reddish tones |

*Euphorbia thymifolia*
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