Homalanthus (Euphorbiaceae)
in New Zealand, and its fruit

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Homalanthus A.Juss.

Small (occ. medium-sized) secondary-growth trees, branches whorled, all parts with white latex, mostly glabrous; stipules large (often more than 1 cm long), enclosing new leaves and infls; leaves alternate, simple, us. long-petiolate, blade deltoid, glands us. present dorsally or laterally at petiole apex and also near base of blade on its underside, margins of blade entire (repand, but not toothed, in *H. repandus* of New Caledonia); inflorescences terminal, bisexual, unbranched, raceme-like, round or tremelloid glands just below the bracts, numerous small clusters of male flowers distally, solitary female flowers proximally; ovary 2-3-locular, papillose on exterior surface (and often clearly so in fruit), ovules solitary, the 2 or 3 style branches ("stigmas") almost always with an abaxial gland at apex; fruit mostly a woody loculicidal capsule (but a fleshy, septicidally-dehiscing capsule in *H. repandus*); seeds us. ± elliptic-oblong, us. with a yellowish aril, testa thin and us. papillose, tegmen hard.

The name, sometimes spelt *Omalanthus*, derives from the Greek *homalos*, equal, level or smooth, and anthos, flower – the reference being to the flattened nature of the male flowers in the type species (Esser).

Approximately 20 species, naturally distributed from southern Thailand and Taiwan through Malesia (13 spp.) to Australia (3 spp.), New Caledonia (2 spp.) and the Kermadec Islands (1 sp.), and east across the central and southern Pacific Ocean to the Society and Austral Islands.

Two species are present in New Zealand. Our native Kermadec Islands endemic, *H. polyandrus* (Muell. Arg.) Cheeseman, is sometimes grown in sheltered northern gardens. Until felled by a storm in 1992, a large tree graced the central courtyard of the Auckland Museum. Seedlings from it used to come up behind the low concrete walls etc., but there are no other collections in AK to suggest that *H. polyandrus* might have naturalized on the mainland. The two trees I know of now in Auckland gardens (e.g., one at the Mount Albert Research Centre grounds) have an abundance of green fruit in summer, but most if not all of their seeds are small and shrunken.

The other species present in New Zealand is *H. populifolius* Graham, native to Australia and adjacent parts of Melanesia. It is fairly well naturalized in northern New Zealand, but seems to be only of sporadic occurrence south of Auckland. In this city, one commonly finds young plants along neglected boundaries, e.g., below overhanging roofs and guttering, and under large trees - these are all places where birds frequently defecate. It can be abundant too in waste scrubby places, for example, on the Whangaparoa Peninsula.

Key to the species

Petiole apex on adaxial (upper) side with a pair of glands or these fused into a prominent, raised, flat-topped or cupular structure; leaves withering first to bright red and then to yellow; male flowers us. 3 together in axis of bract, each flower with a pair of sepals (rarely 1 in smaller flowers); fruit rounded (flattened along each side), 2(rarely 3)-locular, c. 13 mm wide, 8 mm deep, the surface of the valves softly papillose. Figure 1 opposite right..... ***H. populifolius***

Petiole apex not glandular; leaves withering to yellow (sometimes reddish on margins and petiole); male flowers solitary, enclosed by a solitary sepal; fruit angled, 3(-4)-locular, surface smooth to slightly rugose but only obscurely papillose, c. 15 mm diam. Figure 1 opposite left..... ***H. polyandrus***

Fruit and seeds

One of the more constant features of the huge, genus-rich family Euphorbiaceae is the structure of the fruit, which is often a 3- or 6-locular capsule, whose wedge-shaped segments (called mericarps, or cocci) detach from each other along their junctions (the septa) and also from the central column; the mericarps may then open adaxially to release their seed or seeds. This type of fruit is called a septicidal schizocarp. The outer wall of the mericarps is often dry but can sometimes be juicy.

Rather than splitting along the septa though, the capsule in *Homalanthus* species (with the exception of the apparently primitive berry-like fruit of *H. repandus*) has somehow been reorg-anized so that it splits over the back of each seed, that is, it is loculicidal rather than septicidal. The mericarp structure is lost, and each valve of the fruit is in fact a double structure, one half from the carpel to the left and the other from the carpel to the right. In our species, and probably in most others, the valves of the ripening fruit become bright red and

dry out, losing their animal-repellent latex. At full ripeness the valves detach when touched or otherwise disturbed, leaving the arillate seeds exposed at the top of the columella. Sykes (1969) described predation by the tui, *Prosthemadera novaeseelandiae*) on *H. polyandrus* on Raoul Island; parrots too might be involved in this aspect of fruit biology.

Another fairly typical feature in the family is a fleshy outgrowth, or aril, at the top of the seed. For example, the familiar spiky capsule of the castor oil tree, *Ricinus communis*, is a dry schizocarp with the 3 seeds each having a small pale aril. In our *Homalanthus* the arils are bright yellow and shaped rather like a jester's cap, so contrasting noticeably with the dark hammer-marked seedcoat.

References

Esser, H.-J. 1996. Proposal to conserve the name *Homalanthus* (Euphorbiaceae) with a conserved spelling. *Taxon 45:* 555-556.

Sykes, W. R. 1969. *Homalanthus* in New Zealand. *N.Z. J. Bot. 7:* 302-307.

Figure 1

Left: *H. polyandrus*: Intact capsule; ts capsule.

Right: *H. populifolius*: Intact capsule; seeds on columella; ts capsule showing position of seeds (stippled) and stigmas (dashed), lines externally to show future dehiscence in loculicidal plane.