Balanites aegyptiaca (L.) Delile
Balanites pedicellaris Mildbr. & Schltr.
Balanites rotundifolia (Tiegh.) Blatt.
Zygophyllaceae

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Synonyms

***Balanites aegyptiaca* (L.) Delile:** *Agalid aegyptiaca* (L.) Kuntze, *Ximenia aegyptiaca* L.
***Balanites pedicellaris* Mildbr. & Schltr.:** *Balanites australis* Bremek.
***Balanites rotundifolia* (Tiegh.) Blatt.:** Synonyms: *Agalid rotundifolia* Tiegh.

Local Names

***Balanites aegyptiaca*: Swahili:** Mkonga, Mnyira, Mchunju, Mguguni, **Borana:** Baddan, **Gabbra:** Baddano, **Kamba:** Kilului, Mulului, **Kipsigis:** Ngoswet, **Luo:** Othoo, **Maa:** Olngoswa, **Marakwet:** Ngoswa, Tunyunwa, **Pokot:** Tuyunwo, **Samburu:** Lowvai, **Tugen:** Ngonswo, **Turkana:** Eroronyit, **Luganda:** Musongole (Beentje 1994; Kokwaro 2009), **English:** Torchwood, Green thorn.
***Balanites pedicellaris*: Ilelewa:** Mubadana, **Oromo:** Baddan, **Pokot:** Lomion, Loma, **Marakwet:** Lomion, **Taita:** Kikowa, **Turkana:** Elamach (Beentje 1994; Kokwaro 2009).

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***Balanites rotundifolius*: Borana/Oromo:** Baddan, **Ilelewa:** Mubadada, **Pokot/Marakwet:** Lomion, **Pokomo:** Daddan, **Rendile:** Kulum, **Samburu:** Sarei, **Somali:** Kullan, **Tugen:** Tirikiwa, **Turkana:** Ebei (Beentje 1994; Kokwaro 2009).

Botany and Ecology

***Balanites aegyptiaca* (L.) Delile:** Small evergreen tree (rarely a shrub) up to 15 m tall, spiny, with a flat or rounded crown, stem with a reticulate dark brown or grey (rarely green) bark, branches green or greyish, stiff and brittle, always armed with stout simple green or yellowish spines. Leaves petiolate, leaflets shortly petiolulate, lamina 2.5–6 × 1.5–4 cm, slightly asymmetric, elliptic to elliptic-obovate, apex subacute to obtuse, sometimes slightly refuse, base cuneate or rarely rounded, coriaceous, puberulous when young, later glabrescent or sometimes remaining puberulous on the lower surface, secondary nerves 4–6 pairs, prominent beneath, petiole (0.5)0.8–2 cm long, puberulous or glabrescent, canaliculate. Flowers in usually few-flowered sessile or shortly pedunculate fascicles, pedicels up to 1.5 cm long, densely greyish-pubescent. Flowers 1.4 cm in diameter. Sepals 5, 2.7 × 2.7–3.25 mm, ovate or ovate-lanceolate, coriaceous, caducous, densely pubescent outside, with long silky whitish hairs inside. Petals 7.2–9.5 × 2–2.4 (2.8) mm, narrowly elliptic or elliptic-oblong, rarely lanceolate-oblong, glabrous on both surfaces. Stamens with the anthers 1.7–2.2 mm long, ovate or ovate-oblong, glabrous, filaments 3.175 mm long. Ovary densely covered with long silky hairs. Drupe yellowish or green, up to 5 × 2.5 cm, usually subcylindric, more rarely narrowly ellipsoid or subobclavate, finely puberulous, sometimes glabrescent. Occurs from south-eastern Kenya south to Swaziland and the province of KwaZulu-Natal in South Africa, with its center of diversity in Mozambique (El Hadidi 1985) (Fig. 1).
***Balanites pedicellaris* Mildbr. & Schltr.:** Much-branched shrub or small tree with pendulous branches, up to 6 m or taller, variable in shape and size. Branches yellowish or greyish-green or grey, rather stiff, usually spiny, younger parts densely puberulous, glabrous when older, spines rather stout, simple. Leaves shortly petiolate, leaflets sessile, 1–3 (4) × 0.5–2.3 (3) cm, obovate, broadly obovate, obcuneate or rarely obovate-elliptic, apex rounded, rarely subtruncate, entire or slightly retuse, base always narrowly cuneate, sub-succulent, very shortly and densely puberulous to sub-tomentose when young, later glabrescent, secondary nerves 3–5 pairs, not very prominent beneath, petiole 1.5–4 (6) mm long, rather stout, densely pubescent at first, later glabrescent. Flowers c. 1.4 cm in diameter, in few- to many-flowered sessile or rarely shortly pedunculate fascicles, pedicels up to 2 cm long, fairly stout, densely puberulous, very rarely glabrous. Sepals 6.5–7.5 × 3.2–5 mm, ovate to ovate-lanceolate, coriaceous, densely tomentose outside, with long whitish silky hairs inside, acute, caducous. Petals 6.7–9 × (2.5) 2.8–3.4 mm, narrowly elliptic with an acute apex, glabrous on both surfaces. Stamens with oblong anthers 2–2.8 mm long, filaments 3.75 mm long. Ovary densely covered with whitish silky hairs. Drupe orange, subglobose or broadly ellipsoid, usually somewhat flattened on

Fig. 1 *Balanites aegyptiaca* (Zygophyllaceae), Nairobi National Park, Kenya. (Photo R.W. Bussmann)

both ends, 1.2–2.5 × 1.5–2 cm, finely puberulous when young, later usually glabrescent (El Hadidi 1985).

***Balanites rotundifolia* (Tiegh.) Blatt.:** A spiny evergreen shrub or small tree up to 6 (–8) m high (frequently much shorter), with a low bushy habit, densely branched, or with a trunk up to 40 cm diameter, bark grey-brown, strongly fissured, sap gummy, branchlets grey-green or yellowish-brown and, like the young spines, glabrous or puberulous to pubescent at first, glabrescent. Primary spines borne on the parent axis at a varying angle, (1–)2–5(–10) cm above the axil, 2–11 cm long, 2–5 mm diameter at the base, subulate, smooth or sometimes shallowly grooved, green or yellowish-green, spinuliferous with some branch-spines, spinules 0.5–2 cm long grading to branch-spines. Leaves on the stems and spines, sessile or with a petiole up to 4 mm long, stipules 1–2(–3) mm long, triangular, puberulous, often persistent, leaflets sessile or subsessile, orbicular to broadly obovate or obovate-elliptic, 0.7–6.5 cm long, 0.8–4.8 cm wide, coriaceous, frequently concave and undulate, apex rounded or sometimes emarginate to truncate and abruptly apiculate, base rounded or broadly cuneate, glabrous or puberulous to pubescent, eventually glabrescent, rarely setulose, foliole linear, 0.7–4 mm long, sometimes caducous. Inflorescence on the stems and spines, a few to 12-flowered fascicle or sometimes clustered on a short peduncle up to 2.8 cm long, axillary or rarely terminal on a leafy shoot, pedicels 0.2–1.6 cm long. Flowers 4-merous, sepals ovate, 3–5.5 mm long, 3 mm wide, acute to acuminate, sparsely pubescent outside, the glabrous margin narrow, petals yellowish green or olive-green, obovate-elliptic, 3–6.5 mm long, 1.8–2.5 mm wide, acute or

obtuse and sometimes irregular at the apex, narrowing to the base, glabrous within, stamens 8, spreading-erect, anthers 1.5–2 mm long, 0.5–1 mm wide, ovary 1–1.5 mm high, glabrous or densely pubescent to pilose, style 1–2 mm long. Fruit, not elongating in early development, swelling at first proximally, with slower expansion of the glabrous style-base, eventually ripening orange-yellow, ovoid to broadly ellipsoid when mature, 2.5–3 cm long, 1.8–2.5 cm diameter, rounded at both ends, thin, hard, brittle and smooth on the outside, fibrous within enclosing a dense pale layer, the endocarp hard and oily, the seed becoming free inside the fruit (El Hadidi 1985).

Local Medicinal Uses

***Balanites aegyptiaca*:** The roots and bark are widely used in purgative medicines. The roots are used to treat malaria (Beentje 1994; Kokwaro 2009). Root decoction also used for edema, abdominal pains, as purgative and anthelminthic. Molten gum mixed in porridge is used for pneumonia and chest problems (Kokwaro 2009). The gum is used to treat skin problems (Wondimu et al. 2007). Root and bark used to treaty stomach problems and cowpox (Muthee et al. 2011).
***Balanites pedicellaris*:** Root infusion used as emetic (Beentje 1994). Pounded roots in water used to treat diarrhea and fever (Kokwaro 2009).
***Balanites rotundifolia*:** Leaves used to treat wounds (Beentje 1994). Boiled roots in water used to treat abdominal pain and fever. Leaf paste applied to wounds (Kokwaro 2009). The roots are boiled, and the decoction drunk for diarrhea and to stop weight loss and applied to body rushes in Ethiopia (Teklehaymanot et al. 2010).

Local Food Uses

***Balanites aegyptiaca*:** The fruits and seed oil are edible, the oil is used in cooking, and as a massage oil (Beentje 1994). The leaves and fruits serve as famine foods (Balemie and Kebebew 2006).
***Balanites pedicellaris*:** Fruit edible (Beentje 1994).
***Balanites rotundifolia*:** Fruit edible (Beentje 1994).

Local Handicraft and Other Uses

***Balanites aegyptiaca*:** Oil pressed from the seed kernel is used in Limpopo Province of South Africa as a dressing for hides and skins. In some regions the oil or seeds are burnt as torches, hence the common name "torchwood," the wood produces a good charcoal. The timber is useful for building poles, tool handles, grain mortars, stools and for carving and turnery, in Swaziland it is used to make wagons. In southern Malawi the fruits are used to make leg rattles. Although the fruit is edible to mammals, the fruit exudate is used in fish poison and is lethal to the freshwater

snails and water fleas (*Cyclops* spp.) that are vectors of bilharzia and Guinea worm, respectively. Occasionally been planted as an ornamental. Gum used as glue. Wood used for utensils and tool handles (Beentje 1994). Dried leaves used to treat eye problems in cows (Kokwaro 2009). Used as fuelwood, together with ***Balanites glabra*** (Tian 2017). Used as fish poison (Neuwinger 2004).

***Balanites pedicellaris*:** Used as fish poison (Neuwinger 2004).

***Balanites rotundifolia*:** Wood used for utensils and spears, gum used as glue (Beentje 1994). Used as fish poison (Neuwinger 2004).

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