

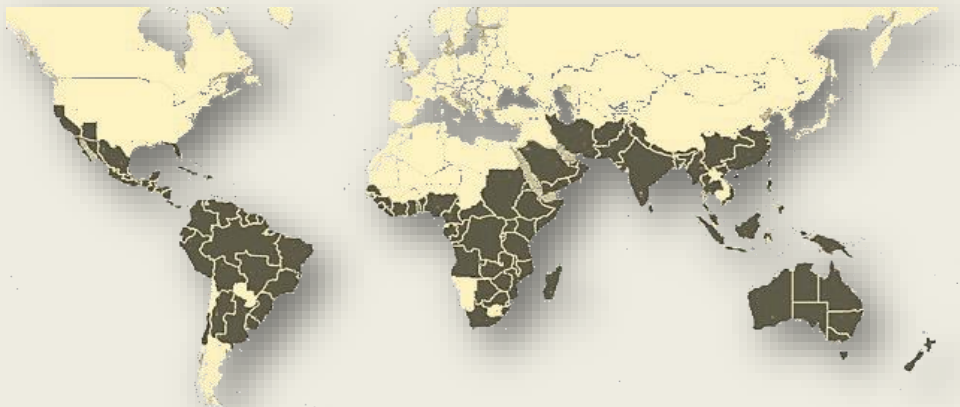
Dodonaea viscosa

Sticky Hop Bush A relatively unknown Australian that conquered the world.



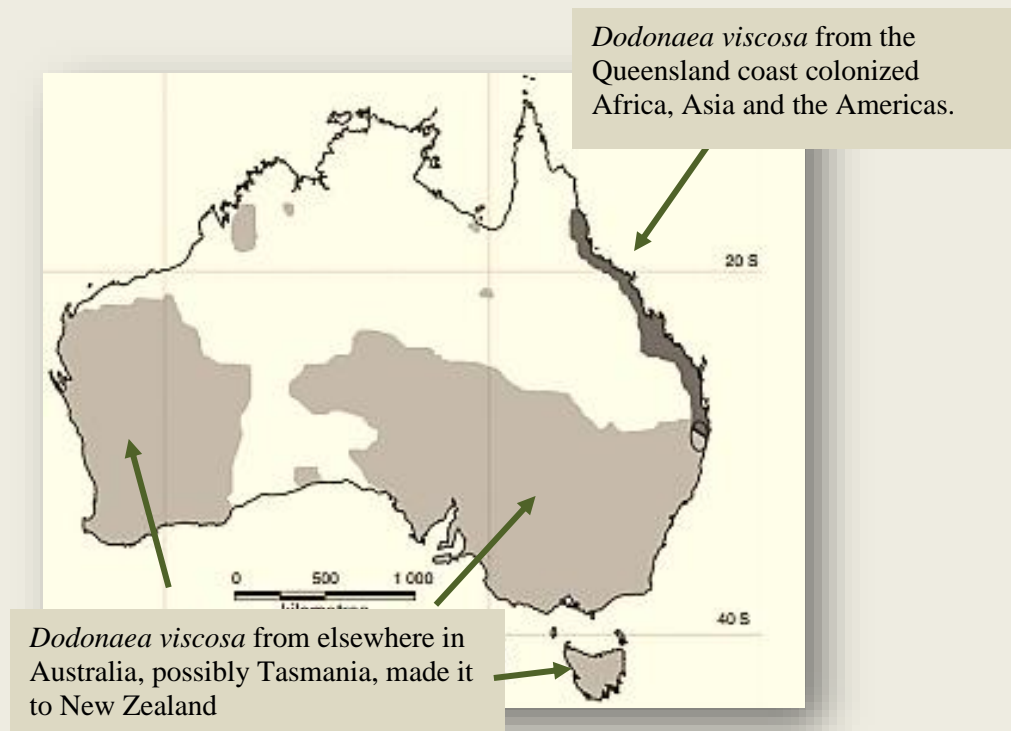
Dodonaea viscosa in Hawaii. Photo: David Eickhoff from Pearl City, Hawaii, USA, CC BY 2.0 <<https://creativecommons.org/licenses/by/2.0/>>, via Wikimedia Commons

Australia has about 70 endemic species of *Dodonaea* (Hop Bushes), one species shared with Papua New Guinea, and one extraordinary outlier in Madagascar, but **just one species**, *Dodonaea viscosa*, emigrated from the Australian mainland to become one of the world's most widely dispersed species, an extraordinary feat. It has an incredibly broad distribution throughout tropical, subtropical and temperate regions of the world; in Africa, the Americas, Asia and Australasia and thus it's known as a *cosmopolitan* species. It's not quite so uncommon for a *genus* to have a broad distribution, but very unusual for a *species*. There are many variants of *D. viscosa* throughout the world but none that could be classified as a distinctly separate species. Many, however, are identified as *subspecies*, subdivisions of a species that are distinguishable and geographically isolated from other populations of the same species but are still capable of interbreeding with them. New South Wales alone has seven subspecies.



So how did *Dodonaea viscosa* conquer the world? Because of its exceptional world-wide distribution, initially it was believed to have been a very old lineage, but botanists have determined that it evolved in Australia from a common ancestor within just the last two million years, then split into *two* distinct, geographically based lineages.

The expansion of *D. viscosa* world-wide to Africa, the Americas and Asia, is the result of long-distance dispersal of *one of these two lineages* from the north-eastern coast of Queensland while those that made it from mainland Australia to New Zealand between 0.5 to 1.2 million years ago came from the *second lineage*.



Distribution of two lineages of *Dodonaea viscosa* in Australia: Harrington and Gadek (2010).

Dodonaea species are known as *Hop Bushes* because of the supposed similarity of the winged fruit to that of hops. *Dodonaea viscosa* usually grows as a shrub, occasionally a small tree. The flowers are unusual too, they can be male or female, but fertile flowers can also be hermaphrodite (having both male and female reproductive organs) or unisexual. They are wind-pollinated, therefore not requiring colourful petals to attract pollinators. Indeed, a lack of obstructive petals probably facilitates wind dispersal of pollen. They are often referred to as *Sticky Hop Bushes* because of resin secreted from the leaves.

Dodonaea madagascariensis is another extraordinary species. It's endemic to the uplands of central Madagascar, one of the few amazing examples of disjunct distributions within a genus from Australia to Madagascar. And a colourful cultivar developed in New Zealand, *D. viscosa* 'Purpurea' is commonly available in Australian nurseries.

Why isn't *Dodonaea viscosa* more widely recognised for its remarkable colonisation of the world? Well, most *Dodonaea* species, including *Dodonaea viscosa*, even when flowering or fruiting, are not particularly eye-catching or interesting!



Flowers of *Dodonaea triquetra*
– a common species in the
Sydney area



Winged fruit of *Dodonaea triquetra*

Alison Downing, Brian Atwell, Karen Marais, Kevin Downing
School of Natural Sciences

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Wikipedia: https://en.wikipedia.org/wiki/Dodonaea_viscosa



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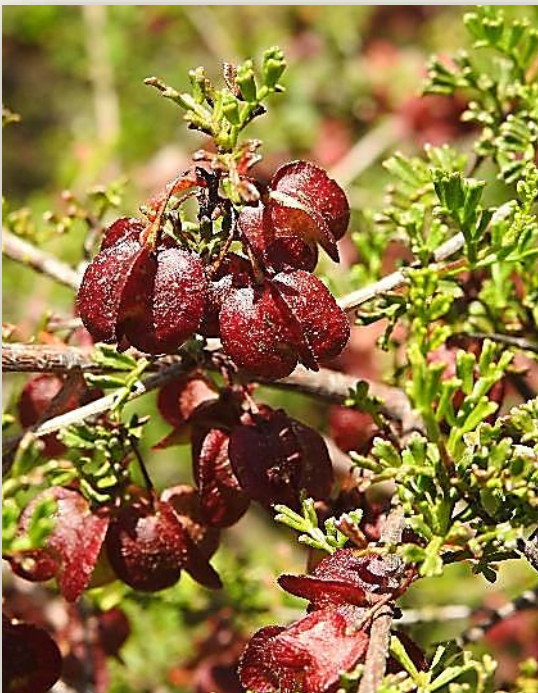
These photographs of *Dodonaea viscosa* subsp. *angustissima* flowering along Old Mount Canobolas Road at Orange, and of other *Dodonaea* species, together with accompanying text, are courtesy of Rosemary Stapleton, Orange Field Naturalist and Conservation Society.



Dodonaea viscosa subsp. *angustissima*. 'Open' male flowers with rich red anthers. Note the tiny spider in the centre of one flower. Photo: R. Stapleton



Dodonaea viscosa subsp. *angustissima*. 'Open' female flowers with 'extended' style and stigma. A green ovary is present on one flower where sepals have spread open. Photo: R. Stapleton



Winged seed capsules of *Dodonaea boroniifolia*, the Fern-leaf Hop Bush. This is the other hop bush species found on Mt Canobolas. These capsules are similar to those of the Sticky Hop Bush. Photo: R. Stapleton



Dodonaea sp. An old capsule on a plant in Goobang National Park. Photo: R. Stapleton