

Smooth Davidson's Plum

Davidsonia johnsonii
Family Davidsoniaceae

Previous names:

Davidsonia sp. A sensu
(Williams & Harden 1979)
Davidsonia sp. 'Mullumbimby-Currumbin Ck'

Conservation Status:

Smooth Davidson's Plum is listed as
Endangered under the following:

- New South Wales *Threatened Species Conservation Act 1995*
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*



Davidson's Plum *Davidsonia johnsonii*, leaves and fruit.

photo: David Milledge

Description

Last updated January 2010

Smooth Davidson's Plum is a sought-after bush food tree with sour, plum-like fruit containing seeds that are almost always infertile. Trees are bushy and dense-crowned, growing up to 18 m in height and reproducing by way of root suckers. Young growth is covered with soft, non-irritant hairs, while mature leaves are almost or completely hairless. The leaves are 12-30cm long, divided into 5-9 leaflets with a winged leaf axis. Leaf margins are toothed. Flowers are small, pink-red, in clusters towards the end of leafy shoots. Its root-suckering habit has resulted in the formation of dense clumps and stands at certain locations (Harden 2000, NPWS 2002, DEC 2004).

Distribution and Trends

National and State

Smooth Davidson's Plum has a restricted distribution from the Currumbin Valley in south east Queensland south to the Richmond River in New South Wales (Harden 2000, DECC 2005).

In New South Wales it has been recorded at scattered locations from Hogan's Scrub at North Tumbulgum to Sandy Flat east of Tintenbar.

Historical clearing of coastal rainforest habitat and conversion of land use to agriculture and development in NSW and south-eastern Queensland may have led to the destruction of sub-populations of this species.

Habitat fragmentation has isolated many Smooth Davidsonia sites that may formerly have been part of a system of continuous habitat. Isolation of individuals may be preventing the flow of genetic material (DEC 2004).

Local

Smooth Davidson's Plums are presently known from a number of locations in Byron Shire including Snow's Gully Nature Reserve, Goonengerry National Park, Huonbrook, Wilsons Creek, Mullumbimby Creek, Main Arm, The Pocket and Broken Head.

Ecology

Habitat

Current records indicate that Smooth Davidson's Plum occurs in lowland wet sclerophyll forest and subtropical rainforest, growing up to 300m above sea level. It grows on soils derived from metasediments¹ or rhyolitic² or basaltic³ substrates (DEC 2004). Some individuals are found in cleared land growing as isolated clumps in paddocks, or in regrowth forest dominated by *Lantana* (*Lantana camara*) and other weed species. Many sites are on the edges of forest or regrowth that are also characteristically dominated by *Lantana* (DEC 2004).

Reproduction

Smooth Davidson's Plum is not known to set fertile seed and appears to reproduce only by suckering. Consequently, propagation must be from suckers, or stem or root cuttings, which is likely to be damaging

to the plant and may adversely affect the viability of populations (Costin 1993).

Flowering occurs from October to November (Floyd 1989) but the pollinators are unknown. The size and form of the flower suggest that the vectors are likely to be small insects, however, the flowers grow on major branches which can be suggestive of mammal pollination (DEC 2004). Bees, beetles and ants have been observed visiting the flowers (F. Elliott unpubl. data). The plum-like fruit ripens between April to June.

Each fruit contains one or two infertile seeds consisting of empty husks. With reproduction apparently confined to sucker production, it is believed that stems at a single location consist of one or a small number of clones (Watson 1987, McKinley and Stewart 1999, Harden and Williams 2000).

¹ Sediments or sedimentary rocks which have undergone metamorphism.

² Rhyolite is a very acid, fine grained volcanic rock. It is light in colouring and has a similar composition to granite.

³ Basalt is a dark coloured, fine grained igneous rock.

Figure 2: A stand of Smooth Davidson's Plum

photo: David Milledge



Threats

Habitat Loss and Modification

Their restriction to lowland sites places Smooth Davidson's Plums at further risk from habitat clearing and modification. The Byron and Tweed Shires are presently undergoing major urban and rural expansion with small-scale clearing and the under-scrubbing of vegetation widespread. These practices pose a particular threat to current and undiscovered populations.

Grazing

Known sites are predominantly on private land with grazing occurring at some, exposing plants to direct damage and soil compaction.

Fire

Planned and unplanned fire can cause irreversible damage to the Smooth Davidson's Plum if fires are of high intensity or frequency (DEC 2004). Fire poses the largest risk to those located within larger remnant communities.

Weed infestation

Competition from Camphor Laurel (*Cinnamomum camphora*) and smothering by Lantana are a common threat.

Propagation and Genetic Vulnerability

The collection of propagation material for bush food plantings and nurseries is a major threat, due to the potential for this practice to damage discrete plants or populations that lack the ability to colonize new sites. The apparent vegetative connection of all individual stems at each of the known sites suggests very low genetic diversity within each population, posing a long-term threat to the viability of the species (Quinn et al. 1996).

Road works

No published material concerning roadside vegetation which includes the Smooth Davidson's Plum is available, however, known populations have been isolated by the Pacific Highway upgrade and further habitat fragmentation is expected from future works (DEC 2004).

Management Recommendations for Byron Shire

- Identify and record any Smooth Davidson's Plum habitat in the Byron shire.
- When undertaking development in potential habitats obtain expert assistance to search for new populations.
- Prevent livestock access to known Smooth Davidson's Plum sites in order to cease grazing and soil compaction.
- Determine and implement appropriate fire regimes in and adjacent to all known sites.
- Take care when clearing weeds or regrowth in possible habitat as weeds may obscure previously undetected plants.
- Do not dump garden waste near native vegetation.
- Buffer all populations and reconnect isolated sites to adjacent habitat using suitable bush regeneration methods.
- Ensure that remaining rainforest and wet eucalypt forest habitats are preserved.
- Ensure road construction and maintenance avoids known populations and obtain expert advice when undertaking new work.
- Seek a permit from the DECCW before collecting fruit or seed from the wild, buy plants only from appropriately licensed nurseries and ensure plants are sourced from wild populations within your local catchment.
- Support local Landcare groups carrying out native vegetation conservation.
- Report new Smooth Davidson's Plum locations to the Ecologist at Byron Shire Council and to the DEC Wildlife Atlas database. (<http://wildlifeatlas.nationalparks.nsw.gov.au/wildlifeatlas/watlas.jsp>) Records should include date of location, location (grid reference) and number of individuals.

Locations of Threatened Flora within Byron Shire *Davidsonia Johnsonii*

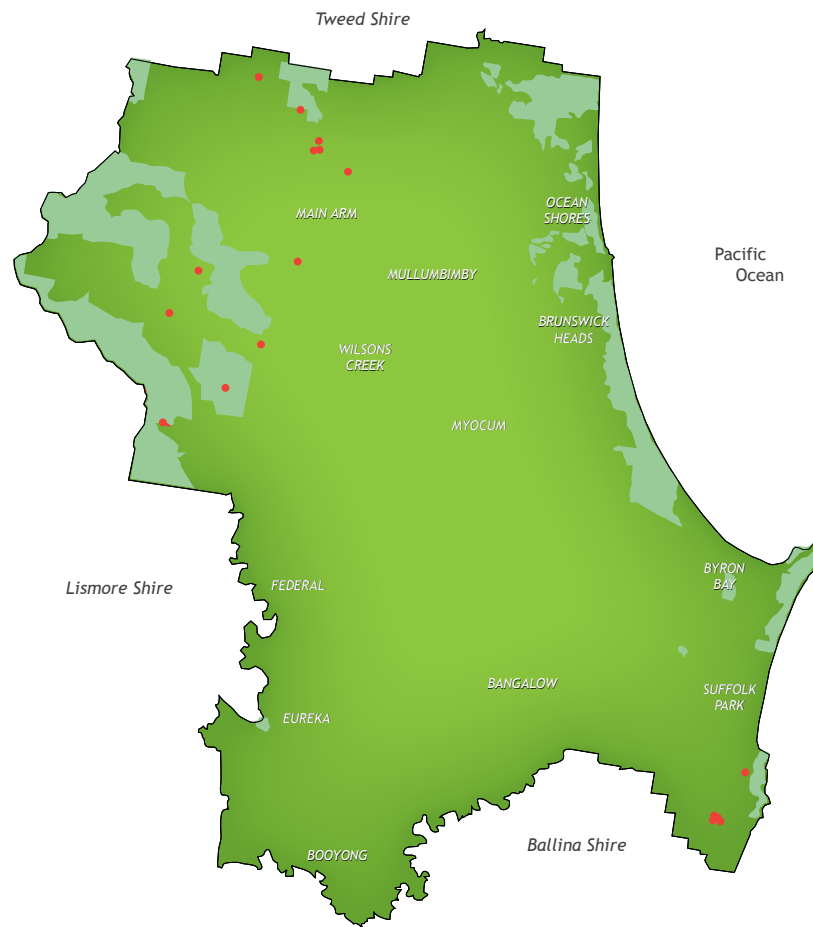


Figure 3: Distribution of Smooth Davidson's Plum *Davidsonia johnsonii* in Byron Shire

References

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